Proactive by Design

SHORT TERM RESPONSE ACTION PLAN (STRAP)
HOLDER 18/21 CAPPING PROJECT

642 Allens Avenue
Providence, Rhode Island

April 27, 2016
GZA File No.: 03.0033554.00

PREPARED FOR:
Rhode Island Department of Environmental Management (RIDEM)
Providence, Rhode Island

ON BEHALF OF:
nationalgrid

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April 27, 2016
File No. 03.00033554.00

Via E-Mail and U.S. Mail

Mr. Joseph Martella
Rhode Island Department of Environmental Management (RIDEM)
Office of Waste Management
235 Promenade Street
Providence, Rhode Island 02908

Re: Short Term Response Action Plan (STRAP)
Holder 18/21 Capping Project
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 d/b/a National Grid (National Grid), GZA GeoEnvironmental, Inc. (GZA) is pleased to present to the Rhode Island Department of Environmental Management (RIDEM) the attached Short Term Response Action Plan (STRAP).

This STRAP describes proposed remedial actions for an approximate five acre portion of the 642 Allens Avenue Site which consists of installing an engineered cap with appurtenances. These remedial actions are designed to prevent potential human exposure to impacted soils.

Should you have any questions or comments regarding the information presented herein, please do not hesitate to contact the undersigned or Amy Willoughby from National Grid at (401) 258-5410.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.

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MSK/tlb
Attachment: *STRAP Holder 18/21 Area Capping Project*
cc: Amy Willoughby, National Grid

TABLES

FIGURES

APPENDICES

1.0 INTRODUCTION

On behalf of The Narragansett Electric Company (TNEC) d/b/a National Grid (National Grid), GZA GeoEnvironmental, Inc. (GZA) is pleased to present to the Rhode Island Department of Environmental Management (RIDEM) this *Short-Term Response Action Plan (STRAP)* for the former 642 Allens Avenue Manufactured Gas Plant (MGP) located in Providence, Rhode Island (herein referred to as the "Site"). A Project Locus Map is presented on Figure 1, *Cover Sheet and Index to Drawings*.

This *STRAP* has been prepared to address applicable requirements of Section 6.00 – Emergency or Short Term Response, of the RIDEM Rules and Regulations for the Investigation and Remediation of Hazardous Materials Releases (Remediation Regulations).

This *STRAP* is subject to the Limitations included in Appendix A.

1.1 PROJECT OBJECTIVES

This plan has been prepared to address soils in the Holder 18/21 Area (referred to herein as the "STRAP Area") exhibiting impacts in excess of the RIDEM Method 1 Criteria via the installation of an engineered cap. As described herein, proposed STRAP activities include clearing and grubbing, installing erosion and sedimentation controls, miscellaneous demolition activities, removal of accumulated sediment and debris from and inspection of sections of an existing drainage line, grading and off-Site disposal of excess materials, installation of an engineered cap, and restoration activities (hydroseeding and fencing). The installation of the engineered cap includes on-Site infiltration of treated stormwater via a forebay and vegetated sand filter. In addition, this project involves limited electrical work to install a new electric gate, new utility poles and to repair some existing electrical infrastructure at the Site.

Figure 2, *Existing Conditions Plan*, presents the location of existing buildings, roads, landscaped areas and approximate property boundaries based on tax map information at the Site. This plan also shows the approximate 4.6 acre STRAP Area which is located on the southwestern portion of the Site.

2.0 BACKGROUND

The following sections present a summary of relevant background information for the Site, with focus on the STRAP Area, including relevant historical operations, regulatory history and status of the RIDEM-listed Site.

2.1 SITE DESCRIPTION AND HISTORY

The Site is located at 642 Allens Avenue in the southeastern portion of the City of Providence, Rhode Island and is identified as Assessor's Plat (A.P.) 56, Lots 5, 273, 316 and 317, and A.P. 101, Lot 1. The Site consists of approximately 42 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. Currently, active natural gas regulation and distribution, gas construction storage, a compressed natural gas (CNG) fueling station, (LNG) storage and distribution, and cement storage and distribution activities are conducted at the 642 Allens Avenue property. As described previously, the STRAP Area consists of approximately 4.6 acres on the southwestern portion of the Site and is located on A.P. 101 Lot 1 and A.P. 56 Lot 5. This

area is mostly vacant; a limited portion of the area is currently used by National Grid Gas construction crews for material laydown and storage (i.e., existing Holder 21 concrete slab). The below table presents a summary of the Site current use:

A.P.	Lot	Current Owner	Address	Current Use(s)
101	1	TNEC	642 Allens Avenue 670 Allens Avenue	Natural Gas Construction Storage Natural Gas Regulation and Distribution CNG Fueling Station
56	5	TNEC	642 Allens Avenue	Natural Gas Construction Storage Natural Gas Regulation and Distribution
56	273	TNEC	139 Terminal Road	Cement Storage and Distribution
56	316	TNEC	121 Terminal Road	LNG Facility
56	317	TNEC	121 Terminal Road	Access Road

The Site is generally level with gentle slopes towards the Providence River. The Site is entirely enclosed and secured by chain-link fencing and barbed wire. Based on several rounds of investigations performed at the Site, subsurface conditions generally consists of urban fill underlain by organic silt, glacial outwash and glacial till. The depth to bedrock is generally more than 100 feet below ground surface (bgs). Groundwater is generally encountered within the fill unit, is classified as GB or not suitable for drinking water use without treatment, and flows towards the tidally influenced Providence River.

A United States Army rifle range operated at the Site in the late 1800s, prior to the use of the Site as a MGP. From 1910 until 1954, a MGP operated at the Site producing coal gas, carbureted water gas, and high-BTU oil gas. MGP by-products were routinely managed through recovery, storage, recycling, reprocessing, and resale. Such by-products included coke, coal tar, ammonia, toluene, and benzene. B.P. Clapp operated an ammonia works at the 642 Allens Avenue property beginning in 1910, and managed the recycling and sale of ammonia by products. The United States Government operated a toluene facility at the Site for a short period of time during 1918. By 1954, coal gasification operations at the Site had ceased. From 1952 until the 1960s, a liquefied petroleum gas distribution plant operated on the Site. Gulf Oil had a facility at the Site to store kerosene from 1957 to 1971. A Liquefied Natural Gas (LNG) facility has operated on the eastern and southeastern portions of the Site since 1972. The southeastern portion of the Site has been utilized for cement storage and distribution since 1961. Propane storage and distribution occurred at the Site from the 1960s to the 1980s for peak shaving purposes.

In October 2015, National Grid relocated a large stockpile from the central northern portion of the Site (known herein as the MHA stockpile) (2,000 CY) to the STRAP Area to pre-load the former holder 18 area and to fill to planned subgrade elevations during the planned capping project. The MHA stockpile, which was previously located in the central portion of the Site, was generated during remedial activities in the early 2000s. As described in the November 2002 Remedial Action Closure Report and the 2003 Site Investigation Report (SIR) prepared by Vanasse Hangen Brustlin, Inc. (VHB) on behalf of the New England Gas Company, the MHA stockpile material was designated as acceptable for future reuse as backfill at the Site below the engineered cap. GZA sampled the MHA stockpile in January 2011. Results are presented below and in the attached Table 2 – *MHA Stockpile Soil Analysis*.

The STRAP Area includes the Oxide Box Area (0.80 acres), the former gasholder area (3.30 acres) and the area between the former gasholder area and the CNG fueling station area (0.5 acres). These areas are described below and shown on Figure 2.

- The Oxide Box Area was the location of former purifier tanks associated with the former MGP. According to records, the four purifier tanks were constructed sometime between 1926 and 1937. The purifier tanks were used to remove hydrogen sulfide by sorption from the gas iron oxide and wood chips. The tanks were constructed of iron and were

approximately 2 feet above grade. The above ground portion of the tanks were removed sometime between 1972 and 1981.

- The former gasholder area was the location of the two gasholders (Gasholder No.18 and No.21) and associated buildings (most notably the Holder Heating Building). There were also two 4,000 gallon gasoline underground storage tanks (USTs) present proximate to the heater building. Both USTs were decommissioned (completely removed) in 1995. Gasholder No. 18 was constructed in 1911 as a holder for coal gas and was a telescopic multiple lift holder, with the lower chamber containing water and the upper chambers containing coal gas held under pressure. Gasholder No.21 was constructed between 1939 and 1950 and was a multiple lift holder as well, although it was entirely above ground. Both gasholders and the associated Heater Building were decommissioned and demolished by National Grid in 2009. The below ground portion of Gasholder No. 18 was decontaminated and the area was backfilled to current grades. The concrete slab associated with Gasholder No. 21 remains in-place. This area of the Site may have been graded (with soil or crushed stone) during the decommissioning and demolition effort in 2009.

- The CNG fueling station was constructed sometime between 1988 and 1994 and is currently active. Prior to the construction of the CNG fueling station, this area of the Site was vacant. The area between the former holder and the CNG Fueling Station is currently vacant and vegetated with grass.

Given the nature of the facility, the current and foreseeable future use of the property and STRAP Area is unlikely to change. The STRAP area is mostly vacant with a limited portion of the area currently being used by National Grid Gas construction crews for material laydown and storage. The planned use of the STRAP Area is as a material storage and laydown area for National Grid's gas construction facility operations.

2.2 REGULATORY HISTORY

RIDEM issued a Letter of Responsibility (LOR) dated February 13th, 1998 to Providence Gas Company. The Site was listed as State Site #98-004 (RIDEM File No. SR-28-1152) following the issuance of the LOR.

The Site is listed with RIDEM due to certain soil and groundwater impacts at concentrations in excess of Method 1 standards as defined in the Remediation Regulations. Investigation activities have been conducted at the Site in several phases since 1994 and have been documented in several reports submitted to RIDEM.

Constituents detected include, total petroleum hydrocarbons (TPH), cyanide, polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs) and certain inorganic compounds (primarily arsenic and lead). Sporadic observations of light non-aqueous phase liquids (LNAPL) have been made in certain Site monitoring wells. In addition, residual materials, including in the Oxide Box Area, have been observed in former gas processing areas.

A Soil Management Plan (SMP) was established for the Site and submitted to RIDEM on August 31, 2010; a revised SMP was later submitted on September 12, 2012. The SMP was prepared to establish procedures to be followed should construction or maintenance activities require the need to manage soils and/or groundwater. The SMP includes procedures for soil screening/disposal requirements, soil stockpile management and erosion 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). The SMP is similar to what would be recorded with an Environmental Land Usage Restriction (ELUR) and has been followed at the Site for numerous facility projects.

As discussed during a November 2013 meeting with RIDEM and subsequent project communications with the Department, GZA, on behalf of National Grid, is currently preparing a Site Investigation Report (SIR) Addendum to document results of

more recent investigation efforts. The SIR Addendum will also present the preferred remedial approach for the Site and will consist of progressive engineered capping consistent with facility upgrades, groundwater monitoring and institutional controls. The approach presented herein for the STRAP Area is consistent with the overall remedy for the Site which will be described in the SIR Addendum.

3.0 NATURE AND EXTENT OF OBSERVED IMPACTS IN THE STRAP AREA

Approximately one hundred and fifty (150) explorations (borings, test pits, monitoring wells and surface soil samples) have been conducted in the STRAP Area, to depths ranging from approximately 1 to 30 feet bgs. Most recently, GZA performed four borings in November 2015 (GZ-401 through GZ-404) in the STRAP Area to supplement historic investigation data and to further evaluate the presence of any visual or olfactory indicators of petroleum-like impacts or the presence of NAPL. Two of these borings were completed as shallow groundwater monitoring wells (GZ-401 and GZ-403). Boring and test pit logs are included in Appendix B. Figure 3, *Existing Exploration Location Plan*, presents the location of explorations that have been completed in the STRAP Area.

The following sections present a summary of the nature and extent of observed impacts in the STRAP Area.

3.1 FIELD SCREENING AND OBSERVATIONS OF IMPACTED SOILS

Explorations performed proximate to the STRAP Area indicate the presence of approximately 10 feet of fill underlain by outwash deposits and glacial till. The fill consists of sands and gravels with concrete, coal, asphalt, and brick fragments, cinders, and cinder ash.

Visual indicators of petroleum-like impacts were noted sporadically throughout the STRAP Area, generally at the water table and decreasing with depth. Visual indicators of former MGP residuals (i.e., oxide box waste with blue/green/yellow staining) were noted primarily in the Oxide Box Area, although some slight similar staining was observed in a few soil samples throughout the STRAP Area. Total Volatile Organic Compounds (TVOCs) readings ranged from non-detect (ND) to approximately 7,000 parts per million by volume (ppmv). Generally, TVOC readings were most significant coincident with the water table and decrease with depth. The highest TVOC readings were observed in the Oxide Box Area.

No visual or olfactory indicators of petroleum impacts were noted by GZA in the 2015 borings (GZ-401, GZ-402, GZ-403 and GZ-404). TVOC readings ranged from ND to 10.1 ppmv. The highest PID readings were noted in GZ-401 at a depth of 8-10 feet bgs.

3.2 SOIL ANALYTICAL RESULTS

Over 230 soil samples were collected and analyzed in the STRAP Area for total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), pesticides, inorganic compounds and leachable lead. Compounds detected at elevated[1] levels were VOCs (benzene and toluene), TPH, inorganic compounds (arsenic, beryllium, and lead) and several PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, indeno(1,2,3-cd)pyrene and naphthalene). Table 1 presents the analytical soil data collected from the STRAP Area.

[1] Defined herein as an exceedance of the RIDEM Method 1 Criteria: Industrial/Commercial Direct Exposure Criteria (I/C-DEC), the GB Leachability Criteria or the Upper Concentration Limit (UCL).

Twelve (12) soil samples were collected from the MHA stockpile in January 2011. The soil samples were submitted for analysis of TPH, SVOCs, VOCs, inorganic compounds and leachable lead. Compounds detected at elevated levels were PAHs only (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene and indeno(1,2,3-cd)pyrene). Table 2 presents the analytical soil data collected from the MHA stockpile.

The data indicates that materials in the STRAP Area are generally consistent with typical urban fill (arsenic, lead and PAHs), with the following noted exceptions.

Sporadic elevated concentrations of TPH and VOCs were also detected in the STRAP Area, primarily in the vicinity of the Oxide Box Area, to the west of Former Gasholder No. 18, and between Former Gasholder Nos. 18 and 21.

In addition, lead was detected at elevated levels in several samples collected in the former gasholder portion of the STRAP Area. Historical samples collected around the footprint of the former holders are included in Table 1 (refer to orange shaded samples). These samples were collected prior to the decommissioning and demolition of former Gasholders Nos. 18 and 21 in 2009. These samples were collected within approximately 50 feet of the holder footprints and the elevated lead concentrations are associated with lead-based paint. To confirm previously identified levels of lead in surface soils and consistent with the February 2014 Supplemental Site Investigation Work Plan (SSIWP) submitted to RIDEM, GZA collected ten (10) additional surface soil samples in July 2014 proximate to the former gasholders to evaluate current lead data (refer to Table 1; SS-300 series). For these samples, total lead was detected in eight (8/10) samples at concentrations ranging from 448 to 5,650 mg/kg, with seven (7/10) samples detected in excess of the RIDEM I/C-DEC. TCLP lead was detected in eight (8/10) samples at concentrations ranging from 3.35 to 36 mg/L. In contrast, five samples were sampled for lead via SPLP, with results ranging from 0.232 to 2.93 mg/L. When compared to TCLP which is typically used to determine leachability for disposal characterization purposes, SPLP analysis is a SW-846 test method used to estimate the site-specific adsorption-desorption potential of a compound that may impact groundwater. The SPLP analysis is intended to simulate the effect of rainfall on compounds that are sorbed to soil particles.

3.3 GROUNDWATER AND NAPL MEASUREMENTS

There are seven (7) monitoring wells within the STRAP Area (RCA-11, VHB-8R[2], VHB-10, VHB-18, GZ-320D, GZ-401 and GZ-403) and two (2) monitoring wells (VHB-9 and VHB-19) that were destroyed or decommissioned at some point. GZ-403 is the closest monitoring well to the area for proposed stormwater infiltration. Based on elevation data from these monitoring wells, groundwater is expected to be encountered approximately 4 to 10 feet bgs in the STRAP Area, with groundwater elevations ranging on a seasonal basis. A summary of groundwater elevation data for the wells within the STRAP Area is presented in Table 3, *Summary of Groundwater and NAPL Measurements*. Light non-aqueous phase liquid (LNAPL) observations in the STRAP Area has been limited to trace amounts to 0.02 feet. As indicated in Table 3, LNAPL has not been detected in more than trace amounts in the STRAP Area since 2013. Dense non-aqueous phase liquid (DNAPL) has not been historically detected in the STRAP Area. Monitoring wells GZ-401 and GZ-403 have been gauged on a monthly basis between November 2015 and April 2016. NAPL has not been detected in either of these wells. A summary of historic LNAPL thickness gauging for monitoring wells in the STRAP Area is presented in Table 4, Light *Non-Aqueous Phase Liquids (LNAPL) Well Gauging Data*.

3.4 GROUNDWATER ANALYTICAL RESULTS

Thirty-nine (39) groundwater samples were collected in the STRAP Area between 1994 and 2015 and analyzed for VOCs, SVOCs, and total cyanide. Naphthalene was detected in excess of the RIDEM Method 2-calculated GB Groundwater Objective (2.67 mg/L) in one sample collected from VHB-9 in 2003. Benzene was detected in excess of the RIDEM Method

[2] VHB-8 was replaced in 2014 as VHB-8R.

1 GB Groundwater Objective (0.14 mg/L) in multiple samples collected from VHB-10 and VHB-18. Groundwater samples collected from RCA-11, VHB-8, VHB-19 and GZ-320D have relatively low levels of detected constituents with no elevated concentrations or exceedances of RIDEM GB Groundwater Objectives. Table 5, *Groundwater Analytical Data* presents the analytical groundwater data collected within the STRAP Area.

Groundwater samples have not been historically submitted for analysis of lead. However, groundwater samples were collected downgradient of the STRAP Area during a recent gas line repair dewatering effort in 2013. One grab sample was collected during dewatering and exceeded the RIDEM GA Groundwater Objectives for lead. RIDEM has not defined GB Groundwater Objectives for lead. However, 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 samples were collected while discharging the fractionation tanks through the treatment system. Both exhibited lead at very low or non-detect concentrations (far below the RIDEM GA Groundwater Objectives) and are likely more representative of actual groundwater conditions in the area. This data is included in Table C-1, *Groundwater Analytical Data* in Appendix C.

3.5 CONCLUSIONS

As presented above, soils within the STRAP Area are generally characterized by RIDEM Method 1 Criteria exceedances of PAHs and certain metals, with the exception of areas of sporadic elevated TPH and VOC soil concentrations in the Oxide Box Area and proximate to the former holders, as well as elevated lead levels in surface soils proximate to the footprints of Gasholder Nos. 18 and 21.Based on the SPLP lead testing and available groundwater data within the former holder area, these lead-impacted soils are not significantly impacting Site groundwater. The asphalt engineered cap will serve to further limit the potential for groundwater degradation and limit direct contact. In addition, this STRAP will involve clearing and grubbing of surface areas around the former holders and removal of certain shallow materials to achieve the engineered cap subgrades. Excess soils generated from the surface grubbing and grading activities around the former holders will disposed of off-Site at a licensed receiving facility.

Groundwater within the STRAP Area is generally characterized by non-detect to low levels of VOCs, SVOCs and total cyanide, with only two compounds (naphthalene and benzene) being detected at concentrations above the GB Groundwater Objective. Limited evidence of measurable LNAPL has been recorded in monitoring wells within the STRAP Area.

Based on these soil and groundwater conditions, the STRAP activities were designed to mitigate direct exposure to soils above the RIDEM Method 1 Criteria through installation of an engineered soil cap. As described further in Section 4.0, the proposed cap will consist of a mix of asphalt, crushed stone, topsoil and Riprap engineered caps, with certain sections of cap including an impermeable liner (former Oxide Box Area). In addition, the installation of impermeable caps and asphalt caps in portions of the STRAP Area will limit infiltration and the potential for leaching of residual compounds in the subsurface (i.e., lead and TPH), therefore mitigating the potential for further degradation of groundwater.

4.0 PROPOSED RESPONSE ACTIONS

The proposed STRAP activities include clearing and grubbing, installing erosion and sedimentation controls, miscellaneous demolition activities, removal of accumulated sediment and debris from and inspection of sections of an existing drainage line, grading and off-Site disposal of excess materials, installation of an engineered cap, and restoration activities (hydroseeding and fencing). The installation of the engineered cap includes on-Site infiltration of treated stormwater via a forebay and vegetated sand filter. In addition, this project involves limited electrical work to install a new electric

gate, new utility poles and to repair some existing electrical infrastructure at the Site. The following figures were prepared to illustrate the scope of the proposed STRAP:

- Figure 4 – *Erosion and Sedimentation Control Plan*;
- Figure 5 – *Remedial Cap Subgrade Grading Plan*;
- Figure 6 – *Remedial Cap Types*;
- Figure 7 – *Stormwater Management Plan*;
- Figure 8 – *Site Restoration and Final Grading Plan*; and
- Figure 9 – *Remedial Cap Details*.

4.1 REMEDIAL CAPS

Engineered caps have been designed to mitigate direct exposure to underlying impacted soils across the approximately 4.6 acre STRAP Area and limit further degradation of groundwater in certain areas with asphalt and/or liner caps (approximately 3.42 acres). The liner system was proposed as a conservative measure in the Oxide Box Area to mitigate direct exposure and any potential future recontamination of the asphalt/soil cap through contaminant migration. The following is a description of the engineered caps:

- Asphalt Engineered Cap (approximately 120,000 SF – 2.76 acres): the engineered cap will consist of 2-inches of binder course asphalt overlain with 2-inches of top course.
- Asphalt Engineered Cap underlain with a geosynthetic liner system (approximately 23,100 SF – 0.53 acres): the engineered cap will consist of a geosynthetic liner system (textured LLDPE with an 8-ounce non-woven geotextile cushion layer above and below), overlain by 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 6,375 SF – 0.15 acres): the engineered cap will consist of a geosynthetic liner system (textured LLDPE with an 8-ounce non-woven geotextile cushion layer above and below), overlain by 6-inches of imported granular fill and finished with 6-inches of imported topsoil.
- Riprap Engineered Cap (approximately 10,500 SF – 0.24 acres): the engineered cap will consist of an 8-ounce non-woven geotextile overlain by 12-inches of imported RIDOT R-3 Riprap.
- Topsoil Engineered Cap (approximately 19,240 SF – 0.44 acres): the engineered cap will consist of an 8-ounce non-woven geotextile overlain by overlain by 6-inches of imported granular fill and finished with 6-inches of imported topsoil.
- 2-inch Crushed Stone Engineered Cap (approximately 21,950 SF – 0.50 acres): the engineered cap will consist of an 8-ounce non-woven geotextile overlain by overlain by 6-inches of imported granular fill and finished with 6-inches of imported 2-inch crushed stone.

The approximate extent of these various engineered caps is depicted on Figure 6 and details showing each cap type are provided on Figure 9.

4.2 STORMWATER MANAGEMENT

As described previously, the engineered cap has been designed with an integral stormwater management/treatment system. As stipulated in the *Stormwater Regulations*, the amount of stormwater that must be treated is defined as the Water Quality Volume (WQv) and is the portion of runoff containing the majority of the pollutants. The WQv is equivalent to 1 inch of runoff generated from the first 1.2 inches of rainfall over impervious areas (initial abstraction is assumed to account for the first 0.2 inches of rainfall). By using prescribed methods detailed in the *Stormwater Regulations*, the goal is to reduce 85% of total suspended solids, 60% of pathogens, and 30% of total nitrogen for discharges to saltwater or tidal systems.

Stormwater runoff generated from the proposed Site improvements will be collected by inlets installed at grade on precast concrete forebays. As described previously, the WQ_V will be conveyed to an unlined sand filter located in the north central portion of the STRAP Area and infiltrated. The Contractor will remove soil below the unlined sand filter to the groundwater table and backfill with clean imported free draining soil. Excess stormwater will flow to the Ellis Street Drain Line via a 24-inch overflow orifice installed in the forebay system, ultimately reaching an outfall located on the Providence River.

Based on the proposed STRAP activities, the redevelopment of the Site is subject to Minimum Standard 6 (Redevelopment) within the Stormwater Regulations. As such, the engineered cap has been designed with an integral stormwater management/treatment system. The location and design of the proposed infiltration system (i.e., unlined sand filter) was evaluated in accordance with Section 3.2.8 Subsurface Contamination Guidance of the Stormwater Regulations. As shown on the attached Figure 7, *Stormwater Management Plan*, the proposed sand filter will be located in an approximately is a 25-foot by 25-foot area in the northcentral portion of the STRAP Area. This area is located along the downgradient portion of the proposed STRAP Area in areas of known soil impacts, but no evidence of free phase product. To be conservative, soil within the proposed unlined sand filter will be excavated to the depth of the water table and backfilled with clean imported free draining soil.

4.3 SOIL DISPOSAL

Site grades are not anticipated to be significantly altered as part of this work, therefore only a limited volume of existing Site materials will require removal to facilitate installation of the engineered cap and stormwater system. It is currently estimated that approximately 1,400 cubic yards of existing Site materials will be removed and disposed off-Site to facilitate installation of the engineered cap and stormwater system.

All excess soil generated during the STRAP implementation will be disposed off-Site at a licensed disposal/recycling facility approved by National Grid. We currently anticipate excess soils will be shipped to the ESMI in Loudon, New Hampshire for thermal desorption treatment/recycling. Prior to off-Site disposal, samples will be collected from the stockpiled soil and analyzed based on the frequency and the parameters required by the selected disposal facility.

Copies of all manifest(s) and Bills of Lading (BOLs) documenting the off-Site disposal of these materials will be included in the *Short Term Response Action Closure Report*.

4.4 IMPORT SAMPLING

Samples representative of any off-Site imported soil material (collected as discrete grab samples from the source) will be tested for the analyte groups described below. As described above, processed gravel, granular fill, topsoil, C33 Sand, bedding sand, Riprap, ¾-inch crushed stone and 2-inch crushed stone are expected to be imported to the Site as part of the *STRAP* activities.

Analyte	EPA Test Method
Total Petroleum Hydrocarbons	8100M
Volatile Organic Compounds	8260
Semi-Volatile Organic Compounds	8270
Priority Pollutant Metals (PP-13)	6010 & 7471A

The frequency of sampling and testing will be:

- Full suite of analysis for up to 2,000 cubic yards, with an additional full suite for each subsequent 2,000 cubic yards of material; and

- Arsenic and lead each 500 cubic yards of material.

Laboratory samples will be analyzed and compared to RIDEM Method 1 Residential Direct Exposure Criteria (R-DEC). Soils not meeting these criteria will be rejected for use at the Site. The laboratory testing results of the approved soil source(s) will be provided to RIDEM as part of the *Short Term Response Action Closure Report*.

4.5 DEWATERING AND GROUNDWATER MANAGEMENT

We anticipate that minimal excavation dewatering will likely be required during the installation of the new stormwater system described above. We currently anticipate that any resulting groundwater will be containerized into fractionation tanks and disposed off-Site at a licensed disposal/recycling facility approved by National Grid. Copies of all manifest(s) and Bills of Lading (BOLs) documenting the off-Site disposal will be included in the *Short Term Response Action Closure Report*.

4.5.1 Contingency Item – Groundwater Treatment and Discharge

In the unlikely event significant dewatering is required to facilitate construction of the engineered cap and/or the stormwater management system, we propose management, treatment and on-Site discharge consistent with a Temporary Groundwater Discharge Approval issued by RIDEM's Office of Waste Management under Rule 13 of the October 2014 Rules for the Discharge of Non-Sanitary Wastewater and Other Fluid to or Below the Ground Surface. Information related to proposed dewatering, groundwater treatment, and discharge is included in Appendix C, Dewatering and Groundwater Summary Information.

As presented on Figure C-1 in Appendix C, *Dewatering and Groundwater Management Summary Plan,* groundwater removed from the excavations for the purpose of dewatering will be collected and transferred to fractionation tanks. The collected groundwater will be processed through an on-Site treatment system consisting of bag filtration for solids removal followed by activated carbon to remove organic compounds. This treatment system will be similar to the previous treatment systems that have been approved by RIDEM at the Site. Figure C-2 in Appendix C, *Process Flow Diagram* shows the treatment components. Based on previous experience at the Site, depths of the planned excavations, and groundwater depths (Figure C-3 in Appendix C, *Groundwater Contour Plan*) in this area, the system will be designed for a flowrate of up to approximately 100 gallons per minute (gpm). Once processed through the treatment system, which will be assembled and tested on-Site, the treated groundwater will be reintroduced to the ground surface and allowed to infiltrate upgradient of the work area. The proposed infiltration location is shown on the attached Figure C-1. Groundwater will be infiltrated in a non-erosive manner by constructing an infiltration basin using geotextile fabric and haybales or equivalent (see Appendix C for detail).

Available analytical data representative of groundwater within the STRAP Area are summarized in the attached Table C-1, *Groundwater Analytical Data*. Results indicate the presence of low level volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), total petroleum hydrocarbons (TPH), poly-chlorinated biphenyls (PCBs) and certain metals. Similar to the previous projects, we expect the treated groundwater quality will meet RIDEM GA/GAA Groundwater Objectives prior to on-Site infiltration. Activated carbon design calculations based on the groundwater results from previous work at the Site (April 2013 gas line repair – within 100 feet of the STRAP Area) are provided in Appendix C. Based on the available groundwater analytical results, the anticipated flow rate, and the size of the carbon vessels (2,000 pounds each), we conservatively anticipate "breakthrough" on the first vessel will likely occur after approximately 3,500,000 gallons which would be equivalent to 58 days (at 100 gpm flow rate for 10 hour work days). This is an unlikely scenario given the limited depth of excavation necessary to construct the engineered caps and stormwater management system. During discharge of groundwater from the treatment system, effluent will be sampled in general conformance with the protocol established at the Site in the past. Samples will be collected on the first day of operation of the treatment system and at a rate of one effluent sample per 20,000 gallons of groundwater treated. Specifically, effluent samples will be analyzed for semi-volatile organic compounds (SVOCs) via EPA Method 8270, VOCs via EPA Method 8260B, TPH via EPA Method 8100M, PCBs via EPA Method 8082A and PP-13 metals via EPA Methods 6020A and 7471A.

Consistent with previous temporary discharge requests and approvals, following completion (if any) of the contingency groundwater treatment and discharge, GZA will include a summary of treatment and discharge activities in the *Short Term Response Action Closure Report*.

4.6 AIR EMISSION EVALUATION

Implementation of this *STRAP* will involve earthwork activities that requires certain impacted material excavation, re-grading, management, and temporary stockpiling. GZA performed an evaluation of the potential volatile emissions including a determination related to the applicability of the RIDEM Air Pollution Control Permits (APC) (Regulation No. 9).

The applicability of Regulation No. 9 was evaluated based on potential volatile emissions calculations/modeling performed consistent with published United States Environmental Protection Agency (EPA) guidance. This emissions modeling was developed for the specific earthwork activities to be performed during this effort. As described further herein and in Appendix D, the results of this modeling indicate that STRAP activities **do not** have the potential to increase emissions by greater than the minimum quantities specified in Appendix A of RIDEM APC Regulation No. 9, and, therefore, a minor source permit is not required for this activity.

4.6.1 Emissions Potentials

The emissions potential of a particular analyte was calculated by assuming all of the mass of the analyte volatilizes during the associated earthwork activities. This would represent the maximum amount of mass of the specific analyte in the volume of soil being excavated and managed on-Site. It is based on analyte concentration, soil volume disturbed, and typical bulk density. The predicted modeled emissions, described in the subsequent section, are generally lower than these calculated emissions potentials.

Excavation activities will consist of clearing and grubbing the STRAP Area, excavation for the installation of the stormwater system, excavation for the installation of the engineered cap and limited miscellaneous other excavation (fencing, utility poles, etc.). It is anticipated that these activities will involve management of approximately 5,120 CY of soil. To evaluate the excavation emissions potentials and modeled excavation emissions, GZA used data collected in the vicinity and at the depths of expected excavation associated with the *STRAP* work. The data used in the evaluation consisted of 84 soil samples collected by Environmental Science Services, Inc. (ESS) in 1999 and 2000, as presented in the January 2003 Site Investigation Report prepared by VHB on behalf of the New England Gas Company, and soil samples collected by GZA in

2011 of the MHA stockpile which was relocated to the Gasholder No.18 footprint. The stockpile is proposed to be reused to fill to planned subgrade elevations. The data is presented in Table D-1 (in Appendix D). The calculations only utilized soil samples collected and at depths from within areas with planned grade cuts (excavations), as well those collected from the MHA stockpile. Exploration locations in the STRAP Area are presented on Figure 3, *Existing Exploration Location Plan*.

Using both the average and maximum concentrations for the potential calculation, GZA conservatively calculated the total emissions potential (in pounds (lbs)) for all the detected VOCs with minimum quantities included in Appendix A of RIDEM's APC Regulation No. 9. This calculation assumes all the mass of the VOCs in the associated soil is emitted, providing conservative upper bounds to potential excavation emissions. As indicated in Table D-2 (in Appendix D), benzene, naphthalene and toluene have an excavation emissions potential exceeding the RIDEM annual minimum quantities (10 lbs/year, 3 lbs/year and 9,000 lbs/year, respectively) based on both the average and maximum measured concentrations. Based on these calculations, benzene, naphthalene and toluene were further evaluated using emissions modeling consistent with published EPA guidance to estimate the predicted emissions that would be generated during the planned *STRAP* implementation activities.

4.6.2 Emissions Modeling

Based on the results of the emissions potentials calculations described above for the earthwork activities, predicted emissions related to benzene, naphthalene and toluene were calculated based on modeling. The predicted emissions modeling used the average concentration of benzene, naphthalene and toluene that was detected. Appendix D describes these emission modeling calculations, which were based on the following EPA guidance document:

- Eklund, et al. 1997. Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other Substances. Prepared for U.S. Environmental Protection Agency Office of Air and Radiation and Office of Research and Development Washington, D.C. EPA-600/R-97-116. October.

The modeling results for the excavation activity are presented in Table D-3 (in Appendix D). GZA assumed that one re-handling event would occur for each of the earthwork activities when the excavated soil was loaded from stockpiles to trucks for subgrade backfilling on-Site or for disposal.

Table D-3 (in Appendix D) and the following presents a summary of the modeled predicted total excavation emissions for benzene, naphthalene and toluene (expressed in pounds) compared to RIDEM's Minimum Quantities (expressed in pounds/year) published in Regulation No. 9, Appendix A.

Analyte	Total Modeled Excavation Emissions (lbs)	RIDEM Annual Minimum Quantity (lbs)
Benzene	0.78	10
Naphthalene	0.09	3
Toluene	2.87	9,000

4.6.3 Estimated Emissions Modeling Conclusions

The results of this predictive modeling indicate that the earthwork activities do not have the potential to increase emissions by greater than the minimum quantities as specified in Appendix A of RIDEM APC Regulation No. 9, and, therefore, a minor source permit is **not** required for the *STRAP* implementation work.

4.7 BEST MANAGEMENT PRACTICES

During construction of the remedy, the following Best Management Practices (BMPs) will be implemented by the Contractor.

- Dust Control – Dust control measures will be employed to mitigate the potential for release of airborne particulate matter beyond the limits of the Site in accordance with RIDEM *Air Pollution Control Regulation No. 5, Fugitive Dust*. Methods of dust control will consist of sprinkling the ground surface with water, covering of temporary stockpiles, mulching, or similar methods. On-Site and perimeter dust monitoring will be performed during all construction activities. This monitoring will include both visible observations as well as measurements of particulate dust using field instruments. If excessive dust generation occurs and cannot be reasonably controlled, the job shall be shut down until appropriate engineering control measures are implemented by the Contractor.

- Odor and Organic Vapor Control – Odor and organic vapor control measures will be employed to mitigate the potential for release of odors and organic vapors from the STRAP activities. Methods of control will consist of backfilling excavations, covering stockpiles or excavations with 6-mil polyethylene sheeting or similar methods. On-Site and perimeter total volatile organic compound (TVOCs) monitoring will be performed during all earthwork activities. This monitoring will include both any observations of odors as well as measurements of TVOCs using field instruments. If excessive odors or TVOCs readings occur and cannot be reasonably controlled, the job shall be shut down until appropriate engineering control measures are implemented by the Contractor.

- Sedimentation and Erosion Controls – Prior to the commencement of any Site work, staked filtrexx siltsoxx and a silt curtain will be installed by the Contractor to mitigate the potential migration of Site contaminants with stormwater run-off. The approximate layout of these sedimentation and erosion control devices is shown on Figure 4, *Erosion and Sedimentation Control Plan***.**

- Impacted excavated materials will be temporarily staged on two layers of minimum 6-mil polyethylene sheeting in working stockpiles. At the end of each work day and to the extent practical during the workdays, working stockpiles will be relocated to a central stockpile area and covered with a layer of polyethylene sheeting to control the generation of wind-blown dusts and potential migration of soils with stormwater runoff. Stockpile areas will be equipped with appropriate controls to limit the loss of the cover and protect against storm water erosion. These controls will include the installation of filtrexx siltsoxx surrounding the perimeter of the stockpiles and weighting the polyethylene cover with sand bags or concrete blocks. Stockpiles will be inspected daily by Site personnel.

4.8 REPORTING

Subsequent to completion of the activities described herein, a *Short Term Response Action Report* will be prepared in accordance with Rule 6.09 of the Remediation Regulations and submitted to RIDEM. The report will summarize field activities and document the completion of the work described herein.

5.0 OTHER PERMITS

All necessary permits will be obtained prior to the start of work. We currently anticipate that a RIDEM Water Quality Certification (WQC), a CRMC Maintenance Assent, NBC Connection Permit, City of Providence Soil Erosion and Sedimentation Permit and a Rhode Island Pollutant Discharge Elimination System Program (RIPDES) General Permit for Stormwater Discharge will be required for the work, as described below:

- The work includes the engineered capping of approximately 4.6 acres and creating approximately 3.5 acres of impervious area. A stormwater management system was designed in accordance with the Rhode Island Stormwater Manual, last revised March 2015 and the RIDEM Water Quality Rules, last revised December 2009. A WQC will be submitted to the RIDEM Office of Water Resources for review and approval. The soil erosion and sedimentation plan prepared as part of this WQC submittal will be submitted to the City of Providence and RIPDES for their review and approval as well.

- The stormwater management system was designed to overflow into a historic abandoned drain line (the Ellis Street Drain Line) currently owned by the NBC. A connection permit will be submitted to NBC for review and approval.

- Some maintenance is required as part of the overflow connection into the Ellis Street Drain Line along the existing Ellis Street Drain Line outfall proximate to the Providence River. Based on the proximity of the outfall to the Providence River (located within 200 feet of river bank), a Maintenance Assent application will be submitted to the CRMC for review and approval.

6.0 PROPOSED SCHEDULE

The schedule for implementation of the remedy described herein will depend on receipt of the *STRAP* Approval from RIDEM and receipt of other necessary permits. The current plan is to perform the work described herein beginning in early July 2016. We anticipate the implementation of the STRAP activities described herein can be completed in 12 weeks.

TABLES

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
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										
Volatile Organic Compounds (VOCs)																										
1,2,4-Trimethylbenzene	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
1,3,5-Trimethylbenzene	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
2-Butanone	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
4-Isopropyltoluene	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
Acetone	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
Benzene	4.3	200	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
Carbon Disulfide	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
Chloroform	NE	940	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
Ethylbenzene	62	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
Isopropylbenzene	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
Methylene Chloride	NE	760	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
Naphthalene	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
n-Butylbenzene	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
n-Propylbenzene	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
sec-Butylbenzene	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
Styrene	64	1,900	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
Toluene	54	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
Trichlorofluoromethane	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
Xylenes (Total)	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
Total Petroleum Hydrocarbons (TPH)																										
Hydrocarbon Content	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
Inorganic Compounds																										
Ammonia	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
Total Cyanide	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
Antimony	NE	820	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Arsenic	NE	7	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**9**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
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
Beryllium	NE	1.5	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**9**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	**2**
Cadmium	NE	1,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5
Chromium	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	134	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	41
Copper	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1710	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	55
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
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**
Mercury	NE	610	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Nickel	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	40
Selenium	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Silver	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
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
Thallium	NE	140	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Zinc	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4730	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	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
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	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																										
Aroclor 1248	10	10	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
Aroclor 1242	10	10	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
Aroclor 1254	10	10	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
4,4-DDD	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
4,4-DDE	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
4,4-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
Aldrin	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
alpha-BHC	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
alpha-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
beta-BHC	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
delta-BHC	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
Dieldrin	NE	0.4	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
Endosulfan I	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

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					1994											1994										
Polychlorinated Biphenyls (PCBs) and Pesticides																										
Endosulfan II	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
Endosulfan sulfate	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
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
Endrin aldehyde	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
Endrin ketone	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
gamma-BHC	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
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
Heptachlorepoxide	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
Methoxychlor	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
Semi-Volatile Organic Compounds (SVOCs)																										
1,1-Biphenyl	NE	10000	10000	mg/kg	NA	NA	NA	NA	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	NA	NA	NA	NA	NA	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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	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
Anthracene	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
Benzo(a)anthracene	NE	7.8	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
Benzo(a)pyrene	NE	0.8	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
Benzo(b)fluoranthene	NE	7.8	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
Benzo(g,h,i)perylene	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
Benzo(k)fluoranthene	NE	78	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
bis(2-Ethylhexyl)phthalate	NE	410	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
Carbazole	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
Chrysene	NE	780	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
Dibenzo(a,h)Anthracene	NE	0.8	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
Dibenzofuran	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
Fluoranthene	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
Fluorene	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
Indeno(1,2,3-cd)Pyrene	NE	7.8	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
Naphthalene	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
Phenanthrene	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
Pyrene	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

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.
Table only shows explorations within the Limits of Work
ND - Not Detected
NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	Unit 2 (All samples collected between 0-3 inches bgs)																								RCA-11		C18		C19		C20	
					SU-2-A1	Replicate SU-1 No.6	Replicate SU-1 No.2	SU-2-A4	SU-2-B1	SU-2-B4	SU-2-C1	SU-2-C4	SU-2-D1	SU-2-D2	SU-2-D3	SU-2-D4	SU-2-E1	SU-2-E2	SU-2-E3	SU-2-E4	Replicate SU-2 No.1	Replicate SU-2 No.6	Replicate SU-2 No.3	SU-2-G4	SU-2-H1	SU-2-H2	SU-2-H3	SU-2-H4	4-6 FT	14-16 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT
					1995																								1994		12/13/99		12/13/99		12/14/99	
Volatile Organic Compounds (VOCs)																																				
1,2,4-Trimethylbenzene	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	ND	ND	ND	ND	ND	ND	0.38	ND
1,3,5-Trimethylbenzene	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	ND	ND	ND	ND	ND	ND	0.22	ND
2-Butanone	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	ND	NA	NA	NA	NA
4-Isopropyltoluene	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	ND	ND	ND	ND	NA	ND	NA	ND
Acetone	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	ND	ND	ND	ND	ND	ND	0.042	ND
Benzene	4.3	200	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	ND	ND	ND	ND	0.063	ND	0.11	0.026
Carbon Disulfide	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	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	NE	940	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	ND	ND	ND	ND	NA	ND	NA	ND
Ethylbenzene	62	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	ND	ND	ND	ND	ND	ND	0.083	ND
Isopropylbenzene	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	ND	ND	ND	ND	NA	ND	NA	ND
Methylene Chloride	NE	760	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	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	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	ND	ND	ND	ND	ND	ND	15	ND
n-Butylbenzene	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	ND	ND	ND	ND	NA	ND	NA	ND
n-Propylbenzene	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	ND	ND	ND	ND	ND	ND	0.041	ND
sec-Butylbenzene	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	ND	ND	ND	ND	NA	ND	NA	ND
Styrene	64	1,900	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	ND	ND	ND	ND	ND	ND	0.16	0.037
Toluene	54	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	ND	ND	ND	ND	0.048	ND	0.41	0.098
Trichlorofluoromethane	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	NA	NA	NA	NA	NA	NA	NA
Xylenes (Total)	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	ND	ND	ND	ND	ND	ND	0.67	0.07
Total Petroleum Hydrocarbons (TPH)																																				
Hydrocarbon Content	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	ND	ND	ND	310	220	1900	140
Inorganic Compounds																																				
Ammonia	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	180	71	480	380	120	20
Total Cyanide	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	12	2.9	25.9	135	27.7	2.8
Antimony	NE	820	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	ND	NA	0.29	NA
Arsenic	NE	7	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	**17**	NA	NA	NA	4.3	NA	**10**	NA	**8.3**	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	44.5	NA	31.7	NA	25.3	NA
Beryllium	NE	1.5	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	0.24	NA	ND	NA	ND	NA
Cadmium	NE	1,000	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	1.4	NA	2.3	NA	1.8	NA
Chromium	NE	10,000	10,000	mg/kg	NA	NA	NA	7	NA	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	10	NA	NA	NA	NA	NA	NA	9	NA	NA	NA	13	NA	12.6	NA	5.1	NA
Copper	NE	10,000	10,000	mg/kg	NA	NA	NA	30	NA	NA	NA	NA	NA	31	NA	NA	NA	NA	NA	17	NA	NA	NA	NA	NA	NA	22	NA	NA	NA	11.1	NA	31.3	NA	17.1	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	NA	NA	NA	NA	17000	18000	27300	29700	20500	60700
Lead	NE	500	10,000	mg/kg	**1330**	**1720**	**8780**	470	**817**	**749**	**2200**	**1500**	**916**	**1760**	**2060**	**607**	**656**	**616**	134	309	**9520**	454	**4800**	**841**	**706**	242	**1652**	391	NA	NA	7	NA	343	NA	151	NA
Mercury	NE	610	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	0.6	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	0.029	NA	0.15	NA	0.44	NA
Nickel	NE	10,000	10,000	mg/kg	NA	NA	NA	7	NA	NA	NA	NA	NA	6	NA	NA	NA	NA	NA	11	NA	NA	NA	NA	NA	NA	8	NA	NA	NA	7.7	NA	4.4	NA	ND	NA
Selenium	NE	10,000	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA	NA	NA
Silver	NE	10,000	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	3	NA	5.2	NA	4.1	NA
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	NA	NA	NA	NA	NA	NA
Thallium	NE	140	10,000	mg/kg	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA	NA	NA
Zinc	NE	10,000	10,000	mg/kg	NA	NA	NA	56	NA	NA	NA	NA	NA	90	NA	NA	NA	NA	NA	87	NA	NA	NA	NA	NA	NA	84	NA	NA	NA	25.4	NA	27.1	NA	7	NA
Leachable Metals																																				
TCLP Lead	NE	NE	NE	mg/L	NA	NA	NA	NA	NA	NA	0.9	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
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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
Aroclor 1248	10	10	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	0.095	ND	0.046	NA	ND	NA
Aroclor 1242	10	10	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	ND	NA	NA	NA	NA
Aroclor 1254	10	10	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	ND	NA	NA	NA	NA
4,4-DDD	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	NA	0.022	NA	0.036	NA	0.12	NA
4,4-DDE	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	NA	ND	NA	NA	NA	NA	NA
4,4-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	NA	ND	NA	0.011	NA	ND	NA
Aldrin	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	NA	ND	NA	ND	NA	0.0025	NA
alpha-BHC	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	NA	0.0022	NA	0.0052	NA	0.018	NA
alpha-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	NA	0.0024	NA	NA	NA	NA	NA
beta-BHC	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	NA	ND	NA	ND	NA	ND	NA
delta-BHC	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	NA	ND	NA	ND	NA	ND	NA
Dieldrin	NE	0.4	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	NA	0.012	NA	0.14	NA
Endosulfan I	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	NA	ND	NA	0.002	NA	ND	NA

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

File No. 03.00033554.00
4/25/2016

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	Unit 2 (All samples collected between 0-3 inches bgs)																								RCA-11		C18		C19		C20	
					SU-2-A1	Replicate SU-1 No.6	Replicate SU-1 No.2	SU-2-A4	SU-2-B1	SU-2-B4	SU-2-C1	SU-2-C4	SU-2-D1	SU-2-D2	SU-2-D3	SU-2-D4	SU-2-E1	SU-2-E2	SU-2-E3	SU-2-E4	Replicate SU-2 No.1	Replicate SU-2 No.6	Replicate SU-2 No.3	SU-2-G4	SU-2-H1	SU-2-H2	SU-2-H3	SU-2-H4	4-6 FT	14-16 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT
					1995																								1994		12/13/99		12/13/99		12/14/99	
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
Endosulfan II	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	NA	0.0061	NA	ND	NA	ND	NA
Endosulfan sulfate	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	NA	ND	NA	0.016	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	NA	0.0059	NA	0.0058	NA	0.056	NA
Endrin aldehyde	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	NA	ND	NA	0.016	NA	NA	NA
Endrin ketone	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	NA	0.0055	NA	NA	NA	0.041	NA
gamma-BHC	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	NA	ND	NA	ND	NA	0.011	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	NA	0.0024	NA	0.002	NA	ND	NA
Heptachlorepoxide	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	NA	ND	NA	ND	NA	0.0024	NA
Methoxychlor	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	NA	ND	NA	0.053	NA	0.072	NA
Semi-Volatile Organic Compounds (SVOCs)																																				
1,1-Biphenyl	NE	10000	10000	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	ND	ND	NA	NA	NA	ND	NA	ND
2-Methylnaphthalene	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	ND	ND	ND	ND	ND	ND	1.6	ND
Acenaphthene	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	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	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	ND	ND	ND	ND	0.46	ND	1.1	ND
Anthracene	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	ND	ND	ND	ND	ND	0.39	0.71	ND
Benzo(a)anthracene	NE	7.8	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	ND	ND	ND	ND	1.4	1.2	1.7	ND
Benzo(a)pyrene	NE	0.8	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	ND	ND	ND	ND	1.1	0.76	0.68	ND
Benzo(b)fluoranthene	NE	7.8	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	ND	ND	0.6	ND	3.4	2.1	3.6	0.74
Benzo(g,h,i)perylene	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	ND	ND	ND	ND	0.71	0.49	0.94	ND
Benzo(k)fluoranthene	NE	78	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	ND	ND	ND	ND	1.5	0.9	1.6	0.44
bis(2-Ethylhexyl)phthalate	NE	410	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	NA	NA	NA	NA	NA
Carbazole	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	ND	ND	ND	ND	NA	ND	NA	ND
Chrysene	NE	780	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	ND	ND	0.36	ND	1.8	1.7	2.5	0.6
Dibenzo(a,h)Anthracene	NE	0.8	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	ND	ND	ND	ND	ND	ND	0.46	ND
Dibenzofuran	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	ND	ND	ND	ND	NA	ND	NA	ND
Fluoranthene	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	ND	ND	0.41	ND	1.9	2	2.5	0.45
Fluorene	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	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)Pyrene	NE	7.8	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	ND	ND	ND	ND	1	0.69	1.2	ND
Naphthalene	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	ND	ND	ND	ND	ND	ND	2.5	ND
Phenanthrene	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	ND	ND	ND	ND	0.73	1.3	2.4	ND
Pyrene	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	ND	ND	0.4	ND	1.7	1.8	2.3	0.47

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.
Table only shows explorations within the Limits of Work
ND - Not Detected
NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	C21		D64		D65		D66		D67		D68		D69		D70		D71		E01		E02		E03		E04		E08		E09	
					0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	6-8 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT
					12/14/99		12/11/99		12/11/99		12/11/99		12/22/99		12/23/99		12/23/99		12/23/99		12/23/99		12/11/99	12/11/99	12/13/99	12/13/99	12/19/99		12/13/99		12/14/99		12/14/99	
Volatile Organic Compounds (VOCs)																																	
1,2,4-Trimethylbenzene	NE	NE	10,000	mg/kg	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	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NE	NE	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	0.077	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	NE	10,000	10,000	mg/kg	NA	NA	ND	ND	0.049	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	NE	NE	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND
Acetone	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	0.077	0.083	0.11	ND	ND	0.11	ND	0.061	ND
Benzene	4.3	200	10,000	mg/kg	ND	NA	ND	ND	0.2	ND	ND	ND	0.18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Disulfide	NE	NE	10,000	mg/kg	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	ND	ND	ND	ND
Chloroform	NE	940	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA
Ethylbenzene	62	10,000	10,000	mg/kg	ND	NA	ND	ND	0.13	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
Isopropylbenzene	NE	10,000	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	ND	NA	ND
Methylene Chloride	NE	760	10,000	mg/kg	ND	NA	0.34	0.34	0.24	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.25	0.2	0.25	0.23	0.28	0.35	ND	ND	0.085	ND	ND	ND
Naphthalene	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58	0.72	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	NE	NE	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NE	NE	10,000	mg/kg	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	ND	ND	ND	ND
sec-Butylbenzene	NE	NE	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	64	1,900	10,000	mg/kg	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	ND	ND	ND	ND
Toluene	54	10,000	10,000	mg/kg	0.34	NA	ND	ND	ND	ND	ND	ND	0.24	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	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND
Xylenes (Total)	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons (TPH)																																		
Hydrocarbon Content	2,500	2,500	30,000	mg/kg	550	NA	ND	150	200	ND	ND	ND	150	ND	ND	ND	580	ND	ND	ND	ND	ND	170	ND	ND	ND	ND	ND	ND	ND	640	ND	**3000**	ND
Inorganic Compounds																																		
Ammonia	NE	NE	NE	mg/kg	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	100	44	450	300	170	ND
Total Cyanide	NE	10,000	10,000	mg/kg	27	ND	1.3	1	2.8	ND	2	0.51	1.4	ND	0.92	ND	10.3	ND	1.5	ND	ND	ND	22.7	0.72	0.91	1.3	15.9	3.3	17.4	10	1	2.5	28.1	4.5
Antimony	NE	820	10,000	mg/kg	0.65	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Arsenic	NE	7	10,000	mg/kg	3	NA	2	NA	**25.2**	NA	3.7	NA	5	NA	3.3	NA	4.2	NA	4.4	NA	1.4	NA	5.7	NA	6.9	NA	5.8	NA	4.2	NA	**15.1**	NA	4.2	NA
Barium	NE	10,000	10,000	mg/kg	19	NA	ND	NA	33.4	NA	32.1	NA	37.1	NA	23.2	NA	26.7	NA	50.7	NA	ND	NA	28.8	NA	26.7	NA	19	NA	20.1	NA	21.8	NA	13.9	NA
Beryllium	NE	1.5	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.73	NA	0.4	NA	0.33	NA	0.45	NA	ND	NA	ND	NA	ND	NA
Cadmium	NE	1,000	10,000	mg/kg	0.47	NA	1.4	NA	1.6	NA	2.4	NA	1	NA	0.74	NA	0.96	NA	0.91	NA	0.78	NA	1.4	NA	1.5	NA	1.6	NA	1.2	NA	2	NA	0.36	NA
Chromium	NE	10,000	10,000	mg/kg	2.1	NA	11.2	NA	10.7	NA	7.4	NA	8.9	NA	7.3	NA	8.4	NA	11.8	NA	4.3	NA	8	NA	10.2	NA	13.7	ND	8.2	ND	4.6	NA	2.5	NA
Copper	NE	10,000	10,000	mg/kg	13.7	NA	13.6	NA	17.3	NA	19.1	NA	21.1	NA	13	NA	16.8	NA	21.2	NA	6.2	NA	17.7	NA	24.2	NA	12.6	ND	14.1	NA	4.2	NA	9.5	NA
Iron	NE	NE	NE	mg/kg	5620	NA	14500	13000	16500	12800	11600	12100	13000	12500	8480	6170	12100	11500	8600	8570	10400	9250	15000	13600	18000	15000	19000	19800	14800	17000	21900	20900	4050	6890
Lead	NE	500	10,000	mg/kg	45.2	NA	17.4	NA	105	NA	105	NA	**591**	NA	86.6	NA	130	NA	280	NA	28	NA	203	NA	88.6	NA	5.8	NA	86	NA	5.4	NA	28.5	NA
Mercury	NE	610	10,000	mg/kg	1.2	NA	ND	NA	0.14	NA	0.085	NA	0.16	NA	0.073	NA	0.14	NA	0.21	NA	ND	NA	0.047	NA	0.093	NA	ND	NA	0.036	NA	ND	NA	0.037	NA
Nickel	NE	10,000	10,000	mg/kg	0.49	NA	15.2	NA	22.2	NA	12.5	NA	12.8	NA	11	NA	12.1	NA	10.6	NA	7.1	NA	10.6	NA	7.9	NA	9	NA	5.1	NA	1.2	NA	1.4	NA
Selenium	NE	10,000	10,000	mg/kg	NA	NA	14	NA	15.5	NA	9.5	NA	10.4	NA	7.5	NA	11.2	NA	3.3	NA	9.5	NA	15.1	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Silver	NE	10,000	10,000	mg/kg	1.1	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	1	NA	3.2	NA	3	NA	2.7	NA	4	NA	0.82	NA
Reactive Sulfide	NE	NE	NE	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NE	140	10,000	mg/kg	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND
Zinc	NE	10,000	10,000	mg/kg	2.5	NA	50	NA	33.5	NA	38.9	NA	53	NA	63.7	NA	51.6	NA	87.5	NA	40	NA	41.2	NA	36.3	NA	30.1	NA	18.2	NA	9.5	NA	1.2	NA
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	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	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																																		
Aroclor 1248	10	10	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA
Aroclor 1242	10	10	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor 1254	10	10	10,000	mg/kg	NA	NA	ND	0.19	ND	ND	ND	ND	0.054	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.28	ND	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDD	NE	NE	10,000	mg/kg	0.022	NA	ND	NA	0.014	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.007	NA	ND	NA	ND	NA
4,4-DDE	NE	NE	10,000	mg/kg	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.00397	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4-DDT	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.016	NA	ND	NA	ND	NA	ND	NA	ND	NA
Aldrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-Chlordane	NE	NE	10,000	mg/kg	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0044	NA	NA	NA	NA	NA	NA	NA	NA	NA
beta-BHC	NE	NE	10,000	mg/kg	0.0026	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
delta-BHC	NE	NE	10,000	mg/kg	0.0087	NA	0.0042	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Dieldrin	NE	0.4	10,000	mg/kg	0.01	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0039	NA
Endosulfan I	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0019	NA

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	C21		D64		D65		D66		D67		D68		D69		D70		D71		E01		E02		E03		E04		E08		E09	
					0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	6-8 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT
					12/14/99		12/11/99		12/11/99		12/11/99		12/22/99		12/23/99		12/23/99		12/23/99		12/23/99		12/11/99	12/11/99	12/13/99	12/13/99	12/19/99		12/13/99		12/14/99		12/14/99	
Polychlorinated Biphenyls (PCBs) and Pesticides																																		
Endosulfan II	NE	NE	10,000	mg/kg	0.013	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin	NE	NE	10,000	mg/kg	0.011	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.00372	NA	0.0069	NA	ND	NA	ND	NA	ND	NA	0.0086	NA
Endrin aldehyde	NE	NE	10,000	mg/kg	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA
Endrin ketone	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.005	NA	0.0053	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0073	NA
gamma-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
gamma-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Heptachlorepoxide	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Methoxychlor	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Semi-Volatile Organic Compounds (SVOCs)																																		
1,1-Biphenyl	NE	10000	10000	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	ND	NA	ND	NA	ND	NA	ND
2-Methylnaphthalene	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	NE	10,000	10,000	mg/kg	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	ND	ND	ND	ND
Acenaphthylene	NE	10,000	10,000	mg/kg	0.55	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.49	ND	0.64	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.68	ND	0.66	ND	ND	ND	2.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	NE	7.8	10,000	mg/kg	ND	NA	ND	1.9	0.9	0.56	1.2	ND	1.8	ND	0.54	ND	2	ND	4.3	ND	0.71	ND	4.9	0.57	0.89	ND	ND	ND	0.52	ND	ND	ND	ND	ND
Benzo(a)pyrene	NE	0.8	10,000	mg/kg	**1.6**	NA	ND	**2**	**0.84**	0.39	ND	ND	**1.3**	ND	0.41	ND	**1.6**	ND	**4.5**	ND	0.61	ND	**3.3**	0.48	ND	**0.8**	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	NE	7.8	10,000	mg/kg	2.4	NA	0.41	2.6	1.3	0.41	1.5	ND	1.8	ND	0.53	ND	2.2	ND	5.8	ND	0.76	ND	4.9	0.72	ND	ND	ND	ND	ND	ND	ND	ND	0.44	ND
Benzo(g,h,i)perylene	NE	10,000	10,000	mg/kg	0.48	NA	ND	0.98	0.77	ND	ND	ND	ND	ND	ND	ND	0.82	ND	2.1	ND	0.45	ND	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	NE	78	10,000	mg/kg	1.1	NA	ND	1.3	ND	ND	0.98	ND	0.79	ND	0.23	ND	1	ND	2.9	ND	0.5	ND	3.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	NE	410	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND
Carbazole	NE	NE	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.52	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND
Chrysene	NE	780	10,000	mg/kg	1.1	NA	ND	1.8	1.1	0.52	1.4	ND	1.6	ND	0.51	ND	1.8	ND	3.4	ND	0.64	ND	3.7	0.4	1.1	ND	ND	ND	0.9	ND	ND	ND	0.41	ND
Dibenzo(a,h)Anthracene	NE	0.8	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	NE	NE	10,000	mg/kg	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.96	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND
Fluoranthene	NE	10,000	10,000	mg/kg	0.46	NA	ND	3	1.6	0.73	1.5	ND	2.4	0.66	1	ND	3.2	ND	4.8	ND	1.1	ND	9.4	0.6	2.2	ND	ND	ND	1	ND	ND	ND	ND	ND
Fluorene	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.43	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)Pyrene	NE	7.8	10,000	mg/kg	0.79	NA	ND	1	0.36	ND	ND	ND	ND	ND	ND	ND	0.84	ND	2.2	ND	0.39	ND	1.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.63	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	NE	10,000	10,000	mg/kg	ND	NA	ND	ND	0.76	ND	0.69	ND	1.6	ND	1.1	ND	2.6	ND	2	ND	ND	ND	8.3	ND	0.84	ND	ND	ND	0.42	ND	ND	ND	ND	ND
Pyrene	NE	10,000	10,000	mg/kg	0.37	NA	ND	ND	1.3	ND	2	ND	3.5	ND	0.93	ND	2.6	ND	4.3	ND	0.96	ND	7.5	0.52	1.3	ND	ND	ND	0.65	ND	ND	ND	ND	ND

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.
Table only shows explorations within the Limits of Work
ND - Not Detected
NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	E10		E11		E12		E13		E14		E15		E16		E17		E18		E19		E20		E21		E22		E23		E24		E25	
					0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT
					12/14/99		12/14/99		12/14/99		12/14/99		12/15/99		12/15/99		12/15/99		12/15/99		12/15/99		12/15/99		12/15/99		12/16/99		12/16/99		12/16/99		12/16/99		12/17/99	
Volatile Organic Compounds (VOCs)																																		
1,2,4-Trimethylbenzene	NE	NE	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4	21	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	1.8	9.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Butanone	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	ND	ND	ND	ND	0.048	0.051	0.063	ND	ND	ND	ND	ND
4-Isopropyltoluene	NE	NE	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	NE	10,000	10,000	mg/kg	0.085	ND	0.034	ND	ND	ND	ND	ND	0.032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.06	0.046
Benzene	4.3	200	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**43**	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	NE	940	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	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	ND	ND	ND	ND	ND	ND	1	18	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NE	10,000	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	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	0.095	0.05
Naphthalene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	68	630	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND
n-Butylbenzene	NE	NE	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	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
sec-Butylbenzene	NE	NE	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	64	1,900	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
Toluene	54	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	43	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	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	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	ND	ND	ND	ND	ND	ND	ND	23	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons (TPH)																																		
Hydrocarbon Content	2,500	2,500	30,000	mg/kg	ND	ND	540	ND	ND	ND	240	ND	ND	ND	1200	**9700**	ND	ND	ND	ND	ND	ND	190	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Inorganic Compounds																																		
Ammonia	NE	NE	NE	mg/kg	560	560	34	ND	80	150	490	40	370	70	220	850	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide	NE	10,000	10,000	mg/kg	0.8	1	2.3	0.31	4.4	0.31	9.1	0.14	10.6	1.1	44	197	7.2	5.1	2.8	0.2	1.4	0.57	35.6	0.066	3.8	1.8	3.1	3.4	26	0.95	0.29	0.037	3.1	1.3	ND	0.06
Antimony	NE	820	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.42	NA	0.38	NA	ND	NA	ND	NA	0.28	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.27	NA
Arsenic	NE	7	10,000	mg/kg	**8.3**	NA	**7.3**	NA	**10.9**	NA	6.9	NA	6.6	NA	**7.6**	NA	**8.9**	NA	**7.7**	NA	**7.2**	NA	**15.4**	NA	**7.9**	NA	3.9	NA	6.9	NA	**7.6**	NA	5	NA	6.7	NA
Barium	NE	10,000	10,000	mg/kg	24.9	NA	20	NA	30.6	NA	26.1	NA	16.6	NA	19.5	NA	30.1	NA	27	NA	15.9	NA	38.7	NA	24.2	NA	19.5	NA	18.1	NA	33.9	NA	39.2	NA	62.2	NA
Beryllium	NE	1.5	10,000	mg/kg	0.52	NA	0.27	NA	0.3	NA	ND	NA	ND	NA	ND	NA	0.28	NA	0.43	NA	0.38	NA	0.24	NA	0.5	NA	0.22	NA	ND	NA	0.46	NA	0.43	NA	0.4	NA
Cadmium	NE	1,000	10,000	mg/kg	1.9	NA	1.7	NA	2.5	NA	1.3	NA	2.7	NA	1.6	NA	2	NA	1.8	NA	1.8	NA	3.3	NA	1.6	NA	1	NA	1.3	NA	1.4	NA	1.6	NA	1.3	NA
Chromium	NE	10,000	10,000	mg/kg	13.9	NA	10.9	NA	13.8	NA	3.8	NA	7.7	NA	8.9	NA	12.3	NA	12	NA	11.9	NA	13.9	NA	11.7	NA	10	NA	10	NA	11.4	NA	11.5	NA	9.7	NA
Copper	NE	10,000	10,000	mg/kg	18.3	NA	11	NA	25.7	NA	11.5	NA	14.2	NA	18.8	NA	19.3	NA	16.5	NA	26.8	NA	78.9	NA	21.2	NA	21.8	NA	9.2	NA	11.5	NA	21.8	NA	21.6	NA
Iron	NE	NE	NE	mg/kg	19600	14600	18600	17300	26500	23600	15000	21700	32200	22700	17500	90900	21200	18800	18500	16400	19800	14000	78900	16800	17300	14300	11900	13900	17000	18900	15600	9410	16000	12000	18100	12800
Lead	NE	500	10,000	mg/kg	17.5	NA	6	NA	**515**	NA	107	NA	64.2	NA	36.2	NA	72.6	NA	99.4	NA	23.9	NA	491	NA	**711**	NA	242	NA	157	NA	42.3	NA	**2770**	NA	**1320**	NA
Mercury	NE	610	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.064	NA	0.092	NA	0.87	NA	0.088	NA	ND	NA	0.018	NA	0.41	NA	0.054	NA	0.3	NA	0.27	NA	ND	NA	0.2	NA	0.73	NA
Nickel	NE	10,000	10,000	mg/kg	13.6	NA	8.1	NA	9.4	NA	0.77	NA	1.8	NA	2.8	NA	7.9	NA	11	NA	10.3	NA	7.5	NA	12.4	NA	8.3	NA	10.9	NA	15	NA	17.2	NA	13.6	NA
Selenium	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	10	NA	16.2	NA	12.1	NA	12.8	NA	ND	NA
Silver	NE	10,000	10,000	mg/kg	3.1	NA	3.5	NA	5.2	NA	3.1	NA	5.6	NA	3.4	NA	4	NA	3	NA	3.5	NA	6.7	NA	3	NA	1.1	NA	1.1	NA	0.87	NA	1.1	NA	3.3	NA
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	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	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Zinc	NE	10,000	10,000	mg/kg	43.8	NA	24.1	NA	33	NA	7	NA	14.3	NA	21.3	NA	27.4	NA	45	NA	38.3	NA	34.6	NA	47.4	NA	23.6	NA	23.5	NA	52.3	NA	66.7	NA	145	NA
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	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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																																		
Aroclor 1248	10	10	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.1	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242	10	10	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254	10	10	10,000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	0.11	ND	0.092	ND
4,4-DDD	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
4,4-DDE	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	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
4,4-DDT	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.005	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.026	NA	0.0065	NA
Aldrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.0021	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-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	ND	NA	0.0026	NA	ND	NA	ND	NA	ND	NA	ND	NA
beta-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.0034	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.014	NA	ND	NA	ND	NA	0.0019	NA	ND	NA
delta-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.0026	NA	0.0084	NA	ND	NA	ND	NA	ND	NA	0.0036	NA	ND	NA	ND	NA	0.0021	NA	0.0023	NA	ND	NA	0.0024	NA	ND	NA
Dieldrin	NE	0.4	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.016	NA	ND	NA	0.025	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan I	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.0042	NA	0.0023	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.002	NA	ND	NA	ND	NA	0.0081	NA

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	E10		E11		E12		E13		E14		E15		E16		E17		E18		E19		E20		E21		E22		E23		E24		E25	
					0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT
					12/14/99		12/14/99		12/14/99		12/14/99		12/15/99		12/15/99		12/15/99		12/15/99		12/15/99		12/15/99		12/15/99		12/16/99		12/16/99		12/16/99		12/16/99		12/17/99	
Polychlorinated Biphenyls (PCBs) and Pesticides																																		
Endosulfan II	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.011	NA	ND	NA	0.0079	NA	ND	NA	ND	NA	ND	NA	0.0037	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.0069	NA	ND	NA	0.015	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.004	NA
Endrin aldehyde	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	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin ketone	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.015	NA	ND	NA	0.0042	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
gamma-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.0022	NA	ND	NA	0.014	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
gamma-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Heptachlorepoxide	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0038	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Methoxychlor	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.076	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Semi-Volatile Organic Compounds (SVOCs)																																		
1,1-Biphenyl	NE	10000	10000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.6	220	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	ND	ND	ND	ND	ND	34	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	ND	ND	ND	0.95	ND	ND	ND	0.75	50	ND	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	ND	ND	ND	ND	ND	ND	0.61	ND	ND	ND	ND	100	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	2.3	ND	ND	ND	1.1	**110**	ND	ND	ND	ND	ND	ND	0.92	ND	0.54	ND	ND	ND	ND	ND	ND	ND	0.55	ND	1	ND
Benzo(a)pyrene	NE	0.8	10,000	mg/kg	ND	ND	ND	ND	ND	ND	**1.4**	ND	ND	ND	ND	**70**	ND	ND	ND	ND	ND	ND	0.79	ND	0.42	ND	ND	ND	ND	ND	ND	ND	0.37	ND	0.66	ND
Benzo(b)fluoranthene	NE	7.8	10,000	mg/kg	ND	ND	ND	ND	ND	ND	5	ND	ND	ND	2.6	**100**	ND	ND	ND	ND	ND	ND	1.8	ND	0.9	ND	ND	ND	0.81	ND	ND	ND	0.5	ND	1.4	ND
Benzo(g,h,i)perylene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	26	ND	ND	ND	ND	ND	ND	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.39	ND
Benzo(k)fluoranthene	NE	78	10,000	mg/kg	ND	ND	ND	ND	ND	ND	2.4	ND	ND	ND	1.4	27	ND	ND	ND	ND	ND	ND	0.96	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.46	ND
bis(2-Ethylhexyl)phthalate	NE	410	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NE	NE	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	82	NA	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	NE	780	10,000	mg/kg	ND	ND	ND	ND	ND	ND	3.2	ND	0.67	ND	1.8	88	0.41	ND	ND	ND	ND	ND	1.4	ND	0.74	ND	ND	ND	ND	ND	ND	ND	0.44	ND	1.2	ND
Dibenzo(a,h)Anthracene	NE	0.8	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4.2**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	NE	NE	10,000	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	98	NA	ND	NA	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	3.3	ND	ND	ND	1.6	180	0.7	ND	ND	ND	ND	ND	2	ND	1.1	ND	ND	ND	ND	ND	ND	ND	0.85	ND	2.2	ND
Fluorene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	160	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)Pyrene	NE	7.8	10,000	mg/kg	ND	ND	ND	ND	ND	ND	1.5	ND	ND	ND	1	**29**	ND	ND	ND	ND	ND	ND	0.46	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.48	ND
Naphthalene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	0.67	ND	ND	ND	6.6	670	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.94	ND
Phenanthrene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	1.8	ND	ND	ND	1	330	0.41	ND	ND	ND	ND	ND	0.83	ND	0.53	ND	ND	ND	ND	ND	ND	ND	0.48	ND	1.5	ND
Pyrene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	2.6	ND	ND	ND	1.4	180	0.45	ND	ND	ND	ND	ND	1.6	ND	0.96	ND	ND	ND	ND	ND	ND	ND	0.69	ND	1.4	ND

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.

Table only shows explorations within the Limits of Work

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

File No. 03.00033554.00
4/25/2016

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	E26		E27		E28		E29		E30		E31		E32		E33		E34		E35		E36		E38		E39		E40		E41		E42	
					0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 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	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT
					12/17/99		12/20/99		12/17/99		12/17/99		12/17/99		12/16/99		12/16/99		12/20/99		12/20/99		12/20/99		12/21/99		12/21/99		1/26/00		12/21/99		12/21/99		12/21/99	
Volatile Organic Compounds (VOCs)																																		
1,2,4-Trimethylbenzene	NE	NE	10,000	mg/kg	ND	0.023	ND	ND	ND	ND	ND	0.97	ND	ND	ND	ND	ND	ND	ND	ND	ND	68	ND	36	0.052	2	ND	40	ND	70	ND	ND	0.061	19	ND	0.34
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	34	0.044	ND	0.047	ND	ND	ND	ND	38	ND	ND	0.081	1.8	ND	ND
2-Butanone	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.057	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	1.6	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	NE	10,000	10,000	mg/kg	0.048	ND	ND	ND	0.064	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.081	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.3	200	10,000	mg/kg	ND	0.24	0.061	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.043	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.12	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	ND	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	ND	ND	ND	ND	ND	ND	ND
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	14	0.3	22	ND	ND	ND	46	ND	8	ND	ND	ND	10	ND	ND
Isopropylbenzene	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	0.061	3.2	ND	ND	ND	3.7	ND	ND	ND	ND	ND	1.4	ND	ND
Methylene Chloride	NE	760	10,000	mg/kg	0.098	ND	ND	ND	0.036	ND	ND	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.042	ND	ND	1.2	2.7	ND	ND	ND	0.084	ND	0.087	ND	0.056	ND
Naphthalene	NE	10,000	10,000	mg/kg	0.029	ND	0.06	ND	0.049	ND	0.048	12	ND	ND	ND	ND	ND	ND	0.24	ND	0.48	390	0.16	180	0.24	24	0.79	ND	ND	200	0.16	ND	0.16	90	0.14	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	0.035	ND	ND	1.1	ND	ND	ND	ND	ND	ND	0.14	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	1.4	ND	ND	ND	ND	ND	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	64	1,900	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	62	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	54	10,000	10,000	mg/kg	ND	ND	0.064	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**97**	0.26	ND	0.11	ND	ND	ND	ND	ND	ND	ND	0.26	ND	ND	ND
Trichlorofluoromethane	NE	NE	10,000	mg/kg	ND	ND	ND	ND	0.048	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
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	ND	210	ND	ND	ND	ND	ND	2000	ND	ND	ND	ND	0.48	9.7	ND	ND
Total Petroleum Hydrocarbons (TPH)																																				
Hydrocarbon Content	2,500	2,500	30,000	mg/kg	300	ND	ND	ND	250	ND	ND	960	ND	ND	150	ND	210	ND	290	270	570	**5600**	ND	1600	310	**2800**	ND	**4600**	ND	**6100**	1400	ND	350	**7500**	ND	1100
Inorganic Compounds																																				
Ammonia	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	NA	NA	NA	NA	NA	NA
Total Cyanide	NE	10,000	10,000	mg/kg	3.2	0.66	1.7	0.34	10.2	0.23	1.7	0.29	0.2	4.7	6.1	1.3	3.3	4.2	69.2	27.3	26.4	0.13	2.8	0.55	7.9	0.85	1.7	1.5	134	3.5	134	29.7	15.5	ND	5	3.2
Antimony	NE	820	10,000	mg/kg	ND	NA	0.46	NA	0.3	NA	1.3	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.35	NA	ND	ND	0.38	NA	ND	NA	MD	NA	NA	NA	0.32	NA	0.29	NA
Arsenic	NE	7	10,000	mg/kg	5.1	NA	5.6	NA	6.7	NA	**7.6**	NA	6.1	NA	5.2	NA	**8.4**	NA	**7.7**	NA	7	NA	4.3	ND	5.5	NA	**11.5**	NA	4.4	NA	6.3	NA	6.6	NA	5.5	NA
Barium	NE	10,000	10,000	mg/kg	34.3	NA	23.8	NA	28.9	NA	31.7	NA	27.3	NA	29.7	NA	34.2	NA	40	NA	40.9	NA	22.5	ND	48.7	NA	29.1	NA	53.5	NA	28.4	NA	29.9	NA	41.8	NA
Beryllium	NE	1.5	10,000	mg/kg	0.37	NA	0.49	NA	0.61	NA	0.78	NA	0.47	NA	0.22	NA	0.3	NA	ND	NA	ND	NA	0.42	ND	0.49	NA	ND	NA	ND	NA	ND	NA	0.28	NA	0.36	NA
Cadmium	NE	1,000	10,000	mg/kg	0.73	NA	1	NA	1.2	NA	0.91	NA	0.96	NA	1.3	NA	4.8	NA	1.2	NA	1.3	NA	0.74	ND	0.89	NA	1	NA	0.75	NA	0.96	NA	0.74	NA	0.8	NA
Chromium	NE	10,000	10,000	mg/kg	8.8	NA	9.1	NA	9.8	NA	10.8	NA	10.4	NA	7.7	NA	10.7	NA	8.2	NA	6.7	NA	6.6	ND	9.9	NA	13.1	NA	6.9	NA	6.6	NA	6.8	NA	9.2	NA
Copper	NE	10,000	10,000	mg/kg	24.7	NA	27.9	NA	43.2	NA	50.3	NA	25.8	NA	20.3	NA	19.1	NA	19.9	NA	24.7	NA	15.6	ND	39.6	NA	22.4	NA	28.6	NA	16.9	NA	20.4	NA	52.3	NA
Iron	NE	NE	NE	mg/kg	12000	16800	16100	12800	16900	15100	12000	10700	15600	10900	15000	13500	64800	14600	19500	15300	22700	13000	10800	11400	10800	14300	17300	7130	12700	17300	17100	5530	10700	11900	11000	9080
Lead	NE	500	10,000	mg/kg	**542**	NA	477	NA	**9280**	NA	**938**	NA	463	NA	318	NA	**1800**	NA	152	NA	231	NA	123	ND	**1450**	NA	132	NA	339	NA	393	NA	101	NA	**732**	NA
Mercury	NE	610	10,000	mg/kg	0.064	NA	ND	NA	0.043	NA	0.018	NA	ND	NA	0.071	NA	0.081	NA	0.24	NA	0.068	NA	0.02	ND	0.1	NA	0.12	NA	0.52	NA	0.52	NA	0.026	NA	0.046	NA
Nickel	NE	10,000	10,000	mg/kg	7.1	NA	10.9	NA	27.3	NA	29.5	NA	11.8	NA	11.6	NA	21.3	NA	5.8	NA	4.4	NA	8.1	ND	12.9	NA	15.1	NA	5.6	NA	5.6	NA	12,7	NA	11.9	NA
Selenium	NE	10,000	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	12.8	NA	50.1	NA	ND	NA	ND	NA	ND	ND	ND	NA	ND	NA	5.1	NA	5.1	NA	ND	NA	ND	NA
Silver	NE	10,000	10,000	mg/kg	2.2	NA	2.8	NA	3.7	NA	2.3	NA	2.8	NA	1.1	NA	3.2	NA	3.8	NA	4.6	NA	1.9	ND	2.2	NA	ND	NA	ND	NA	ND	NA	2	NA	2.1	NA
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	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Thallium	NE	140	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.31	NA	ND	NA	ND	NA	ND	ND	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Zinc	NE	10,000	10,000	mg/kg	50.9	NA	85.4	NA	226	NA	182	NA	57.1	NA	32	NA	58.4	NA	22.1	NA	19.4	NA	40.4	ND	87.7	NA	ND	NA	29.4	NA	29.4	NA	56.7	NA	58.8	NA
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	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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
Aroclor 1248	10	10	10,000	mg/kg	ND	0.052	ND	ND	0.088	ND	0.17	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.54	ND	ND	ND	ND	NA	ND	ND	0.035	ND	0.093	ND
Aroclor 1242	10	10	10,000	mg/kg	ND	ND	0.055	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
Aroclor 1254	10	10	10,000	mg/kg	0.093	ND	0.054	ND	0.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND
4,4-DDD	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0086	NA	ND	NA	ND	NA	0.027	NA	0.042	NA	ND	NA	ND	NA	ND	NA	0.011	NA	ND	NA	ND	NA	ND	NA	0.0088	NA	0.0049	NA
4,4-DDE	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0079	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
4,4-DDT	NE	NE	10,000	mg/kg	ND	NA	0.0054	NA	0.0089	NA	0.0078	NA	0.0049	NA	ND	NA	ND	NA	ND	NA	0.024	NA	ND	NA	0.016	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Aldrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.014	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0044	NA	ND	NA
alpha-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0021	NA	0.0028	NA	ND	NA	0.034	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0058	NA	0.0039	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0058	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
beta-BHC	NE	NE	10,000	mg/kg	0.0036	NA	ND	NA	0.0031	NA	ND	NA	ND	NA	0.0052	NA	0.002	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0041	NA	ND	NA
delta-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0036	NA	ND	NA	ND	NA	0.023	NA	ND	NA	ND	NA	0.091	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0073	NA	ND	NA
Dieldrin	NE	0.4	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0042	NA	0.005	NA	ND	NA	0.035	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan I	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0031	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0034	NA	ND	NA

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	E26		E27		E28		E29		E30		E31		E32		E33		E34		E35		E36		E38		E39		E40		E41		E42	
					0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 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	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT
					12/17/99		12/20/99		12/17/99		12/17/99		12/17/99		12/16/99		12/16/99		12/20/99		12/20/99		12/20/99		12/21/99		12/21/99		1/26/00		12/21/99		12/21/99		12/21/99	
Polychlorinated Biphenyls (PCBs) and Pesticides																																		
Endosulfan II	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.012	NA	ND	NA	0.1	NA	ND	NA	0.017	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.014	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.02	NA	ND	NA	0.0047	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0045	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.11	NA	ND	NA	0.0092	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin aldehyde	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.017	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin ketone	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	0.0036	NA	0.0079	NA	ND	NA	ND	NA	0.074	NA	ND	NA	0.0053	NA	0.0079	NA	ND	NA	ND	NA	ND	NA	ND	NA
gamma-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0054	NA	ND	NA	0.027	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
gamma-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0081	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0047	NA	ND	NA	0.0031	NA	ND	NA	ND	NA	ND	NA	0.0031	NA	ND	NA
Heptachlorepoxide	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.056	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Methoxychlor	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.027	NA	0.035	NA	ND	NA	0.34	NA	ND	NA	0.03	NA	ND	NA	ND	NA	ND	NA	0.036	NA	ND	NA
Semi-Volatile Organic Compounds (SVOCs)																																		
1,1-Biphenyl	NE	10000	10000	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
2-Methylnaphthalene	NE	10,000	10,000	mg/kg	0.41	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	94	0.49	17	0.17	ND	ND	46	ND	NA	ND	ND	2.2	170	0.25	0.53
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	ND	ND	ND	0.22	ND	ND	ND	ND	NA	ND	ND	0.26	14	ND	2.8
Acenaphthylene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	5	ND	ND	0.2	ND	ND	ND	0.84	NA	2.5	ND	ND	ND	ND	0.38
Anthracene	NE	10,000	10,000	mg/kg	0.52	0.43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.47	0.64	1.7	ND	1.6	0.56	NA	1.3	ND	0.11	4.6	0.037	0.67
Benzo(a)anthracene	NE	7.8	10,000	mg/kg	1.3	1.6	0.82	ND	0.71	ND	0.7	ND	0.8	ND	0.61	ND	0.44	ND	ND	5.2	2.7	ND	ND	ND	1.7	0.4	1.2	0.99	2.2	NA	**12**	ND	0.46	ND	0.11	0.88
Benzo(a)pyrene	NE	0.8	10,000	mg/kg	**1.1**	**1.4**	**0.84**	ND	0.63	ND	0.48	ND	0.69	ND	0.5	ND	0.56	ND	**2.3**	**3.4**	0.71	ND	ND	ND	**1.4**	0.46	**1.1**	0.67	**2.2**	NA	**5.8**	0.56	0.3	ND	0.06	0.54
Benzo(b)fluoranthene	NE	7.8	10,000	mg/kg	1.5	2	1.2	ND	0.8	ND	ND	ND	ND	ND	0.92	ND	1.1	ND	5.5	7.6	5.9	ND	ND	ND	2.4	0.57	1.6	0.95	5.2	NA	**22**	1.1	0.7	ND	0.25	0.83
Benzo(g,h,i)perylene	NE	10,000	10,000	mg/kg	0.57	0.56	0.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	ND	ND	ND	0.79	ND	0.56	ND	2.2	NA	4.9	ND	0.17	ND	ND	ND
Benzo(k)fluoranthene	NE	78	10,000	mg/kg	0.66	0.69	0.38	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.8	2.8	ND	ND	ND	1.1	ND	0.84	0.4	1.9	NA	10	0.66	0.38	ND	0.086	0.64
bis(2-Ethylhexyl)phthalate	NE	410	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.087	ND	ND	ND	ND	NA	ND	ND	0.043	ND	0.057	ND
Carbazole	NE	NE	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.56	ND	ND	ND	ND	ND	0.21	ND	0.058	ND	ND	NA	0.61	ND	ND	ND	ND	ND
Chrysene	NE	780	10,000	mg/kg	1.4	1.6	0.8	ND	0.79	ND	0.59	ND	0.71	ND	0.6	ND	0.63	ND	3.2	5	4.5	ND	ND	ND	1.9	ND	1.1	0.84	2.6	NA	15	0.61	0.47	ND	0.19	2.9
Dibenzo(a,h)Anthracene	NE	0.8	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58	ND	0.55	ND	ND	ND	0.17	ND	0.14	ND	0.7	NA	**2.3**	ND	0.06	ND	ND	ND
Dibenzofuran	NE	NE	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.65	ND	ND	ND	ND	ND	0.16	ND	ND	3.4	ND	NA	ND	ND	0.24	12	0.047	0.4
Fluoranthene	NE	10,000	10,000	mg/kg	2.9	3	1.2	ND	0.95	ND	1.4	ND	1.4	ND	1	ND	0.55	ND	6	10	2.6	ND	ND	ND	3.2	0.56	1.4	2.2	3.6	NA	11	ND	0.74	8	0.25	6
Fluorene	NE	10,000	10,000	mg/kg	0.58	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.78	ND	ND	6	ND	ND	2.6	ND	0.038	3.9	ND	NA	ND	ND	0.29	14	ND	0.82
Indeno(1,2,3-cd)Pyrene	NE	7.8	10,000	mg/kg	0.66	0.73	0.47	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.6	ND	ND	ND	0.81	ND	0.52	ND	ND	NA	5.8	ND	0.17	ND	0.043	0.94
Naphthalene	NE	10,000	10,000	mg/kg	0.77	ND	ND	ND	ND	ND	ND	13	ND	ND	ND	ND	0.55	ND	ND	ND	1.2	ND	3.3	67	0.31	13	0.43	ND	0.61	190	3.8	ND	7.3	780	1.6	1.1
Phenanthrene	NE	10,000	10,000	mg/kg	2.4	1.8	ND	ND	0.4	ND	0.98	ND	0.63	ND	0.44	ND	ND	ND	5.3	ND	0.66	ND	ND	ND	2.8	ND	0.62	ND	1.7	NA	3.9	ND	0.97	28	0.18	4.4
Pyrene	NE	10,000	10,000	mg/kg	2.1	2.1	0.86	ND	1.4	ND	1.1	ND	1.1	ND	0.83	ND	0.49	ND	4.5	ND	2.2	ND	ND	ND	4.6	0.7	1.9	ND	2.7	NA	12	ND	0.88	ND	0.26	7

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.
Table only shows explorations within the Limits of Work
ND - Not Detected
NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

File No. 03.00033554.00
4/25/2016

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	E43		E44		E45		E46		E53		E57		E58		E92		E93		E94	E95	E96	E97	E98	F01		F02		F03		F04		F05	
					0-2 FT	4-6 ft	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 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	4-6 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	8-10 FT	0-2 FT	6-8 FT
					12/21/99		12/22/99		12/22/99		12/22/99		12/22/99		2/2/00		1/4/00		3/7/00		3/7/00		3/9/00	3/9/00	3/9/00	3/9/00	3/9/00	1/4/00		1/4/00		1/4/00		1/4/00		1/4/00	
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	2.2	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	8.7	0.055	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	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	0.26	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	ND	ND	NA	NA	NA	NA	NA	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	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.3	ND	0.075	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	0.046	ND	0.056	ND	0.11	0.51	ND	ND	ND	ND
Benzene	4.3	200	10,000	mg/kg	0.045	0.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.15	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.52	0.056	0.61	0.062	0.075
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	NA	NA	NA	NA	NA	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	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	62	10,000	10,000	mg/kg	ND	0.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.031	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	2.7	0.053	0.063
Isopropylbenzene	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	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	2.1	ND	ND
Methylene Chloride	NE	760	10,000	mg/kg	0.025	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.058	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	0.16	0.047	0.18	2
Naphthalene	NE	10,000	10,000	mg/kg	0.048	0.51	ND	0.18	0.2	ND	ND	ND	ND	0.17	ND	ND	ND	ND	8.2	14	0.48	ND	NA	NA	NA	NA	NA	ND	ND	ND	0.095	ND	0.036	ND	13	ND	0.44
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	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	0.95	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	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	1.1	ND	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	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Styrene	64	1,900	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	54	10,000	10,000	mg/kg	0.053	0.21	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	0.078	ND	ND
Trichlorofluoromethane	NE	NE	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.038	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	0.045	ND	ND
Xylenes (Total)	NE	10,000	10,000	mg/kg	0.036	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.034	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	0.038	ND
Total Petroleum Hydrocarbons (TPH)																																				
Hydrocarbon Content	2,500	2,500	30,000	mg/kg	170	ND	300	180	300	ND	170	ND	ND	ND	ND	ND	ND	290	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	210	ND	**10000**	ND	ND
Inorganic Compounds																																				
Ammonia	NE	NE	NE	mg/kg	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Cyanide	NE	10,000	10,000	mg/kg	1.6	1.9	12.6	8.9	12.6	ND	10.4	ND	0.46	ND	2.2	ND	ND	0.66	ND	ND	0.4	ND	NA	NA	NA	NA	NA	ND	0.95	0.5	ND	0.069	6	0.13	ND	1.2	ND
Antimony	NE	820	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.25	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	0.24	ND	0.38	ND	0.5	ND	0.47	ND	0.65	ND
Arsenic	NE	7	10,000	mg/kg	5	NA	4.2	NA	4.2	NA	5	NA	3	NA	5.9	NA	2.1	NA	ND	NA	6.4	NA	NA	NA	NA	NA	NA	1.5	ND	2.4	ND	2.5	ND	4.4	ND	4.5	ND
Barium	NE	10,000	10,000	mg/kg	59.7	NA	24.2	NA	24.2	NA	486	NA	38.8	NA	36.8	NA	16.3	NA	17.5	NA	25.3	NA	NA	NA	NA	NA	NA	16.2	ND	35.5	ND	15.8	ND	40.1	ND	23.3	ND
Beryllium	NE	1.5	10,000	mg/kg	0.46	NA	ND	NA	ND	NA	1.8	NA	0.31	NA	ND	NA	ND	NA	ND	NA	0.44	NA	NA	NA	NA	NA	NA	0.26	ND	0.27	ND	0.23	ND	0.23	ND	0.28	ND
Cadmium	NE	1,000	10,000	mg/kg	0.89	NA	0.69	NA	0.69	NA	2.4	NA	1.4	NA	1.3	NA	0.32	NA	0.41	NA	0.94	NA	NA	NA	NA	NA	NA	0.32	ND	0.69	ND	0.37	ND	0.88	ND	0.69	ND
Chromium	NE	10,000	10,000	mg/kg	9	NA	5.7	NA	5.7	NA	5.4	NA	6.8	NA	10.8	NA	3.4	NA	6.5	NA	9.4	NA	NA	NA	NA	NA	NA	3.8	ND	6.3	ND	4.4	ND	3	ND	6.9	ND
Copper	NE	10,000	10,000	mg/kg	53.5	NA	16.5	NA	16.5	NA	18.7	NA	29.6	NA	17.7	NA	8.9	NA	11.7	NA	15.9	NA	NA	NA	NA	NA	NA	15.4	ND	16.1	ND	17.9	ND	11.1	ND	15.6	ND
Iron	NE	NE	NE	mg/kg	12800	15300	8380	12900	8380	21000	27700	11300	7540	10700	11300	7680	4610	3440	10400	14200	15500	13800	NA	NA	NA	NA	NA	5170	8000	6150	ND	6350	ND	5190	12300	9650	15100
Lead	NE	500	10,000	mg/kg	452	NA	310	NA	310	NA	132	NA	454	NA	78.1	NA	31.8	NA	133	NA	429	NA	**5410**	**13100**	**14900**	**7710**	**3550**	107	ND	**664**	ND	385	ND	20.7	ND	200	ND
Mercury	NE	610	10,000	mg/kg	0.16	NA	0.11	NA	0.52	NA	0.1	NA	0.052	NA	0.1	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	0.073	ND	ND	ND	0.025	ND	ND	ND	0.048	ND
Nickel	NE	10,000	10,000	mg/kg	30.2	NA	9	NA	ND	NA	16.1	NA	28.9	NA	13	NA	4.4	NA	12.4	NA	13.8	NA	NA	NA	NA	NA	NA	13.8	ND	15.4	ND	8	ND	9.5	ND	11.6	ND
Selenium	NE	10,000	10,000	mg/kg	ND	NA	7.5	NA	13.6	NA	13.6	NA	4.7	NA	ND	NA	ND	NA	ND	NA	1.3	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	0.93	ND	0.51	ND
Silver	NE	10,000	10,000	mg/kg	2.3	NA	ND	NA	ND	NA	ND	NA	0.52	NA	ND	NA	0.66	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	0.83	ND	0.93	ND	1	ND	0.94	ND	1.6	ND
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	ND	NA	ND	NA	ND	NA	ND	NA	ND
Thallium	NE	140	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Zinc	NE	10,000	10,000	mg/kg	145	NA	38.8	NA	19.6	NA	109	NA	192	NA	123	NA	18.2	NA	94.9	NA	113	NA	NA	NA	NA	NA	NA	58	ND	98.8	ND	35.1	ND	20.3	ND	40.3	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	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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
Aroclor 1248	10	10	10,000	mg/kg	ND	ND	0.11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
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	NA	NA	NA	NA	NA	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	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,4-DDD	NE	NE	10,000	mg/kg	0.0049	NA	ND	NA	ND	NA	0.049	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
4,4-DDE	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
4,4-DDT	NE	NE	10,000	mg/kg	0.0039	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Aldrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.0024	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
alpha-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
beta-BHC	NE	NE	10,000	mg/kg	0.002	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
delta-BHC	NE	NE	10,000	mg/kg	0.017	NA	ND	NA	0.0011	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Dieldrin	NE	0.4	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan I	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	E43		E44		E45		E46		E53		E57		E58		E92		E93		E94	E95	E96	E97	E98	F01		F02		F03		F04		F05	
					0-2 FT	4-6 ft	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 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	4-6 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	8-10 FT	0-2 FT	6-8 FT
					12/21/99		12/22/99		12/22/99		12/22/99		12/22/99		2/2/00		1/4/00		3/7/00		3/7/00		3/9/00	3/9/00	3/9/00	3/9/00	3/9/00	1/4/00		1/4/00		1/4/00		1/4/00		1/4/00	
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
Endosulfan II	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin aldehyde	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Endrin ketone	NE	NE	10,000	mg/kg	ND	NA	ND	NA	0.001	NA	0.014	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0088	NA
gamma-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
gamma-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Heptachlorepoxide	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Methoxychlor	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	0.044	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA	NA	NA	NA	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
Semi-Volatile Organic Compounds (SVOCs)																																				
1,1-Biphenyl	NE	10000	10000	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	NA	NA
2-Methylnaphthalene	NE	10,000	10,000	mg/kg	0.097	3.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.49	ND	0.85	ND	ND
Acenaphthene	NE	10,000	10,000	mg/kg	ND	2.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	NE	10,000	10,000	mg/kg	0.45	ND	1.9	0.42	0.42	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	5.4	ND	ND	0.7	ND
Anthracene	NE	10,000	10,000	mg/kg	0.62	0.71	3.5	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	1.1	ND	0.59	1	ND
Benzo(a)anthracene	NE	7.8	10,000	mg/kg	3.6	0.78	**8.4**	0.53	1.2	ND	1.9	ND	1.3	ND	ND	ND	0.48	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	1.1	ND	1.1	6.8	ND
Benzo(a)pyrene	NE	0.8	10,000	mg/kg	**3.4**	0.51	**6.5**	ND	0.53	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	**3.7**	ND	**1.1**	**5.3**	ND
Benzo(b)fluoranthene	NE	7.8	10,000	mg/kg	5.6	0.79	**8.8**	ND	3.2	ND	ND	ND	1.5	ND	0.52	ND	0.43	ND	ND	5.1	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	2.8	ND	1.3	7.5	ND
Benzo(g,h,i)perylene	NE	10,000	10,000	mg/kg	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	2	ND	0.48	1.9	ND
Benzo(k)fluoranthene	NE	78	10,000	mg/kg	2.9	0.53	6.6	ND	3.8	ND	ND	ND	0.55	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	1.2	ND	0.48	2.3	ND
bis(2-Ethylhexyl)phthalate	NE	410	10,000	mg/kg	0.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbazole	NE	NE	10,000	mg/kg	0.17	ND	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	NE	780	10,000	mg/kg	3.1	0.81	8.9	ND	1.7	ND	2	ND	1.5	ND	0.44	ND	0.45	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	1.3	ND	0.86	6	ND
Dibenzo(a,h)Anthracene	NE	0.8	10,000	mg/kg	0.43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.56	ND	ND	**0.81**	ND
Dibenzofuran	NE	NE	10,000	mg/kg	0.085	0.94	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	NE	10,000	10,000	mg/kg	4	1.9	15	7.1	1.2	ND	2.3	ND	1.8	ND	0.48	ND	0.81	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	1.5	ND	1.6	12	ND
Fluorene	NE	10,000	10,000	mg/kg	0.15	1.8	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.8	ND	0.64	ND	ND
Indeno(1,2,3-cd)Pyrene	NE	7.8	10,000	mg/kg	1.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	2.3	ND	0.53	2.4	ND
Naphthalene	NE	10,000	10,000	mg/kg	0.15	1.6	0.67	ND	0.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	0.46	ND	4.5	ND	ND
Phenanthrene	NE	10,000	10,000	mg/kg	1.6	3.4	17	11	0.84	ND	0.99	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	1.1	ND	2.2	1.6	ND
Pyrene	NE	10,000	10,000	mg/kg	5.5	2.3	20	8.5	1.7	ND	3.4	ND	2.7	ND	0.58	ND	0.56	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	8.1	ND

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.

Table only shows explorations within the Limits of Work

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	F06		F07		F08		F09		F13		F14		F15		F16		F17		F18		F20		F28		F33		F53		F58		F60		B-1C
					0-2 FT	8-10 FT	0-2 FT	8-10 FT	0-2 FT	8-10 FT	0-2 FT	6-8 FT	0-2 FT	8-10 FT	0-2 FT	6-8 FT	0-2 FT	6-8 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	8-10 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	11-12 FT
					1/4/00		1/5/00		1/5/00		1/5/00		1/6/00		1/6/00		1/6/00		1/6/00		1/6/00		1/6/00		1/7/00		2/2/00		1/7/00		1/19/00		3/7/00		3/7/00		2003
Volatile Organic Compounds (VOCs)																																			
1,2,4-Trimethylbenzene	NE	NE	10,000	mg/kg	ND	ND	ND	2.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.052	ND	ND	ND	ND	ND	ND	ND	ND	0.53	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NE	NE	10,000	mg/kg	ND	ND	ND	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.4	ND	ND	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	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
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
Acetone	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	0.088	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.3	200	10,000	mg/kg	0.085	0.069	ND	**4.8**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.9	ND	ND	ND	ND	ND
Carbon Disulfide	NE	NE	10,000	mg/kg	ND	ND	ND	0.13	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
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	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	62	10,000	10,000	mg/kg	0.049	0.038	ND	0.25	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
Isopropylbenzene	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
Methylene Chloride	NE	760	10,000	mg/kg	0.24	0.16	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
Naphthalene	NE	10,000	10,000	mg/kg	ND	ND	ND	140	ND	ND	ND	ND	ND	0.063	ND	0.052	ND	ND	ND	0.64	ND	0.076	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	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	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	0.046	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
sec-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
Styrene	64	1,900	10,000	mg/kg	ND	ND	ND	1.2	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	ND	ND	ND
Toluene	54	10,000	10,000	mg/kg	0.044	ND	ND	4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.17	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	0.033	0.027	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA
Xylenes (Total)	NE	10,000	10,000	mg/kg	0.074	ND	ND	5.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.7	ND	ND	ND	ND	ND
Total Petroleum Hydrocarbons (TPH)																																				
Hydrocarbon Content	2,500	2,500	30,000	mg/kg	ND	160	ND	**3600**	ND	ND	ND	200	ND	ND	ND	1000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1700	1200	ND	ND	ND	ND	ND
Inorganic Compounds																																				
Ammonia	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	NA	NA	NA	NA	NA	NA
Total Cyanide	NE	10,000	10,000	mg/kg	2.2	ND	ND	2.6	ND	1.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.1	ND	ND	ND	ND	NA
Antimony	NE	820	10,000	mg/kg	0.34	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	NA
Arsenic	NE	7	10,000	mg/kg	2.1	ND	2.9	ND	5.3	ND	5.9	ND	ND	ND	ND	ND	5.2	ND	5.7	ND	**9.9**	ND	3	ND	2.8	ND	**7.1**	ND	5.1	ND	5	ND	3.4	ND	2.6	ND	NA
Barium	NE	10,000	10,000	mg/kg	13.1	ND	42.5	ND	27.9	ND	23.5	ND	ND	ND	ND	ND	49.3	ND	ND	ND	ND	ND	25.3	ND	20.5	ND	ND	ND	28.8	ND	47	ND	27.4	ND	ND	ND	NA
Beryllium	NE	1.5	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	0.22	ND	ND	ND	NA
Cadmium	NE	1,000	10,000	mg/kg	0.39	ND	ND	ND	0.57	ND	ND	ND	ND	ND	ND	ND	1.2	ND	1.2	ND	1	ND	0.52	ND	ND	ND	0.86	ND	0.56	ND	1.5	ND	0.4	ND	ND	ND	NA
Chromium	NE	10,000	10,000	mg/kg	5.3	ND	3.2	ND	6.4	ND	6.9	ND	3	ND	4.7	ND	15.2	ND	14.2	ND	11.5	ND	6	ND	4.9	ND	7.5	ND	6.4	ND	11.4	ND	3.3	ND	4.2	ND	NA
Copper	NE	10,000	10,000	mg/kg	7.9	ND	12.5	ND	13.6	ND	14.9	ND	ND	ND	6.1	ND	14.2	ND	18.2	ND	25.8	ND	9.4	ND	8.4	ND	19.4	ND	15.7	ND	26.6	ND	3.7	ND	9.4	ND	NA
Iron	NE	NE	NE	mg/kg	5350	15100	3360	11200	8540	9440	7790	8210	4810	3810	5200	10400	9550	6550	18300	4410	15000	18700	7010	5620	6700	3960	9780	19500	8100	4850	15500	6700	5990	15800	8980	10900	NA
Lead	NE	500	10,000	mg/kg	**642**	ND	19.2	ND	91.7	ND	137	ND	7	ND	14.8	ND	96.6	ND	11.5	ND	174	ND	163	ND	39.9	ND	159	ND	88.8	ND	84.1	ND	14.1	ND	40.6	ND	NA
Mercury	NE	610	10,000	mg/kg	ND	ND	ND	ND	ND	ND	0.065	ND	ND	ND	ND	ND	0.099	ND	ND	ND	ND	ND	0.068	ND	0.091	ND	0.087	ND	0.076	ND	0.077	ND	ND	ND	0.12	ND	NA
Nickel	NE	10,000	10,000	mg/kg	4	ND	6.7	ND	9.2	ND	6.8	ND	ND	ND	5.7	ND	12	ND	20	ND	17.2	ND	6.4	ND	5.2	ND	9.7	ND	8.5	ND	17.6	ND	4.5	ND	ND	ND	NA
Selenium	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	ND	ND	ND	2.3	ND	2.3	ND	0.04	ND	8.1	ND	8.2	ND	3.1	ND	3.1	ND	ND	ND	3.8	ND	11.8	ND	ND	ND	ND	ND	NA
Silver	NE	10,000	10,000	mg/kg	0.85	ND	NA	ND	NA	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	ND	NA
Reactive Sulfide	NE	NE	NE	mg/kg	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA
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	NA
Zinc	NE	10,000	10,000	mg/kg	25.8	ND	15.2	ND	28.7	ND	20.7	ND	12.6	ND	12.6	ND	33.5	ND	48.7	ND	44.3	ND	31.9	ND	19.2	ND	33.6	ND	31.8	ND	64.5	ND	62.1	ND	20.3	ND	NA
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	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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
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	NA
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	ND	ND	ND	NA
Aroclor 1254	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	NA
4,4-DDD	NE	NE	10,000	mg/kg	0.012	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
4,4-DDE	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
4,4-DDT	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0039	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Aldrin	NE	NE	10,000	mg/kg	0.0047	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
alpha-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
alpha-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
beta-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
delta-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Dieldrin	NE	0.4	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Endosulfan I	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	F06		F07		F08		F09		F13		F14		F15		F16		F17		F18		F20		F28		F33		F53		F58		F60		B-1C
					0-2 FT	8-10 FT	0-2 FT	8-10 FT	0-2 FT	8-10 FT	0-2 FT	6-8 FT	0-2 FT	8-10 FT	0-2 FT	6-8 FT	0-2 FT	6-8 FT	0-2 FT	6-8 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	8-10 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	11-12 FT
					1/4/00		1/5/00		1/5/00		1/5/00		1/6/00		1/6/00		1/6/00		1/6/00		1/6/00		1/6/00		1/7/00		2/2/00		1/7/00		1/19/00		3/7/00		3/7/00		2003
Polychlorinated Biphenyls (PCBs) and Pesticides																																				
Endosulfan II	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.02	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Endosulfan sulfate	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Endrin	NE	NE	10,000	mg/kg	0.022	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Endrin aldehyde	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Endrin ketone	NE	NE	10,000	mg/kg	0.008	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
gamma-BHC	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
gamma-Chlordane	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	0.0063	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Heptachlorepoxide	NE	NE	10,000	mg/kg	0.0047	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Methoxychlor	NE	NE	10,000	mg/kg	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	ND	NA	NA
Semi-Volatile Organic Compounds (SVOCs)																																				
1,1-Biphenyl	NE	10000	10000	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	NA	NA	NA
2-Methylnaphthalene	NE	10,000	10,000	mg/kg	ND	ND	ND	230	0.51	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.58	ND	ND	ND	ND	ND	ND
Acenaphthene	NE	10,000	10,000	mg/kg	1.2	ND	ND	53	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9	ND	ND	ND	ND	ND
Acenaphthylene	NE	10,000	10,000	mg/kg	0.61	ND	ND	370	0.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND
Anthracene	NE	10,000	10,000	mg/kg	3	ND	0.54	570	1.4	ND	ND	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.66	ND	ND	ND	ND	ND	ND	ND	ND	2	10	ND	ND	ND	ND	ND
Benzo(a)anthracene	NE	7.8	10,000	mg/kg	6.2	ND	1.2	**760**	2.6	ND	ND	**75**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.2	ND	0.41	ND	4.3	**17**	ND	ND	ND	ND	ND
Benzo(a)pyrene	NE	0.8	10,000	mg/kg	**5.6**	ND	0.73	**630**	**2**	ND	ND	**56**	ND	ND	ND	ND	ND	ND	ND	ND	ND	**2.3**	ND	ND	ND	ND	**2.1**	ND	ND	ND	**3.8**	**14**	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	NE	7.8	10,000	mg/kg	6.7	ND	1	**790**	3	ND	ND	**67**	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.2	ND	ND	ND	ND	3.7	ND	ND	ND	5.5	**16**	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	NE	10,000	10,000	mg/kg	3	ND	ND	160	1	ND	ND	24	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	4.4	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	NE	78	10,000	mg/kg	3.1	ND	0.52	**270**	1.1	ND	ND	30	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	1.2	ND	ND	ND	1.8	5	ND	ND	ND	ND	ND
bis(2-Ethylhexyl)phthalate	NE	410	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	NA
Carbazole	NE	NE	10,000	mg/kg	1	ND	ND	280	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	NA
Chrysene	NE	780	10,000	mg/kg	6	ND	ND	540	ND	ND	ND	56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.4	ND	0.47	ND	ND	15	ND	ND	0.47	ND	ND
Dibenzo(a,h)Anthracene	NE	0.8	10,000	mg/kg	**0.83**	ND	ND	**77**	ND	ND	ND	**8.3**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3.6**	ND	ND	ND	ND	ND	ND	ND
Dibenzofuran	NE	NE	10,000	mg/kg	0.78	ND	ND	250	ND	ND	ND	8.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.72	ND	ND	ND	ND	ND	NA
Fluoranthene	NE	10,000	10,000	mg/kg	15	ND	ND	1400	5	ND	ND	140	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.8	0.66	ND	0.39	ND	3.1	ND	0.68	ND	8	30	ND	ND	0.78	ND	ND
Fluorene	NE	10,000	10,000	mg/kg	1.1	ND	ND	400	ND	ND	ND	12	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.4	3.8	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)Pyrene	NE	7.8	10,000	mg/kg	3.2	ND	ND	**330**	1.1	ND	ND	**28**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.3	ND	ND	ND	ND	5	ND	ND	ND	ND	ND
Naphthalene	NE	10,000	10,000	mg/kg	0.54	ND	ND	630	1.3	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
Phenanthrene	NE	10,000	10,000	mg/kg	13	ND	2.3	1600	4.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND	ND	ND	ND	0.51	ND	ND	ND	1.2	ND	ND	ND	5.8	24	ND	ND	0.5	ND	ND
Pyrene	NE	10,000	10,000	mg/kg	11	ND	1.8	1000	3.5	ND	ND	110	ND	ND	ND	ND	0.43	ND	ND	ND	ND	ND	0.58	ND	ND	ND	3.3	ND	0.55	ND	6.5	34	ND	ND	ND	ND	ND

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.

Table only shows explorations within the Limits of Work

ND - Not Detected

NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	B-2C	B-8	SS-11	SS-14	VHB TP-100	VHB TP-101	VHB TP-102	GZ-321	GZ-322S S-2	GZ-323S S-2	GZ-324 S-2	SS-301	SS-302	SS-303	SS-304	SS-305	SS-306	SS-307	SS-308	SS-309	SS-310
					5.5-6.5 FT	1-2 FT	0-0.5 FT	0-0.5 FT	4-5 FT	5-8 FT	6 FT	2-4 FT	2-4 FT	2-4 FT	2-4 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT
					2003	2003	2003	2003	2008	2008	2008	5/20/14	5/20/14	5/20/14	5/20/14	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015
Volatile Organic Compounds (VOCs)																									
1,2,4-Trimethylbenzene	NE	NE	10,000	mg/kg	67.3	182	NA	NA	0.0157	0.961	74.2	ND	0.0354	ND	7.39	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	NE	NE	10,000	mg/kg	31.2	55.1	NA	NA	ND	0.421	32.4	ND	0.0205	ND	3.19	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Butanone	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
4-Isopropyltoluene	NE	NE	10,000	mg/kg	0.9	NA	NA	NA	ND	0.263	0.724	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acetone	NE	10,000	10,000	mg/kg	ND	ND	NA	NA	ND	ND	0.483	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	4.3	200	10,000	mg/kg	**40**	**27.2**	NA	NA	0.0186	1.79	**23**	ND	0.0228	ND	0.146	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide	NE	NE	10,000	mg/kg	1.1	5	NA	NA	ND	ND	0.388	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chloroform	NE	940	10,000	mg/kg	ND	NA	NA	NA	ND	ND	ND	0.0119	0.0205	0.013	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	62	10,000	10,000	mg/kg	47.5	19.7	NA	NA	ND	1.59	59.5	ND	0.0217	ND	4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Isopropylbenzene	NE	10,000	10,000	mg/kg	1.4	NA	NA	NA	ND	0.099	1.54	ND	ND	ND	0.213	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methylene Chloride	NE	760	10,000	mg/kg	ND	ND	NA	NA	0.126	0.182	0.316	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NE	10,000	10,000	mg/kg	717	9650	NA	NA	0.294	86.6	759	0.0435	0.48	ND	56.2	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Butylbenzene	NE	NE	10,000	mg/kg	ND	NA	NA	NA	ND	ND	ND	ND	ND	ND	0.269	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NE	NE	10,000	mg/kg	6.2	4.58	NA	NA	ND	0.144	5.62	ND	ND	ND	0.752	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	10,000	mg/kg	0.5	NA	NA	NA	ND	0.0326	0.774	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Styrene	64	1,900	10,000	mg/kg	ND	2.78	NA	NA	ND	0.0714	35.9	ND	0.0354	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Toluene	54	10,000	10,000	mg/kg	52.5	**194**	NA	NA	0.0735	0.117	222	ND	0.106	ND	0.146	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trichlorofluoromethane	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
Xylenes (Total)	NE	10,000	10,000	mg/kg	320	336	NA	NA	ND	0.302	438	ND	0.129	ND	17.9	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Petroleum Hydrocarbons (TPH)																									
Hydrocarbon Content	2,500	2,500	30,000	mg/kg	1874	**40000**	NA	NA	867	577	2000	ND	1090	ND	**4930**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Inorganic Compounds																									
Ammonia	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
Total Cyanide	NE	10,000	10,000	mg/kg	NA	61.2	NA	NA	NA	NA	75.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	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	NA	NA	NA
Arsenic	NE	7	10,000	mg/kg	NA	**47.3**	NA	NA	NA	NA	**13.6**	**10.3**	**12**	**12.6**	**12**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Barium	NE	10,000	10,000	mg/kg	NA	NA	NA	NA	NA	NA	28.7	17.2	26.3	18.6	32.5	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	21.7	5.7	4	13.6	7.2	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	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Lead	NE	500	10,000	mg/kg	NA	91.9	NA	NA	NA	NA	132	42.7	86.6	8.6	87.2	ND	**2090**	**2040**	448	**1610**	ND	**1390**	**5650**	**4490**	**2880**
Mercury	NE	610	10,000	mg/kg	NA	NA	NA	NA	NA	NA	1.18	ND	0.316	ND	0.98	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
Selenium	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	ND	0.55	0.81	0.62	0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Reactive Sulfide	NE	NE	NE	mg/kg	NA	NA			NA	NA	NA	ND	ND	ND	ND	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
Leachable Metals																									
TCLP Lead	NE	NE	NE	mg/L	NA	NA	NA	NA	NA	NA	0.029	ND	ND	ND	0.154	ND	4.42	5.12	11.5	3.35	ND	4.75	36	12.6	16.7
SPLP Lead	NE	NE	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.564	0.232	NA	NA	NA	0.843	0.531	2.93
Polychlorinated Biphenyls (PCBs) and Pesticides																									
Aroclor 1248	10	10	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
Aroclor 1242	10	10	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
Aroclor 1254	10	10	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
4,4-DDD	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
4,4-DDE	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
4,4-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
Aldrin	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
alpha-BHC	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
alpha-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
beta-BHC	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
delta-BHC	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
Dieldrin	NE	0.4	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
Endosulfan I	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

Table 1

Analytical Soil Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	B-2C	B-8	SS-11	SS-14	VHB TP-100	VHB TP-101	VHB TP-102	GZ-321	GZ-322S S-2	GZ-323S S-2	GZ-324 S-2	SS-301	SS-302	SS-303	SS-304	SS-305	SS-306	SS-307	SS-308	SS-309	SS-310
					5.5-6.5 FT	1-2 FT	0-0.5 FT	0-0.5 FT	4-5 FT	5-8 FT	6 FT	2-4 FT	2-4 FT	2-4 FT	2-4 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT	0-1 FT
					2003	2003	2003	2003	2008	2008	2008	5/20/14	5/20/14	5/20/14	5/20/14	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015	2014-2015
Polychlorinated Biphenyls (PCBs) and Pesticides																									
Endosulfan II	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
Endosulfan sulfate	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
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
Endrin aldehyde	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
Endrin ketone	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
gamma-BHC	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
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
Heptachlorepoxide	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
Methoxychlor	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
Semi-Volatile Organic Compounds (SVOCs)																									
1,1-Biphenyl	NE	10000	10000	mg/kg	NA	NA	NA	NA	NA	NA	2.23	ND	ND	ND	0.565	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NE	10,000	10,000	mg/kg	ND	ND	ND	ND	ND	0.436	27.1	ND	0.516	ND	8.33 D	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthene	NE	10,000	10,000	mg/kg	ND	35	0.06	ND	ND	ND	ND	ND	ND	ND	0.447	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Acenaphthylene	NE	10,000	10,000	mg/kg	ND	61	0.24	0.14	ND	0.479	2.73	ND	1.1	ND	2.63	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Anthracene	NE	10,000	10,000	mg/kg	ND	ND	0.44	0.28	ND	0.416	3.24	ND	ND	ND	0.965	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)anthracene	NE	7.8	10,000	mg/kg	ND	ND	1.7	0.73	ND	0.674	3	ND	0.558	ND	1.94	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(a)pyrene	NE	0.8	10,000	mg/kg	ND	ND	**1.6**	0.74	**1.13**	0.454	**1.92**	ND	0.261	ND	**1**	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	NE	7.8	10,000	mg/kg	ND	ND	1.6	0.79	2.91	0.638	2.54	ND	1.63	ND	3.35	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	NE	10,000	10,000	mg/kg	ND	ND	0.93	0.5	ND	ND	ND	ND	ND	ND	0.425	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	NE	78	10,000	mg/kg	ND	ND	1.4	0.55	1.92	ND	ND	ND	0.638	ND	1.02	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
bis(2-Ethylhexyl)phthalate	NE	410	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
Carbazole	NE	NE	10,000	mg/kg	NA	NA	NA	NA	NA	NA	ND	ND	ND	ND	0.518	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NE	780	10,000	mg/kg	ND	ND	2	0.88	2.25	0.717	3.28	ND	1.05	ND	2.88	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzo(a,h)Anthracene	NE	0.8	10,000	mg/kg	ND	ND	0.43	0.2	ND	ND	ND	ND	ND	ND	0.244	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dibenzofuran	NE	NE	10,000	mg/kg	NA	NA	NA	NA	NA	NA	3.17	ND	ND	ND	0.528	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NE	10,000	10,000	mg/kg	14.2	76	3.4	1.08	2.4	1.4	8.04	ND	0.6	ND	2.76	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fluorene	NE	10,000	10,000	mg/kg	7.3	96	0.12	0.05	ND	0.655	5.39	ND	ND	ND	0.764	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)Pyrene	NE	7.8	10,000	mg/kg	ND	ND	0.97	0.49	ND	ND	ND	ND	0.433	ND	0.528	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NE	10,000	10,000	mg/kg	248	**15400**	0.09	0.17	ND	25.4	144	ND	1.55	ND	55.7	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Phenanthrene	NE	10,000	10,000	mg/kg	22	199	2	0.41	ND	1.56	12.5	ND	ND	ND	2.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Pyrene	NE	10,000	10,000	mg/kg	12.2	66	2.8	0.89	1.94	1.25	5.99	ND	0.617	ND	2.23	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Data is compared to RIDEM Method 1 Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.
Table only shows explorations within the Limits of Work
ND - Not Detected
NA - Not Analyzed

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Gasholders decommissioning and demolition. Sample may not be representative of current conditions.

Table 2 - MHA Stockpile Soil Analysis
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM Industrial / Commercial Direct Exposure Criteria (I/C-DEC)	RIDEM GB Leachability Criteria	RIDEM UCL	RCRA Hazardous Waste Criteria	Units	SPC-1 1101-00120-001 01/25/2011		SPC-2 1101-00120-002 01/25/2011		SPC-3 1101-00120-003 01/25/2011		SPC-4 1101-00120-004 01/25/2011		SPC-5 1101-00120-005 01/26/2011		SPC-6 1101-00120-006 01/26/2011		SPC-7 1101-00120-007 01/26/2011		SPC-8 1101-00120-008 01/25/2011		SPC-9 1101-00120-009 01/26/2011		SPC-10 1101-00120-010 01/26/2011		SPC-11 1101-00120-011 01/26/2011		SPC-12 1101-00120-012 01/26/2011	
						Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
EPA Method 8260B VOLATILE ORGANICS																													
1,1,1,2-Tetrachloroethane	220,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,1,1-Trichloroethane	10,000,000	160,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,1,2,2-Tetrachloroethane	29,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,1,2-Trichloroethane	100,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,1-Dichloroethane	10,000,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,1-Dichloroethene	9,500	700	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,1-Dichloropropene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2,3-Trichlorobenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2,3-Trichloropropane	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2,4-Trichlorobenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2,4-Trimethylbenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2-Dibromo-3-chloropropane	4,100	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
1,2-Dibromoethane (EDB)	70	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
1,2-Dichlorobenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2-Dichloroethane	63,000	2,300	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,2-Dichloropropane	84,000	70,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,3,5-Trimethylbenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,3-Dichlorobenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,3-Dichloropropane	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
1,4-Dichlorobenzene	240,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
2,2-Dichloropropane	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
2-Butanone (MEK)	10,000,000	NE	10,000,000	NE	µg/kg	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300
2-Chlorotoluene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
2-Hexanone	NE	NE	10,000,000	NE	µg/kg	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300
4-Chlorotoluene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
4-Methyl-2-pentanone (MIBK)	10,000,000	NE	10,000,000	NE	µg/kg	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300
Acetone	10,000,000	NE	10,000,000	NE	µg/kg	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300	<	1300
Benzene	200,000	4,300	10,000,000	NE	µg/kg	<	50	<	50	<	50	110	50	<	50	<	50	51	50	<	50	<	50	<	50	160	50	57	50		
Bromobenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Bromochloromethane	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Bromodichloromethane	92,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Bromoform	720,000	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Bromomethane	2,900,000	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Carbon tetrachloride	44,000	5,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Chlorobenzene	10,000,000	100,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Chloroethane	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Chloroform	940,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Chloromethane	NE	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
cis-1,2-Dichloroethene	10,000,000	60,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
cis-1,3-Dichloropropene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Dibromochloromethane	68,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Dibromomethane	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Dichlorodifluoromethane	NE	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Dichloromethane	760,000	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Diethylether	NE	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Ethylbenzene	10,000,000	62,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Hexachlorobutadiene	73,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Isopropylbenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
m&p-Xylene	10,000,000	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Methyl tert-butyl ether	10,000,000	100,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Naphthalene	10,000,000	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	3800	100	<	100	<	100	130	100	<	100	<	100	<	100	170	100	<	100		
n-Butylbenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
n-Propylbenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
o-Xylene	10,000,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
p-Isopropyltoluene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Pyridine	NE	NE	10,000,000	NE	µg/kg	<	6900	<	7300	<	7300	<	36000	<	7300	<	7300	<	7300	<	50	<	50	<	50	<	50	<	50	<	50
sec-Butylbenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Styrene	1,900,000	64,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
tert-Butylbenzene	NE	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Tetrachloroethene	110,000	4,200	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Tetrahydrofuran	NE	NE	10,000,000	NE	µg/kg	<	500	<	500	<	500	<	500	<	500	<	500	<	500	<	500	<	500	<	500	<	500	<	500	<	500
Toluene	10,000,000	54,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	60	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
trans-1,2-Dichloroethene	10,000,000	92,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
trans-1,3-Dichloropropene	NE	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Trichloroethene	520,000	20,000	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50
Trichlorofluoromethane	NE	NE	10,000,000	NE	µg/kg	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100	<	100
Vinyl chloride	3,000	NE	10,000,000	NE	µg/kg	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50	<	50

Table 2 - MHA Stockpile Soil Analysis
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM Industrial / Commercial Direct Exposure Criteria (I/C-DEC)	RIDEM GB Leachability Criteria	RIDEM UCL	RCRA Hazardous Waste Criteria	Units	SPC-1 1101-00120-001 01/25/2011		SPC-2 1101-00120-002 01/25/2011		SPC-3 1101-00120-003 01/25/2011		SPC-4 1101-00120-004 01/25/2011		SPC-5 1101-00120-005 01/26/2011		SPC-6 1101-00120-006 01/26/2011		SPC-7 1101-00120-007 01/26/2011		SPC-8 1101-00120-008 01/25/2011		SPC-9 1101-00120-009 01/26/2011		SPC-10 1101-00120-010 01/26/2011		SPC-11 1101-00120-011 01/26/2011		SPC-12 1101-00120-012 01/26/2011	
						Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
EPA Method 8270C SEMI-VOLATILE ORGANICS																													
1,2,4-Trichlorobenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
1,2-Dichlorobenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
1,3-Dichlorobenzene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
1,4-Dichlorobenzene	240000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2,4,5-Trichlorophenol	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2,4,6-Trichlorophenol	520000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2,4-Dichlorophenol	6,100,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2,4-Dimethylphenol	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2,4-Dinitrophenol	4,100,000	NE	10,000,000	NE	µg/kg	<	6900	<	7300	<	7300	<	36000	<	7300	<	7300	<	7300	<	7300	<	15000	<	7300	<	7300	<	7300
2,4-Dinitrotoluene	8400	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2,6-Dinitrotoluene	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2-Chloronaphthalene	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2-Chlorophenol	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2-Methylnaphthalene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	19000	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2-Methylphenol (o-cresol)	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
2-Nitroaniline	NE	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
2-Nitrophenol	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
3&4-Methylphenol (m & p cresol)	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
3,3'-Dichlorobenzidine	13000	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
3-Nitroaniline	NE	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
4,6-Dinitro-2-Methylphenol	NE	NE	10,000,000	NE	µg/kg	<	3500	<	3600	<	3600	<	18000	<	3600	<	3600	<	3600	<	3600	<	7300	<	3600	<	3600	<	3600
4-Bromophenyl Phenyl Ether	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
4-Chloro-3-Methylphenol	NE	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
4-Chloroaniline	8,200,000	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
4-Chlorophenyl Phenyl Ether	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
4-Nitroaniline	NE	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
4-Nitrophenol	NE	NE	10,000,000	NE	µg/kg	<	3500	<	3600	<	3600	<	18000	<	3600	<	3600	<	3600	<	3600	<	7300	<	3600	<	3600	<	3600
Acenaphthene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Acenaphthylene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	1000	730	1600	730	32000	3600	1800	730	1700	730	2900	730	2900	730	2000	1500	1300	730	810	730	1800	730
Anthracene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	1200	730	45000	3600	740	730	1500	730	1600	730	1700	730	1700	1500	<	730	<	730	930	730
Benzo [a] Anthracene	7800	NE	10,000,000	NE	µg/kg	1200	690	1900	730	3400	730	**56000**	3600	2300	730	4800	730	3600	730	3800	730	4700	1500	2600	730	1600	730	2700	730
Benzo [a] Pyrene	800	NE	10,000,000	NE	µg/kg	**890**	690	**1200**	730	**2000**	730	**21000**	3600	**1400**	730	**2600**	730	**1600**	730	**1900**	730	**2200**	1500	**1200**	730	**1200**	730	**1100**	730
Benzo [b] Fluoranthene	7800	NE	10,000,000	NE	µg/kg	1600	690	2000	730	3100	730	**38000**	3600	2400	730	4000	730	2300	730	3000	730	3800	1500	2300	730	1900	730	2400	730
Benzo [g,h,i] Perylene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	1200	730	8800	3600	930	730	1100	730	830	730	1000	730	<	1500	750	730	930	730	<	730
Benzo [k] Fluoranthene	78000	NE	10,000,000	NE	µg/kg	<	690	730	730	1400	730	14000	3600	940	730	2000	730	1500	730	1000	730	1600	1500	900	730	810	730	740	730
Benzoic Acid	NE	NE	10,000,000	NE	µg/kg	<	6900	<	7300	<	7300	<	36000	<	7300	<	7300	<	7300	<	7300	<	15000	<	7300	<	7300	<	7300
Benzyl Alcohol	NE	NE	10,000,000	NE	µg/kg	<	1400	<	1500	<	1500	<	7200	<	1500	<	1500	<	1500	<	1500	<	2900	<	1500	<	1500	<	1500
bis(2-Chloroethoxy)Methane	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
bis(2-Chloroethyl)Ether	5200	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
bis(2-Chloroisopropyl)Ether	82000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
bis(2-Ethylhexyl)Phthalate	410000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Butylbenzylphthalate	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Carbazole	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	18000	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Chrysene	780000	NE	10,000,000	NE	µg/kg	890	690	1700	730	3200	730	49000	3600	2200	730	6200	730	3700	730	3700	730	4200	1500	2400	730	1300	730	3100	730
Dibenzo [a,h] Anthracene	800	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	**4000**	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Dibenzofuran	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	25000	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Diethylphthalate	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Dimethylphthalate	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
di-n-Butylphthalate	NE	NE	10,000,000	NE	µg/kg	<	1100	<	1100	<	1100	<	5500	<	1100	<	1100	<	1100	<	1100	<	2200	<	1100	<	1100	<	1100
di-n-Octylphthalate	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Fluoranthene	10,000,000	NE	10,000,000	NE	µg/kg	1700	690	3100	730	6400	730	130000	3600	3900	730	6800	730	5700	730	5800	730	8900	1500	4400	730	2300	730	4400	730
Fluorene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	39000	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Hexachlorobenzene	3600	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Hexachlorobutadiene	73000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Hexachlorocyclopentadiene	NE	NE	10,000,000	NE	µg/kg	<	3500	<	3600	<	3600	<	18000	<	3600	<	3600	<	3600	<	3600	<	7300	<	3600	<	3600	<	3600
Hexachloroethane	410000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Indeno [1,2,3-cd] Pyrene	7800	NE	10,000,000	NE	µg/kg	<	690	<	730	1200	730	**9800**	3600	890	730	1400	730	840	730	910	730	<	1500	<	730	840	730	800	730
Isophorone	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Naphthalene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	31000	3600	2200	730	740	730	830	730	770	730	<	1500	<	730	1100	730	1100	730
Nitrobenzene	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
n-Nitrosodimethylamine	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
n-Nitrosodi-n-Propylamine	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
n-Nitrosodiphenylamine	NE	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Pentachlorophenol	48000	NE	10,000,000	NE	µg/kg	<	3500	<	3600	<	3600	<	18000	<	3600	<	3600	<	3600	<	3600	<	7300	<	3600	<	3600	<	3600
Phenanthrene	10,000,000	NE	10,000,000	NE	µg/kg	<	690	1600	730	3600	730	150000	3600	2200	730	4200	730	2600	730	2600	730	4600	1500	1800	730	1300	730	2100	730
Phenol	10,000,000	NE	10,000,000	NE	µg/kg	<	690	<	730	<	730	<	3600	<	730	<	730	<	730	<	730	<	1500	<	730	<	730	<	730
Pyrene	10,000,000	NE	10,000,000	NE	µg/kg	1600	690	2700	730	5600	730	99000	3600	3600	730	6000	730	8600	730	8400	730	7800	1500	4000	730	2100	730	4800	730

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						Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL	Result	RL
EPA Method 8100M TOTAL PETROLEUM HYDROCARBON																													
Hydrocarbon Content (TPH)	2,500	2,500	30,000	NE	mg/kg	350	52	340	53	460	54	1300	54	330	53	420	54	830	54	520	54	410	54	530	54	370	54	420	54
EPA Method 6010C/7471B Method SW-846 9010 METALS																													
Arsenic	7	NE	10,000	NE	mg/kg	2.5	0.59	2.3	0.56	4.4	0.85	6.4	0.85	3.7	0.51	4.4	0.82	5.7	0.75	3.7	0.74	4.5	0.61	2.5	0.73	5.1	0.96	5.4	0.86
Barium	10,000	NE	10,000	NE	mg/kg	19	0.30	21	0.28	34	0.43	39	0.43	33	0.25	28	0.41	40	0.37	29	0.37	25	0.30	26	0.36	43	0.48	33	0.43
Cadmium	1,000	NE	10,000	NE	mg/kg	<	0.30	<	0.28	<	0.43	<	0.43	<	0.25	<	0.41	<	0.37	<	0.37	<	0.30	<	0.36	<	0.48	<	0.43
Chromium	10,000	NE	10,000	NE	mg/kg	3.7	0.30	5.9	0.28	7.8	0.43	9.4	0.43	9.9	0.25	8.0	0.41	12	0.37	6.7	0.37	11	0.30	8.6	0.36	11	0.48	12	0.43
Lead	500	NE	10,000	NE	mg/kg	18	0.59	21	0.56	99	0.85	320	0.85	30	0.51	51	0.82	160	0.75	140	0.74	42	0.61	31	0.73	120	0.96	180	0.86
Mercury	610	NE	10,000	NE	mg/kg	0.049	0.012	0.073	0.012	0.81	0.011	0.15	0.012	0.080	0.011	0.16	0.012	0.36	0.012	0.15	0.012	0.16	0.011	0.077	0.011	0.34	0.011	0.33	0.012
Selenium	10,000	NE	10,000	NE	mg/kg	2.1	1.5	3.0	1.4	3.2	2.1	3.6	2.1	2.4	1.3	3.6	2.0	3.9	1.9	2.4	1.9	3.2	1.5	2.8	1.8	3.0	2.4	3.1	2.2
Silver	10,000	NE	10,000	NE	mg/kg	<	0.35	<	0.31	<	0.34	<	0.41	<	0.37	<	0.39	<	0.40	<	0.39	<	0.37	<	0.25	<	0.40	<	0.39
Total Cyanide	NE	NE	10,000	NE	mg/kg	<	9.9	<	11	<	10	<	9.1	<	9.7	<	9.6	25	9.9	<	9.8	<	9.9	<	11	<	11	<	10
Total Sulfur	NE	NE	NE	NE	%	<	0.02	<	0.01	<	0.01	0.03	0.01	<	0.02	0.02	0.02	<	0.02	<	0.02	<	0.02	0.02	0.02	0.02	0.02	<	0.01
TCLP Lead	NE	NE	NE	5	mg/L	NA		NA		NA		0.51	0.015	NA		NA		0.33	0.015	0.26	0.015	NA		NA		0.21	0.015	0.35	0.015

Notes
NE = Not Established
NA = Not Analyzed
Bolded values indicates the concentration exceeds the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).
Cells highlighted in blue had detection limits in excess of RIDEM Method 1 Criteria or RO.
Concentrations underlined exceed the RIDEM Method 1 GB Leachability Criteria.
A concentration with a bold border exceeds the Upper Concentration Limit.
Red text indicate that the concentration exceeds the RCRA Hazardous Waste Criteria

Table 3
Summary of Groundwater and NAPL Measurements
Holder 18/21 Capping Project
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-10	19.45	19.10	15.88	Standpipe	Shallow	1/15/2002	14.77	5 - 15	trace - 0.02	NP	trace	11.7	-	17.04	7.40	trace	NP	7.40	12.22	12.23	-	17.04	6.87	0.01	NP	6.88
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
NG	VHB-8R	14.85	14.06	12.60	Standpipe	Shallow	6/4/2014	12.29	2 - 12	NP	NP	-	5.21	-	11.5	8.85	NP	NP	8.85	-	5.74	-	11.5	8.32	NP	NP	8.32
NG	GZ-320D	19.25	18.94	16.03	Standpipe	Deep	6/5/2014	30.19	20 - 30	NP	NP																
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																

Notes
Elevations are relative to NAVD 1988 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.
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 3
Summary of Groundwater and NAPL Measurements
Holder 18/21 Capping Project
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-10	19.45	19.10	15.88	Standpipe	Shallow	1/15/2002	14.77	5 - 15	trace - 0.02	NP	trace	11.83	-	17.16	7.27	trace	NP	7.27	12.45	12.47	-	17.16	6.63	0.02	NP	6.65
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
NG	VHB-8R	14.85	14.06	12.60	Standpipe	Shallow	6/4/2014	12.29	2 - 12	NP	NP	-	5.4	-	11.6	8.66	NP	NP	8.66	-	5.9	-	11.6	8.16	NP	NP	8.16
NG	GZ-320D	19.25	18.94	16.03	Standpipe	Deep	6/5/2014	30.19	20 - 30	NP	NP																
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																

Notes
Elevations are relative to NAVD 1988 Datum
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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.

Table 3
Summary of Groundwater and NAPL Measurements
Holder 18/21 Capping Project
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-10	19.45	19.10	15.88	Standpipe	Shallow	1/15/2002	14.77	5 - 15	trace - 0.02	NP	-	12.81	-	17.15	6.29	NP	NP	6.29	13.24	13.25	-	15.2	5.85	0.01	NP	5.86
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
NG	VHB-8R	14.85	14.06	12.60	Standpipe	Shallow	6/4/2014	12.29	2 - 12	NP	NP	-	5.25	-	10	8.81	NP	NP	8.81								
NG	GZ-320D	19.25	18.94	16.03	Standpipe	Deep	6/5/2014	30.19	20 - 30	NP	NP																
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																

Notes
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Table 3
Summary of Groundwater and NAPL Measurements
Holder 18/21 Capping Project
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-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								
NG	VHB-10	19.45	19.10	15.88	Standpipe	Shallow	1/15/2002	14.77	5 - 15	trace - 0.02	NP	Trace	12.08	-	18	7.02	Trace	NP	6.08	Trace	12.41	-	18	6.69	Trace	NP	6.69
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								
NG	VHB-8R	14.85	14.06	12.60	Standpipe	Shallow	6/4/2014	12.29	2 - 12	NP	NP	-	6.74	-	13.75	7.32	NP	NP	7.32	-	7.06	-	13.74	7.00	NP	NP	7.00
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-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																

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.

Table 3
Summary of Groundwater and NAPL Measurements
Holder 18/21 Capping Project
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-11	13.27	13.04	10.57	Standpipe	Shallow	9/12/1994	12.53	4 - 14	NP	NP									-	7.24	-	14.98	5.80	NP	NP	5.80
NG	VHB-10	19.45	19.10	15.88	Standpipe	Shallow	1/15/2002	14.77	5 - 15	trace - 0.02	NP	-	12.66	-	17.94	6.44	NP	NP	6.44	-	12.88	-	18	6.22	NP	NP	6.22
NG	VHB-18	15.54	15.35	10.61	Standpipe	Shallow	1/21/2003	12.26	6 - 16	NP	NP									-	9.34	-	17	6.01	NP	NP	6.01
NG	VHB-8R	14.85	14.06	12.60	Standpipe	Shallow	6/4/2014	12.29	2 - 12	NP	NP	-	7.41	-	14.00	6.65	NP	NP	6.65	-	7.74	-	13.75	6.32	NP	NP	6.32
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-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																

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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.

Table 3
Summary of Groundwater and NAPL Measurements
Holder 18/21 Capping Project
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-10	19.45	19.10	15.88	Standpipe	Shallow	1/15/2002	14.77	5 - 15	trace - 0.02	NP	-	11.29	-	18	7.81	NP	NP	7.81	trace	13.14	-	18.15	5.96	trace	NP	5.96
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
NG	VHB-8R	14.85	14.06	12.60	Standpipe	Shallow	6/4/2014	12.29	2 - 12	NP	NP	Buried under Snow								-	8.00	-	14.15	6.06	NP	NP	6.06
NG	GZ-320D	19.25	18.94	16.03	Standpipe	Deep	6/5/2014	30.19	20 - 30	NP	NP	-	11.34	-	33.3	7.60	NP	NP	7.60	-	12.8	-	33.3	6.14	NP	NP	6.14
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
NG	GZ-403	14.52	14.29	11.45	Standpipe	Shallow	11/2/2015	14.65	3 - 13	NP	NP									-	7.43	-	14.65	6.86	NP	NP	6.86

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.

TABLE 4

LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA

Holder 18/21 Capping Project

642 Allens Avenue

Providence, Rhode Island

LNAPL Thickness (feet)																
Date	11/12/01	06/20/02	09/12/02	02/03/03	Sept 2003	Sept 2005	Mar 2006	June 2006	July 2006	Oct. 2006	Mar 2008	Dec. 2009	June 2010	January 2011	July 2011	Aug 2011
Natural Gas Regulation Facility																
RCA-11	trace	NG	ND	NG	ND	ND	NG	NG	NG	NG	NG	NG	NG	NG	ND	ND
VHB-9	NI	trace	trace	NG	trace	ND	NG	NG	NG	NG	ND	Dest	Dest	Dest	Dest	Dest
VHB-10	NI	trace	0.01	NG	trace	trace	NG	NG	NG	NG	trace	NG	ND	trace	trace	0.01
VHB-18	NI	NI	NI	trace	trace	ND	ND	ND	ND	ND	ND	ND	ND	NG	ND	ND

Notes:

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

NG - Not Gauged

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

TABLE 4
LIGHT NON-AQUEOUS PHASE LIQUID (LNAPL) WELL GAUGING DATA
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	LNAPL Thickness (feet)									
Date	Feb 2012	July 2012	Feb 2013	Nov 2013	June 2014	July 2, 2014	July 23, 2014	October 2014	April 2015	October 2015
	Natural Gas Regulation Facility									
RCA-11	ND	ND	ND	ND	ND	NG	NG	ND	ND	ND
VHB-9	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest	Dest
VHB-10	trace	0.02	ND	0.01	trace	trace	ND	ND	ND	trace
VHB-18	ND	ND	ND	ND	ND	NG	NG	ND	ND	ND

Notes:
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
NG - Not Gauged
This table presents LNAPL thickness data for monitoring wells in the Limits of Work that have exhibited LNAPL thicknesses of at least trace amounts since 2001.

Table 5
Analytical Groundwater Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM		Sample ID:	RCA-11										C21	E02	E24	E42		F16
	GB GW	GB UCL	Sample Date:	1994	1996	2001	2003	2005	2011	2012	2013	2014	2015	1999	1999	1999	Mar 2000	Apr 2000	2000
Volatile Organic Compounds (VOCs)																			
1,2,4-Trimethylbenzene	NE	NE	mg/L	ND	ND	ND	0.0015	ND	ND	0.0001	ND	ND	0.0001	NA	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
4-Isopropyltoluene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Benzene	0.14	18	mg/L	ND	ND	0.032	0.0167	ND	ND	0.0092	0.0999	ND	0.0007	0.007	ND	ND	0.012	0.12	ND
Carbon Disulfide	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Ethylbenzene	1.6	16	mg/L	ND	ND	ND	ND	ND	ND	0.0005	0.0012	ND	ND	ND	ND	ND	0.04	ND	ND
Isopropylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Methyl Tert-Butyl Ether	5	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.38	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	0.12	ND	0.004	ND	0.24	ND
n-Butylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
n-Propylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
sec-Butylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Styrene	2.2	50	mg/L	ND	ND	0.0195	ND	ND	ND	0.0003	ND	ND	0.0003	NA	NA	NA	NA	NA	NA
tert-Butylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA	NA	NA	NA
Toluene	1.7	21	mg/L	ND	ND	0.0205	0.0065	ND	ND	0.0004	ND	ND	0.001	0.009	ND	ND	0.004	ND	ND
Xylene O	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	0.0002	ND	ND	0.0002	NA	NA	NA	NA	NA	NA
Xylene P,M	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	0.0003	ND	ND	0.0004	NA	NA	NA	NA	NA	NA
Xylenes (Total)	NE	NE	mg/L	ND	ND	0.024	ND	ND	ND	0.0005	ND	ND	0.0006	0.21	ND	ND	0.052	0.001	ND
Total VOCs	NE	NE	mg/L	ND	0.011	0.577	0.1877	ND	ND	0.0142	0.1156	ND	0.0078	0.346	ND	0.384	0.108	0.361	ND
Inorganics																			
Total Cyanide	NE	NE	mg/L	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs)																			
Fluorene	NE	NE	mg/L	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-Methylnaphthalene	NE	NE	mg/L	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:

Data is compared to RIDEM GB Groundwater Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.

Table only shows monitoring wells or groundwater samples collected within the Limits of Work.

ND - Not Detected
NA - Not Analyzed
NE - Not Established

GB GW - GB Groundwater Objective
GB UCL - GB Upper Concentration Limit

Table 5
Analytical Groundwater Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM		Sample ID:	VHB-8									VHB-9			
	GB GW	GB UCL	Sample Date:	2002	2003	2005	2008	2010	2011	2012	2014	2015	2002	2003	2005	2008
Volatile Organic Compounds (VOCs)																
1,2,4-Trimethylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.19	0.288	0.0277	ND
1,3,5-Trimethylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0205	0.0183	ND	ND
4-Isopropyltoluene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0024	0.00248	ND	ND
Benzene	0.14	18	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00196	ND	ND
Carbon Disulfide	NE	NE	mg/L	ND	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	0.0436	0.0337	0.0051	ND
Isopropylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0209	0.0217	0.0048	ND
Methyl Tert-Butyl Ether	5	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	2.67	NE	mg/L	ND	0.00159	ND	ND	ND	ND	ND	ND	ND	2.24	**3.12**	0.395	ND
n-Butylbenzene	NE	NE	mg/L	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	0.003	0.0023	ND	ND
sec-Butylbenzene	NE	NE	mg/L	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
tert-Butylbenzene	NE	NE	mg/L	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
Xylene O	NE	NE	mg/L	ND	ND	ND	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	ND	ND	ND
Xylenes (Total)	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0688	ND	ND	ND
Total VOCs	NE	NE	mg/L	ND	0.00159	ND	ND	ND	ND	ND	ND	ND	2.5204	3.48844	0.4326	ND
Inorganics																
Total Cyanide	NE	NE	mg/L	0.254	NA	NA	NA	NA	NA	NA	NA	NA	0.91	NA	NA	NA
Semi-Volatile Organic Compounds (SVOCs)																
Fluorene	NE	NE	mg/L	ND	NA	NA	NA	NA	NA	NA	NA	NA	0.032	NA	NA	NA
2-Methylnaphthalene	NE	NE	mg/L	ND	NA	NA	NA	NA	NA	NA	NA	NA	0.39	NA	NA	NA

Notes:

Data is compared to RIDEM GB Groundwater Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.

Table only shows monitoring wells or groundwater samples collected within the Limits of Work.

ND - Not Detected
NA - Not Analyzed
NE - Not Established

GB GW - GB Groundwater Objective
GB UCL - GB Upper Concentration Limit

Table 5
Analytical Groundwater Data
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM		Sample ID:	VHB-10								VHB-18						VHB-19		GZ-320D
	GB GW	GB UCL	Sample Date:	2002	2003	2005	2011	2012	2013	2014	2015	2002	2003	2005	2008	2009	2010	2002	2003	2014
Volatile Organic Compounds (VOCs)																				
1,2,4-Trimethylbenzene	NE	NE	mg/L	ND	0.0115	0.0056	0.0018	0.002	ND	ND	0.0009	0.107	0.0235	0.004	0.0011	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.0464	ND	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.00153	ND	ND	ND	ND	ND	ND	ND
Benzene	0.14	18	mg/L	**0.185**	**0.238**	**0.175**	0.11	**0.271**	**0.147**	0.0808	**0.162**	**1.97**	**0.206**	**1.95**	**0.742**	ND	ND	ND	ND	0.0015
Carbon Disulfide	NE	NE	mg/L	ND	ND	ND	ND	ND	ND	ND	ND	0.003	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1.6	16	mg/L	ND	0.0109	0.0114	0.0052	0.008	0.0019	0.0017	0.0021	0.168	0.0399	0.139	0.0214	ND	ND	ND	ND	ND
Isopropylbenzene	NE	NE	mg/L	ND	0.0104	0.0125	0.0062	0.0097	0.0046	0.0055	0.0042	ND	0.00173	0.0037	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	ND	ND	ND
Naphthalene	2.67	NE	mg/L	0.385	0.0857	0.289	0.016	0.0565	0.021	0.0192	0.0413	0.76	0.229	0.0208	0.0062	0.016	ND	ND	ND	0.0011
n-Butylbenzene	NE	NE	mg/L	ND	ND	0.001	ND	0.0008	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NE	NE	mg/L	ND	0.00381	0.0048	0.002	0.0027	0.0013	0.0019	0.0013	0.0104	0.00198	0.0018	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NE	NE	mg/L	ND	0.00104	0.001	ND	0.0006	ND	ND	0.0003	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	ND
tert-Butylbenzene	NE	NE	mg/L	ND	ND	ND	ND	0.0002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	1.7	21	mg/L	ND	ND	0.0012	ND	0.001	ND	ND	0.0015	0.0318	0.00315	0.243	0.0018	ND	ND	ND	ND	ND
Xylene O	NE	NE	mg/L	ND	ND	ND	0.0057	0.008	0.0052	0.0038	0.0044	ND	ND	ND	0.0026	ND	ND	ND	ND	ND
Xylene P,M	NE	NE	mg/L	ND	ND	ND	ND	0.0013	ND	ND	0.0007	ND	ND	ND	0.0097	ND	ND	ND	ND	ND
Xylenes (Total)	NE	NE	mg/L	ND	ND	ND	0.0057	0.0093	0.0052	0.0038	0.0051	0.36	ND	ND	0.0123	ND	ND	ND	ND	ND
Total VOCs	NE	NE	mg/L	0.57	0.36135	0.5015	0.1469	0.3618	0.181	0.1129	0.2187	3.0966	0.50679	2.3623	0.7848	0.016	ND	ND	ND	0.0026
Inorganics																				
Total Cyanide	NE	NE	mg/L	ND	NA	NA	NA	NA	NA	NA	NA	10.6	NA	NA	NA	NA	NA	0.909	NA	NA
Semi-Volatile Organic Compounds (SVOCs)																				
Fluorene	NE	NE	mg/L	ND	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA
2-Methylnaphthalene	NE	NE	mg/L	1.82	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	ND	NA	NA

Notes:

Data is compared to RIDEM GB Groundwater Standards. Shaded results represent numerical exceedances of standards.

Table only indicates the compounds that were detected, other compounds were analyzed for, but not detected.

Table only shows monitoring wells or groundwater samples collected within the Limits of Work.

ND - Not Detected
NA - Not Analyzed
NE - Not Established

GB GW - GB Groundwater Objective
GB UCL - GB Upper Concentration Limit

FIGURES

NATIONAL GRID

SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT

642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

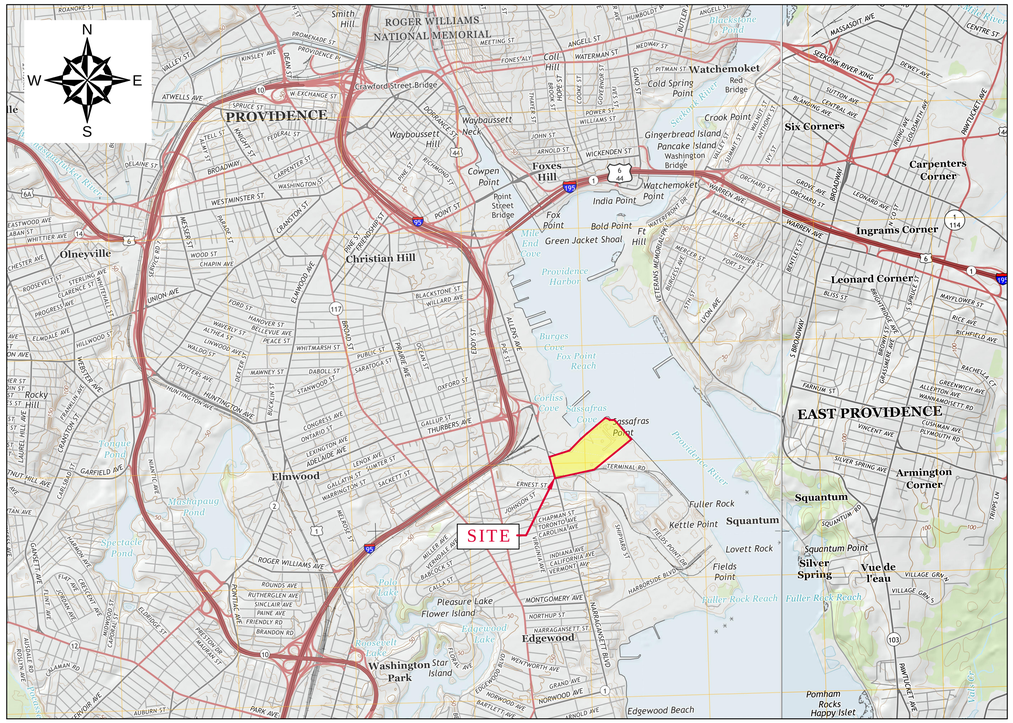
APRIL 2016

PREPARED FOR:

nationalgrid

PREPARED BY:

GZA GEOENVIRONMENTAL, INC.
530 BROADWAY
PROVIDENCE, RHODE ISLAND 02909



PROJECT LOCUS MAP

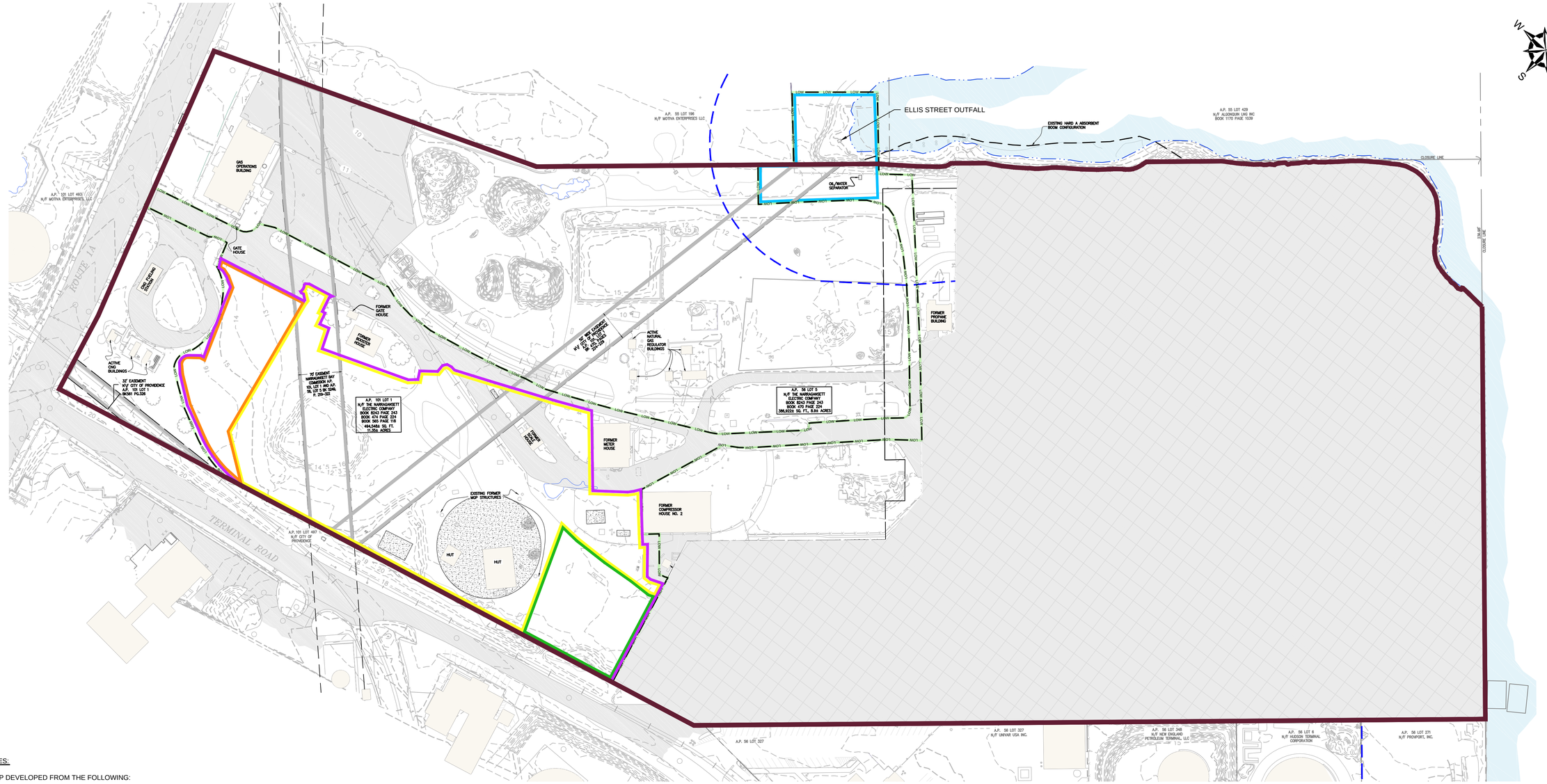
SOURCE: USGSSTORE.GOV

0 1000' 2000' 4000' 6000'

SCALE: 1 INCH = 2000 FEET

INDEX OF DRAWINGS	
Sheet #	Sheet Title
1	TITLE SHEET AND INDEX
2	EXISTING CONDITIONS
3	EXISTING EXPLORATION LOCATION PLAN
4	EROSION AND SEDIMENTATION CONTROL PLAN
5	REMEDIAL CAP SUBGRADE GRADING PLAN
6	REMEDIAL CAP TYPES
7	STORMWATER MANAGEMENT PLAN
8	SITE RESTORATION PLAN & FINAL GRADING
9	REMEDIAL CAP DETAILS

PERMITTING SET



GENERAL NOTES:

1) 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. PLANS PROVIDED BY NATIONAL GRID.
- 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.
- ELECTRONIC CAD FILE14-152_SU1_REV2.DWG, TITLED "TOPOGRAPHIC SURVEY PLAN, PORTION OF A.P. 56 LOT 5" DATED OCTOBER 27, 2014 AND PROVIDED BY NATIONAL GRID.

2) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.

3) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.

4) ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.

5) PARCEL DATA PROVIDED BY THE CITY OF PROVIDENCE PLANNING AND DEVELOPMENT DEPARTMENT. PARCELS OF REAL ESTATE ASSESSED AS OF DECEMBER 31, 2012. GIS DATA ARE FOR PLANNING PURPOSES ONLY. THESE DATA DO NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.

6) SITE BOUNDARIES ARE APPROXIMATE.

LEGEND:

- EXISTING BUILDING
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- 200 FOOT CRMC SETBACK
- EXISTING PAVEMENT
- EASEMENT AREA
- LIMIT OF WORK
- STRAP AREA
- OUTFALL AND PIPE CLEANING TRASH RACK INSTALLATION AREA
- OXIDE BOX AREA
- CNG FUELING AREA
- FORMER GAS HOLDER AREA
- MANHOLE
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- SITE PROPERTY LINES
- INTERIOR PROPERTY LINE
- ABUTTING PROPERTY LINE
- EDGE OF WATER
- EXISTING RAILROAD TRACKS
- EXISTING FENCE
- EXISTING CONCRETE PAD
- EXISTING BOOM CONFIGURATION
- SITE BOUNDARY
- LNG AND CEMENT FACILITY

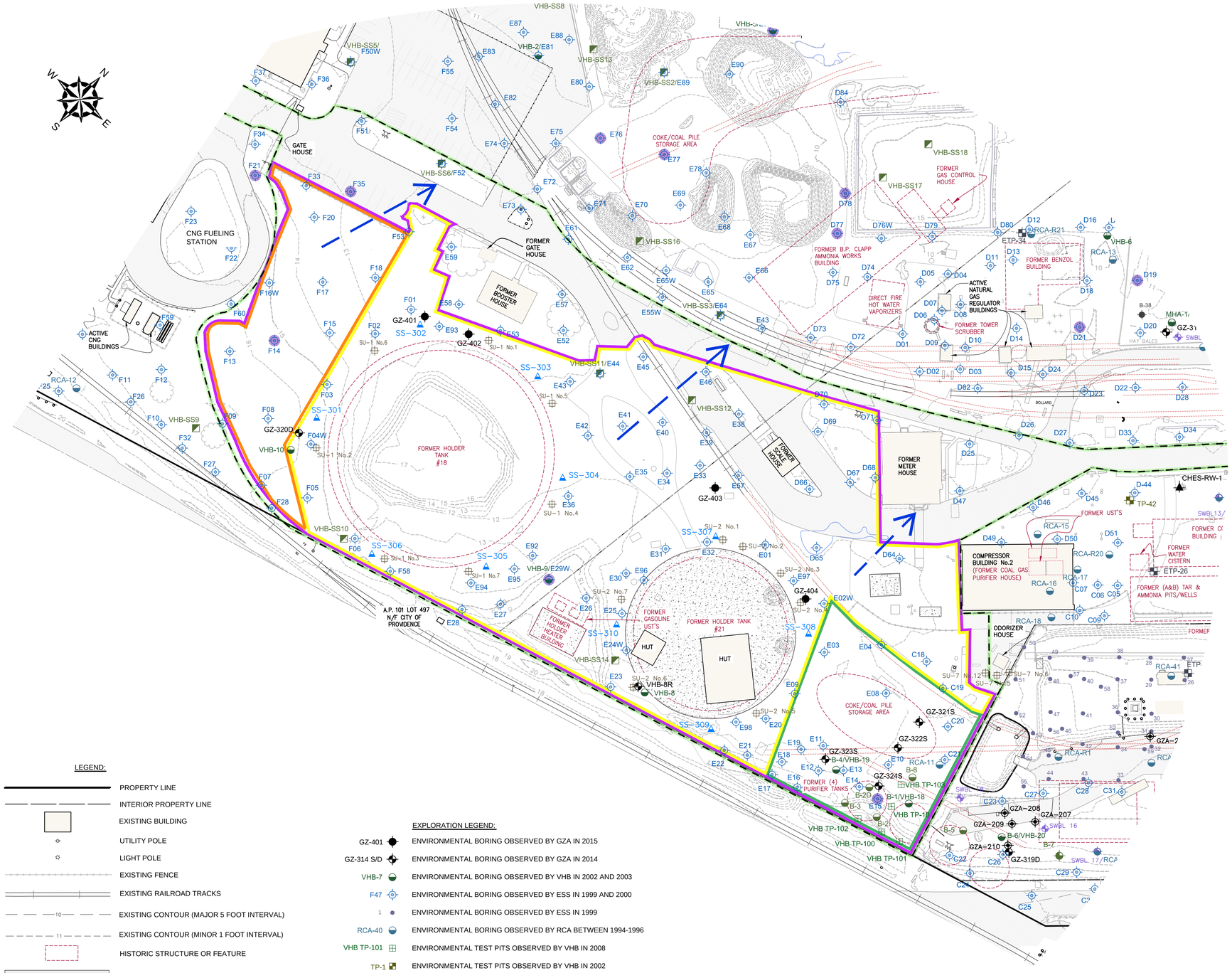
NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

EXISTING CONDITIONS

PERMITTING SET

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 2
DESIGNED BY: SDN	DRAWN BY: DL/DT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 2 OF 9

2016 - GZA GeoEnvironmental, Inc. - G:\ENV\33554.48\V\FIGURES\CAD\DWGS\SHORT TERM RESPONSE ACTION PLAN\33554_00_SHORT TERM RESPONSE ACTION PLAN_1_3837.DWG 2 APRIL 27, 2016 2:09 PM LISA.THERRAULT



LEGEND:

- PROPERTY LINE
- INTERIOR PROPERTY LINE
- EXISTING BUILDING
- UTILITY POLE
- LIGHT POLE
- EXISTING FENCE
- EXISTING RAILROAD TRACKS
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- HISTORIC STRUCTURE OR FEATURE
- EXISTING PAVEMENT
- EXISTING CONCRETE PAD
- HYDRANT
- STRAP AREA
- LIMIT OF WORK
- REGIONAL GROUNDWATER FLOW

EXPLORATION LEGEND:

- 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
- RCA-40 — ENVIRONMENTAL BORING OBSERVED BY RCA BETWEEN 1994-1996
- VHB TP-101 — ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2008
- TP-1 — ENVIRONMENTAL TEST PITS OBSERVED BY VHB IN 2002
- B07 — ENVIRONMENTAL TEST PIT OBSERVED BY ESS IN 1999 AND 2000
- 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
- GZA-206 — GEOTECHNICAL BORING OBSERVED BY GZA IN 2005
- SWBL13 — GEOTECHNICAL BORING OBSERVED BY SWEC IN 1995

- OXIDE BOX AREA
- CNG FUELING AREA
- FORMER GAS HOLDER AREA

GENERAL NOTES:

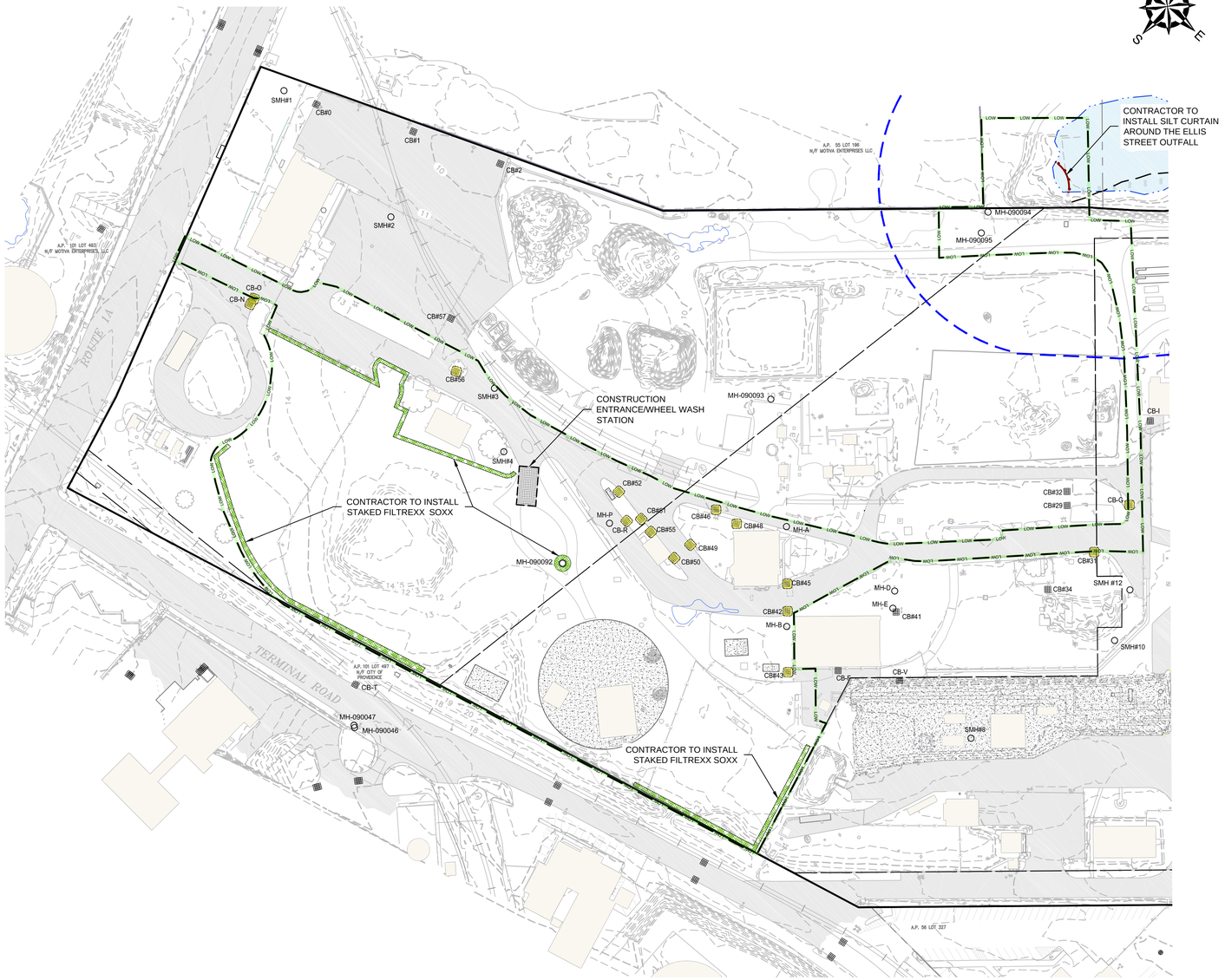
1) EXISTING CONDITIONS BASE MAP DEVELOPED FROM THE FOLLOWING:
   - ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. 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
   - ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2015.
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) 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 NATIONAL GRID.
   - 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 NATIONAL GRID.
   - 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 NATIONAL GRID.
   - 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 NATIONAL GRID.
   - 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 NATIONAL GRID.
   - SITE PLANS PROVIDED BY VHB IN THE RIDEM-SUBMITTED JANUARY 26, 2009 "OXIDE BOX INVESTIGATION TECHNICAL MEMORANDUM" PREPARED ON BEHALF OF NATIONAL GRID. PLANS PROVIDED BY NATIONAL GRID.
   - FIGURE 3 "EXPLORATION LOCATION PLAN" PREPARED BY GZA GEOENVIRONMENTAL, INC. (GZA) ON BEHALF OF CHICAGO BRIDGE AND IRON (CB&I) IN JULY 2005. PLANS PROVIDED BY NATIONAL GRID.
   - 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 NATIONAL GRID.
   - ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
4) 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.
5) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
6) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
7) 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 NATIONAL GRID.
   - HISTORIC SITE PLAN "GENERAL PLAN OF WORKS, PROVIDENCE GAS COMPANY, SASSAFRAS POINT PLANT, PROVIDENCE, RHODE ISLAND." UNDATED. PLANS PROVIDED BY NATIONAL GRID.
10) THE SITE HAS BEEN THE LOCATION OF NUMEROUS REMEDIAL ACTIONS. 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.
11) 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 NATIONAL GRID) ARE PRESENTED IN THIS PLAN SET.
12) THIS PLAN ONLY PRESENTS EXPLORATIONS CONDUCTED IN THE HOLDER CAPPING AREA.

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

EXISTING EXPLORATION LOCATION PLAN

PERMITTING SET

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 3
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 3 OF 9



LEGEND:

- EXISTING BUILDING
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- 200 FOOT CRMC SETBACK
- EXISTING PAVEMENT
- LIMIT OF WORK
- CATCH BASIN FRAME AND GRATE
- MANHOLE
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- SITE PROPERTY LINES
- INTERIOR PROPERTY LINE
- ABUTTING PROPERTY LINE
- EDGE OF WATER
- EXISTING RAILROAD TRACKS
- EXISTING FENCE
- EXISTING CONCRETE PAD
- EXISTING BOOM CONFIGURATION
- STAKED FILTREXX SOXX
- SILT CURTAIN
- CONTRACTOR TO INSTALL SILTSACK IN CATCH BASIN STRUCTURE
- WHEEL WASH / CONSTRUCTION ENTRANCE

GENERAL NOTES:

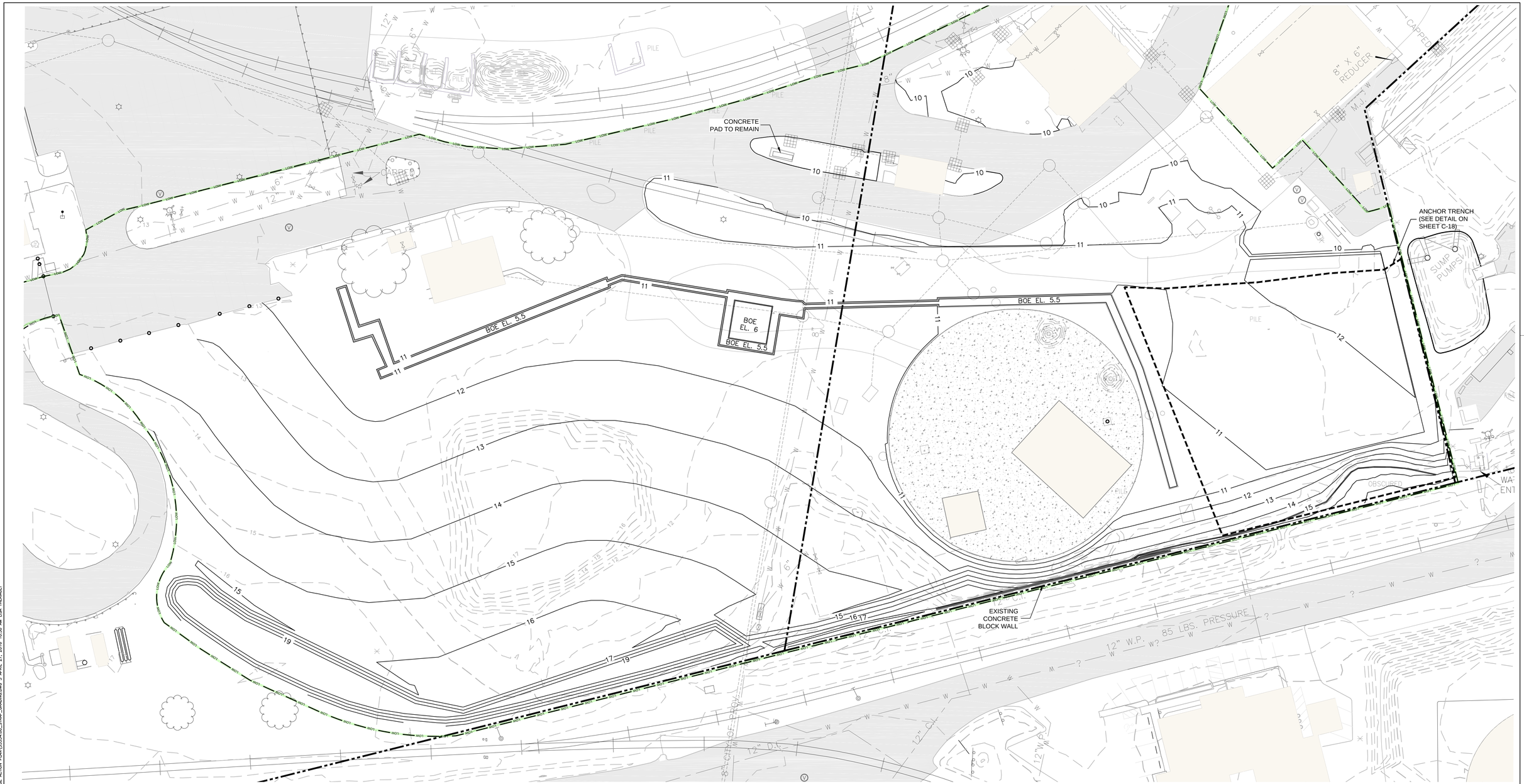
1) BASE MAP DEVELOPED FROM THE FOLLOWING:
   - ELECTRONIC CAD FILE "ACAD-7257PL.DWG" PROVIDED BY VANASSE HANGEN BRUSTLIN (VHB) ENTITLED "EXISTING CONDITIONS PLAN," PROJECT TITLE "NATIONAL GRID LNG TERMINAL ROAD LNG FACILITY" DATED MARCH 10, 2014, ORIGINAL SCALE 1" = 50', DRAWING NO. SV-1 THROUGH SV-3 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. PLANS PROVIDED BY NATIONAL GRID.
   - ELECTRONIC CAD FILE14-152_SU1_REV2.DWG, TITLED "TOPOGRAPHIC SURVEY PLAN, PORTION OF A.P. 56 LOT 5" DATED OCTOBER 27, 2014 AND PROVIDED BY NATIONAL GRID.
2) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
3) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
4) ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.
5) PARCEL DATA PROVIDED BY THE CITY OF PROVIDENCE PLANNING AND DEVELOPMENT DEPARTMENT. PARCELS OF REAL ESTATE ASSESSED AS OF DECEMBER 31, 2012. GIS DATA ARE FOR PLANNING PURPOSES ONLY. THESE DATA DO NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.
6) SITE BOUNDARIES ARE APPROXIMATE.
7) CONTRACTOR SHALL BE RESPONSIBLE FOR STREET SWEEPING ALL ASPHALT PAVING IN THE LIMITS OF WORK (LOW) AS NEEDED THROUGHOUT WORK ACTIVITIES.

PERMITTING SET

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

EROSION AND SEDIMENTATION CONTROL PLAN

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 4
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 4 OF 9



GENERAL NOTES:

1. BASE MAP DEVELOPED FROM THE 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 NATIONAL GRID.
2. HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.
3. VERTICAL DATUM IS BASED ON NAVD 1988 (MSL) FROM BASE MAPPING PROVIDED BY VHB.
4. SELECT PRESENTED SITE UTILITIES WERE TAKEN FROM HISTORIC FIGURES PROVIDED BY NATIONAL GRID. 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.** CONTRACTOR TO VERIFY LOCATION OF ALL UTILITIES WITH THE LOW.
5. ON-SITE INVESTIGATIONS AND SURVEYS WERE PERFORMED BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2015.

LEGEND:

- EXISTING BUILDING
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- PROPERTY LINES
- ELLIS STREET DRAIN LINE
- EXISTING SEWER AND STORM DRAIN
- EXISTING WATER LINE
- ANCHOR TRENCH FOR GEOSYNTHETIC LINER SYSTEM
- SUBGRADE ELEVATION CONTOUR
- EXISTING CATCH BASIN
- EXISTING MANHOLE

NOTE: BOE = BOTTOM OF EXCAVATION

0 15' 30' 60' 90'
SCALE IN FEET

N W E S

PERMITTING SET

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

REMEDIAL CAP SUBGRADE GRADING PLAN

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 5
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 5 OF 9

GENERAL NOTES:

1. BASE MAP DEVELOPED FROM THE 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 NATIONAL GRID.
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3. VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.
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5. ON-SITE INVESTIGATIONS AND SURVEYS WERE PERFORMED BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2015.

LEGEND:

- PROPERTY LINES
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- EXISTING CATCH BASIN
- EXISTING MANHOLE

REMEDIAL CAP TYPES (SEE DETAILS ON SHEET 9)

- 2" TOP COURSE ASPHALT, 2" BINDER COURSE ASPHALT
- 2" TOP COURSE ASPHALT, 2" BINDER COURSE ASPHALT, 8" PROCESSED GRAVEL, GEOSYNTHETIC LINER SYSTEM
- 12" RIP RAP (RIDOT R-3), 8-OUNCE NON-WOVEN GEOTEXTILE
- 6" CRUSHED STONE (2"), 6" COMPACTED GRANULAR FILL, 8-OUNCE NON-WOVEN GEOTEXTILE
- 6" TOPSOIL, 6" COMPACTED GRANULAR FILL, 8-OUNCE NON-WOVEN GEOTEXTILE
- 6" TOPSOIL, 6" COMPACTED GRANULAR FILL, GEOSYNTHETIC LINER SYSTEM
- STORMWATER MANAGEMENT STRUCTURE
- EXISTING PAVEMENT
- EXISTING BUILDING
- EXISTING CONCRETE SURFACE

N W E S

PERMITTING SET

0 15' 30' 60' 90'
SCALE IN FEET

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

REMEDIAL CAP TYPES

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

PREPARED FOR: nationalgrid

PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 6
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 6 OF 9

GENERAL NOTES:

1. BASE MAP DEVELOPED FROM THE 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 NATIONAL GRID.
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5. ON-SITE INVESTIGATIONS AND SURVEYS WERE PERFORMED BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2015.

LEGEND:

- EXISTING BUILDING
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- PROPERTY LINES
- ELLIS STREET DRAIN LINE
- EXISTING SEWER AND STORM DRAIN
- EXISTING WATER LINE
- ×18.00 FINISH GRADING SPOT ELEVATION
- 15 FINISH GRADING ELEVATION CONTOUR
- HIGHWAY BARRIER WALL
- ACCESS COVER
- WATER QUALITY HOOD
- EXISTING CATCH BASIN
- EXISTING MANHOLE
- NEW MANHOLE
- RIP RAP (RIDOT R-3)
- 2" CRUSHED STONE
- NEW ASPHALT PAVING
- VEGETATED SAND FILTER
- NEW PIPE
- CAPE COD BERM
- TRENCH DRAIN
- CONCRETE FOREBAY SECTION (4-FOOT SECTIONS)
- FLOW DIRECTION

0 15' 30' 60' 90'
SCALE IN FEET

N W E S

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

STORMWATER MANAGEMENT PLAN

PERMITTING SET

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 7
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 7 OF 9

2016 – GZA GeoEnvironmental, Inc. GZA-J:\ENV\33554.ABJ\FIGURES\CAD\DWGS\SHORT TERM RESPONSE ACTION PLAN\33554-00_STRAP_GRADING.DWG 7 APRIL 27, 2016 10:54 AM LISA THERIAULT

GENERAL NOTES:

1. BASE MAP DEVELOPED FROM THE 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 NATIONAL GRID.
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5. ON-SITE INVESTIGATIONS AND SURVEYS WERE PERFORMED BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2015.

LEGEND:

- EXISTING BUILDING
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- PROPERTY LINES
- HIGHWAY BARRIER WALL
- PRE-CAST CONCRETE BLOCKS (NON-ANCHORED) (PROVIDED BY OWNER)
- NEW 7-FOOT TALL CHAIN LINK FENCE WITH 3-STRAND BARBED WIRE
- NEW 7-FOOT TALL CHAIN LINK FENCE WITH RAZOR WIRE
- FINISH GRADING ELEVATION CONTOUR
- NEW 8" BOLLARDS AND TRUCK CHARGING OUTLETS
- LIMIT OF HYDROSEEDING
- LIMIT OF EROSION CONTROL NETTING
- RIP RAP (RIDOT R-3)
- 2" CRUSHED STONE
- NEW ASPHALT PAVING
- STORMWATER MANAGEMENT STRUCTURE
- EXISTING PAVEMENT
- EXISTING CATCH BASIN
- EXISTING MANHOLE
- NEW MANHOLE
- TRENCH DRAIN
- UTILITY POLE
- NEW UTILITY POLE WITH LED FLOODLIGHTS INSTALLED BY OTHERS

0 15' 30' 60' 90'
SCALE IN FEET

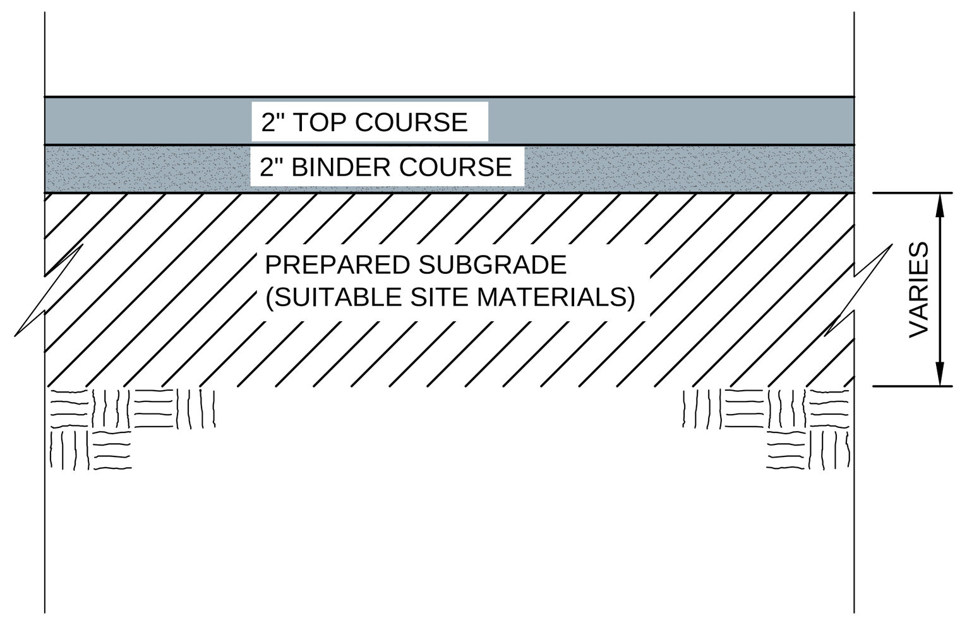
N W E S

PERMITTING SET

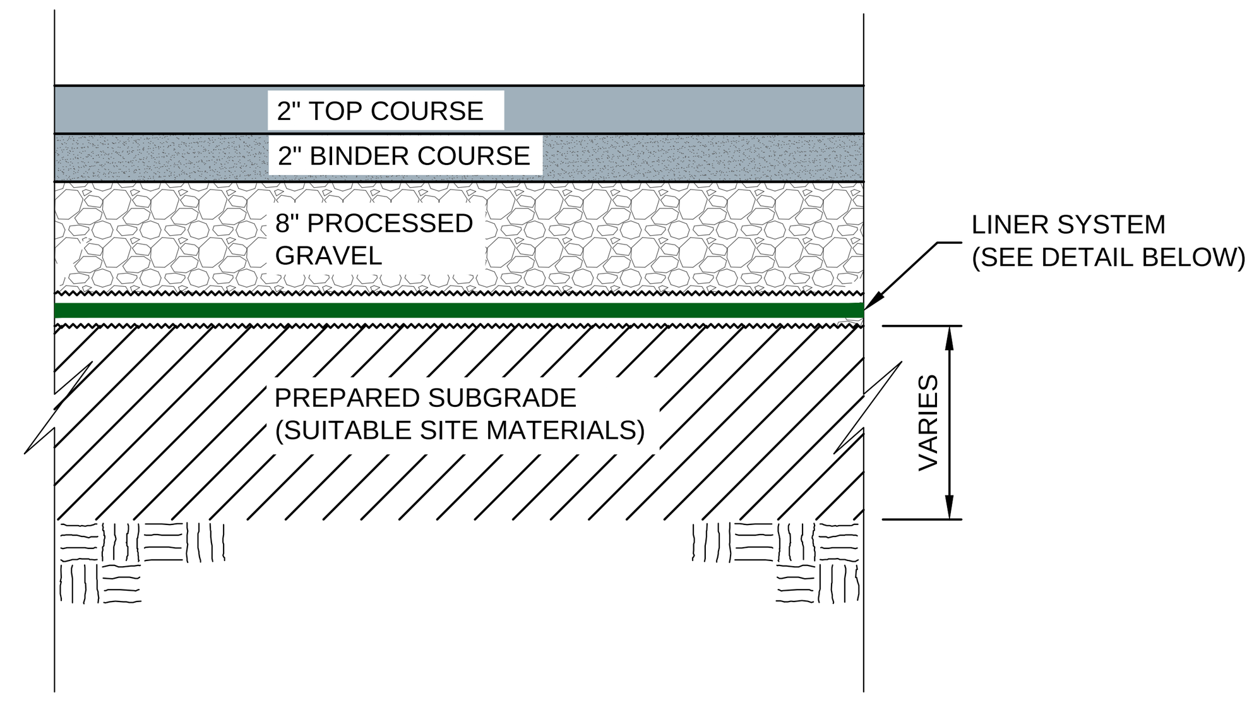
NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

SITE RESTORATION PLAN & FINAL GRADING

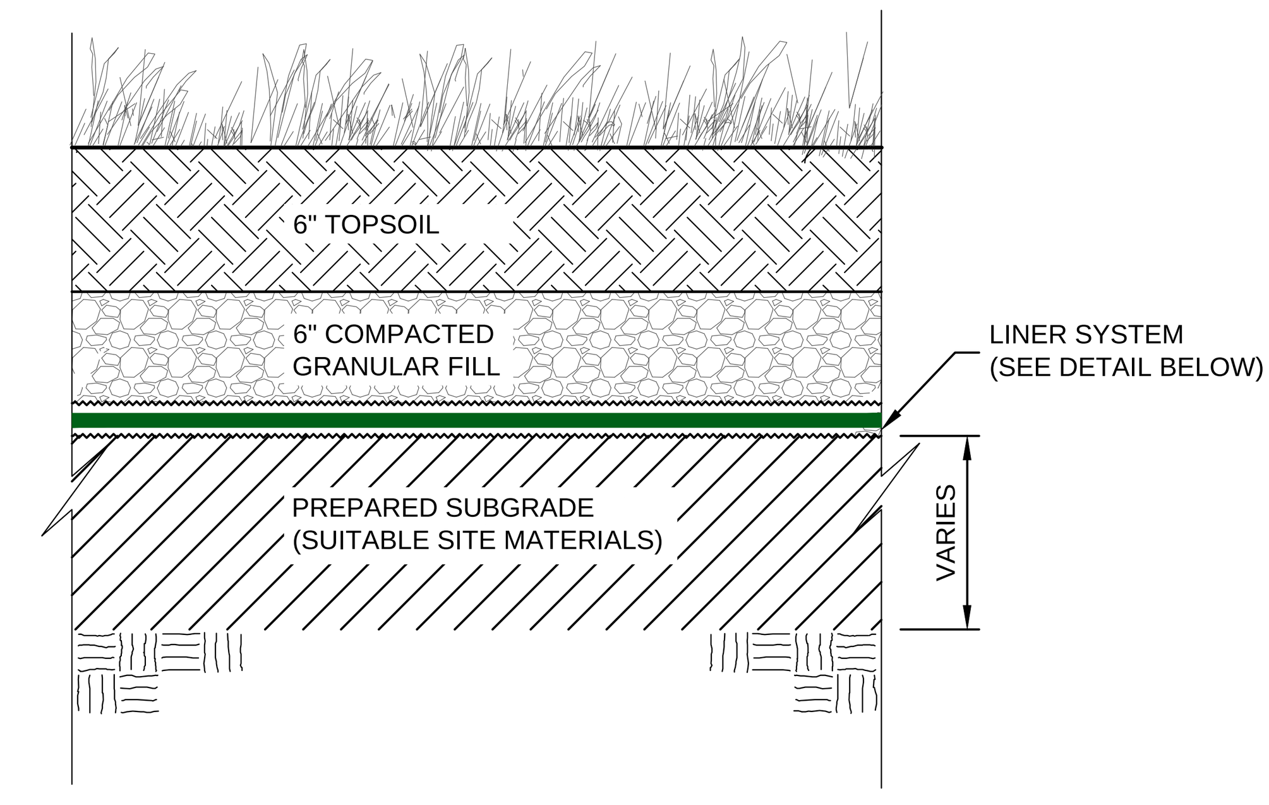
PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		PREPARED FOR: nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING 8
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 8 OF 9



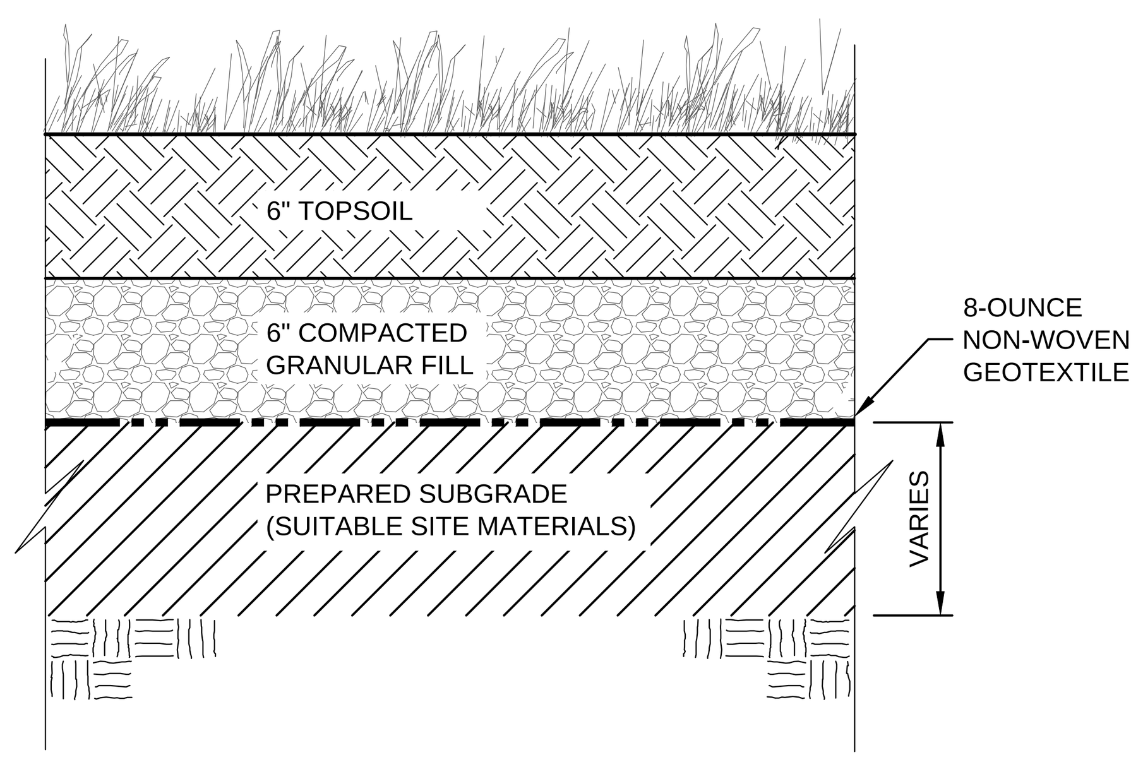
ASPHALT ENGINEERED CAP
NOT TO SCALE



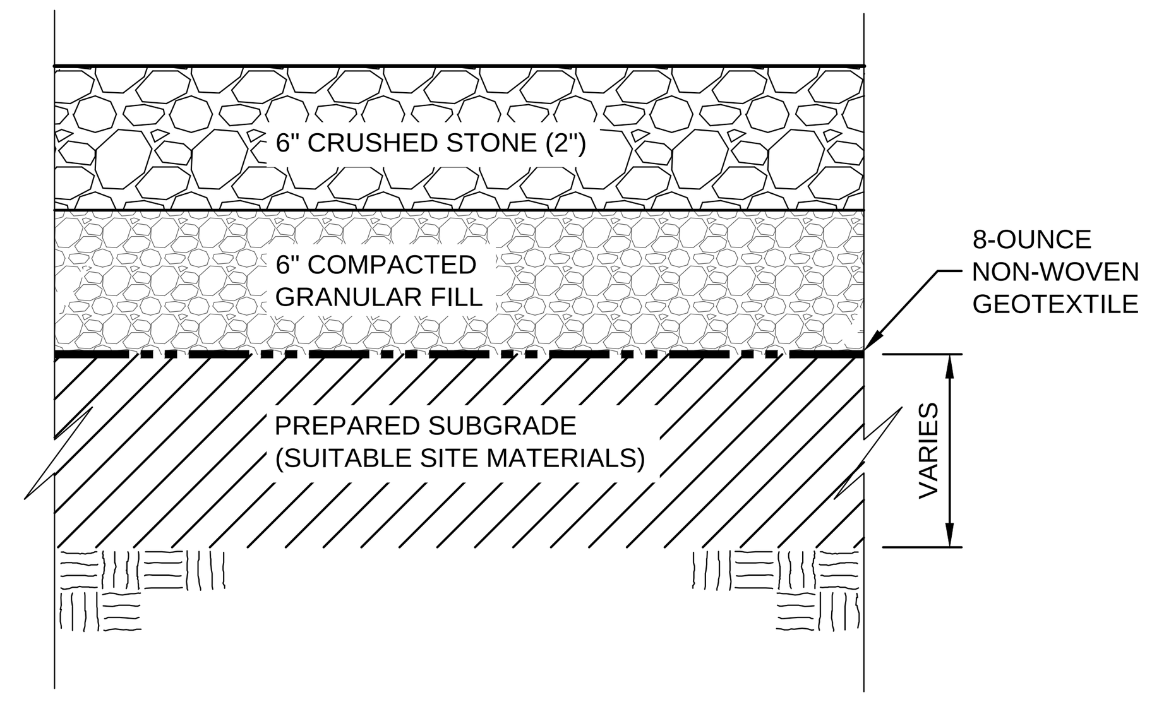
ASPHALT AND LINER SYSTEM ENGINEERED CAP
NOT TO SCALE



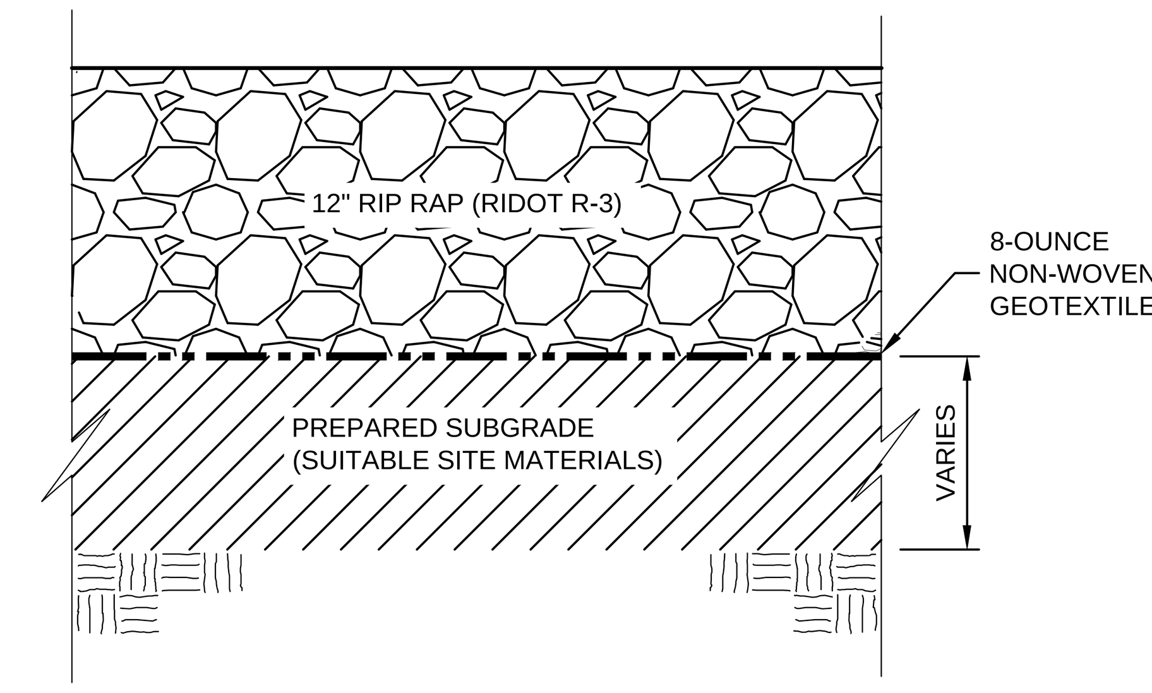
TOPSOIL AND LINER SYSTEM ENGINEERED CAP
NOT TO SCALE



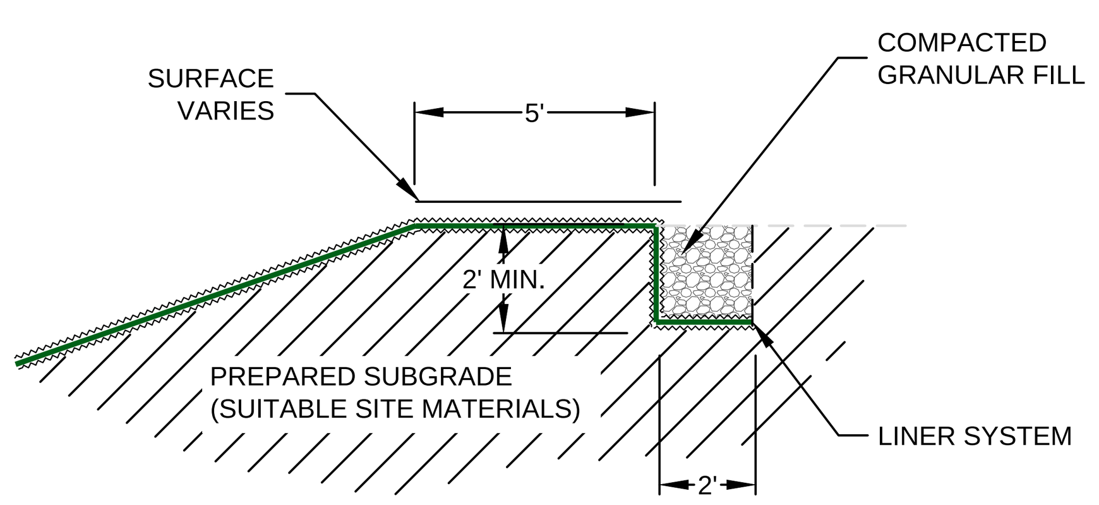
TOPSOIL AND GEOTEXTILE ENGINEERED CAP
NOT TO SCALE



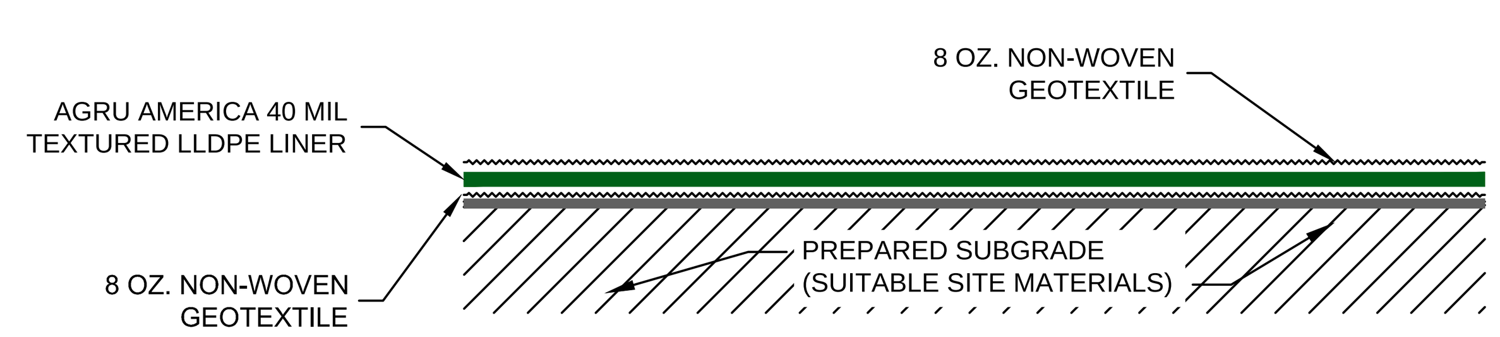
CRUSHED STONE AND GEOTEXTILE ENGINEERED CAP
NOT TO SCALE



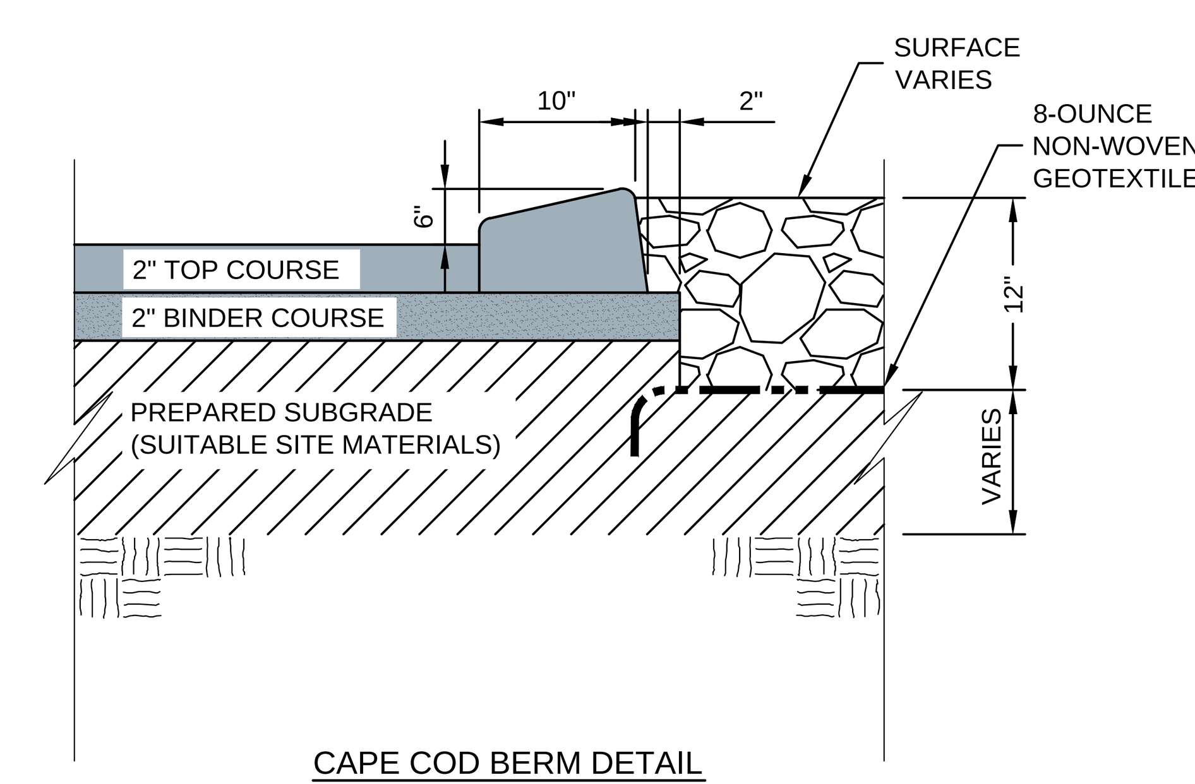
RIP RAP AND GEOTEXTILE ENGINEERED CAP
NOT TO SCALE



TYPICAL LINER SYSTEM ANCHOR TRENCH DETAIL
NOT TO SCALE



TYPICAL LINER SYSTEM
NOT TO SCALE



CAPE COD BERM DETAIL
NOT TO SCALE

PERMITTING SET

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

REMEDIAL CAP DETAILS

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		nationalgrid	
PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	9
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 9 OF 9

APPENDIX A

Limitations

LIMITATIONS

1. This Short Term Response Action Plan has been prepared on behalf of and for the exclusive use of The Narragansett Electric Company d/b/a National Grid (National Grid), solely for use in documenting the work completed as described herein at the 642 Allens Avenue Former MGP ("Site") under the applicable provisions of the State of Rhode Island Department of Environmental Management Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations). 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 GeoEnvironmental, Inc.(GZA) or National Grid.

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 work described herein.

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

Boring and Test Pit Logs

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-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 ID	PERCENT RECOV.	BLOWS PER 6 INCHES	WELL DATA	STRATA CHANGE (FT.)	LITHOLOGY (DESCRIPTION OF MATERIALS) SAND and GRAVEL	FIELD TEST DATA PID - 10.2 eV (ppm)
	1'	S-1	NA	Grab			dry, green, fine SAND	11.1
	2-4	SS-1	100%	5-8-5-8			SAME, damp	8.3
5'	4-6	SS-2	90%	3-4-4-6		▽ 5	sand	14
	6-8	SS-3	85%	5-6-6-7			SAME	6.9
10'	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)	
	12-14	SS-6	100%	10-10-12-15			brown, medium SAND, little fine sand	27.8
15'	14-16	SS-7	100%	3-9-11-12			SAME	62.3
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

ESS
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.: **C18**
	Date: 12/13/00
ESS Job No: P151-002	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: 5.0'
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	1534	1.4	(0-6") F/M brown sand with bits of gravel. (6-12") F/M brown sand with SO bits of coal. (12-24") gray/light tan sandy silt with gravel and bits of coal; cinders 20-24".
B	2-4	30/48		1.4	(30-36") gray sandy silt, gravel. (36-60") Large grain sand; heavy cinders; large gravel with coal bits. (60-62") Blue shale. (62-72") Large grained sand with gravel, heavy iron staining, saturated.
C	4-6			0.0	
D	6-8	44/48	1545	2.8	(78-82") M/large grain. (82-120") M, brown sand with SO small rounded gravel; saturated.
E	8-10			2.8	
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
N/A

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

ESS

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.: C19
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: 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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	N/A
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: C20
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: 5.0'
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	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") MGreen/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	
		F = FINE	N/A	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: C21
ESS Job No: P151-002	Date: 1/11/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	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	(72-76") Remnants of F/M silty sand stained, light blue. (76-120") M green/brown sand, dense, with SO small rounded stones.
E	8-10				
F	10-12				
G	12-14				

Comments:
located near well number RCA 11.

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE	N/A	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: D64
ESS Job No: P151-002	Date: 12/11/99
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: 6.0'
Sample Method: 4' Acetate Sampler	Depth to Water: unknown
	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	28/24	1045	2.6	(0-12") F/M brown to dark brown sand with TR gravel; damp from rain; no odor. (12-24") F/C brown sand with SO gravel; wet at 12"; no odor.
B	2-4	35/48		0.2	(37-72") F/M brown/dark brown/tan sand with SO gravel and SO gravel; dry; light odor. Refusal at 72".
C	4-6		1100	0.1	
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: D65
	Date: 12/11/99
ESS Job No: P151-002	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: 5.0'
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	20/24	1110	0.3	(4-24") F/C brown/light brown/dark brown sand with SO gravel; dry; faint odor.
B	2-4	48/48		0.0	(24-48") F/M dark brown sand and gravel; dry; no odor. (48-72") F/M brown sand with TR gravel; dry; no odor.
C	4-6		1120	0.0	
D	6-8	48/48		0.0	(72-120") F/C gray/brown sand and silt; saturated with water; no odor.
E	8-10			0.0	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: **D66**
ESS Job No: P151-002	Date: 12/22/99
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: 6.0'
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	1340	0.0	(0-1") brown sand with grass, roots, organics. (1-5") F/M brown/black sand with SO small gravel. (5-8") F dark brown to light tan silty sand, loose, roots. (8-18") M black stained sand with SO small gravel, cinder, and ash throughout. (17-18") cinder ash and stone. (18-24") F light brown silty sand; coal bits at 20" and 24".
B	2-4	36/48	1350	0.0	(36-42") M brown and black sand with SO cinder ash at 36-40" and large gravel at 40-42". (42-60") F black silty sand with SO M/small gravel. (60-72") F/M gray sand; saturated with water 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	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: D67
	Date: 12/22/99
ESS Job No: P151-002	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: 5.0'
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	20/24	1430	0.0	(0-1") grass and roots. (1-10") F/M brown sand, roots, soft; SO small/M gravel. (10-15") F/M brown/gray sand with SO large gravel. (15-17") concrete and gravel. (17-24") F/M light tan sandy soil; gravel at 23-24".
B	2-4	24/48	0.0	0.0	(24-48") no recovery due to concrete piece. (48-52") M black loose sand with M gravel. (54-57") large stone pieces. (57-72") F/M brown/tan silty sand with small/M gravel; saturated at 60"
C	4-6		1445	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: D68
ESS Job No: P151-002	Date: 12/23/99
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: 6.0'
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	(0-4") organic matter. (4-10") F/M brown sand with SO gravel; dry; no odor. (10-15") black cinders with TR sand; dry; no odor. (15-24") F/M light brown sand and gravel; damp; no odor.
B	2-4	25/48		0.0	(47-62") F light brown sand - uniform; dry; no color. (62-72") F/M brown sand with TR gravel; wet; no odor.
C	4-6		0900	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: D69
ESS Job No: P151-002	Date: 12/23/99
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: 6.0
Sample Method: 4' Acetate Sampler	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	0920	9.2	(0-3") organic matter. (3-16") black cinders with SO brown sand and SO shiny black cinders; dry; no odor. (16-24") F/M brown sand with TR gravel; damp; no odor.
B	2-4	32/48		0.0	(40-57") F/M brown sand with SO gravel; dry; no odor. (57-72") F/M brown sand and gravel; saturated with water; no odor.
C	4-6		0938	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 — Well Construction

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

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

ESS
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.: D70
	Date: 12/23/99
ESS Job No: P151-002	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: 4.0'
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	0945	2.3	(0-4") organic matter. (4-8") F/M light brown/brown sand with SO gravel; dry; no odor. (8-20") black cinders with SO gravel; dry; no odor. (20-24") F/M brown sand with TR gravel; dry; no odor.
B	2-4	46/48	1010	0.0	(26-30") black cinders; dry; no odor. (30-48") F/M brown sand with TR gravel; dry; no odor. (48-72") F/M dark brown sand and silt; saturated with water at 48"; 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 (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: D71
	Date: 12/23/99
ESS Job No: P151-002	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: 6.5'
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	20/24	1030	11.5	(4-7") organic matter. (7-24") F/C brown sand and gravel; dry; no odor.
B	2-4	40/48		0.0	(42-62") F/M brown sand and gravel; dry; no odor. (62-72") F/M brown sand with SO gravel; no odor.
C	4-6			0.0	
D	6-8	48/48	1100	0.0	(72-120") F/M brown sand with TR gravel; saturated with water; no odor. Wet at 76".
E	8-10			0.0	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E01
ESS Job No: P151-002	Date: 12/11/99
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: 10.0'
Sample Method: 4' Acetate Sampler	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	1130	1.9	(0-24") F/M brown/dark brown sand with SO gravel and LI black cinders; TR silt near 18-24"; dry; no odor;
B	2-4	36/48		0.0	(36-48") F/C light brown sand with TR gravel; damp; no odor. (48-72") F/M brown/dark brown sand; saturated with water at 54"; light odor.
C	4-6		1145	0.0	
D	6-8	40/48		0.0	(80-88") F/C brown sand and gravel; wet; no odor. (88-120") F/M brown sand and gravel with SO silt at 108"; saturated with water; light odor.
E	8-10			0.0	
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 — Well Construction

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

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

ESS
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.: E02
ESS Job No: P151-002	Date: 12/13/99
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: 10.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 6.0'
	Logged By: Nicole Murry/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	1045	0.7	(0-6") F/M brown sand with LI gravel; dry; no odor. (6-12") F/M black sand and gravel; dry. (12-24") F/M brown sand with SO gravel; dry; no odor.
B	2-4	30/48		0.0	(42-48") F/M brown sand with F black specs of stone. (48-60") stone with M brown sand. (60-72") M/C brown sand with small amounts of small stones; moist.
C	4-6		1125	0.0	
D	6-8	48/48		0.0	(72-120") F brown/light tan dense till; saturated; visible porous cinders from 108-120".
E	8-10			0.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE	(+1.5-5.5') PVC Solid Riser (5.5-10.5') PVC Screen One inch sump at 10.5'	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS

: 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.: E03
ESS Job No: P151-002	Date: 12/13/99
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: 10.0'
Sample Method: 4' Acetate Sampler	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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS — Well Construction

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

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

ESS
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.: E04
ESS Job No: P151-002	Date: 12/13/99
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: 10'
Sample Method: 4' Acetate Sampler	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	(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.
E	8-10			0.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE			
TRACE (TR)	0-10%	M = MEDIUM		A = 0-24 in.	G = 144-168 in.
LITTLE (LI)	10-20%	C = COARSE		B = 24-48 in.	H = 168-192 in.
SOME (SO)	20-35%	F/M = FINE TO MEDIUM		C = 48-72 in.	I = 192-216 in.
AND	35-50%	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

ESS
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.: E08
ESS Job No: P151-002	Date: 12/14/99
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: 10.0'
Sample Method: 4' Acetate Sampler	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	(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.
E	8-10			0.0	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E09
ESS Job No: P151-002	Date: 12/14/99
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: 10.0'
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	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

ESS
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.: E10
	Date: 12/14/99
ESS Job No: P151-002	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: 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	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

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

ESS

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.: E11
	Date: 12/14/00
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmen. Instruments, Inc., Model 580B OV
Well Diameter: N/A	Boring Depth: 6.0'
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	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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

, 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
	Date: 12/14/00
ESS Job No: P151-002	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: 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	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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E13
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: 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	
		F = FINE			
TRACE (TR)	0-10%	M = MEDIUM		A = 0-24 in.	G = 144-168 in.
LITTLE (LI)	10-20%	C = COARSE		B = 24-48 in.	H = 168-192 in.
SOME (SO)	20-35%	F/M = FINE TO MEDIUM		C = 48-72 in.	I = 192-216 in.
AND	35-50%	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

ESS
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.: E14
ESS Job No: P151-002	Date: 12/15/00
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: 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

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS **Well Construction**

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

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

ESS
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.: E15
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: 6.0'
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	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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

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.: E16
ESS Job No: P151-002	Date: 12/15/00
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	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	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E17
ESS Job No: P151-002	Date: 12/15/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environment. Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
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	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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

? 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.: E18
	Date: 12/15/99
ESS Job No: P151-002	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: 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	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	
		F = FINE			
TRACE (TR)	0-10%	M = MEDIUM		A = 0-24 in.	G = 144-168 in.
LITTLE (LI)	10-20%	C = COARSE		B = 24-48 in.	H = 168-192 in.
SOME (SO)	20-35%	F/M = FINE TO MEDIUM		C = 48-72 in.	I = 192-216 in.
AND	35-50%	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

ESS

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
	Date: 12/15/99
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment. Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6'
Drilling Method: Geoprobe	Depth to Water: 4.5'
Sample Method: 4' Acetate Sampler	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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E20
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: 6.0'
Sample Method: 4' Acetate Sampler	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	1500	0.0	(0-4") F/M brown sand and organic matter; dry; no odor. (4-15") F/M brown sand and silt with TR gravel; dry; no odor. (15-24") F/M brown silt and sand; saturated with water; no odor.
B	2-4	48/48	1515	0.0	(24-72") F dense silty brown sand; saturated at approximately36"
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E21
ESS Job No: P151-002	Date: 12/16/99
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: 6.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 2.0'
	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	1010	0.0	(0-8") F/M brown sand with SO small rounded stones. (8-18") F brown and light brown sand. (18-20") gravel; stone. (20-24") F dense silty brown sand; wet.
B	2-4	36/48	1020	0.0	(36-48") F silty brown sand; saturated. (48-72") F silty brown sand with iron staining at 60-72"; saturated.
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E22
ESS Job No: P151-002	Date: 12/16/99
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: 6.0'
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	1040	0.0	(0-5") M brown sand with large gravel stone. (5-7") cinder ash band. (7-12") M light tan/brown sand with green spotting and mixed gravel. (12-20") M/large orange sand with gravel. (20-24") F silty orange/brown sand.
B	2-4	40/48	1050	0.0	(24-32") M brown sand with gravel. (32-50") M/large brown/orange sand with mixed gravel. (50-72") F brown silty 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	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
272 West Exchange Street, Suite 101
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(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company 642 Allens Avenue, Providence, RI	Boring No.: E23
ESS Job No: P151-002	Date: 12/13/99
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmen Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 10.0'
Drilling Method: Geoprobe	Depth to Water: 5.0'
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	1114	0.0	(0-8") F/M brown sand; roots; SO gravel stone. (8-20") F silty dense brown sand. (20-24") F silty loose light tan sand
B	2-4	36/48		0.0	(36-60") Fine silty loose light tan sand with brown sand and SO gravel. (60-66") M orange sand with SO gravel; wet. (66-72") M brown sand with SO gravel; wet.
C	4-6		1130	0.0	
D	6-8	30/48		0.0	(90-94") M brown sand; wet. (94-120") F/M light brown and orange sand; saturated at 94".
E	8-10			0.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E24
	Date: 12/16/99
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 7.0'
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	1216	0.0	(0-6") M loose brown sand. (6-8") dense brown silty sand. (8-12") M loose brown sand with gravel, bits of coal, and SO brick. (12-24") F/M light brown to brown sand with gravel and coal bits throughout; large cinder block at 14".
B	2-4	40/48	1235	0.0	(32-36") F/M brown sand with cinder ash and coal bits throughout. (36-44") F silty light brown sand with SO gravel; coal bits; wet at 44-48". (48-50") gravel band. (50-72") F/M dense brown sand with small gravel.
C	4-6			0.0	
D	6-8	12/48		0.0	(72-84") F orange/brown sand with SO small gravel; saturated.
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE	(+1.0-2.0') PVC Solid Riser (2.0-7.0') PVC Screen One inch sump at 7.0'	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E25
	Date: 12/17/99
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environment Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 4.0'
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	0815	0.0	(0-4") M brown sand. (4-7") F/M brown wand. (7-14") F/M light brown to brown sand with cinder ash throughout. (14-20") M brown sand with cinders and coal bits. (20-24") F orange/brown sand.
B	2-4	36/48	0830	0.0	(36-40") F/M dense brown sand. (40-44") large brown sand with M rounded gravel. (44-48") F/M brown sand with M/large rounded gravel; wet. (48-72") F/M silty sand with SO small rounded gravel; saturated at 48".
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

, 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.: E26
	Date: 12/17/99
ESS Job No: P151-002	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: 5.0'
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	0845	0.0	(0-8") M/C brown sand with M/large rounded gravel. (8-9") cinder ash/cinders. (9-14") F/M sand with brick and small gravel. (14-16") cinder ash with M brown sand. (16-18") large gravel with F/M brown sand. (18-24") cinder ash with F/M silty brown sand.
B	2-4	36/48	0855	0.0	(36-40") M brown sand with small rounded gravel and cinder ash bits; brick. (40-48") F/M brown sand with large gravel; bits of coal at 47-48". (48-56") F/M silty dense brown sand with SO large gravel. (56-60") large brown sand with M gravel; wet. (60-72") F dense silty brown/light brown sand; saturated at 60".
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E27
ESS Job No: P151-002	Date: 12/20/99
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environment Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 5.0'
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	1105	28.2	(0-17") F/M brown sand and gravel with TR gravel; dry; no odor. (17-24") F/M light brown/ brown sand and black cinders with TR gravel and TR brick; dry; faint odor.
B	2-4	47/48	1155	3.5	(25-37") F/M brown sand and gravel and black cinders; TR brick pieces; dry; light odor. (37-61") F/M light brown/brown sand - uniform; dry; no odor. (61-72") F/M brown sand with SO gravel; 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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E28
ESS Job No: P151-002	Date: 12/20/99
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: 10.0'
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	23/24	1215	1.7	(0-18") F/M brown and black sand with SO gravel; dry; no odor. (18-20") F light brown sand; dry; no odor. (20-24") F/M dark red stained sand with TR silt; dry; light odor.
B	2-4	40/48		1.7	(32-36") F/M dark red stained sand with TR silt; dry; no odor. (36-50") F/M dark brown sand with SO gravel; dry; no odor. (50-54") pulverized stone. (54-72") F/M brown sand with SO gravel and SO black cinders; damp; no odor.
C	4-6		1230	1.7	
D	6-8	48/48		1.7	(72-84") F/M brown sand and gravel with SO black cinders; damp; no odor. (84-120") F/C brown sand and gravel; dry; no odor.
E	8-10			1.7	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
272 West Exchange Street, Suite 101
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(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company 642 Allens Avenue, Providence, RI	Boring No.: E29
ESS Job No: P151-002	Date: 12/17/99
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: 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	1005	0.0	(0-8") M/C brown sand and large gravel with SO roots; moist. (8-20") C cinder ash mixed with poorly sorted small/M gravel; cinder ash and black cinders throughout. (20-24") F/M brown sand; SO gravel; dense; wet.
B	2-4	36/48		54.6	(36-40") M/C brown sand; heavy content of C cinder ash. (40-48") F/M silty light brown/brown sand. (48-72") F/M silty brown/dark gray sand; wet; heavy petroleum odor.
C	4-6	36/48	1050		
D	6-8	40/48		127	(80-90") poorly sorted F/C sand; black cinder ash and cinder ash stone; saturated. (90-120") F/M silty brown/black sand; saturated with petroleum; heavy petroleum odor. Sheen observed
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE	(+1.0-2.0') PVC Solid Riser (2.0-7.0') PVC Screen One inch sump at 7.0"	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E30
ESS Job No: P151-002	Date: 12/17/99
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: 6.0'
Sample Method: 4' Acetate Sampler	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	1220	0.0	(0-6") poorly sorted M/large gravel with F/M brown sand; roots; visible iron staining at 6". (6-8") black silty sand (8-24") F/M brown silty sand with M rounded gravel; cinder ash at 20-21"; soil wet at 20-24".
B	2-4	48/48		0.0	(24-28") F/M dense silt; SO small gravel. (28-38") F/M light brown and tan silty sand; SO small gravel. (38-39") cinder ash with M brown sand; wet. (39-72") F/M brown silty sand with SO small gravel; saturated.
C	4-6		1240	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E31
ESS Job No: P151-002	Date: 12/16/99
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: 6.0'
Sample Method: 4' Acetate Sampler	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	1315	0.0	(0-10") M brown sand with gravel and small rounded stones; dense. (10-18") cinder ash band with M brown sand. (18-24") F silty light brown sand.
B	2-4	36/48	1330	0.0	(36-40") cinder ash with SO M brown sand; SO gravel. (40-48") F dense silty brown sand; wet. (48-52") M/C brown sand with gravel; saturated. (52-60") F silty orange and brown sand; dense. (60-72") F/M brown sand with small rounded stones and SO gravel; saturated.
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E32
	Date: 12/15/99
ESS Job No: P151-002	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: 5.0'
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	1350	0.0	(0-4") M loose brown sand with small/large rounded stones. (4-10") M brown and light tan sand with M/large rounded stone; cinder ash throughout. (10-12") cinder ash band. (12-14") M brown sand with SO stone. (14-16") dense light brown silty sand. (16-24") cinder ash with M/large brown sand and small rounded stones.
B	2-4	36/48		0.0	(36-40") M brown sand with large gravel. (40-42") gravel (large conglomerate stone). (42-50") F silty sand. (50-54") M/C sand with M gravel. (54-58") M/C sand with small/M gravel. (58-60") schist stone and gravel. (60-72") F light tan silty sand; saturated.
C	4-6		1420	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E33
ESS Job No: P151-002	Date: 12/20/99
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	22/24	1415	1.7	(2-15") F/C brown and light brown sand and gravel; dry; no odor. (15-24") blue/black cinders with SO F/M brown sand and SO gravel; dry; no odor.
B	2-4	42/48	1430	0.0	(30-36") black/blue stained cinders with SO dark brown sand and TR gravel; dry; no odor. (36-42") F/M brown sand with SO gravel; dry; no odor. (42-72") F/C brown sand with TR silt and 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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E34
	Date: 12/20/99
ESS Job No: P151-002	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: 5.0'
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	1020	5.3	(0-5")F/M brown sand and gravel; dry; no odor. (5-8") F/M black sand and gravel; dry; no odor. (8-16") F/M blue-stained soil with wood chips and gravel; dry; no odor. (16-24") F gray/tan/blue sand with TR gravel; dry; no odor.
B	2-4	40/48		291	(32-42") F/M brown sand mixed with blue stained sand and SO gravel; dry; no odor. (42-58") F/M brown sand and gravel; wet; no odor. (58-72") F/M rust-colored sand and silt with TR gravel; saturated with water; odor present.
C	4-6		1045	348	
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E35
ESS Job No: P151-002	Date: 12/20/99
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	1505	63.0	(0-10") F/M brown sand and gravel; dry; no odor. (10-18") black bits of coal; dry; no odor. (18-24") F/M gray/black stained sand; dry; petroleum odor.
B	2-4	42/48		51.0	(30-36") F/M black stained sand with SO black cinders; bits of coal; dry; odor present. (36-47") F/M gray stained sand and silt; damp; heavy odor. (47-60") F/M gray stained sand and gravel; wet; heavy odor. (60-72") F brown/dark brown sand with TR gravel; wet; heavy odor.
C	4-6		1530	74.0	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E36
	Date: 12/21/99
ESS Job No: P151-002	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: 5.0'
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	1000	4.0	(0-5") F/M brown sand with SO organics; roots. (5-12") C cinder ash mixed with brick, M brown sand, and small/M gravel. (12-24") very C cinder ash with cinder ash block (large pieces).
B	2-4	36/48		151.0	(36-48") very C cinder ash with cinder ash block (large pieces). (48-60") M petroleum stained sand. (60-72") cinder ash block with large gravel; heavy petroleum odor; staining; saturated at 60".
C	4-6		1015		
D	6-8				(72-84") cinder ash block with large gravel; heavy petroleum odor; staining. (84-120") M black stained silty sand; saturated; petroleum sheen observed on soil.
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E38
ESS Job No: P151-002	Date: 12/21/99
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: 6.0'
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	1050	0.0	(0-4") F/M brown silty sand with organics; roots and grass at 0-1/4" and SO F gravel. (4-6") F orange silty sand with SO clay. (6-12") M brown and orange sand; damp. (12-16") M brown and orange sand mixed with large pieces of cinder ash block; damp. (16-20") C cinder ash. (20-24") dense light brown F silty sand with SO gravel.
B	2-4	44/48			(48-56") F/M brown sand; wet. (56-60") F/M brown sand; wet; heavy petroleum staining. (60-64") dense petroleum stained brown clay. (64-66") M black petroleum stained sand. (66-72") M brown sand; saturated; light petroleum staining.
C	4-6		1115	163	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E39
ESS Job No: P151-002	Date: 1/26/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 5.0'
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	1345	0.0	(0-4") M brown sand with roots; small/large rounded stones and SO brick. (4-12") F black cinder ash. (12-14") black cinder ash with bits of coal. (14-18") black cinders and cinder ash. (18-22") dense light tan silty sand mixed with cinder ash and porous cinders.
B	2-4	36/48		110	(36-40") black cinder ash. (40-44") M orange sand with M gravel. (44-72") F gray/brown sand with SO cinder ash at 44-48" and M rounded stones; Wet at 56"; sheen observed.
C	4-6		1400		
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

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.: E40
	Date: 12/21/99
ESS Job No: P151-002	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: 4.0'
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	1150	0.0	(0-4") M brown sand with large gravel. (4-6") pink quartz stone. (6-14") F/M light brown sand with black and gray porous cinders throughout. (14-15") oxidized stone. (15-20") F/M light brown sand with black and gray porous cinders throughout with SO M gravel. (20-24") heavily black stained F/M clay and sand; heavy greenish blue hue.
B	2-4	36/48	1205	0.0	(36-40") F/M light brown sand with black and gray porous cinders throughout. (40-48") light tan silty sand with black and gray porous cinders throughout; SO evidence of orange oxidation. (48-72") F silty light tan/yellow sand with porous cinders of gray, black, and rust color throughout; saturated.
C	4-6				
D	6-8				
E	8-10				
	10-12				
G	12-14				

Comments:

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E41
ESS Job No: P151-002	Date: 12/21/99
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmen. Instruments, Inc., Model 580B OV
Well Diameter: N/A	Boring Depth: 6.0'
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	1330	0.0	(0-5") M dense brown sand with M/large gravel. (5-6") M black sand. (6-8") M dark brown sand. (8-22") M/C cinder ash mixed with SO M black sand and brick. (22-24") schist stone with M brown sand; visible oxidation (iron staining).
B	2-4	44/48	1352		(28-36") M/C cinder ash mixed with SO M black sand and brick. (36-48") F/M loose brown/gray silty sand; petroleum staining; odor throughout. (58-60") C cinder ash mixed with loose brown/gray sand. (60-64") M brown sand with large gravel. (64-66") loose light tan silty sand. (66-72") M brown/gray sand with large gravel; petroleum staining at 36-72"; saturation at approximately 40".
C	4-6			314	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E42
ESS Job No: P151-002	Date: 12/21/99
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: 10.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 2.5'
	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	1405	0.0	(0-5") M brown sand with large gravel; SO organics. (5-6") brown sand with cinder ash. (6-8") solid brick. (8-24") M/C cinder/ash with large bits of cinder ash and porous cinders.
B	2-4	44/48	1440	14	(28-36") M/C cinder ash with SO black cinders. (36-38") brown silty sand with small gravel. (38-56") M/C cinder ash with porous cinders mixed with SO M black sand. (56-72") F brown/gray petroleum stained silty sand with SO gravel at 65-72". Wet at 30".
C	4-6				
D	6-8	48/48			(72-120") F brown/gray petroleum stained silty sand with SO gravel; wet.
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

(+.5-1.8') PVC Solid Riser (1.8-6.8') PVC Screen One inch sump at 6.75'

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

ESS
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.: E43
ESS Job No: P151-002	Date: 12/21/99
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmen Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 5.0'
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	1500	0.0	(0-12") M brown sand; organics; stones. (12-16") SO cinder ash with M brown sand. (16-18") brick; cinder ash; large gravel; M brown sand. (18-20") M dense brown sand. (20-21") white gravel. (21-24") C cinder ash with brick.
B	2-4	40/48			(32-60") M/C cinder ash with cinder ash stone and C porous cinders mixed with SO M black sand; oxidation and iron staining at 54". (60-72") F silty brown/gray sand; heavy petroleum staining; heavy petroleum odor; saturated at 60".
C	4-6		1510	4.0	
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE			
TRACE (TR)	0-10%	M = MEDIUM		A = 0-24 in.	G = 144-168 in.
LITTLE (LI)	10-20%	C = COARSE		B = 24-48 in.	H = 168-192 in.
SOME (SO)	20-35%	F/M = FINE TO MEDIUM		C = 48-72 in.	I = 192-216 in.
AND	35-50%	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

ESS

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.: E44
	Date: 12/22/99
ESS Job No: P151-002	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: 4.5'
Sample Method: 4' Acetate Sampler	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	0930	0.0	(0-2") organic matter. (2-8") F/M brown sand and gravel; dry; no odor. (8-24") black cinders with F/M brown sand and with TR gravel; dry; no odor.
B	2-4	36/48	0940	0.0	(36-40") F/M black cinder ash. (40-44") C black cinder ash with SO black cinders. (44-48") F dense silty brown sand. (48-60") F/M brown sand with SO small gravel. (60-72") M/C brown sand; SO M/large rounded gravel; saturation at 54".
C	4-6			0.0	
D	6-8				
E	8-10				
	10-12				
G	12-14				

Comments:

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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:: E45
ESS Job No: P151-002	Date: 12/22/99
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmen. Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 4.0'
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	1005	0.0	(0-5") brown to black sand mixed with M/large gravel; grass; organics; leaves. (5-10") M black sand with M cinder ash. (10-16") black/teal/gray soil and C cinder ash, moist. (16-20") F/M gray/tan soils stained dark green with large gravel/cobble. (20-24") F/M silty tan soils; SO gravel; moist.
B	2-4	48/48	1015	0.0	(24-28") F/M silty tan soils; SO gravel; moist. (28-32") M/C cinder ash mixed with F/M silty tan soils and SO gravel or wood fiber; moist. (32-38") iron stained F/M orange/tan sandy soils mixed with M rounded gravel. (38-48") F yellow/tan sandy soil. (48-68") M gray/brown soils with SO small rounded gravel. (68-72") large gravel mixed with iron stained gray/brown silty sand; saturation at 48"
C	4-6				
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE			
TRACE (TR)	0-10%	M = MEDIUM		A = 0-24 in.	G = 144-168 in.
LITTLE (LI)	10-20%	C = COARSE		B = 24-48 in.	H = 168-192 in.
SOME (SO)	20-35%	F/M = FINE TO MEDIUM		C = 48-72 in.	I = 192-216 in.
AND	35-50%	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

ESS
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.: E46
	Date: 12/22/99
ESS Job No: P151-002	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: 5.0'
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	1035	0.0	(0-6") M brown sand with organics; grass; roots. (6-10") M black sand with roots and M gravel. (10-12") M brown sand with roots and small gravel. (12-15") M rust color sand; porous cinders/cinder ash. (15-24") F/M brown sand with cinder ash and orange wood fiber.
B	2-4	46/48	1050	0.0	(26-30") M black/brown sandy soil with spots of orange (iron staining). (30-48") F loose tan/yellow silty sand; black porous cinders throughout. (48-56") M brown sand; SO small gravel. (56-70") F light brown silty sand; saturation at 60". (70-72") large gravel with M brown sand.
C	4-6				
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E53
	Date: 12/22/99
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmen Instruments, Inc., Model 580B OV
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 5.0'
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	1150	0.0	(0-3") F/M dense brown silty sand. (3-6") M brown sand with C cinder ash and M gravel. (6-10") F yellow/tan silty sand; loose. (10-24") C black cinder ash mixed with large gravel and black cinders.
B	2-4	36/48		35	(36-40") C black cinder ash mixed with large gravel and black cinders. (40-44") dense brown silty sand. (44-45") white gravel stone. (45-60") C black cinder ash with black cinders and SO M black/brown sand. (60-72") dense gray/brown silty sand with SO M rounded gravel stone at 68"; petroleum odor and staining at 70-72"; saturation at 60".
C	4-6		1215		
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

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.: E57
	Date: 2/2/00
ESS Job No: P151-002	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: 4.0'
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	1330	7.3	(0-2") frozen topsoil and snow. (2-8") F/M brown/dark brown sand with SO gravel; dry; no odor. (8-12") F brown sand with SO gravel; dry; no odor. (17-24") small/large black cinders and cinder ash with SO shiny coal pieces and TR gravel; dry; no odor.
B	2-4	41/48	1340	0.0	(31-36") F/M black cinder ash; dry; no odor (loose). (36-46") M/large black cinders with SO cinder ash and SO F/M brown/dark brown sand; dry; no odor. (46-72") F grey sand and SO silt; wet; slight 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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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				

Comments:

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E92
ESS Job No: P151-002	Date: 3/7/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6.0'
Drilling Method: Geoprobe	Depth to Water: 4.8'
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	16/24	1410	0.0	(8-22") small/large black cinders with SO black and SO gray cinder ash and SO orange/red small/M porous cinders; dry; no odor. (22-24") F dark brown silt with SO sand and TR gravel; dry; no odor.
B	2-4	28/48		0.0	(44-48") small/M black cinders with SO gravel and SO F/M dark brown sand and SO small white cinders; dry; no odor. (48-59") F dark brown silt with SO F brown/dark brown sand and SO gravel; saturated with water; light odor. (59-72") F gray/dark brown silt with SO gravel and TR small/large black cinders; saturated with water; petroleum odor.
C	4-6		1425	10.7	
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E93
	Date: 3/7/00
ESS Job No: P151-002	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: 4.8'
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	20/24	1435	0.0	(4-6") damp dark brown topsoil. (6-24") F/M brown sand and gravel with TR silt, SO black cinder ash, and LI small/M black cinders; dry; no odor.
B	2-4	34/48		0.0	(38-66") F/M brown/dark brown sand and gravel with TR small/M black cinders and TR silt; wet; no odor. (66-72") F black/dark brown silt and gravel; saturated with water; light odor.
C	4-6		1450	0.0	
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: E94
	Date: 3/8/00
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6"
Drilling Method: Geoprobe	Depth to Water: N/A
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	N/A	1545	N/A	(0-3") F light brown sand with SO gravel and TR orange paint chips; dry; no odor. (3-6") F/M brown sand with SO gravel and TR orange paint chips; dry; no odor.
B	2-4				
C	4-6				
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:
Lead grab sample only.

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E95
	Date: 3/8/00
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6"
Drilling Method: Geoprobe	Depth to Water: N/A
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	N/A	1555	N/A	(0-2") F/M light brown sand with SO gravel and SO orange paint ships; dry; no odor. (2-6") F/M dark brown sand with SO gravel and SO small/large black cinders and LI paint chips; dry; no odor.
B	2-4				
C	4-6				
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:
Leadgrab sample only.

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: E96
ESS Job No: P151-002	Date: 3/8/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environment Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6"
Drilling Method: Geoprobe	Depth to Water: N/A
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	N/A	1605	N/A	(0-6") F/M brown sand with SO gravel and SO small/large black cinders and TR orange paint chips; dry; no odor.
B	2-4				
C	4-6				
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:
Lead grab sample only.

PROPORTIONS USED

TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS **Well Construction**

F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

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

ESS

. 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.: E97
	Date: 3/8/00
ESS Job No: P151-002	Within 100' of Water: No
Driller.: Environmental Drilling, Inc.	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 6"
Drilling Method: Geoprobe	Depth to Water: N/A
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	N/A	1610	N/A	(0-6") F/M brown sand and gravel with SO small to very large black cinders and TR orange paint chips; dry; no odor.
B	2-4				
C	4-6				
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:
Lead grab sample only.

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

ESS
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.: **E98**
ESS Job No: P151-002	Date: 3/8/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
Well Diameter: N/A	Instrument: Thermo Environmenta Instruments, Inc., Model 580B OVM
Drilling Method: Geoprobe	Boring Depth: 6"
Sample Method: 4' Acetate Sampler	Depth to Water: N/A
	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	N/A	1620	N/A	(0-6") F/M brown/blue stained sand with SO gravel and SO black cinders with TR orange paint chips; dry; no odor.
B	2-4				
C	4-6				
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:
Lead grab sample only.

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F01
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: 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	21/24	0950	2.2	(3-6") F dark brown sand with TR silt; dry; no odor. (6-24") F/M brown/light brown sand with TR gravel; dry; no odor.
B	2-4	40/48		0.0	(32-35") F tan sand; dry; no odor. (35-72") black cinders and small stones with LI brown/black sand; wet at 66-72"; no odor.
C	4-6		1020	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F02
ESS Job No: P151-002	Date: 1/4/00
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: 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	1040	0.0	(0-4") F/M dark brown sand with TR silt and TR gravel; dry; no odor. (4-16") F tan sand with TR gravel; dry; no odor. (16-24") black cinders and cinder ash with TR dark brown sand; dry; no odor.
B	2-4	40/48		0.0	(32-68") black cinders and cinder ash with SO F/M dark brown sand; dry; no odor. (68-72") F/C brown sand with SO gravel; wet; no odor.
C	4-6		1055	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F03
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: 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	20/24	1110	0.0	(0-4") F/M brown sand with TR gravel; dry; no odor. (4-24") F/M black cinders with SO F/M brown sand; dry; no odor.
B	2-4	43/48		0.0	(29-42") F/M black cinders and cinder ash; dry; no odor. (42-46") F/M brown sand with SO gravel; dry; no odor. (46-52") F/M dark brown sand with TR gravel; dry; no odor. (52-66") cinder ash; dry; no odor. (66-72") F/M brown sand with TR cinder ash and TR silt; wet; no odor.
C	4-6		1130	0.0	
D	6-8				
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: F04
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: 10.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 7.5'
	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	19/24	1145	0.0	(5-8") F/M brown sand with LI gravel; dry; no odor. (8-24") F/C cinder ash with SO black cinders; dry; no odor.
B	2-4	28/48		0.0	(44-52") black cinder ash; dry; no odor. (52-61") F/M brown sand with SO gravel mixed in; dry; no odor. (61-72") F/M brown sand with TR cinder ash; wet; no odor.
C	4-6			0.0	
D	6-8	43/48		20.2	(77-86") black cinder ash with TR gravel; dry; no odor. (86-91") F brown stained sand with SO silt and LI gravel; saturated; no odor. (91-120") F gray stained sand with LI silt and TR gravel; saturated with water; heavy petroleum odor and visible sheen; (116-120") C sand.
E	8-10		1200	110.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE	(+1.0-4.0') PVC Solid Riser (4.0-9.0') PVC Screen One inch sump at 9.0'	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: F05
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: 10.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 8.5'
	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	19/24	1230	0.0	(5-8") brown topsoil. (8-14") F/M brown sand with SO gravel; dry; no odor. (14-24") F/M black cinder ash with black cinders and pieces of elastic material.
B	2-4	32/48		0.0	(40-49") black cinder ash with SO gravel; dry; no odor. (49-56") F/M brown sand with LI gravel and TR black cinder ash; dry; no odor. (56-63") black cinder ash/black cinders; dry; no odor. (63-72") F/M brown sand with SO gravel and TR cinder ash; dry; no odor.
C	4-6			0.0	
D	6-8	28/48	1255	0.0	(92-99") black cinder ash; dry; no odor. (99-103") F/M brown sand with SO gravel; damp; no odor. (103-115") F/M brown sand and silt with streaks of black; saturated; no odor. (115-120") F/M brown sand and TR gravel; saturated with water; no odor.
E	8-10			0.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE			
TRACE (TR)	0-10%	M = MEDIUM		A = 0-24 in.	G = 144-168 in.
LITTLE (LI)	10-20%	C = COARSE		B = 24-48 in.	H = 168-192 in.
SOME (SO)	20-35%	F/M = FINE TO MEDIUM		C = 48-72 in.	I = 192-216 in.
AND	35-50%	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

ESS
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.: F06
	Date: 1/4/00
ESS Job No: P151-002	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: 9.1'
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	1310	0.0	(0-5") F/M dark brown topsoil. (5-15") F brown/dark brown sand; dry; no odor. (15-24") F tan sand; dry; no odor.
B	2-4	35/48		0.0	(37-43") F/M brown sand with SO gravel; SO small cinders; dry; no odor. (43-55") F brown sand with TR silt and TR cinders; damp; no odor. (55-72") F/M brown sand with SO cinder ash and SO gravel; dry; no odor.
C	4-6			0.0	
D	6-8	35/48		0.0	(85-96") F/M brown sand with SO cinder ash and TR gravel; damp; no odor. (96-99") F/M gray sand with TR gravel; damp; light odor. (99-110") F/M brown sand with SO gravel; damp; no odor. (110-120") F/C brown sand with TR gravel; saturated with water; no odor.
E	8-10		1330	0.0	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F07
	Date: 1/5/00
ESS Job No: P151-002	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: 9.5'
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	22/24	1130	0.0	(2-6") F dark brown topsoil. (6-11") F/M brown sand with TR gravel; no odor. (11-24") F/M black cinder ash and black cinders; dry; no odor.
B	2-4	21/48		0.0	(41-62") F/M black cinders and cinder ash with SO gravel; dry; no odor. (62-72") F/M brown sand with SO black cinders and LI silt; dry; no odor.
C	4-6			0.0	
D	6-8	28/48		0.0	(92-103") F/M black cinder ash and small black cinders with TR F/M brown sand; dry; no odor. (103-108") red brick (weathered). (108-115") black cinder ash and brown/black cinders; F/M sand; damp; light odor. (115-120") F brown sand with TR silt; saturated with water; light odor.
E	8-10		1150	2.1	
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F08
ESS Job No: P151-002	Date: 1/5/00
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: 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	18/24	1210	0.0	(6-12") brown topsoil. (12-17") F/M sand with SO gravel; dry; no odor. (17-24") F/M black/red cinder ash/cinders; dry; no odor.
B	2-4	32/48		0.0	(40-59") F/M black cinder ash with large black cinders ; dry; no odor. (59-63") F/M brown sand with LI gravel and SO black cinder ash; dry; no odor. (63-72") black cinder ash with SO small cinders; dry; no odor.
C	4-6			0.0	
D	6-8	23/48		0.0	(97-99") F/M black cinder ash; dry; no odor. (99-106") red brick (weathered). (106-120") large black cinders with SO cinder ash; wet at 108"; no odor
E	8-10		1225	0.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: F09
	Date: 1/5/00
ESS Job No: P151-002	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: 8.0'
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	1310	0.0	(0-7") F/M black topsoil; dry; no odor. (7-10") F/M dark brown sand; dry; no odor. (10-19") F/M brown sand with SO gravel; dry; no odor. (19-24") F/M black cinder ash with SO black large cinders; dry; no odor.
B	2-4	31/48	0.0	0.0	(41-72") F/M black cinder ash and M black cinders with pieces of a porous metal/ore near bottom of sample; dry; no odor.
C	4-6			0.0	
D	6-8	41/48	1335	0.0	(79-80") F black cinder ash with TR F/M brown sand; dry; no odor. (80-96") F/M brown sand and black cinder ash/cinders; damp; no odor. (96-120") F/M black sparkling cinders/cinder ash; wet; no odor.
E	8-10			0.0	
	10-12	33/48		0.0	(120-168") water saturated cinder ash; F/M silt with a slight petroleum odor.
G	12-14	33/48		0.0	

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

ESS

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.: F13
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: 14.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 10.5
	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	1015		(0-1") brown topsoil. (1-12") F/C brown/dark brown sand. (12-24") F/M tan sand; TR gravel; TR silt.
B	2-4	36/48			(36-41") F tan sand; SO gravel; TR silt. (41-51") reddish brown/black cinders and ash; TR brick and ceramic fragments. (51-72") black cinders and cinder ash.
C	4-6				
D	6-8	32/48			(88-94") black cinders and cinder ash. (94-120") black cinders and cinder ash; LI porous cinders; TR F/M sand.
E	8-10		1030		
F	10-12	40/48			(120-168") black cinders and cinder ash. Wet at 126".
G	12-14	40/48			

Comments:

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS

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.: F14
	Date: 1/6/00
ESS Job No: P151-002	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: 9.5'
Sample Method: 4' Acetate Sampler	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	1045		(0-6") F/M brown sand; LI silt. (6-24") F/C brown sand; SO cinders and cinder ash; dry.
B	2-4	32/48			(40-72") black cinder and cinder ash; large porous ore at 50"; TR F/C sand; dry.
C	4-6				
D	6-8	36/48	1110		(84-94") black cinders and cinder ash. (94-96") brown/reddish brown substance; no odor. (96-106") F/C brown/gray/black sand; SO gravel; LI cobble; dry. (106-118") F/C brown sand; LI silt; TR clay; wet at 114-118". (118-120") black cinder.
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F15
	Date: 1/6/00
ESS Job No: P151-002	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: 10.0'
Sample Method: 4' Acetate Sampler	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	1230		(0-3") black topsoil. (3-9") F brown sand; LI silt. (9-11") F tan sand; LI silt. (11-24") black cinders and cinder ash.
B	2-4	34/48			(38-64") black cinders and cinder ash; LI porous cinders; TR brick fragments. (64-68") F brown sand; LI gravel. (68-72") black cinders; TR gravel.
C	4-6				
D	6-8	40/48	1250		(80-120") black cinders and cinder ash; TR F/M sand; Wet at 120"..
E	8-10				
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS Well Construction	DEPTH INTERVALS	
		F = FINE	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM	B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: F16
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: 14.0'
Sample Method: 4' Acetate Sampler	Depth to Water: 9.0'
	Logged By: Jason Wiggin/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	1215		(0-4") dark brown topsoil with organics. (4-22") F/M brown sand; TR silt; TR gravel.
B	2-4	38/48			(34-39") F/C brown sand; SO gravel. (39-72") black cinder and cinder ash; LI porous cinders.
C	4-6	38/48			
D	6-8	33/48	1230		(88-120") black cinders and ash. Wet at 108".
E	8-10				
F	10-12	36/48			(132-168") black cinders and ash.
G	12-14	36/48			

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE	(+.75-6.0') PVC Solid Riser (6.0-11.0') PVC Screen One inch sump at 11.0'	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: F17
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'
Sample Method: 4' Acetate Sampler	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	18/24	1340	0.0	(6-10") black topsoil. (10-24") F/C brown sand; SO gravel; TR silt.
B	2-4	33/48	0.09	0.0	(39-41") F/C brown sand; SO gravel; TR silt. (41-72") C black cinders/cinder ash and porous cinders; LI gravel 68-72".
C	4-6		1355	0.0	
D	6-8	36/48		0.0	(84-113") F black cinders and cinder ash; LI fines (ash or silt); TR brick. (113-120") F black cinders and cinder ash; LI fines; TR gravel. Wet at 90".
E	8-10			0.0	
	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS Well Construction	DEPTH INTERVALS	
		F = FINE	A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM	B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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
	Date: 1/6/00
ESS Job No: P151-002	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: 7.5'
Sample Method: 4' Acetate Sampler	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				

Comments:

PROPORTIONS USED	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F19
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: 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	0910	0.0	(0-3") brown topsoil; organics. (3-13") F brown sand; LI silt. (13-21") F/C brown sand; LI gravel; TR silt. (21-24") F/C black cinders and cinder ash ; TR porous cinders.
B	2-4	37/48		0.0	(37-39") F/C brown sand; LI silt. (39-72") F/C black cinders and cinder ash; LI porous cinders; gravel sized sand.
C	4-6	37/48	0920	0.0	
D	6-8	20/48		0.0	(100-106") F/C black cinders and cinder ash. (106-108") F/C dark brown/black sand; LI silt; TR cinder ash. (108-120") F/C cinders/cinder ash; LI porous cinders. Wet at 102".
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 Well Construction
F = FINE
M = MEDIUM
C = COARSE
F/M = FINE TO MEDIUM
F/C = FINE TO COARSE
M/C = MEDIUM TO COARSE

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

ESS
272 West Exchange Street, Suite 101
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(401) 421-0398 Fax (401) 421-5731

Site: Providence Gas Company 642 Allens Avenue, Providence, RI	Boring No.: F20
ESS Job No: P151-002	Date: 1/7/00
Driller.: Environmental Drilling, Inc.	Within 100' of Water: No
	Instrument: Thermo Environmental Instruments, Inc., Model 580B OVM
Well Diameter: N/A	Boring Depth: 10.0'
Drilling Method: Geoprobe	Depth to Water: 8.75'
Sample Method: 4' Acetate Sampler	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	(0-5") 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	
TRACE (TR)	0-10%
LITTLE (LI)	10-20%
SOME (SO)	20-35%
AND	35-50%

ABBREVIATIONS	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F28
ESS Job No: P151-002	Date: 2/2/00
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	1030	0.0	(0-9") F/M dark brown/brown sand with SO gravel; dry; no odor. (9-18") F/M brown sand with LI gravel; dry; no odor. (18-24") F light brown sand; no gravel; dry; no odor.
B	2-4	35/48		0.0	(37-52") F light brown sand; dry; no odor. (52-67") F/M black/dark brown sand with black cinders and shiny M/large black bits of coal; dry; no odor. (67-72") pulverized stone.
C	4-6			0.0	
D	6-8	23/48		0.0	(97-108") F brown sand with SO gravel; damp; no odor. (108-120") F brown sand and silt; saturated with water; no odor.
E	8-10		1040		
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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F33
	Date: 1/7/00
ESS Job No: P151-002	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: 8.5'
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	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	Well Construction
F = FINE	
M = MEDIUM	
C = COARSE	
F/M = FINE TO MEDIUM	
F/C = FINE TO COARSE	
M/C = MEDIUM TO COARSE	

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

ESS
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.: F53
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: 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	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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

ESS
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.: F58
	Date: 3/7/00
ESS Job No: P151-002	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: 5.8'
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	1200	0.0	(0-2") brown/light brown topsoil; damp; no odor. (2-24") F light brown/tan sand; damp; no odor.
B	2-4	48/48		0.0	(24-27") F/C light brown sand with TR gravel; damp; no odor. (28-36") F/M dark brown sand with TR gravel; damp; no odor. (36-51") F/M brown sand with LI gravel and SO black cinder and SO bits of coal; with LI F cinder ash; damp; no odor. (51-56") F brown/dark brown silt with TR F sand; wet; no odor. (56-68") F dark brown sand with SO small/M black cinders and SO gravel; saturated at 68"; no odor. (68-72") F brown/dark brown sand with TR gravel; saturated with water; no odor.
C	4-6		1215	0.0	
D	6-8	42/48		0.0	(126-168) F/C brown sand and silt with SO gravel and TR black cinders near 126"; saturated with water; no odor.
E	8-10			0.0	
F	10-12				
G	12-14				

Comments:

PROPORTIONS USED		ABBREVIATIONS	Well Construction	DEPTH INTERVALS	
		F = FINE		A = 0-24 in.	G = 144-168 in.
TRACE (TR)	0-10%	M = MEDIUM		B = 24-48 in.	H = 168-192 in.
LITTLE (LI)	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 Pit Excavation Log

ESS 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. E15
	Site Name	Allens Avenue Remediation Project	Date 10/4/00
	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 5.0 feet
	Excavator Reach	12 feet	Groundwater Depth 5.0 feet

Test Pit Description

0-36"	Brown/dark brown fine to medium sand. Some large subangular gravel. Some cinders and wood. Strong odor.
36-54"	Dark brown/black fine to medium sand and black/purple, dense, fibrous material. Damp. Strong odor.
	Black/purple fine to medium sand with some wood, gravel, concrete block fragments, and metal (50-54"). Damp. Very strong odor.

Remarks:

Unusual, strong odor. Blue stained surface soil and prussian blue stained small stones on surface. Concrete fragments are curved and may represent portions of purifiers historically located in this area. Further evaluation needed. Headspace readings at 3' = 1.5 ppm; 4.5' = 2.4 ppm; 5.0' = 175 ppm. CN Draeger tube pulled at 3' result = 0 ppm.

Location/Sketch

Near pipe staging area, east of Holder 21 near historical structures No. 6. Adjacent to Boring E15. See Figure 2 in SIR.

Test Pit Excavation Log

ESS
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.	E29
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	Approximately 5.5 Feet

Test Pit Description

0-12"	Dark brown fine to medium sand and gravel with trace of silt.
12-13"	Black fine sand with traces of coal and fine to medium gravel.
13-17"	Light brown fine to medium sand, trace of silt.
17-28"	Black fine to coarse slag, no odor, no measurable PID readings.
28-42"	Light brown fine to medium sand with some gravel (damp).
42-68"	Light brown fine wet sand.

Remarks:

Groundwater entering excavation at approximately 68" (5'8"). No measurable PID readings, no odors from excavation, no sheen on groundwater.

Location/Sketch:

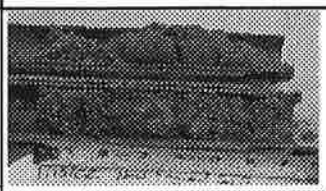
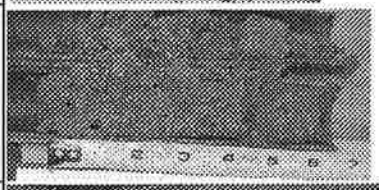
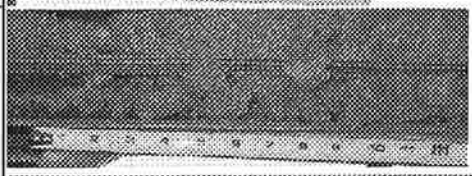
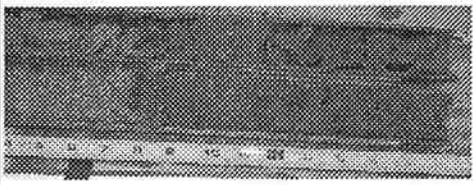
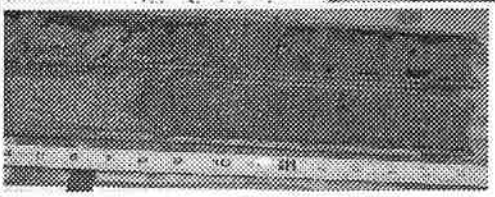
Adjacent to Boring E29. See Figure 2 in SIR.

Soil Boring Report

PROJECT	Report of Boring No.	VHB-8
New England Gas Company 642 Allens Avenue Providence, Rhode Island	Well ID:	VHB-8
	Job Number: 71274	Sheet 1 of 3

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	Behind gasholder		
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	ND	S1	24 / 7	2 - 3 3 - 3	Very dark grayish brown (10YR 3/2) over olive brown (2.5Y 4/3), loose, fine SAND, little silt, trace gravel, moist, no sheen or odors.	
2 - 4	3.0	S2	24 / 6	1 - 2 4 - 7	Olive brown (2.5Y 4/3), loose, fine SAND, some silt, moist, black staining, faint chemical odor.	
4 - 6	1.8	S3	24 / 18	2 - 3 3 - 2	Light brown, loose, fine to medium SAND, trace gravel, wet, rust bands, no sheen or odors.	
						
6 - 8	ND	S4	24 / 16	3 - 2 2 - 2	6" Light brown, loose, fine to medium SAND, over 10" grayish brown, fine to medium SAND, little silt wet, no sheen or odors.	
						

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

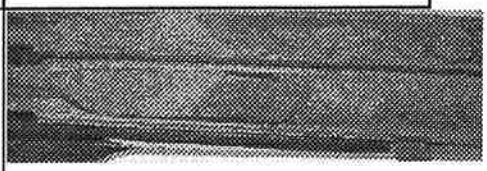
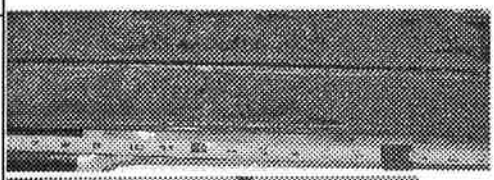
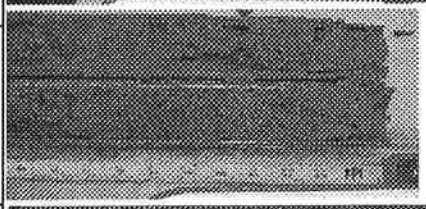
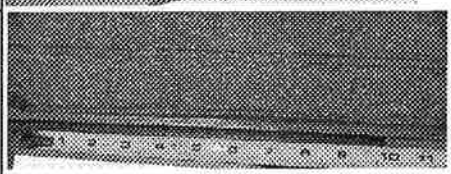
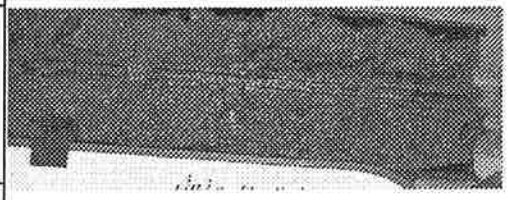
1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual.
2) Bedrock was not encountered.
3) Water levels may fluctuate due to ocean tides, season, and precipitation rates.
4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID).

Soil Boring Report

PROJECT	Report of Boring No.	VHB-8
New England Gas Company 642 Allens Avenue Providence, Rhode Island	Well ID:	VHB-8
	Job Number: 71274	Sheet 2 of 3

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	Behind gasholder		
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
8 - 10	ND	S5	24 / 24	2 - 4 6 - 7	Grayish brown, medium dense, fine to medium SAND, little silt, wet, no sheen or odors.	
						
						
10 - 12	ND	S6	24 / 10	1 - 2 4 - 6	Light brown, loose, medium to coarse SAND, trace gravel, wet, no sheen or odors.	
						
						

GRANULAR SOILS		COHESIVE SOILS		PROPORTIONS	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY		
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		

Notes

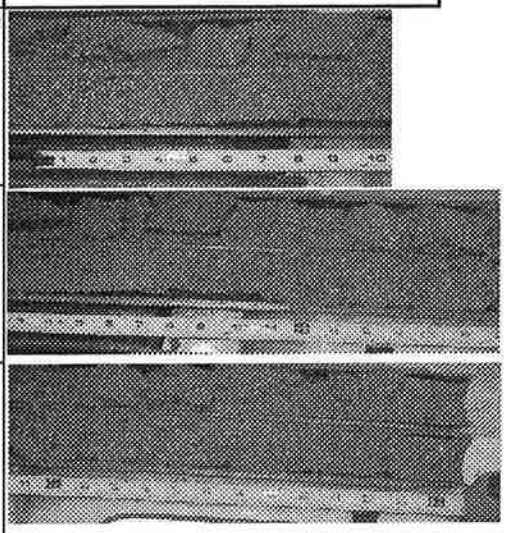
1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual.
2) Bedrock was not encountered.
3) Water levels may fluctuate due to ocean tides, season, and precipitation rates.
4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID).

Soil Boring Report

PROJECT	Report of Boring No.	VHB-8
New England Gas Company 642 Allens Avenue Providence, Rhode Island	Well ID:	VHB-8
	Job Number: 71274	Sheet 3 of 3

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	Behind gasholder		
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
12 - 14	ND	S7	24 / 10	7 - 8 11 - 8	Light brown, loose, medium to coarse SAND, trace gravel, wet, no sheen or odors.	

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 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).

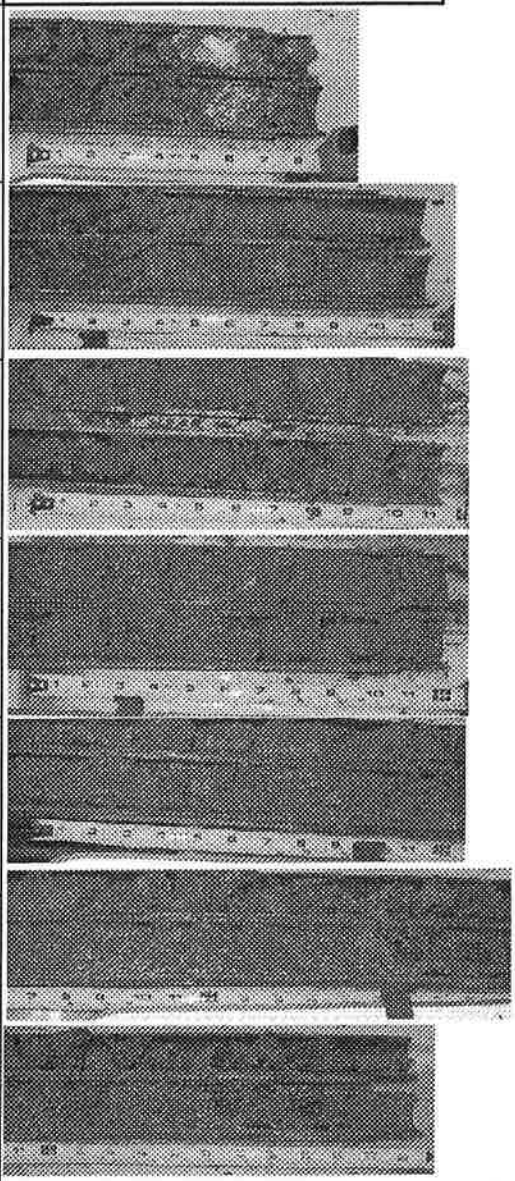
Soil Boring Report

PROJECT	Report of Boring No.	VHB-9
New England Gas Company 642 Allens Avenue Providence, Rhode Island	Well ID:	VHB-9
	Job Number: 71274	Sheet 1 of 2

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	In between gas holders		
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.	Per/Rec	Blows/6"	SAMPLE DESCRIPTION	Boring Photo
0 - 2	ND	S1	24 / 8	2 - 8 7 - 5	Grayish brown, loose, fine SAND and silt, rock in spoon tip, moist, no sheen or odor.	
2 - 4	ND	S2	24 / 14	6 - 4 3 - 4	Grayish brown, loose fine SAND and silt, trace gravel, moist, no sheen or odor.	
4 - 6	ND	S3	24 / 12	4 - 4 3 - 3	Grayish brown, loose fine SAND and silt, trace gravel, moist no sheen or odor, wet tip.	
6 - 6 3/4	3.0	S4	24 / 16	3 - 2 2 - 4	Grayish broown, very loose medium SAND, some silt, wet, no sheen or odor.	
8 - 10	42.1	S5	24 / 22	1 - 1 1 - 5	16" Grayish brown, very loose, medium to coarse SAND, trace gravel, over 6" black, very loose SAND, wet, faint chemical odor, wet.	



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 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).

Soil Boring Report

PROJECT	Report of Boring No.	VHB-9
New England Gas Company	Well ID:	VHB-9
642 Allens Avenue	Job Number: 71274	Sheet 2 of 2
Providence, Rhode Island		

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	In between gas holders		
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.	Per/Rec	Blows/6"	SAMPLE DESCRIPTION	Boring Photo
10 - 12	41.5	S6	24 / 12	1 - 30+	12" Grayish brown, loose medium SAND and silt, over brick (possible old sewer), wet, chemical odor, and oily sheen.	 Bottom of exploration 12' 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

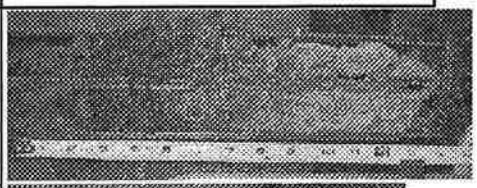
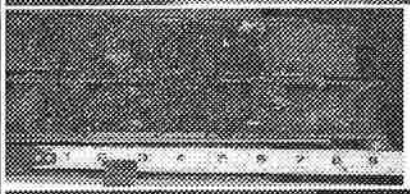
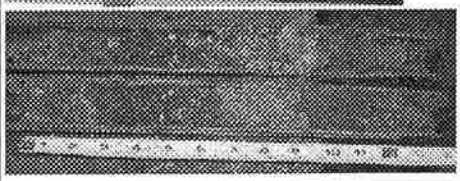
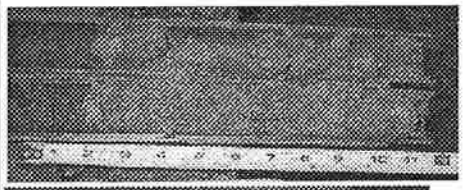
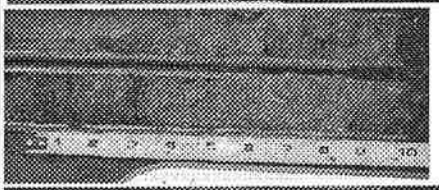
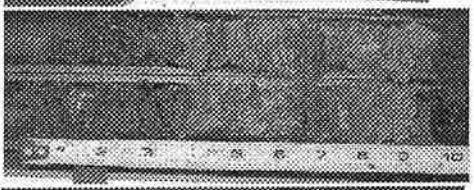
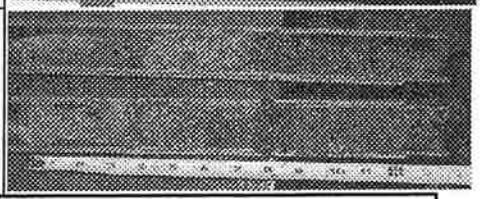
1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual.
2) Bedrock was not encountered.
3) Water levels may fluctuate due to ocean tides, season, and precipitation rates.
4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID).

Soil Boring Report

PROJECT	Report of Boring No.	VHB-10
New England Gas Company	Well ID:	VHB-10
642 Allens Avenue	Job Number: 71274	Sheet 1 of 2
Providence, Rhode Island		

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	By Allens Avenue and Terminal Road
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	ND	S1	24 / 13	1 - 2 2 - 3	3" brown, very loose, medium SAND, over 4" ground asphalt, over 6" light brown, very loose SAND moist, no sheen or odor.	
2 - 4	ND	S2	24 / 9	2 - 3 6 - 10	9" ground ASPHALT, moist no sheen, asphaltic odor.	
4 - 6	ND	S3	24 / 12	4 - 6 4 - 5	Light brown, loose, medium SAND, some ground asphalt, little coal slag, moist, no sheen or odor.	
6 - 8	ND	S4	24 / 18	5 - 4 4 - 5	Light brown, loose, fine SAND, little silt, moist, no sheen or odor.	
8 - 10	58.9	S5	24 / 16	6 - 6 8 - 10	Light olive gray, medium dense, fine SAND trace silt, wet, faint chemical odor.	
10 - 12	60.4	S6	24 / 10	2 - 1 6 - 10	Light gray, loose, fine SAND, over 3" COAL SLAG layer, wet, faint chemical odor.	
12 - 14	57.4	S7	24 / 14	6 - 6 5 - 5	8" light gray, loose SILT, over 6" black COAL SLAG, wet, faint chemical odor, oily sheen.	

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

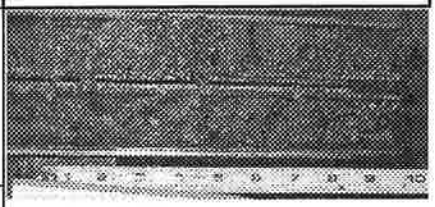
1) Soil stratification lines represent a graphical depiction of changes in soil type and grainsize. Actual changes may be gradual.
2) Bedrock was not encountered.
3) Water levels may fluctuate due to ocean tides, season, and precipitation rates.
4) All soil samples were screened in the field for VOCs using a ThermoEnvironmental Instruments model 580B 10.eV photoionization detector (PID).

Soil Boring Report

PROJECT	Report of Boring No.	VHB-10
New England Gas Company 642 Allens Avenue Providence, Rhode Island	Well ID:	VHB-10
	Job Number: 71274	Sheet 2 of 2

Drilling Company:	Subsurface Drilling and Remediation	Boring Location:	By Allens Avenue and Terminal Road		
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
15 - 17	57.4	S8	24 / 10	6 - 3 4 - 2	Gray to black, loose SAND, some coal slag, little silt, faint chemical odor, oily sheen.	 Bottom of exploration 17' below grade.

GRANULAR SOILS BLOWS/FT	DENSITY	COHESIVE SOILS BLOWS/FT	DENSITY
0 - 4	V. Loose	<2	V. Soft
4 - 10	Loose	2 - 4	Soft
10 - 30	M. Dense	4 - 8	M. Stiff
30 - 50	Dense	8 - 15	Stiff
>50	V. Dense	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 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).

Soil Boring Report

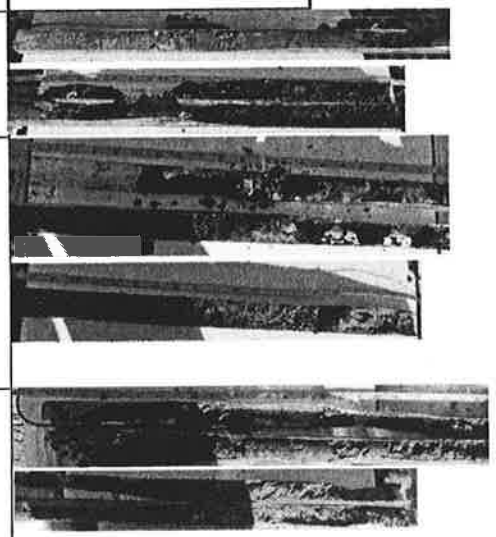
PROJECT	New England Gas Company Providence, Rhode Island	642 Allens Avenue	Report of Boring No. B-1
			Well ID: VHB-18
			Job Number: 71274 — Sheet 1 of 1

Drilling Company:	NE Geotech	Boring Location:	South-central portion of Site
Driller:		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/6"	SAMPLE DESCRIPTION
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/darl 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 conentrations, 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

Boring Photo



No Photo Available.

Bottom of exploration 16' 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 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).

Soil Boring Report

PROJECT New England Gas Company — **642 Allens Avenue** — **Providence, Rhode Island**

Report of Boring No. B-2
Well ID: NA
Job Number: 71274 | Sheet 1 of 1

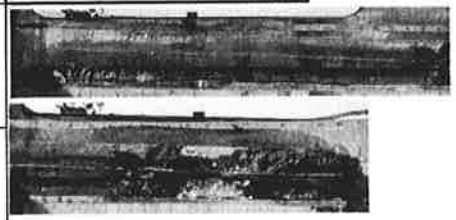
Drilling Company: NE Geotech
Driller:
Inspector: Claude Masse / Chris Mazzolini

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.	Pen/Rec	Blows/6"	SAMPLE DESCRIPTION
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 concentreations, 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.

Boring Photo



Bottom of exploration 4' 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 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).

Soil Boring Report

PROJECT	New England Gas Company Providence, Rhode Island	642 Allens Avenue	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		
Driller:		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	Blows/6"	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.
						Bottom of exploration 4' 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 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).

Soil Boring Report

PROJECT	New England Gas Company Providence, Rhode Island	642 Allens Avenue	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	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	Blows/6"	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 concentreations, 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.

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 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 photolonization detector (PID).

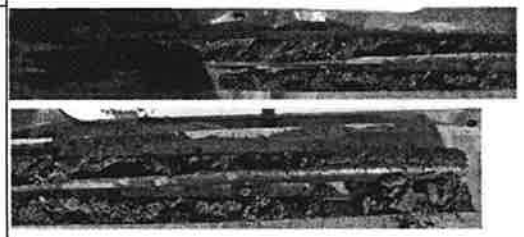
Soil Boring Report

PROJECT New England Gas Company, Providence, Rhode Island — 642 Allens Avenue

Report of Boring No. B-2D
Well ID: NA
Job Number: 71274 Sheet 1 of 1

Drilling Company:	NE Geotech	Boring Location:	Approx. 20 feet northwest of B-2
Driller:		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	Blows/6"	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.

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 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).

Soil Boring Report

PROJECT	New England Gas Company Providence, Rhode Island	642 Allens Avenue	Report of Boring No. B-3
			Well ID: NA
			Job Number: 71274 — Sheet 1 of 1

Drilling Company:	NE Geotech	Boring Location:	South-central portion of the Site
Driller:		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	Blows/6"	SAMPLE DESCRIPTION
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.

Boring Photo

Bottom of exploration 12' 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 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 photolonization detector (PID).

Soil Boring Report

PROJECT	New England Gas Company Providence, Rhode Island	642 Allens Avenue	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/6"	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 lt. Tan f sand and silt, some blue/green staining over approx. 0.5 feet of lt. 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	
0 - 4	V. Loose	<2	V. Soft
4 - 10	Loose	2 - 4	Soft
10 - 30	M. Dense	4 - 8	M. Stiff
30 - 50	Dense	8 - 15	Stiff
>50	V. Dense	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 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).

Soil Boring Report

PROJECT	New England Gas Company Providence, Rhode Island	642 Allens Avenue	Report of Boring No. B-8
			Well ID: NA
			Job Number: 71274 — Sheet 1 of 1

Drilling Company:	NE Geotech	Boring Location:	South-central portion of the Site
Driller:		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/Rec	Blows/6"	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 exploration 11' 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 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).

DAMAGED AT THE BASE - STANDPIPE 12/2009 NG

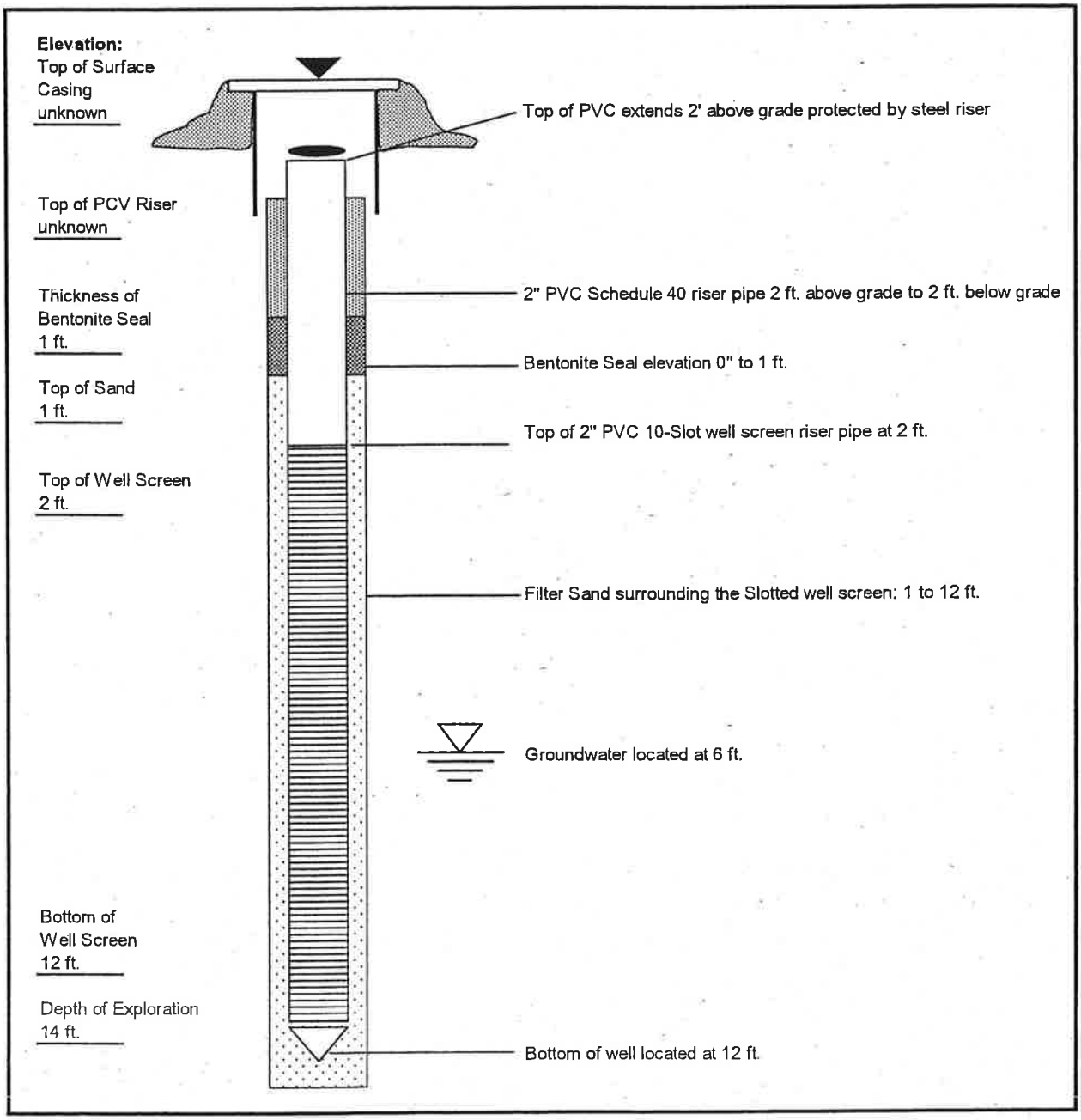
VHB Monitoring Well Diagram

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-8
GW Depth: Approx. 6 Feet

COULD NOT LOCATE 6/2010



DAMAGED AT THE BASE - STANDPIPE N6 12/2009

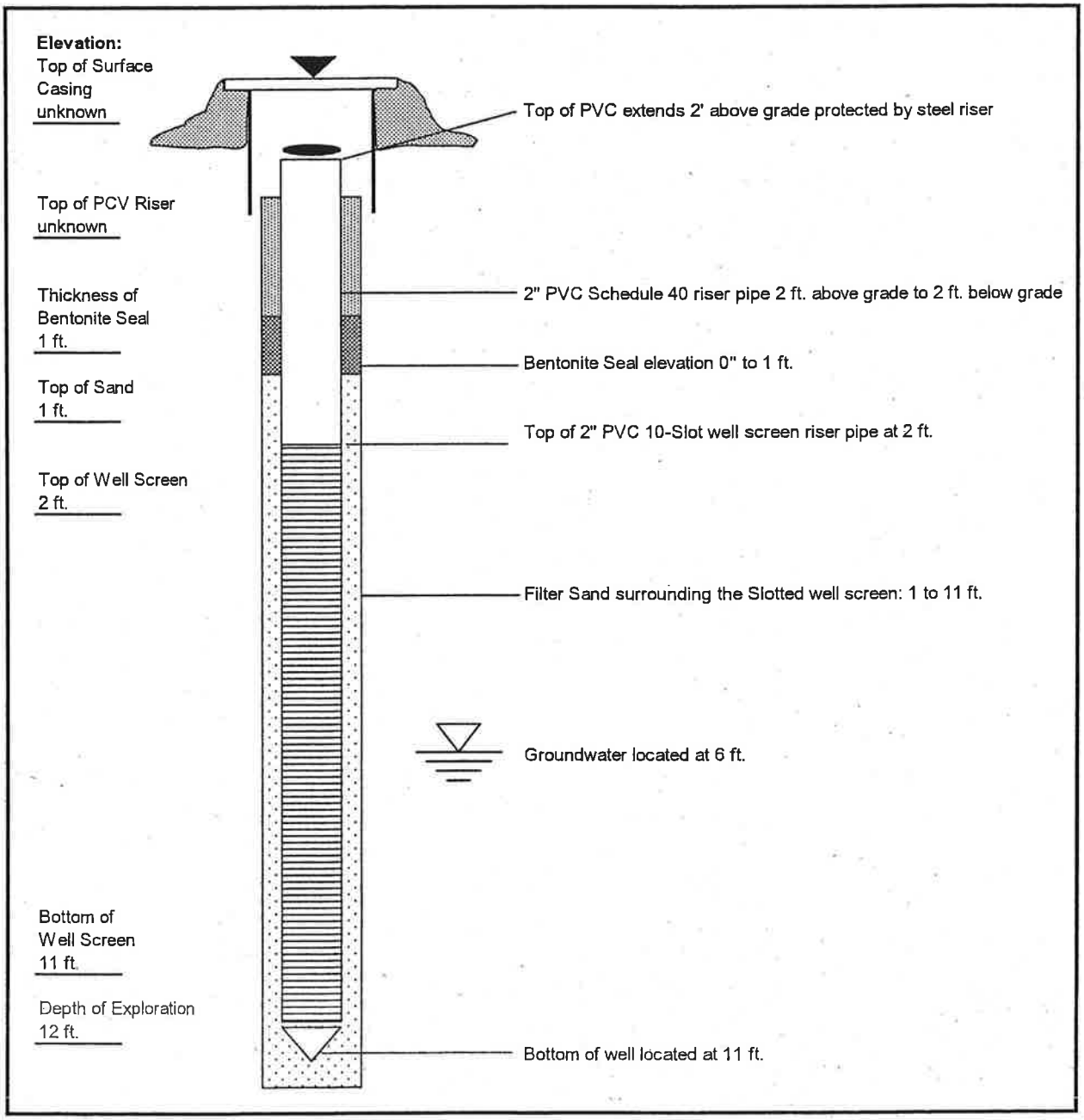
VHB Monitoring Well Diagram

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-9
GW Depth: Approx. 6 Feet

DAMAGED 6/2010



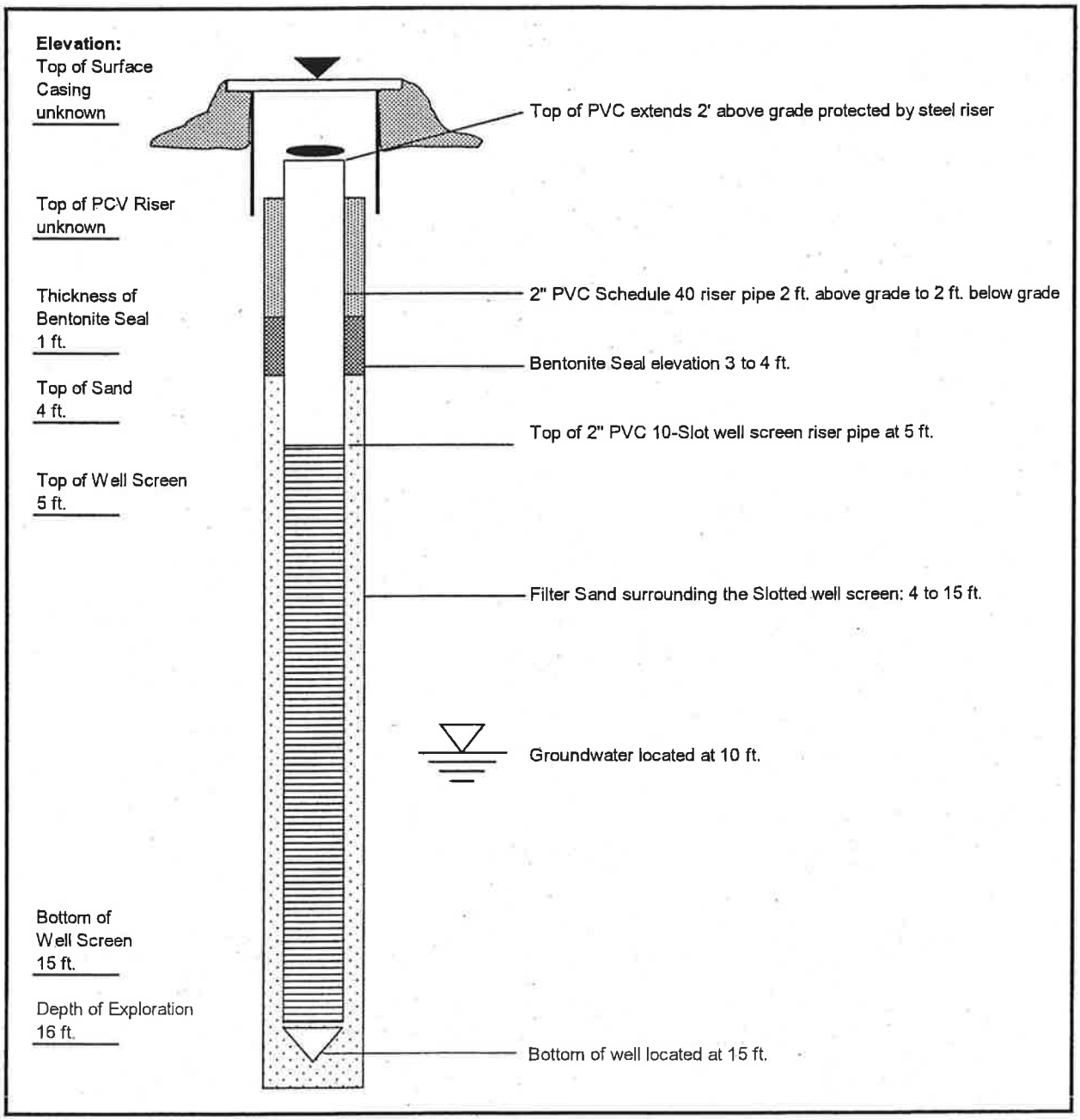
N 6

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-10
GW Depth: Approx. 6 Feet



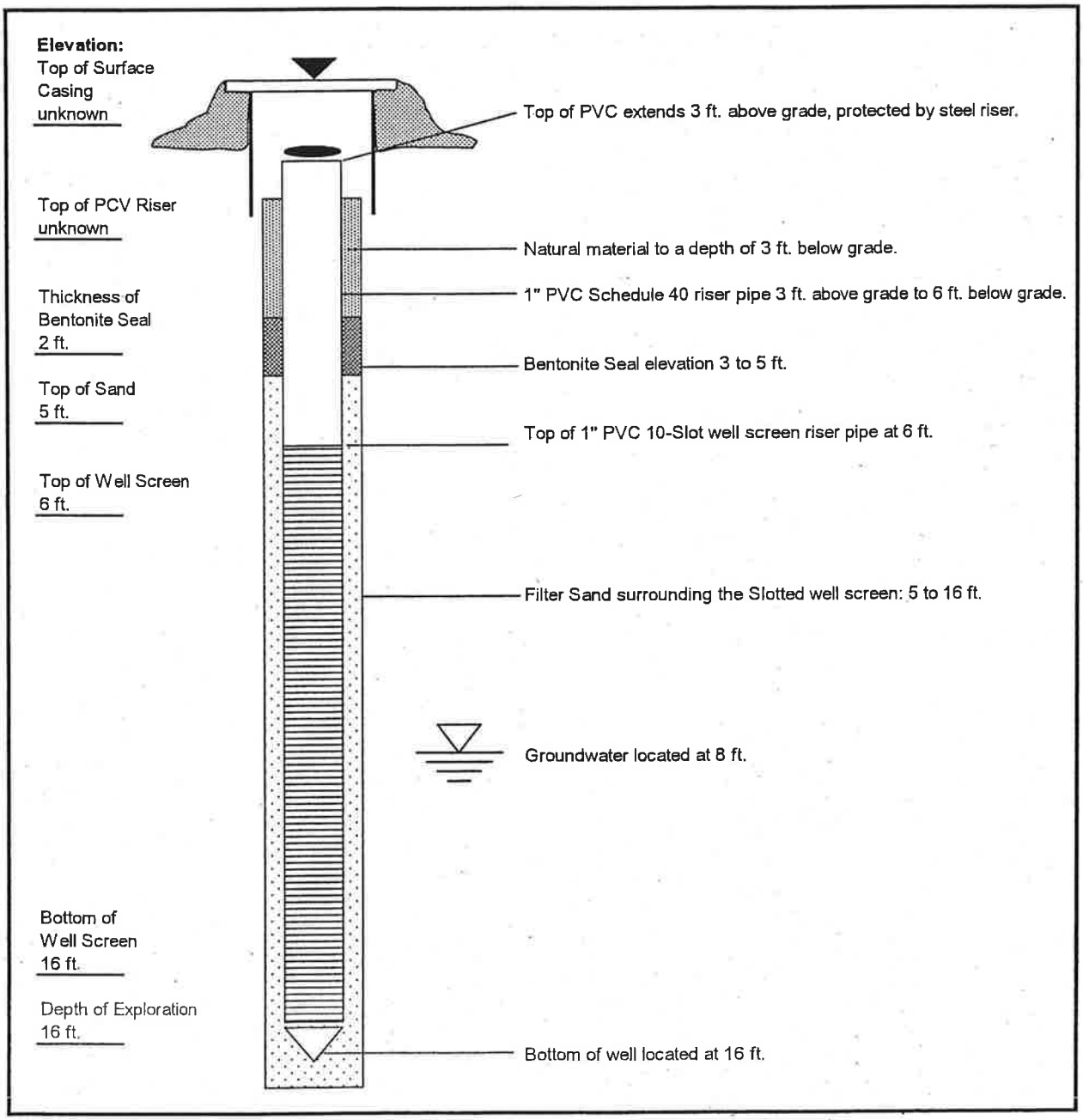
N 6

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-18
GW Depth: Approx. 8 Feet



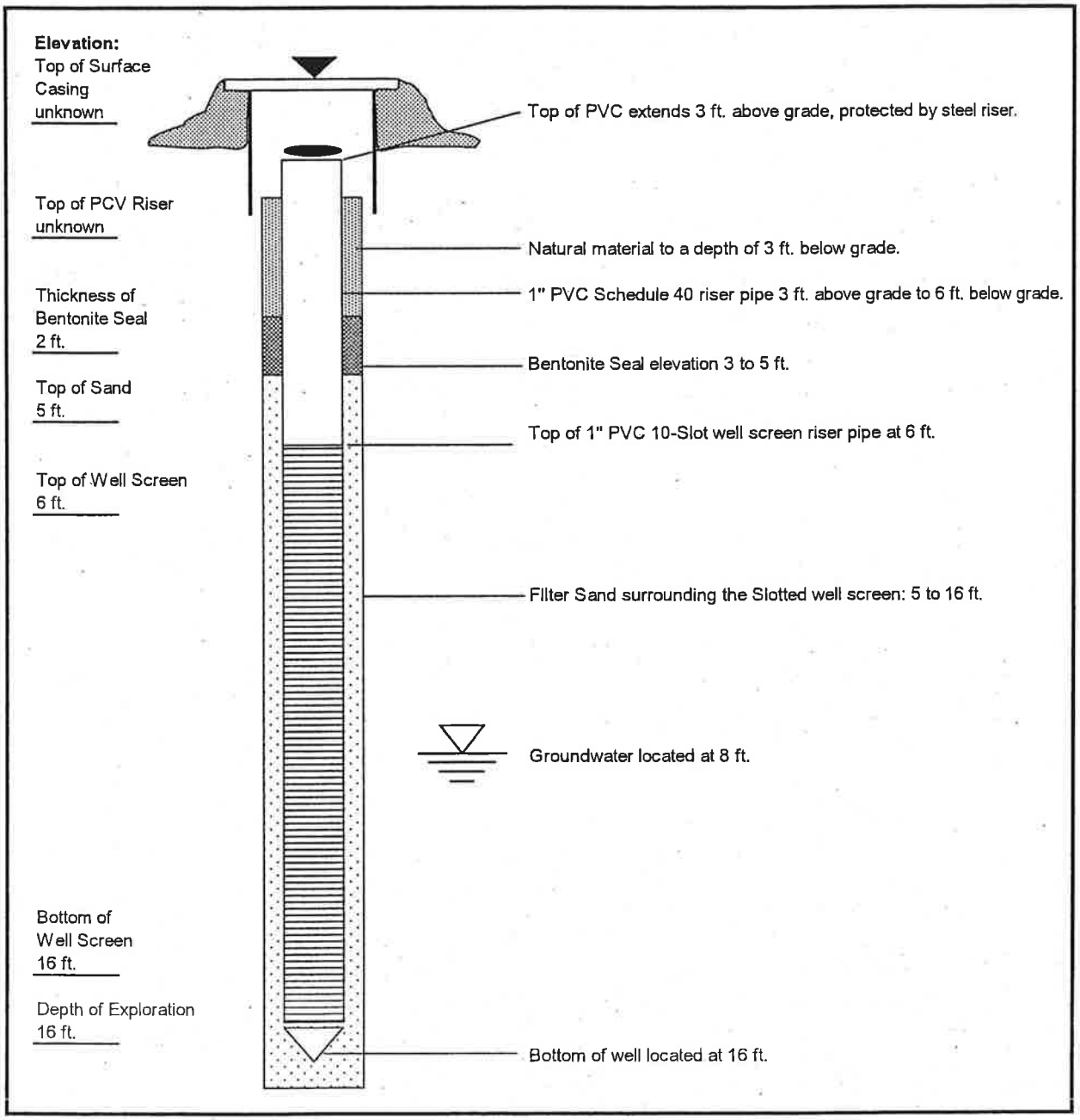
N6

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



VHB Vanasse Hangen Brustlin, Inc.

Test Pit Log: **VHB-TP100**

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					

VHB Vanasse Hangen Brustlin, Inc.

Test Pit Log: **VHB-TP101**

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	OVM Reading (ppm)	Description: strata thickness, color, texture, moisture, observations	Remarks
0					
1					
2	VHB-TP101 (5-8')	E		Lt. olive br vf/f sand, tr/li f/m gravel	
3					
4		E/M		Dk grayish green vf/f sand, masses of blackish blue, extremely dense, vf sand	
5					
6		M/D	114	Blk vf/f sand, MGP-like odor, plastic sheeting at approximately 7 feet bsg	
7					
8		D		Refusal	
9					
10					
11					
12					
13					
14					

Vanasse Hangen Brustlin, Inc.

Test Pit Log: **VHB-TP102**

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		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.
5	VHB-TP-102 (6')				
6		D	>2500	Refusal	
7					
8					
9					
10					
11					
12					
13					
14					

VHB Vanasse Hangen Brustlin, Inc.

Test Pit Log: **VHB-TP103**

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				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).
		E/M			
2					
3			315	Blk green vf/f sand, tr/li gravel/cobbles	
		M/D			
4		D			
5				Yell br/br yell c sand and gravel and cobbles.	
6					
7					
8					
9					
10					
11					
12					
13					
14					

VHB Vanasse Hangen Brustlin, Inc.

Test Pit Log: VHB-TP104

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: strata thickness, color, texture, moisture, observations	Remarks
0					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.
1					
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					
8	M/D			Yell/Yell br/br yell vf/f sand and cobbles, very dense	
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-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 No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
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														
4	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						
5														
6	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						
7							3					FILL		
8	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 (GLEY 1, 5/N) fine to medium SAND, some Silt, some Gravel, wet		ND						
9														
10	S-6	10-12	24	0	18 19 10 8	S-6 : No Recovery		NM						PVC Riser
11														
12	S-7	12-14	24	0	8 12 13 13	S-7 : No recovery, sheen on spoon		NM						
13														
14	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						
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-320D

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:35 PM

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

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 No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Depth(ft.) Stratum Description Elev.(ft.)	Equipment Installed
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										Slgt		
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			Slgt		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

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

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 No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
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
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						Bentonite Seal, PVC Riser, Filter Sand
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				Possible FILL/SAND		
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														Filter Sand
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						
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

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 12/28/2015; 2:41:43 PM

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 No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
16											16	Possible FILL/SAND	-3.4	Filter Sand
						End of exploration at 16 feet.	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 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 No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
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	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			4	FILL	6.9	
3						End of exploration at 4 feet.								
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 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 No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
0	S-1	0-2	N/A	N/A		S-1 : Brown (10YR, 4/3) fine SAND, some Silt, little Gravel, dry	1	0.8						No Equipment Installed
1							2							
2												FILL		
2	S-2	2-3.5	N/A	N/A		S-2 : Dark green gray (GLEY 1. 4/1) fine SAND and SILT, trace Gravel		0.6						
3							3				3.5		7.4	
4						End of exploration at 3.5 feet.								
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

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 No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
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														
4	S-3	4-5	N/A	N/A		S-3 : Brown (10YR, 4/3) fine to medium SAND, some Gravel, little Sllt, moist		ND						
5							3				5		6.9	
						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-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 No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
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						No Equipment Installed
2	S-2	2-4	N/A	N/A		S-2 : Blue/black (GLEY 2, 2.5/B) fine SAND, little wood chips, purifier waste-like odor		33.5		Mod		FILL		
4	S-3	4-5	N/A	N/A		S-3 : Blue/black (GLEY 2, 2.5/B) fine SAND, little wood chips, purifier waste-like odor	3	26.4		Mod	5		6.2	
5						End of exploration at 5 feet.								

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 4
SURFACE SOIL DESCRIPTIONS AND FIELD SCREENING RESULTS

GZA Job No. 03.00033708.00
4/19/2016

National Grid - Owned Property
Woonsocket, 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

TEST BORING LOG

GZA GeoEnvironmental, Inc.
Engineers and Scientists

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	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:** NAD 83
Drilling Co.: Geosearch	**Rig Model:** CME	**Ground Surface Elev. (ft.):** 12	
Foreman: Shawn Preston	**Drilling Method:** HSA & Soil Vactor	**Final Boring Depth (ft.):** 20	**V. Datum:** NAVD 88
		Date Start - Finish: 10/30/2015 - 11/2/2015	

		Groundwater Depth (ft.)			
Hammer Type: Safety Hammer	**Sampler Type:** SS	**Date**	**Time**	**Water Depth**	**Stab. Time**
Hammer Weight (lb.): 140	**Sampler O.D. (in.):** 2.0	11/3/15	12:00	8.71	24 Hours
Hammer Fall (in.): 30	**Sampler Length (in.):** 24				
Auger or Casing O.D./I.D. (in): 4	**Rock Core Size:** N/A				

Depth (ft)	Sample No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
	1	0-2	NA	NA	NA	1 : (0-1'): Light brown (10yr 5/4) fine to medium SAND, little Gravel, trace Silt, Dry (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						Standpipe
							2	ND						Filter Sand
	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		ND						Betonite Seal
5	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		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 (6-12"): Dark gray (10yr 4/2) fine to coarse SAND, little Silt, little Gravel, Wet	3	1.9						Filter Sand
								ND						
	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		Well Screen
10	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						
							4							
	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						Clean Soil & Filter Sand
15											16		-4.0	
	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						
	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											20		-8.0	
						End of exploration at 20 feet.								
25														

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

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE, 11/19/2015, 11:07:48 AM

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 No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Stratum Depth(ft.)	Stratum Description	Stratum Elev.(ft.)	Equipment Installed
	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	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		ND						
5	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						
	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		
10	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						
	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						
15	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	ORGANIC SILT	-6.1	
20						End of exploration at 20 feet.					20		-8.1	
25														

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.

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 W/EQUIP 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	**Type of Rig:** Truck Mounted	**Boring Location:** See Plan	**H. Datum:** NAD 83
Drilling Co.: Geosearch	**Rig Model:** CME	**Ground Surface Elev. (ft.):** 11.5	
Foreman: Shawn Preston	**Drilling Method:** HSA & Soil Vactor	**Final Boring Depth (ft.):** 20	**V. Datum:** NAVD 88
		Date Start - Finish: 10/30/2015 - 11/2/2015	

		Groundwater Depth (ft.)			
Hammer Type: Safety Hammer	**Sampler Type:** SS	**Date**	**Time**	**Water Depth**	**Stab. Time**
Hammer Weight (lb.): 140	**Sampler O.D. (in.):** 2.0	11/3/15	12:00	7.43	24 Hours
Hammer Fall (in.): 30	**Sampler Length (in.):** 24				
Auger or Casing O.D./I.D. (in): 4	**Rock Core Size:** N/A				

Depth (ft)	Sample No.	Sample Depth (ft.)	Pen. (in)	Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Depth(ft.)	Stratum Description	Elev.(ft.)	Equipment Installed
	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 ND						Standpipe Betonite Seal
	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 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						Filter Sand
	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		Well Screen
	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						
10	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						
	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	Clean Soil & Filter Sand
15	8	14-16	24	0	WOH	8 : No Recovery (very soft organic soils)		NM						
	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											20		-8.5	
						End of exploration at 20 feet.								
25														

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

GZA TEMPLATE TEST BORING W/EQUIP NGRIDNE; 11/19/2015; 11:12:27 AM

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 No.	Sample Depth (ft.)	Sample Pen. (in)	Sample Rec. (in)	Blows (per 6 in.)	Sample Description Modified Burmister	Remark	Field Test Data	Visual	Odor	Depth (ft.)	Stratum Description	Elev. (ft.)	Equipment Installed
	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	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		ND				FILL		
						2 : Brown (10yr 4/4) fine to coarse SAND, little Gravel, trace (+) Silt, trace Coal, trace Slag, trace Ash, trace Brick, moist		ND						
	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	
5														
	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						
	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		
10														
	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						
	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		ND						
						(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						
15														
	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											20		-8.7	
						End of exploration at 20 feet.								
25														

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 W/EQUIP NGRIDNE; 11/16/2015; 10:41:02 AM

APPENDIX C

Dewatering and Groundwater

Management Information

APPENDIX C

Table

TABLE C-1
GROUNDWATER ANALYTICAL DATA
642 Allens Avenue
Providence, Rhode Island

		RIDEM GB Groundwater Objectives	RIDEM GA & GAA Groundwater Objectives	Client Sample: / Sample Date: / Lab Sample ID: / Matrix: / Units	Frac Tank 02/01/2013 1302017-01 Aqueous	3-25-13 Influent 3/25/2013 1303412-01 Aqueous	3-28-13 Influent 3/28/2013 1303500-01 Aqueous
Polychlorinated Biphenyls (PCBs)							
8082	Aroclor 1016	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1221	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1232	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1242	NE	0.0005	mg/L	0.00135	<0.00004	0.0188 D
	Aroclor 1248	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1254	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1260	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1262	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
	Aroclor 1268	NE	0.0005	mg/L	<0.00011	<0.00004	<0.00206 D
Total Petroleum Hydrocarbons							
8100M	Total Petroleum Hydrocarbons	NE	NE	mg/L	50.7	0.29	0.31
Total Metals Aqueous							
6020A	Antimony	NE	0.006	mg/L	<0.0025	NA	NA
6020A	Arsenic	NE	0.01	mg/L	0.0177	0.0017	<0.005 D
6020A	Beryllium	NE	0.004	mg/L	0.0024	NA	NA
6020A	Cadmium	NE	0.005	mg/L	<0.0025	NA	NA
6020A	Chromium	NE	0.1	mg/L	0.029	<0.0005	<0.005 D
6020A	Copper	NE	NE	mg/L	0.06	0.0025	<0.005 D
6020A	Lead	NE	0.015	mg/L	0.206	0.0009	<0.001 D
7470A	Mercury	NE	0.002	mg/L	0.00028	<0.00012	<0.0002
6020A	Nickel	NE	0.1	mg/L	0.042	0.0072	0.0058 D
6020A	Selenium	NE	0.05	mg/L	<0.025	NA	NA
6020A	Silver	NE	NE	mg/L	<0.005	<0.0001	<0.001 D
6020A	Thallium	NE	0.002	mg/L	<0.001	NA	NA
6020A	Zinc	NE	NE	mg/L	0.272	0.0275	0.0286 D
6020A	Chromium (III)	NE	NE	mg/L	NA	NA	<0.01 D
7196A	Chromium (VI)	NE	NE	mg/L	NA	NA	<0.01

TABLE C-1
GROUNDWATER ANALYTICAL DATA
642 Allens Avenue
Providence, Rhode Island

		RIDEM GB Groundwater Objectives	RIDEM GA & GAA Groundwater Objectives	Client Sample: / Sample Date: / Lab Sample ID: / Matrix: / Units	Frac Tank 02/01/2013 1302017-01 Aqueous	3-25-13 Influent 3/25/2013 1303412-01 Aqueous	3-28-13 Influent 3/28/2013 1303500-01 Aqueous
Volatile Organic Compounds							
8260B	1,1,1,2-Tetrachloroethane	NE	NE	mg/L	<0.001	NA	NA
	1,1,1-Trichloroethane	3.1	0.2	mg/L	<0.001	NA	NA
	1,1,2,2-Tetrachloroethane	NE	NE	mg/L	<0.0005	NA	NA
	1,1,2-Trichloroethane	NE	0.005	mg/L	<0.001	NA	NA
	1,1-Dichloroethane	NE	NE	mg/L	<0.001	NA	NA
	1,1-Dichloroethene	0.007	0.007	mg/L	<0.001	NA	NA
	1,1-Dichloropropene	NE	NE	mg/L	<0.002	NA	NA
	1,2,3-Trichlorobenzene	NE	NE	mg/L	<0.001	NA	NA
	1,2,3-Trichloropropane	NE	NE	mg/L	<0.001	NA	NA
	1,2,4-Trichlorobenzene	NE	0.07	mg/L	<0.001	NA	NA
	1,2,4-Trimethylbenzene	NE	NE	mg/L	0.0024	NA	NA
	1,2-Dibromo-3-Chloropropane	0.002	0.0002	mg/L	<0.005	NA	NA
	1,2-Dibromoethane	NE	0.00005	mg/L	<0.001	NA	NA
	1,2-Dichlorobenzene	NE	0.6	mg/L	<0.001	NA	NA
	1,2-Dichloroethane	0.11	0.005	mg/L	<0.001	NA	NA
	1,2-Dichloropropane	3	0.005	mg/L	<0.001	NA	NA
	1,3,5-Trimethylbenzene	NE	NE	mg/L	<0.001	NA	NA
	1,3-Dichlorobenzene	NE	0.6	mg/L	<0.001	NA	NA
	1,3-Dichloropropane	NE	NE	mg/L	<0.001	NA	NA
	1,4-Dichlorobenzene	NE	0.075	mg/L	<0.001	NA	NA
	1,4-Dioxane - Screen	NE	NE	mg/L	<0.5	NA	NA
	1-Chlorohexane	NE	NE	mg/L	<0.001	NA	NA
	2,2-Dichloropropane	NE	NE	mg/L	<0.001	NA	NA
	2-Butanone	NE	NE	mg/L	0.044	NA	NA
	2-Chlorotoluene	NE	NE	mg/L	<0.001	NA	NA
	2-Hexanone	NE	NE	mg/L	<0.01	NA	NA
	4-Chlorotoluene	NE	NE	mg/L	<0.001	NA	NA
	4-Isopropyltoluene	NE	NE	mg/L	<0.001	NA	NA
	4-Methyl-2-Pentanone	NE	NE	mg/L	<0.025	NA	NA
	Acetone	NE	NE	mg/L	<0.01	NA	NA
	Benzene	0.14	0.005	mg/L	<0.001	NA	NA
	Bromobenzene	NE	NE	mg/L	<0.002	NA	NA
	Bromochloromethane	NE	NE	mg/L	<0.001	NA	NA
	Bromodichloromethane	NE	NE	mg/L	<0.0006	NA	NA
	Bromoform	NE	NE	mg/L	<0.001	NA	NA
	Bromomethane	NE	NE	mg/L	<0.002	NA	NA
	Carbon Disulfide	NE	NE	mg/L	<0.001	NA	NA
	Carbon Tetrachloride	0.07	0.005	mg/L	<0.001	NA	NA
	Chlorobenzene	3.2	0.1	mg/L	<0.001	NA	NA
	Chloroethane	NE	NE	mg/L	<0.002	NA	NA
	Chloroform	NE	NE	mg/L	<0.001	NA	NA
	Chloromethane	NE	NE	mg/L	<0.002	NA	NA
	cis-1,2-Dichloroethene	2.4	0.07	mg/L	<0.001	NA	NA

TABLE C-1
GROUNDWATER ANALYTICAL DATA
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			
Volatile Organic Compounds							
8260B	cis-1,3-Dichloropropene	NE	NE	mg/L	<0.0004	NA	NA
	Dibromochloromethane	NE	NE	mg/L	<0.001	NA	NA
	Dibromomethane	NE	NE	mg/L	<0.001	NA	NA
	Dichlorodifluoromethane	NE	NE	mg/L	<0.002	NA	NA
	Diethyl Ether	NE	NE	mg/L	<0.001	NA	NA
	Di-isopropyl ether	NE	NE	mg/L	<0.001	NA	NA
	Ethyl tertiary-butyl ether	NE	NE	mg/L	<0.001	NA	NA
	Ethylbenzene	1.6	0.7	mg/L	0.0011	NA	NA
	Hexachlorobutadiene	NE	NE	mg/L	<0.0006	0.0016	0.002
	Hexachloroethane	NE	NE	mg/L	<0.001	NA	NA
	Isopropylbenzene	NE	NE	mg/L	<0.001	NA	NA
	Methyl tert-Butyl Ether	5	0.04	mg/L	<0.001	NA	NA
	Methylene Chloride	NE	0.005	mg/L	<0.002	NA	NA
	Naphthalene	2.67	0.1	mg/L	0.0012	NA	NA
	n-Butylbenzene	NE	NE	mg/L	<0.001	NA	NA
	n-Propylbenzene	NE	NE	mg/L	<0.001	NA	NA
	sec-Butylbenzene	NE	NE	mg/L	<0.001	NA	NA
	Styrene	2.2	0.1	mg/L	<0.001	NA	NA
	tert-Butylbenzene	NE	NE	mg/L	<0.001	NA	NA
	Tertiary-amyl methyl ether	NE	NE	mg/L	<0.001	NA	NA
	Tetrachloroethene	0.15	0.005	mg/L	<0.001	NA	NA
	Tetrahydrofuran	NE	NE	mg/L	<0.005	NA	NA
	Toluene	1.7	1	mg/L	0.0362	NA	NA
	trans-1,2-Dichloroethene	2.8	0.1	mg/L	<0.001	0.0313	0.0015
	trans-1,3-Dichloropropene	NE	NE	mg/L	<0.0004	NA	NA
	Trichloroethene	0.54	0.005	mg/L	<0.001	NA	NA
	Trichlorofluoromethane	NE	NE	mg/L	<0.001	NA	NA
	Trihalomethanes (Total)	NE	NE	mg/L	<0.0036	NA	NA
	Vinyl Acetate	NE	NE	mg/L	<0.005	NA	NA
	Vinyl Chloride	0.002	0.002	mg/L	<0.001	NA	NA
	Xylene O	NE	10	mg/L	0.0015	0.0013	0.0019
	Xylene P,M	NE	10	mg/L	0.0028	0.003	0.0054
	Xylenes (Total)	NE	NE	mg/L	0.0043	0.0043	0.0073
	Total BTEX	NE	NE	mg/L	0.0416	0.0372	0.0109

TABLE C-1
GROUNDWATER ANALYTICAL DATA
642 Allens Avenue
Providence, Rhode Island

		RIDEM GB Groundwater Objectives	RIDEM GA & GAA Groundwater Objectives	Client Sample: / Sample Date: / Lab Sample ID: / Matrix: / Units	Frac Tank 02/01/2013 1302017-01 Aqueous	3-25-13 Influent 3/25/2013 1303412-01 Aqueous	3-28-13 Influent 3/28/2013 1303500-01 Aqueous
Semi-Volatile Organic Compounds							
8270C	1,1-Biphenyl	NE	NE	mg/L	<0.0111	NA	NA
	1,2,4-Trichlorobenzene	NE	0.07	mg/L	<0.0111	NA	NA
	1,2-Dichlorobenzene	NE	0.6	mg/L	<0.0111	NA	NA
	1,3-Dichlorobenzene	NE	0.6	mg/L	<0.0111	NA	NA
	1,4-Dichlorobenzene	NE	0.075	mg/L	<0.0111	NA	NA
	2,3,4,6-Tetrachlorophenol	NE	NE	mg/L	<0.0556	NA	NA
	2,4,5-Trichlorophenol	NE	NE	mg/L	<0.0111	NA	NA
	2,4,6-Trichlorophenol	NE	NE	mg/L	<0.0111	NA	NA
	2,4-Dichlorophenol	NE	NE	mg/L	<0.0111	NA	NA
	2,4-Dimethylphenol	NE	NE	mg/L	<0.0556	NA	NA
	2,4-Dinitrophenol	NE	NE	mg/L	<0.0556	NA	NA
	2,4-Dinitrotoluene	NE	NE	mg/L	<0.0111	NA	NA
	2,6-Dinitrotoluene	NE	NE	mg/L	<0.0111	NA	NA
	2-Chloronaphthalene	NE	NE	mg/L	<0.0111	NA	NA
	2-Chlorophenol	NE	NE	mg/L	<0.0111	NA	NA
	2-Methylnaphthalene	NE	NE	mg/L	<0.0111	NA	NA
	2-Methylphenol	NE	NE	mg/L	<0.0111	NA	NA
	2-Nitroaniline	NE	NE	mg/L	<0.0111	NA	NA
	2-Nitrophenol	NE	NE	mg/L	<0.0111	NA	NA
	3,3´-Dichlorobenzidine	NE	NE	mg/L	<0.0222	NA	NA
	3+4-Methylphenol	NE	NE	mg/L	<0.0222	NA	NA
	3-Nitroaniline	NE	NE	mg/L	<0.0111	NA	NA
	4,6-Dinitro-2-Methylphenol	NE	NE	mg/L	<0.0556	NA	NA
	4-Bromophenyl-phenylether	NE	NE	mg/L	<0.0111	NA	NA
	4-Chloro-3-Methylphenol	NE	NE	mg/L	<0.0111	NA	NA
	4-Chloroaniline	NE	NE	mg/L	<0.0222	NA	NA
	4-Chloro-phenyl-phenyl ether	NE	NE	mg/L	<0.0111	NA	NA
	4-Nitroaniline	NE	NE	mg/L	<0.0111	NA	NA
	4-Nitrophenol	NE	NE	mg/L	<0.0556	NA	NA
	Acenaphthene	NE	NE	mg/L	<0.0111	0.00088	0.00392
	Acenaphthylene	NE	NE	mg/L	<0.0111	NA	NA
	Acetophenone	NE	NE	mg/L	<0.0111	NA	NA
	Aniline	NE	NE	mg/L	<0.0111	NA	NA
	Anthracene	NE	NE	mg/L	<0.0111	NA	NA
	Azobenzene	NE	NE	mg/L	<0.0222	NA	NA
	Benzo(a)anthracene	NE	NE	mg/L	<0.0111	<0.00006	<0.00005
	Benzo(a)pyrene	NE	0.0002	mg/L	<0.0111	<0.00006	<0.00005
	Benzo(b)fluoranthene	NE	NE	mg/L	<0.0111	<0.00006	<0.00005
	Benzo(g,h,i)perylene	NE	NE	mg/L	<0.0111	NA	NA
	Benzo(k)fluoranthene	NE	NE	mg/L	<0.0111	<0.00006	<0.00005
	Benzoic Acid	NE	NE	mg/L	<0.111	NA	NA
	Benzyl Alcohol	NE	NE	mg/L	<0.0111	NA	NA
	bis(2-Chloroethoxy)methane	NE	NE	mg/L	<0.0111	NA	NA

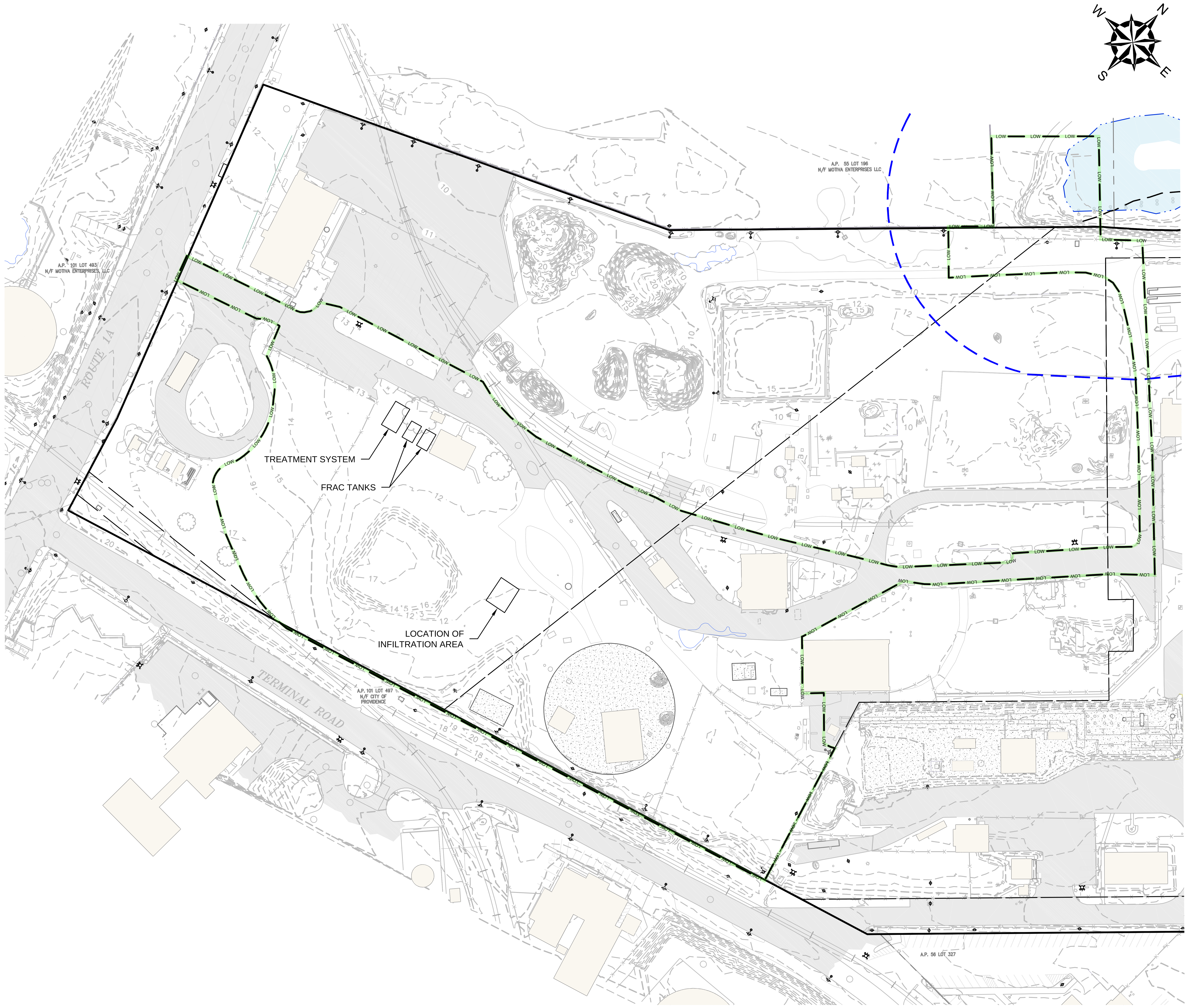
TABLE C-1
GROUNDWATER ANALYTICAL DATA
642 Allens Avenue
Providence, Rhode Island

		RIDEM GB Groundwater Objectives	RIDEM GA & GAA Groundwater Objectives	Client Sample: / Sample Date: / Lab Sample ID: / Matrix: / Units	Frac Tank 02/01/2013 1302017-01 Aqueous	3-25-13 Influent 3/25/2013 1303412-01 Aqueous	3-28-13 Influent 3/28/2013 1303500-01 Aqueous
Semi-Volatile Organic Compounds							
8270C	bis(2-Chloroethyl)ether	NE	NE	mg/L	<0.0111	NA	NA
	bis(2-chloroisopropyl)Ether	NE	NE	mg/L	<0.0111	NA	NA
	bis(2-Ethylhexyl)phthalate	NE	0.006	mg/L	<0.0067	0.00759	<0.0025
	Butylbenzylphthalate	NE	NE	mg/L	<0.0111	NA	NA
	Carbazole	NE	NE	mg/L	<0.0111	NA	NA
	Chrysene	NE	NE	mg/L	<0.0111	<0.00006	<0.00005
	Dibenzo(a,h)Anthracene	NE	NE	mg/L	<0.0111	<0.00006	<0.00005
	Dibenzofuran	NE	NE	mg/L	<0.0111	NA	NA
	Diethylphthalate	NE	NE	mg/L	<0.0111	NA	NA
	Dimethylphthalate	NE	NE	mg/L	<0.0111	NA	NA
	Di-n-butylphthalate	NE	NE	mg/L	<0.0111	NA	NA
	Di-n-octylphthalate	NE	NE	mg/L	<0.0111	NA	NA
	Fluoranthene	NE	NE	mg/L	<0.0111	NA	NA
	Fluorene	NE	NE	mg/L	<0.0111	NA	NA
	Hexachlorobenzene	NE	0.001	mg/L	<0.0111	NA	NA
	Hexachlorobutadiene	NE	NE	mg/L	<0.0111	NA	NA
	Hexachlorocyclopentadiene	NE	NE	mg/L	<0.0278	NA	NA
	Hexachloroethane	NE	NE	mg/L	<0.0056	NA	NA
	Indeno(1,2,3-cd)Pyrene	NE	NE	mg/L	<0.0111	<0.00006	<0.00005
	Isophorone	NE	NE	mg/L	<0.0111	NA	NA
	Naphthalene	2.67	0.1	mg/L	<0.0111	0.00094	0.00125
	Nitrobenzene	NE	NE	mg/L	<0.0111	NA	NA
	N-Nitrosodimethylamine	NE	NE	mg/L	<0.0111	NA	NA
	N-Nitroso-Di-n-Propylamine	NE	NE	mg/L	<0.0111	NA	NA
	N-nitrosodiphenylamine	NE	NE	mg/L	<0.0111	NA	NA
	Pentachlorophenol	NE	0.001	mg/L	<0.0556	<0.00103	<0.0009
	Phenanthrene	NE	NE	mg/L	<0.0111	NA	NA
	Phenol	NE	NE	mg/L	<0.0111	NA	NA
	Pyrene	NE	NE	mg/L	<0.0111	NA	NA
	Pyridine	NE	NE	mg/L	<0.111	NA	NA

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 C

Figures



GENERAL NOTES:

1) 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. PLANS PROVIDED BY NATIONAL GRID.
- ELECTRONIC CAD FILE14-152_SU1_REV2.DWG, TITLED "TOPOGRAPHIC SURVEY PLAN, PORTION OF A.P. 56 LOT 5" DATED OCTOBER 27, 2014 AND PROVIDED BY NATIONAL GRID.

2) HORIZONTAL DATUM IS BASED ON NAD 1983 FROM BASE MAPPING PROVIDED BY VHB.

3) VERTICAL DATUM IS BASED ON NAVD 1988 FROM BASE MAPPING PROVIDED BY VHB.

4) ON-SITE INVESTIGATIONS AND SURVEYS BY GZA PERSONNEL DURING VARIOUS SITE VISITS BETWEEN 2011 AND 2016.

5) PARCEL DATA PROVIDED BY THE CITY OF PROVIDENCE PLANNING AND DEVELOPMENT DEPARTMENT. PARCELS OF REAL ESTATE ASSESSED AS OF DECEMBER 31, 2012. GIS DATA ARE FOR PLANNING PURPOSES ONLY. THESE DATA DO NOT REPRESENT A LEGALLY RECORDED PLAN, DEED, SURVEY OR ENGINEERING SCHEMATIC AND ARE NOT INTENDED TO BE USED AS SUCH.

6) SITE BOUNDARIES ARE APPROXIMATE.

LEGEND:

- EXISTING BUILDING
- EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)
- EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)
- 200 FOOT CRMC SETBACK
- EXISTING PAVEMENT
- LIMIT OF WORK
- MANHOLE
- UTILITY POLE
- LIGHT POLE
- HYDRANT
- SITE PROPERTY LINES
- INTERIOR PROPERTY LINE
- ABUTTING PROPERTY LINE
- EDGE OF WATER
- EXISTING RAILROAD TRACKS
- EXISTING FENCE
- EXISTING CONCRETE PAD
- EXISTING BOOM CONFIGURATION

0 40' 80' 160' 240'
SCALE IN FEET 1" = 80'

PERMITTING SET

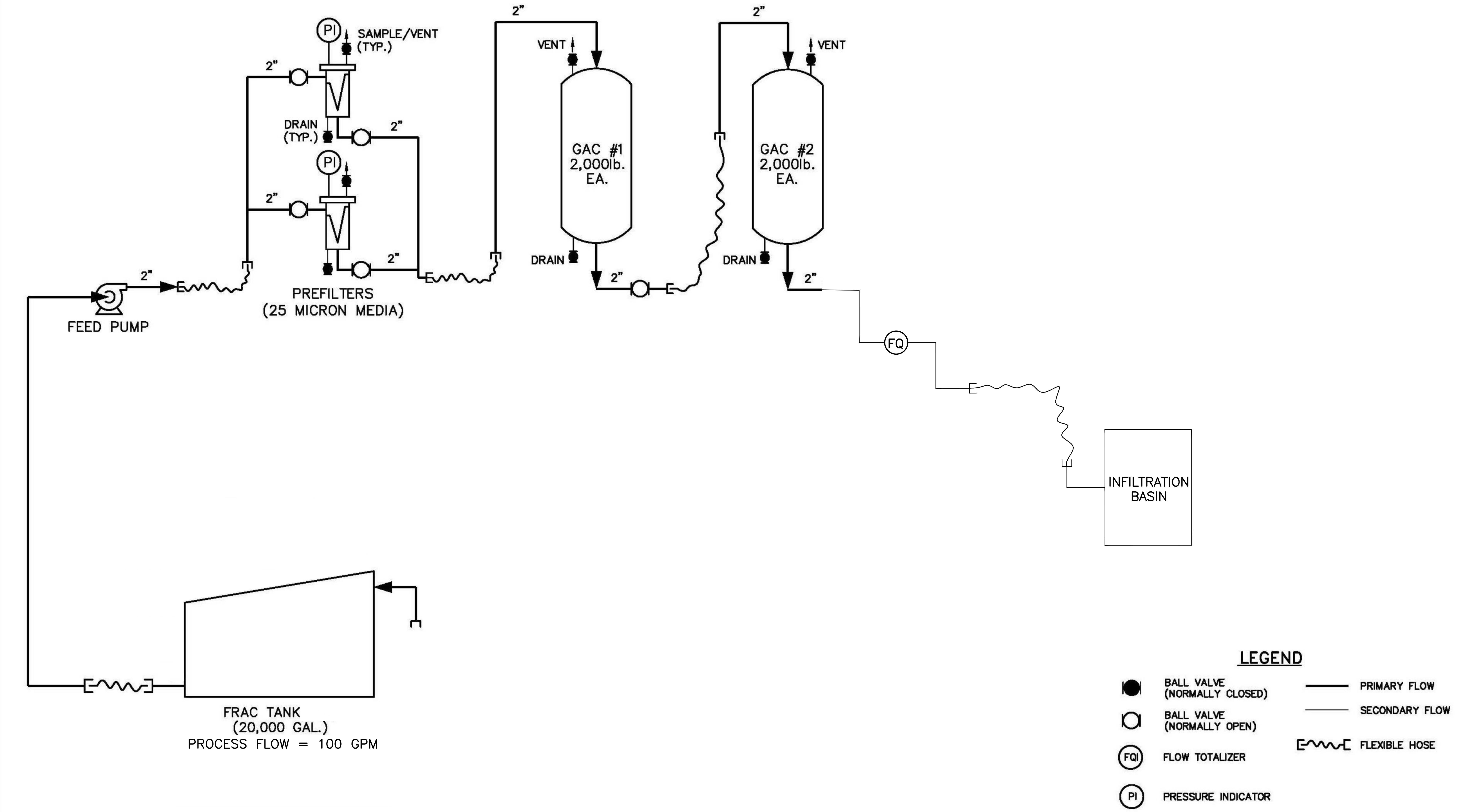
NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

DEWATERING & GROUNDWATER MANAGEMENT SUMMARY PLAN

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

PREPARED FOR: nationalgrid

PROJ MGR: MSK	REVIEWED BY: TRG	CHECKED BY: DL	DRAWING
DESIGNED BY: SDN	DRAWN BY: DL/LDT	SCALE: AS NOTED	C-1
DATE: APRIL, 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 1 OF 3



PERMITTING SET

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

PROCESS FLOW DIAGRAM

PREPARED BY:		PREPARED FOR:	
GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com		nationalgrid	
PROJ MGR: MSK	REVIEWED BY: SDN	CHECKED BY: SDN	FIGURE
DESIGNED BY: SDN	DRAWN BY: CB/LDT	SCALE: AS NOTED	C-2
DATE: APRIL 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 2 OF 3

LEGEND:

PROPERTY LINE

INTERIOR PROPERTY LINE

EXISTING BUILDING

STEEL POST

PILING

EDGE OF WATER

FENCE

RAILROAD TRACKS

EXISTING CONTOUR (MAJOR 5 FOOT INTERVAL)

EXISTING CONTOUR (MINOR 1 FOOT INTERVAL)

PAVEMENT

CONCRETE PAD

STRAP AREA

SITE BOUNDARY

LNG AND CEMENT FACILITY

MONITORING WELL LEGEND:

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
2.93S 2.56D	GROUNDWATER ELEVATION OBSERVED ON OCTOBER 30, 2014 (IN FEET RELATIVE TO NAVD 1988 MSL)
S	INDICATES THE MONITORING WELL SCREEN IS SHALLOW
D	INDICATES THE MONITORING WELL SCREEN IS DEEP

MONITORING WELL LEGEND CONTINUED:

	ACTIVE MONITORING WELLS
	RECOVERY WELLS
5	SHALLOW GROUNDWATER ELEVATION CONTOUR (NAVD 1988 MSL) ON OCTOBER 14, 2015
4	INFERRED SHALLOW GROUNDWATER ELEVATION CONTOUR (NAVD 1988 MSL) ON OCTOBER 14, 2015

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 OCTOBER 14, 2015, WITH THE EXCEPTION OF GZ-401 AND GZ-402 WHICH WERE GAUGED ON NOVEMBER 3, 2015.

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.

PERMITTING SET

0 40 80 160 240

SCALE IN FEET 1" = 80'

NATIONAL GRID
SHORT TERM RESPONSE ACTION PLAN: HOLDER 18/21 CAPPING PROJECT
642 ALLENS AVENUE, PROVIDENCE, RHODE ISLAND

GROUNDWATER CONTOURS

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

PREPARED FOR: nationalgrid

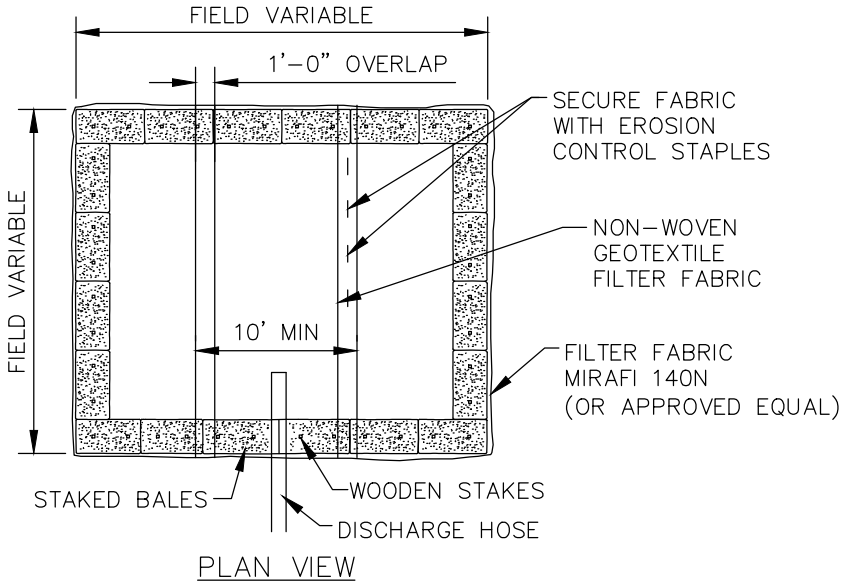
PROJ MGR: MSK	REVIEWED BY: SDN	CHECKED BY: SDN	FIGURE
DESIGNED BY: SDN	DRAWN BY: CB/LDT	SCALE: AS NOTED	C-3
DATE: APRIL 2016	PROJECT NO. 33554.00	REVISION NO. 0	SHEET NO. 3 OF 3

APPENDIX C

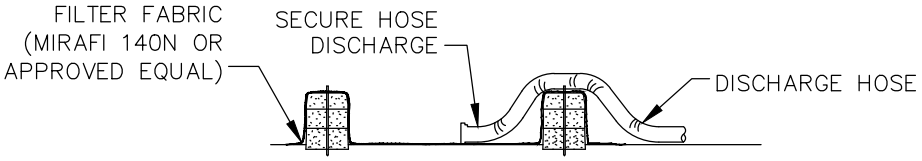
Infiltration Details

BMP DETAIL

SCALE: NONE



PLAN VIEW



CROSS–SECTION

NOTES:

1. NUMBER OF BALES MAY VARY DEPENDING ON SITE CONDITIONS,
2. THE BASIN TO BE SIZED TO PREVENT DISCHARGE WATER FROM OVERTOPPING BASIN.
3. KEEP AS FAR FROM WETLANDS AS PRACTICAL.
4. CLEAN AND REMOVE AS SOON AS DEWATERING IS COMPLETE.

BMP PICTURE

BMP # 31
DEWATERING BASIN (SMALL SCALE)

File: Dewat_Bas_Small.dwg

BMP PICTURE

NOTE:

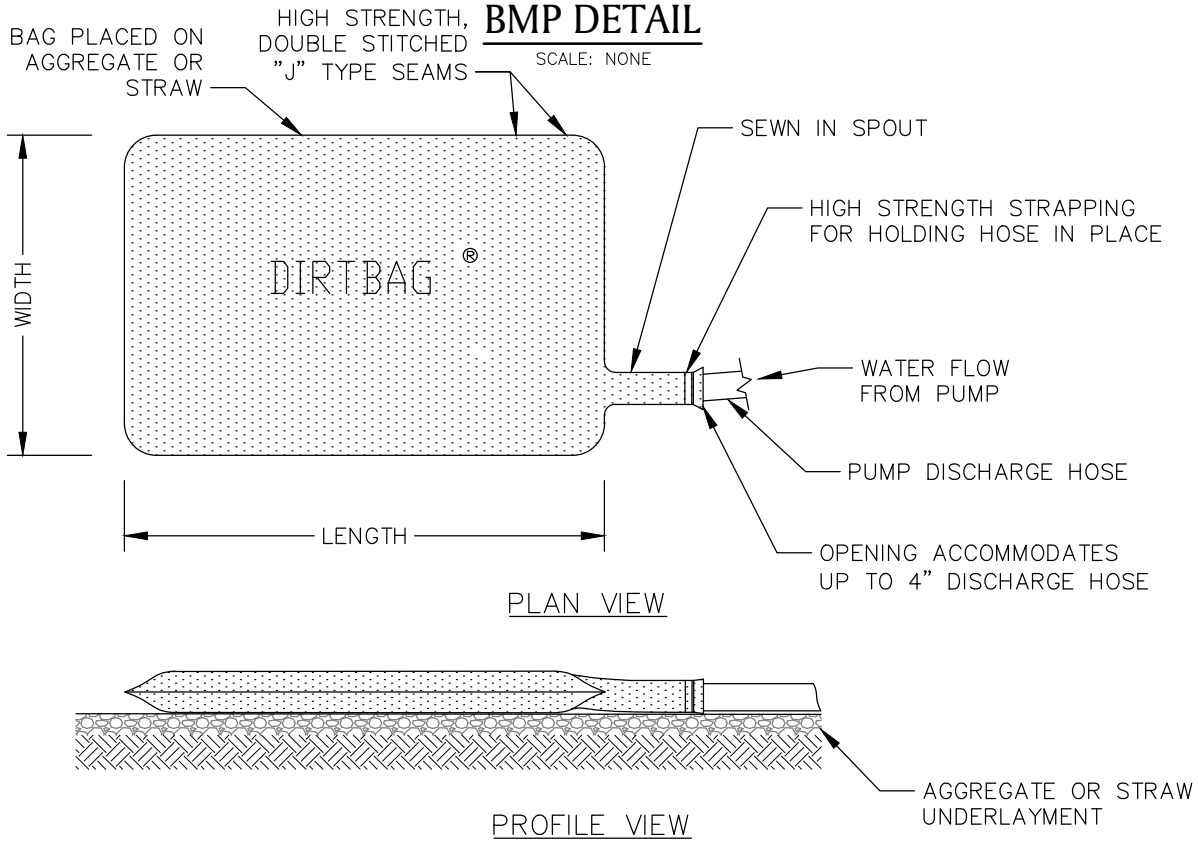
1. EXACT SIZE, LOCATION AND DESIGN IS DEPENDANT ON SITE CONDITIONS, AND LOCAL AND STATE REGULATIONS. COORDINATE THIS BMP WITH NATIONAL GRID ENVIRONMENTAL SCIENTIST PRIOR TO CONSTRUCTION.

BMP # 32
DEWATERING BASIN -
LARGE SCALE

File: Dewat_Bas_Large.dwg

BMP DETAIL

SCALE: NONE



BMP PICTURE

* PICTURE AND DETAIL PROVIDED BY ACF ENVIRONMENTAL

APPROVED BY: VICE PRESIDENT, ENVIRONMENTAL SERVICES

BMP # 33
DIRTBAG *

File: Dirtbag.dwg

APPENDIX C

Design Calculations

APPENDIX C
CARBON DESIGN CALCULATIONS
642 Allens Avenue
Providence, Rhode Island

ORGANIC DESCRIPTION	CONC. (ppb)	lbs OF ORGANIC PER DAY	MOL. WT.	REFRACTIVE INDEX	GAC USE* (lb/1000gal)
TPHg	50700	60.82	108	na	4.28
1,3,5-TRIMETHYLBENZENE	2.4	0.00	120	1.4994	0.00
2-BUTANONE	44	0.05	78	1.3807	0.07
ETHYLBENZENE	1.1	0.00	106	1.4983	0.00
NAPHTHALENE	1.2	0.00	128	1.5823	0.00
TOLUENE	36.2	0.04	92	1.4969	0.02
XYLENE	4.3	0.01	106	1.4972	0.00
TOTAL:	50789.2	60.92			4.37

Note:

Calculations provided by Carbon Filtration Systems, Inc. of Johnston, RI.

APPENDIX D

Air Emissions Evaluation

APPENDIX D

Tables

Table D-1 Summary of Analytical Data used in Emissions Calculation

Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	Average	Maximum	C18	D64	D65	D66	D67	D68	D69	D70	D71	E01		E02		E03	E09		E11	E12	E13	E14	E15
							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	4-6 FT	0-2 FT	4-6 FT	0-2 FT	0-2 FT	2-4 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT
							12/13/99	12/11/99	12/11/99	12/11/99	12/22/99	12/23/99	12/23/99	12/23/99	12/23/99	12/11/99	12/11/99	12/13/99	12/13/99	12/19/99	12/14/99		12/14/99	12/14/99	12/14/99	12/15/99	12/15/99
Volatile Organic Compounds (VOCs)																										
2-Butanone	NE	10,000	10,000	mg/kg	0.256	1.6	0.07	0.09	0.049	0.085	0.075	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Acetone	NE	10,000	10,000	mg/kg	0.274	2.3	0.07	0.09	0.085	0.085	0.075	0.07	0.07	0.08	0.055	0.11	0.085	0.12	0.077	0.083	0.061	0.07	0.034	0.075	0.07	0.032	1.4
Benzene	4.3	200	10,000	mg/kg	0.176	1.6	0.07	0.09	0.2	0.085	0.18	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Ethylbenzene	62	10,000	10,000	mg/kg	0.692	22	0.07	0.09	0.13	0.085	0.075	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1
Isopropylbenzene	NE	10,000	10,000	mg/kg	0.206	3.2	0.07	0.09	0.085	0.085	0.075	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Methylene Chloride	NE	760	10,000	mg/kg	0.212	2.7	0.07	0.34	0.24	0.085	0.075	0.07	0.07	0.08	0.055	0.25	0.2	0.25	0.23	0.28	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Naphthalene	NE	10,000	10,000	mg/kg	9.22	390	0.07	0.09	0.085	0.085	0.21	0.07	0.07	0.08	0.055	0.11	0.085	0.58	0.72	0.095	0.095	0.07	0.08	0.075	0.07	0.055	68
Styrene	64	1,900	10,000	mg/kg	0.902	62	0.07	0.09	0.085	0.085	0.075	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Toluene	54	10,000	10,000	mg/kg	1.34	97	0.07	0.09	0.085	0.085	0.24	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Xylenes (Total)	NE	10,000	10,000	mg/kg	2.85	210	0.07	0.09	0.085	0.085	0.3	0.07	0.07	0.08	0.055	0.11	0.085	0.08	0.075	0.095	0.095	0.07	0.08	0.075	0.07	0.055	1.4
Semi-Volatile Organic Compounds (SVOCs)																										
Naphthalene	NE	10,000	10,000	mg/kg	12.49	780	1.75	1.85	1.75	1.8	1.8	1.8	1.8	1.85	1.8	0.63	1.85	1.75	1.85	1.95	1.8	1.9	1.95	1.9	0.67	1.8	6.6

Notes:

NE = Not Established

NA = Not Analyzed

Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.

Blue shading indicates compound was not detected - value shown is half the detection limit.

Table only shows explorations within a cut area of the Limits of Work

Averages presented in the table include half the detection limit (if reported)

Gray shaded cells and **bolded text** indicates the concentration exceeds the RIDEM Method 1 GB Leachability Criteria.

Concentrations **bolded and underlined** exceed the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).

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

Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Table D-1 Summary of Analytical Data used in Emissions Calculation

Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	Average	Maximum	E19	E20		E23		E24		E25		E26		E27		E29		E33	E34		E35		E38	E39	E40	E41		E42	E43	
							0-2 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	2-4 FT	0-2 FT	4-6 FT	0-2 FT	0-2 FT	4-6 FT	0-2 FT	4-6 FT	0-2 FT	0-2 FT	0-2 FT	0-2 FT	2-4 FT	0-2 FT	0-2 FT	4-6 ft
							12/15/99	12/15/99		12/16/99		12/16/99		12/17/99		12/17/99		12/20/99		12/17/99		12/20/99	12/20/99		12/20/99		12/21/99	1/26/00	12/21/99	12/21/99		12/21/99	12/21/99	
Volatile Organic Compounds (VOCs)																																	
2-Butanone	NE	10,000	10,000	mg/kg	0.256	1.6	0.075	0.07	0.09	0.063	0.06	0.065	0.048	0.055	0.05	0.07	0.06	0.065	0.07	0.06	0.28	0.085	0.105	1.6	0.08	0.65	0.08	0.75	0.09	0.07	0.55	0.08	0.06	0.08
Acetone	NE	10,000	10,000	mg/kg	0.274	2.3	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.06	0.046	0.048	0.06	0.065	0.07	0.06	0.28	0.085	0.105	1.6	0.08	0.65	0.08	0.75	0.09	0.07	0.55	0.08	0.06	0.08
Benzene	4.3	200	10,000	mg/kg	0.176	1.6	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.055	0.05	0.07	0.24	0.061	0.07	0.06	0.28	0.085	0.043	1.6	0.08	0.65	0.08	0.75	0.09	0.12	0.55	0.08	0.045	0.32
Ethylbenzene	62	10,000	10,000	mg/kg	0.692	22	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.055	0.05	0.07	0.06	0.065	0.07	0.06	0.28	0.085	0.105	14	0.3	22	0.08	0.75	0.09	0.07	10	0.08	0.06	0.19
Isopropylbenzene	NE	10,000	10,000	mg/kg	0.206	3.2	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.055	0.05	0.07	0.06	0.065	0.07	0.06	0.28	0.085	0.105	1.6	0.061	3.2	0.08	0.75	0.09	0.07	1.4	0.08	0.06	0.08
Methylene Chloride	NE	760	10,000	mg/kg	0.212	2.7	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.095	0.05	0.098	0.06	0.065	0.07	0.06	0.28	0.085	0.105	1.6	0.042	0.65	2.7	0.75	0.084	0.087	0.55	0.056	0.025	0.08
Naphthalene	NE	10,000	10,000	mg/kg	9.22	390	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.15	0.05	0.029	0.06	0.06	0.07	0.048	12	0.24	0.48	390	0.16	180	0.79	0.75	0.16	0.16	90	0.14	0.048	0.51
Styrene	64	1,900	10,000	mg/kg	0.902	62	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.055	0.05	0.07	0.06	0.065	0.07	0.06	0.28	0.085	0.105	62	0.08	0.65	0.08	0.75	0.09	0.07	0.55	0.08	0.06	0.08
Toluene	54	10,000	10,000	mg/kg	1.34	97	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.055	0.05	0.07	0.06	0.064	0.07	0.06	0.28	0.085	0.105	**97**	0.26	0.65	0.08	0.75	0.09	0.26	0.55	0.08	0.053	0.21
Xylenes (Total)	NE	10,000	10,000	mg/kg	2.85	210	0.075	0.07	0.09	0.075	0.06	0.065	0.048	0.055	0.05	0.07	0.06	0.065	0.07	0.06	0.28	0.085	0.105	210	0.08	0.65	0.08	0.75	0.09	0.48	9.7	0.08	0.036	0.08
Semi-Volatile Organic Compounds (SVOCs)																																	
Naphthalene	NE	10,000	10,000	mg/kg	12.49	780	1.8	2	2.1	1.95	1.8	1.8	1.8	0.94	1.75	0.77	1.8	1.8	1.8	1.8	13	1.85	1.2	1.9	3.3	67	0.43	0.61	3.8	7.3	780	1.6	0.15	1.6

Notes:
NE = Not Established
NA = Not Analyzed
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Table only shows explorations within a cut area of the Limits of Work
Averages presented in the table include half the detection limit (if reported)
Gray shaded cells and **bolded text** indicates the concentration exceeds the RIDEM Method 1 GB Leachability Criteria.
Concentrations **bolded and underlined** exceed the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).
A concentration with a bold border exceeds the RIDEM Upper Concentration Limit (UCL).
Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Table D-1 Summary of Analytical Data used in Emissions Calculation

Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	Average	Maximum	E44		E45	E46	E53		E57	E93		F01		F02	F03	F04	F08	F14	F15	F16	F18	F33	F53
							0-2 FT	2-4 FT	0-2 FT	0-2 FT	0-2 FT	4-6 FT	0-2 FT	0-2 FT	4-6 FT	0-2 FT	4-6 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
							12/22/99		12/22/99	12/22/99	12/22/99		2/2/00	3/7/00		1/4/00		1/4/00	1/4/00	1/4/00	1/5/00	1/6/00	1/6/00	1/6/00	1/6/00	1/7/00	1/19/00
Volatile Organic Compounds (VOCs)																											
2-Butanone	NE	10,000	10,000	mg/kg	0.256	1.6	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Acetone	NE	10,000	10,000	mg/kg	0.274	2.3	0.075	0.75	0.1	0.075	0.09	0.065	2.3	0.6	0.5	0.046	0.08	0.056	0.11	0.09	0.075	0.08	0.085	0.065	0.088	0.085	0.9
Benzene	4.3	200	10,000	mg/kg	0.176	1.6	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.056	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Ethylbenzene	62	10,000	10,000	mg/kg	0.692	22	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Isopropylbenzene	NE	10,000	10,000	mg/kg	0.206	3.2	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Methylene Chloride	NE	760	10,000	mg/kg	0.212	2.7	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.16	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Naphthalene	NE	10,000	10,000	mg/kg	9.22	390	0.075	0.18	0.2	0.075	0.09	0.17	0.75	0.48	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Styrene	64	1,900	10,000	mg/kg	0.902	62	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Toluene	54	10,000	10,000	mg/kg	1.34	97	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	0.9
Xylenes (Total)	NE	10,000	10,000	mg/kg	2.85	210	0.075	0.75	0.1	0.075	0.09	0.065	0.75	0.6	0.5	0.07	0.08	0.085	0.1	0.09	0.075	0.08	0.085	0.065	0.08	0.085	1.7
Semi-Volatile Organic Compounds (SVOCs)																											
Naphthalene	NE	10,000	10,000	mg/kg	12.49	780	0.67	1.9	0.48	1.9	1.7	1.85	2.05	1.85	1.8	1.9	1.9	1.95	1.9	1.95	1.3	1.8	2	1.75	1.9	1.95	1.85

Notes:
NE = Not Established
NA = Not Analyzed
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Blue shading indicates compound was not detected - value shown is half the detection limit.
Table only shows explorations within a cut area of the Limits of Work
Averages presented in the table include half the detection limit (if reported)
Gray shaded cells and **bolded text** indicates the concentration exceeds the RIDEM Method 1 GB Leachability Criteria.
Concentrations **bolded and underlined** exceed the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).
A concentration with a bold border exceeds the RIDEM Upper Concentration Limit (UCL).
Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Table D-1 Summary of Analytical Data used in Emissions Calculation

Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

	RIDEM GB Leachability Criteria	RIDEM I/C DEC	RIDEM UCL	Units	Average	Maximum	SPC-1	SPC-2	SPC-3	SPC-4	SPC-5	SPC-6	SPC-7	SPC-8	SPC-9	SPC-10	SPC-11	SPC-12
							Former MHA Stockpile Samples											
							1/25/2011	1/25/2011	1/25/2011	1/25/2011	1/26/2011	1/26/2011	1/26/2011	1/25/2011	1/26/2011	1/26/2011	1/26/2011	1/26/2011
Volatile Organic Compounds (VOCs)																		
2-Butanone	NE	10,000	10,000	mg/kg	0.256	1.6	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Acetone	NE	10,000	10,000	mg/kg	0.274	2.3	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65	0.65
Benzene	4.3	200	10,000	mg/kg	0.176	1.6	0.025	0.025	0.025	0.11	0.025	0.025	0.051	0.025	0.025	0.025	0.16	0.057
Ethylbenzene	62	10,000	10,000	mg/kg	0.692	22	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Isopropylbenzene	NE	10,000	10,000	mg/kg	0.206	3.2	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Methylene Chloride	NE	760	10,000	mg/kg	0.212	2.7	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Naphthalene	NE	10,000	10,000	mg/kg	9.22	390	0.05	0.05	0.05	3.8	0.05	0.05	0.13	0.05	0.05	0.05	0.17	0.05
Styrene	64	1,900	10,000	mg/kg	0.902	62	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Toluene	54	10,000	10,000	mg/kg	1.34	97	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025
Xylenes (Total)	NE	10,000	10,000	mg/kg	2.85	210	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Semi-Volatile Organic Compounds (SVOCs)																		
Naphthalene	NE	10,000	10,000	mg/kg	12.49	780	0.345	0.365	0.365	31	2.2	0.74	0.83	0.77	0.375	0.365	1.1	1.1

Notes:
NE = Not Established
NA = Not Analyzed
Table only indicates the compounds that were detected and have a RIDEM Minimum Quantity, other compounds were analyzed for, but not detected.
Blue shading indicates compound was not detected - value shown is half the detection limit.
Table only shows explorations within a cut area of the Limits of Work
Averages presented in the table include half the detection limit (if reported)
Gray shaded cells and **bolded text** indicates the concentration exceeds the RIDEM Method 1 GB Leachability Criteria.
Concentrations **bolded and underlined** exceed the RIDEM Method 1 Industrial/Commercial Direct Exposure Criteria (I/C-DEC).
A concentration with a bold border exceeds the RIDEM Upper Concentration Limit (UCL).
Sample depths noted here are from original grade. This table presents data that has since been disturbed or regraded. As such, the final grades are unknown and as such the modified sampling depths are unknown.

Table D-2 Excavation Emissions Potential

Holder 18/21 Capping Project
642 Allens Avenue
Providence, RI

Site-Specific		
Volume of Soil - Excavation	5,210	(cy)
Volume of Soil Moved	5,210	(cy)
Volume of Soil Moved	3,915	(m^3)

Constants			
Typical Bulk Density	1.5	(g/cm^3)	Eklund 1997 Default

Conversion Factors	
ft/m	3.3
ft^3/cy	27
g/lb	454
g/kg	1000

Analyte	Average Measured Concentration in Soil (µg/g)	Maximum Measured Concentration in Soil (µg/g)	Total Excavation Emissions Potential[1] (lb)	Total Excavation Emissions Potential[2] (lb)	RIDEM Annual Minimum Quantity (lb)
2-Butanone	0.256	1.6	3.31E+00	2.07E+01	4.00E+03
Acetone	0.274	2.3	3.54E+00	2.98E+01	2.00E+04
Benzene	0.176	1.6	2.28E+00	2.07E+01	1.00E+01
Ethylbenzene	0.692	22	8.95E+00	2.85E+02	9.00E+03
Isopropylbenzene	0.206	3.2	2.66E+00	4.14E+01	1.00E+03
Methylene Chloride	0.212	2.7	2.74E+00	3.49E+01	2.00E+02
Naphthalene	19.19	780	2.48E+02	1.01E+04	3.00E+00
Styrene	0.902	62	1.17E+01	8.02E+02	3.00E+03
Toluene	1.337	97	1.73E+01	1.25E+03	1.00E+03
Xylenes (Total)	2.854	210	3.69E+01	2.72E+03	3.00E+03

Notes:
1. Total Excavation Emissions Potential based on Average Measured Concentration in Soil.
2. Total Excavation Emissions Potential based on Maximum Measured Concentration in Soil.
3. Only detected analytes with Rhode Island Department of Environmental Management (RIDEM) minimum quanitity values are shown.
4. Naphthalene concentrations presented in this model are the maximum of napthalene analyzed as a VOC or as a PAH
5. cm = centimeter; m = meter; g = gram; µg = microgram; ft = feet, lb = pound; kg = kilogram; cy = cubic yard.
6. Yellow Highlighting indicates model inputs.
7. Orange Highlighting indicates the calculated Total Excavation Emissions Potential exceeds the RIDEM Minimum Quantity.

Table D-3 Predicted Excavation Emissions

Holder 18/21 Capping Project

642 Allens Avenue

Providence, RI

GZA Job 03.0033554.00

4/25/2016

Assumptions		
Assumed Average MW of NAPL	250	(g/mol)
Assumed NAPL Temperature	15	(°C)

Site-Specific		
Shallow Regrading Surface Area	69,120	(ft^2)
Shallow Regrading Average Depth	2.0	(ft)
Excavation Surface Area	6,540	(m^2)
Pile Surface Area	6,540	(m^2)
Emitting Surface Area	13,080	(m^2)
Volume of Soil Moved	5,120	(cy)
Volume of Soil Moved	3,847	(m^3)

Constants			
Typical Bulk Density	1.5	(g/cm^3)	Eklund 1997 Default
R	8.21E-05	(m^3*atm/K/mol)	
R	8.31E-03	(kJ/K/mol)	
R	62,361	(mm Hg*cm^3/mol/K)	
Soil Gas to Atmosphere Exchange Constant (Dry, uncompacted Soils)	0.33	(%/100)	Eklund 1997 Default
Air-Filled Porosity (Dry, uncompacted Soils)	0.55		Eklund 1997 Default
Total Porosity (Uncompacted Soils)	0.55		Eklund 1997 Default
Gas-Phase Mass Transfer Coefficient	0.15	cm/s	Eklund 1997 Default
Time since Start of Excavation of Soil of Interest	60	s	Eklund 1997 Default
Time Period Excavated Soil are Emitting Contaminants	0.1	(hr)	Eklund 1997 Default
TOC of Soil	0.002	(g OC/g soil)	USEPA 1996 Default

Analyte	Average Measured Concentration in Soil (ug/g)	Partial Pressure[1] (atm)	Equilibrium Coefficient	Effective Diffusivity in Air (cm^2/s)	Total Excavation Emissions Potential[2] (lb)	Total Excavation Emissions (lb)	RIDEM Annual Minimum Quantity (lb)
Benzene	0.18	5.42E-05	3.73E-01	4.21E-02	2.24E+00	0.78	10
Naphthalene	19.2	1.04E-06	1.08E-04	2.66E-02	2.44E+02	0.09	3
Toluene	1.3	1.51E-04	1.61E-01	3.93E-02	1.70E+01	2.87	9000

Notes:

1. The Partial Pressure was calculated using Raoult's Law.
2. If the calculated Total Excavation Emissions exceeds the Total Excavation Emissions Potential, the Total Excavation Emissions Potential was used as the Total Excavation Emissions.
3. All constants for total xylenes are the average of the individual constants for m-xylene, o-xylene, and p-xylene.
4. Only detected analytes with RIDEM minimum quanitity values are shown with Total Excavation Emissions Potentials above RIDEM minimum quantities.
5. Concentration units are in ug/g, which is equal to ppm.
6. MW = molecular weight; atm = atmosphere; kJ = kilojoules; mol = moles; NAPL = non-aqueous phase liquid; ppm = parts per million; mm Hg = millimeter mercury; cm = centimeter; m = meter; g = gram; ug = microgram; ft = feet, lb = pound; s = second; yr = year; hr = hour; < = less than the reporting limit; TOC = total organic carbon.
7. Yellow Highlighting indicates model inputs.
8. Purple Highlighting indicates the Total Excavation Emissions exceeds the Rhode Island Department of Environmental Management (RIDEM) Minimum Quantity.

APPENDIX D

Excavation Emission Calculations

APPENDIX D
EXCAVATION EMISSIONS CALCULATIONS
Holder 18/21 Capping Project
642 Allens Avenue
Providence, Rhode Island

To estimate potential volatile emissions associated with planned remediation activities at the 642 Allens Avenue Property ("the Site"), GZA GeoEnvironmental, Inc. (GZA) used the following modified versions of the equations given in Appendix D of "Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other Substances" (Eklund 1997):

First, the total excavation emissions potential is calculated as a benchmark:

Total Excavation Emissions Potential:

$$E_{Potential} = C_{i,Soil} \times S_v \times \beta$$

Where,
$E_{Potential}$ = Total Mass of Component i in a given volume of soil in grams (g);
$C_{i,Soil}$ = Concentration of Component i in the Soil in micrograms of Component i per gram of Soil (ug/g);
β = Typical Bulk Density in grams per cubic centimeter (g/cm^3) (assumed to be 1.5 g/cm^3 – Eklund 1997); and
S_v = Total Volume of Soil Moved in cubic meters (m^3).

Average Total Emissions (detailed model):
If the Average Total Emissions calculated by this detailed model (Eklund 1997) exceeds the calculated Total Excavation Emissions Potential, the Total Excavation Emissions Potential will be used.

$$E = E_{PS} + E_{DIFF}$$

$$E_{PS} = \frac{P_i \, MW \, 10^6 \, E_a \, S_v \, ExC}{R \, T}$$

$$E_{DIFF} = \frac{(C)(10{,}000)(SA)(t_v)}{\left(\frac{E_a}{K_{eq} k_g}\right) + \left(\frac{\pi t}{D_e K_{eq}}\right)^{1/2}}$$

Where,
E = Total Emissions from Excavation of Soil in g;
E_{PS}= Total Emissions due to Soil Pore Space Gas in g;
E_{DIFF} = Total Emissions due to Diffusion in g;
P_i = Partial Pressure of Component i in millimeters of mercury (mm Hg)[1];
MW = Molecular Weight in grams per mole (g/mol);

[1] Note that because the impacts at the Site are primarily not separate phase, we have used the partial pressure as opposed to the vapor pressure of the pure component.

10^6 = Conversion Factor of cm^3/m^3;
E_a= Air-Filled Porosity (0.35 for wet, or compacted soil; 0.55 for dry, uncompacted soil – Eklund (1997));
S_v = Total Volume of Soil Moved in m^3;
ExC = Soil-Gas to Atmosphere Exchange Constant (0.10 for wet or high-clay content soils; 0.33 for dry, sandy soils from Eklund - 1997);
R = Universal Gas Constant in mm-Hg*cm^3/mol/K (62,361 mm-Hg*cm^3/mol/K);
T = Temperatures in K (assumed to be 15°C);
C = Mass Loading of Component i in soil in g/cm^3;
$10{,}000$ = Conversion Factor of square centimeters per square meter (cm^2/m^2); and
SA = Total Emitting Surface Area in square meters (m^2). GZA assumed the Total Emitting Surface Area to be the sides and bottom of the excavation and the sides and top of the stockpile.
D_e = Effective Diffusivity in Air in square centimeter per second (cm^2/s);
K_{eq} = Equilibrium Coefficient;
t_v = Time the Volume of Soil Moved is emitting in seconds (s) (360 s – Eklund (1997));
k_g = Gas-Phase Mass Transfer Coefficient in centimeter per second (cm/s) (Default of 0.15 cm/s – Eklund (1997)); and
t = Time that the Instantaneous Emission Rate approximates the Average Emission Rate over the 360 second period that Emissions from Freshly Excavated Soil are assumed to be Significant in s (60 s – Eklund (1997)).

P_i is calculated by:

For this scenario, the partial pressure was estimated using Raoult's Law assuming the constituents are in a mixture with the other organic matter in the soil.

Raoult's Law:

$$P_i = P_i^* x_i$$

Where,
P_i = Partial Pressure of the Component i in the Mixture;
P_i^* = Vapor Pressure of the pure Component i; and
x_i = Mole Fraction of the Component i in the Mixture (moles component/total moles).

$$x_i = \frac{10^{-6}\, C_{i,Mixture}\, MW_{Mixture}}{MW_i}$$

Where,
10^{-6} = Conversion Factor of kilogram per milligram (kg/mg);
$MW_{Mixture}$ = Molecular Weight of Mixture in g/mol (assumed to be 250 g/mol);
MW_i = Molecular Weight of Component i in g/mol; and
$C_{i,Mixture}$ = Concentration of Component i in the Mixture in milligrams of Component i per kilogram of Mixture (mg/kg).

$$C_{i,Mixture} = \frac{C_{i,Soil}}{TOC}$$

Where,
$C_{i,Mixture}$ = Concentration of Component i in the Mixture in milligrams of Component i per kilogram of Mixture (mg/kg);

$C_{i,Soil}$ = Concentration of Component i in the Soil in micrograms of Component i per gram of Soil (ug/g); and TOC = Fraction of Total Organic Carbon in the Soil (g/g). Because Site-specific TOC data was not available, the default value of 0.002 from the USEPA's Soil Screening Guidance: User's Guide (1996) was used to be conservative.

We've assumed a soil temperature of 15°C in our calculations. We have therefore utilized the Clausius-Clapeyron equation to calculate vapor pressures at 15°C from those in the literature (typically 25°C):
Clausius-Clapeyron Equation:

$$\ln\left(\frac{P_1}{P_2}\right) = \left(\frac{\Delta H_{vap}}{R}\right)\left(\frac{1}{T_2} - \frac{1}{T_1}\right)$$

Where,
P_1 = Vapor Pressure at a Known Point;
P_2 = Vapor Pressure at a Given Point;
T_1 = Temperature at a Known Point in Kelvin (K);
T_2 = Temperature at a Given Point in K;
ΔH_{vap} = Enthalpy of Vaporization of Component i in kilojoules per mole (kJ/mol); and
R = Universal Gas Constant in kilojoules per Kelvin per mole (8.314E-03 kJ/K/mol).

C (Mass Loading of Component i in soil in g/cm^3) is calculated by:

$$C = 10^{-6}\, C_{i,Soil}\, \beta$$

Where,
10^{-6} = Conversion Factor of gram per microgram (g/ug);
$C_{i,Soil}$ = Concentration of Component i in the Soil in micrograms of Component i per gram of Soil (ug/g); and
β = Typical Bulk Density in g/m^3; (assumed to be 1.5 g/m^3 – Eklund (1997)).

K_{eq} is calculated by:

$$K_{eq} = \frac{P_i\, MW_i\, E_a}{R\, T\, C}$$

Where,
P_i = Partial Pressure of the Component i in the Mixture in mm Hg;
MW_i = Molecular Weight of Component i in g/mol;
E_a= Air-Filled Porosity (0.35 for wet, or compacted soil; 0.55 for dry, uncompacted soil – Eklund (1997));
R = Universal Gas Constant in mm-Hg*cm^3/mol/K (62,361 mm-Hg*cm^3/mol/K);
T = Temperatures in K (assumed to be 15°C);
C = Mass Loading of Component i in soil in g/cm^3;

D_e is calculated by:

$$D_e = \frac{D_a\, (E_a)^{3.33}}{(E_T)^2}$$

Where,
D_a = Diffusivity in Air of Component i in cm^2/s (Default of 0.1 was used when chemical-specific values could not be found.);

E_a= Air-Filled Porosity (0.35 for wet, or compacted soil; 0.55 for dry, uncompacted soil – Eklund (1997)); and
E_T= Total Porosity (0.35 for compacted soil; 0.55 for uncompacted soil – Eklund (1997)).

For impacted soils to be managed on-Site (e.g., if it is not directly loaded into a truck but is first stockpiled), an additional Total Emissions due to Soil Pore Space Gas factor will be included in the Average Total Emissions to account for the additional emissions during soil handling and stockpiling. As a conservative measure, for losses during management of materials, GZA will utilize the Total Emissions due to Soil Pore Space Gas that was calculated above for losses during excavation. This is conservative since the concentrations in the re-handled soil will be lower than in the soil during excavation.

References:

Eklund, et al. 1997. Air Emissions from the Treatment of Soils Contaminated with Petroleum Fuels and Other Substances. Prepared for U.S. Environmental Protection Agency Office of Air and Radiation and Office of Research and Development Washington, D.C. EPA-600/R-97-116. October.

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