Remedial Action Closure Report

Former Manufactured Gas Plant
642 Allens Avenue

Providence,
Rhode Island

Prepared for: **New England Gas Company**

Prepared by: ***VHB*/Vanasse Hangen Brustlin, Inc.**
Providence, Rhode Island

November 2002

New England Gas Company

November 15, 2002

Mr. Joseph T. Martella, II
Senior Engineer
Office of Waste Management
Rhode Island Department of Environmental Management
235 Promenade Street
Providence, RI 02908

Re: New England Gas Company
642 Allens Avenue
Providence, Rhode Island
RIDEM Case No.: 98-004

Dear Mr. Martella:

New England Gas Company (NEGC) is pleased to submit the enclosed Site Remediation Closure Report. This Report was prepared by Vanasse Hangen Brustlin Inc. (VHB) on our behalf and it documents site remediation activities which have been completed in Areas 2 and 3 of the above-listed site.

This work was completed in compliance with the Temporary Remedial Action Permit (TRAP) issued by RIDEM on April 17, 2002. The TRAP established a due date for the Closure Report of "within ninety days of the completion of the Phase I RAWP." On October 10, 2002 NEGC notified you in writing that the Phase I field activities were completed, thereby establishing a due date for this Report of January 8, 2003.

As discussed in the meetings on October 10 and 16, 2002, NECG plans to submit a separate Site Remediation Closure Report for site remediation activities which were completed in Area 1 prior to Southern Union's purchase of the former Providence Gas Company. This report is currently being prepared by VHB and it is our intention to submit the Area 1 Closure Report by the end of the year.

If you have any questions regarding this submittal, please do not hesitate to call me.

Sincerely,

Robert Young
Director of Engineering

Enclosure

cc: Alan Fish – Southern Union
Timothy O'Connor – VHB
Dennis Esposito – AP&S
Dino Iseppi – CHES
Derek Tomka – ENSR

100 Weybosset Street
Providence, RI 02903

bcc: Tom Robillard
Charles Meunier
Dave Black – w/ Enclosure including Appendix C – Disposal Documentation
Susan Groce – w/ Enclosure excluding Appendix C – Disposal Documentation
Marc Viera – w/ Enclosure excluding Appendix C – Disposal Documentation

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Project Scientist: _____
Claude M. Masse

Project Manager: _____
Timothy M. O'Connor, P.E.

November 2002

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Executive Summary

On behalf of our client, New England Gas Company (NEGC), a Division of the Southern Union Company, and pursuant to the Rhode Island Department of Environmental Management (RIDEM) Temporary Remedial Action Permit (TRAP) issued to our client by the RIDEM Office of Waste Management on April 17, 2002, Vanasse Hangen Brustlin (VHB) supervised remedial actions at a portion of a former manufactured gas plant (FMGP) from May 2002 to October 2002. Additional permits obtained to conduct the remedial work included a Minor Source Air Permit approved by the RIDEM Office of Air Resources on April 30, 2002, a Coastal Resources Management Council (CRMC) Assent issued on May 8, 2002, and a Narragansett Bay Commission (NBC) Wastewater Discharge Permit issued on April 5, 2002.

The Site is located at 642 Allens Avenue in Providence, RI. The remedial activities conducted address a portion of the Site (Phase 1 Site), and additional remedial activities will be conducted in future phases of the project. Clean Harbors Environmental Services (CHES) of Weymouth, MA was the contractor providing the remediation/construction services and ENSR International (ENSR) of Westford, MA provided independent oversight services on behalf of NEGC.

The scope of work for this remedial action consisted of excavating FMGP waste and impacted soils, performing waste stabilization and transportation of materials to an appropriate RIDEM-approved out-of-state facility for treatment/disposal. The areas of waste removal included six locations and are identified as the:

- Tar and Ammonia Pits (Structure 3B);
- Filters (Structures No. 14A and 14B);
- Open cooling tank (Structure No. 17);
- Open separator tank (Structure No. 18);
- Open tar tank (Structure No. 19); and
- Seep area along the north shore of the property adjacent to the riverbank.

Remedial soil excavations beyond the scope of the RAWP were conducted in Area 2 and were included due to the proximity to Structure 3B, guided by analytical data from soil samples collected from borings completed by Environmental Science Services (ESS) of East Providence, RI through Structure 29.

The remedial objectives (ROs) for this phase of the project were documented in the Remedial Action Work Plan (RAWP), developed by ESS and dated December 4, 1998. The ROs were divided into three categories: surface soil objectives (0-2 feet below surface grade (BSG)); subsurface soil objectives (>2 feet BSG) within 100 feet from the

shore; and subsurface soil greater than 100 feet from the shore. These ROs were based on the RIDEM Direct exposure criteria (surface soil) and Upper Concentration Limits (UCLs) (subsurface soil).

The contents of the above-referenced structures generally consisted of coal tar sludges that were stabilized within each structure using a combination of soil, hydrated lime, and/or absorbent material. Once stabilized, the material was direct-loaded, when feasible, for transport to one of three RIDEM-approved treatment/disposal facilities.

Impacted surrounding soils were also excavated and were either transported for treatment/disposal, used to stabilize structure contents, used as backfill if the corresponding ROs were not exceeded, or stored on the on-Site Material Handling Area (MHA) for use as subsurface backfill during future phases of the project. Subsequent to excavation activities, confirmatory soil samples were collected from excavation sidewalls and from the excavation floor (if the excavation did not extend into the ground water table) and compared to the ROs to determine compliance.

Historic observations of sheening in the Providence River created concerns that there may be a "Seep Area" from the northern portion of the Site (Area 3). The natural gas pipeline located under the northern access road was shut down and a section removed to facilitate excavations within the Seep Area. Upon completion of the remediation excavation, the natural gas pipeline was replaced with new pipe and put back into service. Potential sources of FMGP waste in this area were excavated and removed. Piping observed in this area was removed when possible and sealed with hydraulic cement if it was not possible to remove it.

Laboratory analytical results of confirmatory samples collected from the sidewalls of remedial excavations indicate that there are soils within the remedial area that exceed the ROs, however, soil removal was conducted to the extent possible, based on physical Site constraints and/or on the maximum extent of excavations as presented in the RAWP.

A total of approximately 16,864 tons of FMGP-impacted material was excavated, transported and treated/disposed of during remedial activities. Approximately 9,558 tons was classified as hazardous and approximately 7,307 tons was classified as non-hazardous. The FMGP-impacted material was shipped to three facilities: Keystone Sanitary Landfill (Keystone) in Dunmore, PA; Environmental Soil Management, Inc. (ESMI) in Loudon, NH; and Chemical Waste Management, Inc. (WM Emelle) in Emelle, AL.

1 Introduction

On behalf of our client, New England Gas Company (NEGC), a Division of the Southern Union Company, and pursuant to the RIDEM Temporary Remedial Action Permit (TRAP) issued to our client by the RIDEM Office of Waste Management on April 17, 2002, Vanasse Hangen Brustlin (VHB) supervised remedial actions at a portion of a former manufactured gas plant (FMGP) from May 2002 to October 2002. For the purposes of this submittal, the work area for these activities is referenced by the term "Phase 1 Site". The term "Site" is used to describe the entire FMGP located at 642 Allens Avenue. The site is centered at approximately 41° 47' 42" north latitude and 71° 23' 35" west longitude. Universal Transverse Mercator (UTM) coordinates of the approximate center of the property are 4,629,800 meters north and 300,910 meters east. The main entrance to the Site is on Allens Avenue, on the west side of the property. Refer to Figure 1 for a Site Location Map.

The Site is an FMGP and is currently occupied by an NEGC Operations Center, Duke Energy (formerly known as Algonquin Gas), and the St. Lawrence Cement Company. The Southern Union Company currently owns the property and is in the process of updating the City of Providence Register of Deeds to reflect their recent involvement in the Site.

From 1994 to 2000, the Site was investigated by Resource Control Associates (RCA) of Pawtucket, RI and Environmental Science Services (ESS) of East Providence, RI on behalf of the former Providence Gas Company (PGC) (currently NEGC).

Three areas of the Site have been identified for remedial actions. These areas are the South Algonquin Area (Area 1), the Tar and Ammonia Pit (Area 2), and the North Algonquin Area (Area 3). During 1999 and 2000, remedial activities took place in Area 1 and the description of activities will be provided in a separate document.

The surficial soils in Area 3 were also excavated as part of these activities. The remedial activities were conducted coincident with improvement construction projects undertaken by the Algonquin Gas Transmission Company and Algonquin LNG, Inc.

The Phase 1 Site is characterized by surface and subsurface structures, unvegetated land and paved and unpaved access roads. Area 2 is located on the south-central portion of the property. Structure 3B was identified as the primary remedial excavation at Area 2, although other excavations have also been completed.

Area 3 is located on the northeast portion of the property and is bordered by an inlet to the Providence Harbor to the north. The Duke Energy liquid natural gas (LNG) storage tank is located east of the work area and an active pressurized natural gas pipeline runs under the gravel access road in the northern portion of the work area.

Duke Energy maintains an LNG distribution center and the St. Lawrence Cement maintains a cement storage and distribution facility, located south of the work area.

The remedial activities consisted of excavating impacted soils, both inside and around remnants of FMGP structures in Areas 2 and 3 (refer to Figure 2) and adjacent to a portion of the Providence Harbor waterfront north of the Site and then transporting these wastes to appropriately licensed facilities for treatment/disposal.

Clean Harbors Environmental Services (CHES) of Weymouth, MA was the contractor providing the remediation/construction services, VHB conducted the remedial excavation confirmatory sampling, and ENSR International (ENSR) of Westford, MA provided independent oversight services on behalf of NEGC.

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Background

The Site is located at 642 Allens Avenue in Providence, Rhode Island on a 42-acre parcel of land (Figure 1). From 1910 until 1954, an MGP operated at the property producing coal gas, carbureted water gas, and, to a limited extent, high-BTU oil gas. Gas manufacturing by-products were routinely managed through recovery, storage, recycling, reprocessing, and resale of the by-products. Such by-products included coke, coal tar, ammonia, toluene, and benzene. B.P. Clapp operated an ammonia works at the property beginning in 1910, and managed the recycling and sale of ammonia by-products. The United States Government operated a toluene facility at the property for a short period of time during 1918.

In 1952, a liquefied petroleum gas distribution plant began operation at the property. By 1954, coal gasification operations at the property had ceased. Duke Energy/ Algonquin has leased the eastern and southeastern portions of the property since 1972. St. Lawrence Cement Company (formerly Independent Cement) has leased the southeastern section of the property since 1961.

Buildings and structures formerly associated with the FMGP that survived property renovations include the former coal gas purifier house, the meter house, and the former washer and tar house. All other principal FMGP buildings and structures were demolished before 1980. Presently, the Site includes a NEGC operational center, a liquefied natural gas (LNG) storage terminal, a LNG distribution center, a cement storage and distribution facility, and remnants of the FMGP. In addition to NEGC activities at the Site, operations at the property principally involve storage, processing, and distribution of LNG and cement. NEGC has offices, natural gas regulating equipment, NEGC service vehicles, excavating equipment (i.e. backhoes) and pipeline excavation spoils storage on the property. Active natural gas supply pipelines also traverse the property. No manufacturing currently occurs at the property.

The Site is comprised of three principal areas and associated operations:

- NEGC's 642 Allens Avenue facility (formerly Providence Gas Company);
- The Allens Avenue facility of Duke Energy (formerly Algonquin Gas Transmission Company)and Duke Energy LNG; and
- The St. Lawrence Cement Company (formerly Independent Cement).

The NEGC FMGP occupied portions of all three of the locations described above. The Phase 1 Site encompasses the Tar and Ammonia Pit (Area 2) and the North Algonquin Area (Area 3).

Site Investigations

Previous Investigations

In April 1994, RCA was retained to conduct site characterization activities. A Site Characterization Report was prepared on July 1, 1994, and subsequently submitted to RIDEM. The Site Characterization Report documented the activities undertaken to identify potential areas of environmental concern by means of a site inspection, historical research, file reviews, and interviews with NEGC personnel.

Characterization activities identified that the following raw materials were used at the FMGP: coal, petroleum, water, salt water, iron oxide, compressor oil, methyl alcohol, ethylene glycol, methyl mercaptan odorizer, and natural gas. Additionally, the principal categories of oil or potential hazardous materials formerly stored, used, or generated as a by-product at the FMGP included petroleum products and distillates, coal tar, ammonia, polychlorinated biphenyls (PCBs), sulfur compounds, PAHs, VOCs, phenolic compounds, ferri- and ferrocyanide compounds, and metals.

A work plan for further site characterization activities was prepared by RCA and submitted to RIDEM, on behalf of PGC, based on the results of the initial site characterization. The work plan, titled *Work Plan for Field Characterization Investigations*, included environmental exploration, monitoring, and analytical testing. In February 1995, RCA issued a data summary report titled *Summary Report: Phase IA Field Characterization Investigations*, which contained the findings of the investigation.

RCA completed further site assessment activities on the basis of the Phase IA findings. The results of a preliminary study were presented in a report titled *Passive Soil Gas Survey Pilot Study and Expanded Soil Gas Work Plan (August 1995)*. Follow-up investigations were implemented through November 1995, the results of which appeared in the *Progress Report on Initial Phase IB Field Investigations* and *Final Work Plan for Phase IB Field Characterization Investigations (December 1995)*.

In October 1995, RCA worked with Stone & Webster to complete geotechnical investigations of the central and southern area of the Algonquin and NEGC areas. The purpose of this investigation was to assess the suitability of soil types for future development by Algonquin. Monitor wells were also installed to permit further assessment of groundwater conditions as part of this investigation.

As plans for development of this area of the Site became more definitive, additional environmental investigations focused on proposed construction areas for an expanded Algonquin Gas LNG facility. Since February 1996, the proposed Algonquin development project area was the subject of two focused subsurface investigations.

Recent Subsurface Structure Investigation

In September 1998, Environmental Science Services (ESS) subcontracted for the installation of test borings in several of the subsurface structures to further characterize the contents of these structures. Although some sampling and analysis of the subsurface structures had been performed, a review of the analytical data revealed some inconsistencies and/or uninvestigated structures. Structures further investigated by ESS included Relief Gas Holder 16, North Filter 14A, Open Separating Tank Structure 18 (Tanks 1 and 2), open Tar Tank (Structure 19), Tar and Ammonia Structure (Structure 3B), and the Open Cooling Tank (Structure 17). The results of these investigations are described in Appendix B of the December 1998 limited RAWP (ESS, 1998).

ESS also completed soil borings in the vicinity of the structures in 2000. Environmental Operations, Inc., of Saint Louis, MO on behalf of Southern Union, submitted this information to RIDEM in July 2001. The data from these borings will be comprehensively reviewed as part of the Site Investigation Report, which is anticipated to be submitted to RIDEM in the near future.

This information (along with data from test pits completed by CHES and discussed in Section 3 of this report) was used to guide soil excavations.

Regulatory History

The following summarizes the most recent regulatory history of the Site associated with this Remedial Action:

- ESS submits RAWP to RIDEM on December 4, 1998;
- June 1, 1999, RIDEM issues TRAP;
- RIDEM issues Minor Source Air Permit for remedial activities on May 9, 2000;
- Draft Interim RAWP submitted by Environmental Operations, Inc. on July 20, 2001;
- RIDEM rejects Draft Interim RAWP in a letter dated September 18, 2001;
- VHB submits Modified RAWP on November 21, 2001;
- RIDEM rejects Modified RAWP in a letter dated December 13, 2001;
- "White Paper" prepared and submitted by VHB on January 15, 2002;

- January 15, 2002, NEGC submits letter with list of logistical changes necessary to implement RAWP and address the active petroleum seep;
- March 7, 2002 letter from RIDEM indicated that RIDEM is preparing to issue a new TRAP, approving modifications listed in January 15, 2002 letter;
- April 5, 2002, The Narragansett Bay Commission (NBC) issues the project a Wastewater Discharge Permit;
- RIDEM approves modifications to the TRAP on April 17, 2002;
- April 30, 2002, RIDEM approves modifications to the Minor Source Air Permit;
- Coastal Resources Management Council (CRMC) issues Notice of Assent for remedial activities at the Site on May 8, 2002;
- NEGC submits letter summarizing Project Status-Phase 1 Remedial Action to RIDEM on June 21, 2002;
- NEGC submits second letter summarizing Project Status-Phase 1 Remedial Action to RIDEM on August 16, 2002; and
- NEGC submits letter summarizing Final Project Status-Phase 1 Remedial Action to RIDEM on October 10, 2002.

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Remedial Actions

On May 6, 2002, CHES mobilized to the Site. The scope of work for this remedial action consisted of excavating FMGP source materials and impacted soils, performing waste stabilization and disposing of materials at an appropriate RIDEM-approved out-of-state facility. The areas of waste removal include six locations as shown on Figure 2 and identified as the:

- Tar and Ammonia Pits (Structure 3B);
- Filters (Structures No. 14A and 14B);
- Open cooling tank (Structure No. 17);
- Open separator tank (Structure No. 18);
- Open tar tank (Structure No. 19); and
- Seep area along the north shore of the property adjacent to the riverbank.

Additional material removal beyond the scope of the RAWP was conducted from beneath Structure 29, Compressor Building No. 1 (Former Condenser House) in Area 2. This excavation was included due to the proximity to Structure 3B and was guided by analytical data from soil samples collected from borings completed by ESS through Structure 29 (refer to Figure 3).

Source materials and surrounding impacted soils were direct-loaded into trucks, when feasible, for transport to the treatment/disposal facilities. The selected facilities included Keystone Sanitary Landfill in Dunmore, PA; Environmental Soil Management, Inc. (ESMI) in Loudon, New Hampshire; and Chemical Waste Management in Emelle, AL. As required by the TRAP, letters from the applicable state environmental regulatory authorities and the respective facilities were submitted to RIDEM. Each facility received approval to receive hazardous and/or non-hazardous waste from the project. These letters are attached in Appendix B.

The remedial action consisted of excavation and disposal of impacted material exceeding the RIDEM-approved remedial objectives (ROs) for soil from the ESS RAWP dated December 4, 1998. The ROs were divided into three categories: surface soil objectives (0-2 feet below surface grade (BSG)); subsurface soil objectives (>2 feet BSG) within 100 feet from the shore; and subsurface soil greater than 100 feet from the shore. These ROs were based on the RIDEM Direct exposure criteria (surface soil) and Upper Concentration Limits (UCLs) (subsurface soil) and are presented in Table 1.

Table 1
Remedial Objectives for Soil

Constituent (mg/Kg)	Surface Soil	Subsurface Soil <100 feet from Shore	Subsurface Soil >100 feet from Shore
TPH	2,500	15,000	30,000
VOCs			
Benzene	200	4.3	43
Ethylbenzene	10,000	62	620
Toluene	10,000	54	540
Xylenes	10,000	540	540
PAHs			
Acenaphthene	10,000	10,000	10,000
Acenaphthylene	10,000	10,000	10,000
Anthracene	10,000	10,000	10,000
Benzo(a) Anthracene	7.8	10,000	10,000
Benzo (a) Pyrene	0.8	10,000	10,000
Benzo (b) Fluoranthene	7.8	10,000	10,000
Benzo (g,h,i) perylene	10,000	10,000	10,000
Benzo (k) fluoranthene	78	10,000	10,000
Chrysene	780	10,000	10,000
Dibenzo (a,h) Anthracene	0.8	10,000	10,000
Fluoranthene	10,000	10,000	10,000
Fluorene	10,000	10,000	10,000
Indeno (1,2,3) Pyrene	7.8	10,000	10,000
2-Methylnaphthalene	10,000	10,000	10,000
Naphthalene	10,000	500	5,000
Phenanthrene	10,000	10,000	10,000
Pyrene	10,000	10,000	10,000
2,4-Dimethylphenol	10,000	10,000	10,000
2,6-Dinitrotoluene	10,000	10,000	10,000
Pentachlorophenol	48	10,000	10,000
PCBs	10	10,000	10,000
Metals			
Arsenic	7	-	-
Lead	500	-	-
Cyanide	10,000	-	-

- No RO established for constituent.

Waste Characterization Samples

In order to minimize the amount of ex-situ soil handling and storage, soils in potential excavation areas were sampled in-situ for waste characterization prior to the start of remedial activities. Test pits were completed in Areas 2 and 3 and samples were collected to characterize the subsurface conditions for waste disposal. Approximately 37 test pits (TP-1 through TP-37) were completed in Area 3 and an additional 13 test pits (TP- 38 through TP-50) were completed in Area 2.

The surficial soil (0-2 feet) in Area 3 had been excavated in previously conducted remedial actions and, as such, only subsurface soil samples were collected. The laboratory analytical results of the waste characterization samples are presented in Tables 2 and 3 (see Tables section) and the test pit locations are depicted in Figures 3 and 4.

Samples were collected from test pits advanced in each structure and from a sampling grid to satisfy the disposal facilities' sampling requirements. Subsurface samples from test pits were generally collected from 2 feet below the water table. The sampling frequency was approximately one sample per 500 tons of material to be disposed and the samples were analyzed for parameters outlined by the disposal facilities.

Wastewater Treatment System

The wastewater treatment system (WWTS) operated under a permit issued by the Narragansett Bay Commission (NBC) (Permit No. P4012-017-0307) and was designed to remove settleable and particulate solids, floating oils, dissolved organics, and cyanide.

Wastewater generated from dewatering activities was pumped initially to a weir tank to promote the removal/settling of particulates and NAPL and transferred for additional settling to a fractionization (frac) tank that also served as an equalization tank to the WWTS. From the equalization tank, wastewater passed through an oil/water separator, particulate bag filters, granular activated carbon (GAC) vessels and a 2-stage alkaline chlorination system before discharge to the NBC sewer system. Approximately 296,691 gallons of wastewater was treated and discharged during this phase of the project.

FMGP-Impacted Material Excavation

The contents of all RAWP-identified subsurface structures in Areas 2 and 3 were excavated and the structures were either inspected by RIDEM or photo-documented prior to backfilling with soil meeting subsurface soil ROs. Areas outside the structures that exceeded ROs were excavated and confirmatory samples collected, as outlined in the RAWP. Under the direction of VHB, approximately 16,828 tons of

subsurface FMGP impacted material was excavated and transported for disposal. +Copies of the manifests and/or Bills of Lading and weight slips are provided in Appendix C. Surficial soils that were excavated were either used as subsurface fill (providing that they met subsurface soil ROs), used to stabilize material in the structures and were subsequently disposed of, or were stockpiled on the Material Handling Area (MHA) for future re-use as subsurface fill in other phases of the project. Refer to the Figures section for Site Plans showing the limits of excavations and soil sampling locations along with other pertinent site features. Refer to Appendix D for photographs depicting site activities/conditions.

Odor-suppressing foam was used during the remedial excavations to manage odors and fugitive emissions emanating from excavations and stockpiles. Dust suppression was achieved through the use of a watering truck when Site conditions warranted its use. Refer to the Photographs section to see this equipment in use.

Area 2 Excavations

Structure Excavations

On May 23, 2002, stabilization of the contents of Structure 3B began. Structure 3B measured approximately 125 feet by 45 feet and was approximately 6 feet deep. The structure was divided into three cells by concrete walls and stabilization began in the eastern most cell. Structure 3B had a concrete bottom that appeared to be intact and was scraped cleaned with a smooth-edged excavator bucket. The material in the structure consisted of a coal tar sludge and stabilization was accomplished using hydrated lime and soil to sufficiently dry the material for handling and transportation. Prior to stabilization, a sample was collected from each cell of the structure and composited to form a waste characterization sample. Analytical results indicated failing TCLP benzene results, thus requiring disposal as a hazardous waste. The laboratory analytical results of a sample collected from within the structure is presented in Table 4.

Once stabilized, the material was transferred to the center section of Structure 3B, since stabilization was conducted from east to west. There were three pipes observed in the northeast corner of the eastern cell at approximately three feet below surface grade (BSG). These pipes were traced back to two small structures located east of Structure 3B. These structures were subsequently identified as Structure 3B Northeast (NE) and Structure 3B Southeast (SE). The pipes were removed and the pipe outlets into the structure were sealed with concrete, once the structure was partially backfilled, allowing access to the outlets. When excavation and scraping of the eastern cell with a smooth-edged excavator bucket was completed, it was inspected by Mr. Joseph Martella of RIDEM's Office of Waste Management on May 28, 2002 and approval was granted to backfill this portion of the structure. Mr. Martella visited the Site again on June 24, 2002 to observe the cleaning of the western and final cell in the structure and approved the backfilling of the structure.

Table 4
Structure 3B Waste Characterization Sample Analytical Results

Analyte (mg/Kg)	Structure 3B Sludge Sample
TPH (Diesel Range)	122,000
SVOCs	
Acenaphthylene	3,190
Anthracene	2,660
Benzo (a) anthracene	2,080
Benzo (a) pyrene	1,650
Benzo (b) fluoranthene	1,350
Benzo (g,h,i) perylene	823
Benzo (k) fluoranthene	1,310
Carbazole	1,450
Chrysene	1,940
Dibenzofuran	2,130
Fluoranthene	4,650
Fluorene	2,850
Indeno (1,2,3-cd) perylene	774
2-Methylnaphthalene	3,290
m,p-Methylphenol	919
Naphthalene	21,500
Phenanthrene	9,440
Phenol	1,210
Pyrene	3,580
VOCs	
Benzene	372
Naphthalene	38,700
Styrene	108
Tetrachloroethene	44
Toluene	342
1,2,4-Trimethylbenzene	220
1,3,5-Trimethylbenzene	108
Xylenes (Total)	475
TCLP Benzene	6.9
Metals	
Arsenic	33.7
Barium	14.1
Cadmium	11.8
Chromium	2.51
Lead	466
Mercury	2.02
Selenium	10.1

On June 13, 2002, overburden soil from Structure 3B NE and Structure 3B SE were excavated to collect waste characterization samples of the structure contents. The laboratory analytical results from these samples are presented in Table 5.

Table 5
Laboratory Analytical Results for Structures 3B SE and NE Waste Characterization Samples

Analyte (mg/Kg)/Sample ID	Structure 3B SE	Structure 3B NE
TPH (Gasoline Range)	989	ND
TPH (Diesel Range)	6,480	9,870
SVOCs		
Benzo (a) anthracene	ND	147
Benzo (a) pyrene	ND	134
Benzo (b) fluoranthene	ND	174
Fluoranthene	752	361
2-Methylnaphthalene	594	ND
Naphthalene	3,720	ND
Phenanthrene	1,110	268
Pyrene	436	201
VOCs		
Naphthalene	1,750	59.5
1,2,4-Trimethylbenzene	ND	2.30
Toluene	120	ND
Xylenes (total)	210	ND
TCLP Benzene	0.61	ND
PCBs	0.298*	0.416**
Metals		
Arsenic	16.5	5.16
Barium	26.4	185
Cadmium	1.21	ND
Chromium	5.43	10.3
Lead	144	617
Mercury	0.16	ND
Reactive Sulfide	1,060	471
pH	7.8	8.60
Ignitability	>200°F	>200°F

* Compound identified as Arochlor 1242.
** Compounds identified as Arochlor 1242 and 1254.

The free liquids were pumped from these structures on June 18, 2002 to on-Site frac tanks and on June 21, 2002, excavation of the southeastern structure contents began. The structures had concrete bottoms that appeared to be intact and were scraped clean with a smoothed-edged excavator bucket. The northeastern structure was approximately 10 feet by 10 feet in area and approximately 3 feet deep. The southeastern structure was approximately 15 feet by 15 feet in area and was approximately 6 feet deep. Pipe outlets from these structures to Structure 3B were sealed with concrete when the excavation was filled to a point that allowed safe access to the structures. Photographs of the structures were taken and they were subsequently backfilled. These photographs are presented in Appendix D.

Subsurface Soil Excavations

Subsurface soil excavations were conducted north of Structure 3B and were based on proximity to the structure, laboratory analytical data from ESS borings in the vicinity that indicated concentrations of TPH that exceeded the ROs, and from a waste characterization test pit (TP-39) that indicated concentrations of naphthalene exceeding the ROs.

Based on the above information, portions of the slab underlying the former Compressor Building No. 1 (Structure 29) were demolished and removed. Concrete that was demolished from the slab was disposed of at Keystone Sanitary Landfill under Bills of Lading. These Bills of Lading are attached in Appendix C.

Subsurface soil excavations were conducted below the concrete foundations. Groundwater was encountered at approximately 8 feet BSG and the excavation was advanced approximately 2 feet into the water table. Subsurface concrete slabs were encountered west of Structure 3B at approximately 3 feet BSG, in addition, there were surface and subsurface pipes associated with the NEGC natural gas operation along the western limit of the excavation, limiting the western extent of the excavation. Two subsurface pipes were encountered on the south wall of the excavation, west of Structure 3B. One of the pipes was located at approximately 2 feet BSG and was approximately 12 inches in diameter and the other pipe was at approximately 6 feet BSG and was approximately 4 inches in diameter. Because these pipes extended in a southerly direction under a Duke Energy containment berm, they were cut and sealed with cement once the excavation was partially backfilled.

The excavation was advanced in a north/northeasterly direction and brought to the approximate edge of the paved access road north of Structure 3B and continued east along the road. Proximate to confirmation sample point EXA2-12, a light non-aqueous phase liquid (LNAPL) was observed to be weeping into the excavation from the north excavation wall at the water table. The LNAPL appeared to be brown in color and appeared to be isolated to a small area.

There appeared to be a natural gas line between and parallel with the road and the excavation. On June 12, 2002 and during excavations between samples EXA2-12 and

EXA2-13, the top of an approximately 24-inch subsurface valve casing was scraped by the excavator bucket, causing a small hole in the casing. Work activities were immediately stopped and equipment shut down. NEGC personnel were notified and responded to the work area and plugged the leak. The origin and contents of the pipe were unknown, however, several inches of water column pressure were observed in the pipe. The pipe location was isolated and work continued once the work area was deemed safe. The excavation was continued in a southerly direction to the previously conducted excavation in the vicinity of TP-39.

The excavation was left open overnight and LNAPL was observed to have collected in the excavation. The LNAPL appeared to be from the same area that was observed the day before and as the excavation had already been brought to the northern limits, the project team decided to place a 12-inch diameter recovery well to facilitate future LNAPL recovery. Recovery well specifications are detailed in Appendix E. A trash pump equipped with a 3-inch hose was used to remove LNAPL from the excavations.

For access, CHES backfilled the eastern portion of the excavation so that the trucks could back up to Structure 3B to be loaded. Confirmatory samples had not been collected along the eastern sidewall at this time and were subsequently sampled from test pits. The demarcation between the offsite fill and the native soil was easily identifiable and facilitated the selection of the test pit locations.

During the waste characterization test pitting, no sample was collected from TP-50. Based on PID screening results and visual observations, this area was re-investigated on August 2, 2002. The dimension of the test pit was approximately 15 feet by 22 feet and it was advanced approximately 11 feet BSG. Although soil at this depth appeared to be wet, no apparent groundwater entered the excavation. The soils consisted of very fine sands and silt and the fine texture of the soils was presumed to be the cause of the slow recharge. Monitor well RCA-14 was located approximately 4 feet east of the test pit and was gauged for depth to water. Using an oil-water interface probe, depth to water was gauged to be approximately 9 feet BSG.

Based on PID screening, it was decided to stockpile the test pit spoils on polyethylene sheeting and soil samples were collected from the four sidewalls, in the event that subsurface ROs were exceeded and additional soil excavation was necessary. The test pit was left open until the laboratory analytical results indicated that the ROs were not exceeded. On August 7, 2002, the test pit was observed to have groundwater in it and there was some LNAPL on the water surface. Although the laboratory analytical results did not indicate that the ROs were exceeded and the LNAPL thickness was less than 1/8 inch in thickness, this location was noted as a location for a recovery well. The recovery well was installed in this location on September 16, 2002.

On August 30, 2002, the eastern portion of Structure 29, west of Building No. 9, was excavated, exposing an approximately 3-foot diameter, cast iron standpipe that was filled with LNAPL and/or tar. The contents of the standpipe were contained with

soil and added to the outgoing waste soil stockpile. It was decided that to investigate the area more thoroughly, an excavator equipped with a hydraulic hammer would be needed.

On September 4, 2002, demolition of a portion of the concrete structures began using the hydraulic hammer. Removal of the concrete allowed for the excavation and removal of the standpipe and underlying soils. The pipe was approximately 10 feet in length with a flange at the bottom and a solid, cast iron blind flange bolted to the pipe. Further demolition and excavation of the concrete structure uncovered 3 additional standpipes aligned in series. Based on the configuration of the pipes, the project team presumed the pipes may have been used as "knock-down" pipes in the former compressor building. None of the newly uncovered pipes contained the LNAPL/coal tar that was observed in the first pipe.

Excavations were advanced approximately 2 feet into the groundwater table. Due to the presence of adjacent concrete structures, confirmatory samples could only be collected from the subsurface of the west wall.

Surficial Soil Excavations

Prior to subsurface soil excavations, surficial soils were excavated north and west of Structure 3B to a depth of approximately 2 feet BSG and were used to further stabilize the contents of Structure 3B. These excavations were guided by the laboratory analytical results from soil samples collected at a depth of 0 to 2 feet BSG from borings previously completed by ESS.

A surficial soil excavation was begun on August 29, 2002 south of Building No. 9. Due to the presence of a Duke Energy dike located south of the excavation area, a 20-foot no dig zone was established between the excavation and the dike. Soils were excavated to a depth of 2 feet BSG. The excavation started proximate to an ESS boring that indicated a soil sample at 0-2 feet exceeded surficial soil ROs. The excavation proceeded westerly to the 3B Northeast and Southeast structures which had previously been excavated. A concrete foundation slab was encountered along the southern portion of the excavation and a cement "trough" was observed running approximately the entire length of the excavation. The excavation was advanced northerly to the concrete foundation of Building No. 9.

While excavating along the Building No. 9 foundation, what appeared to be hardened tar balls were observed in the bottom of the excavation. This area of the excavation was advanced deeper, uncovering several subsurface pipes. Some of the pipes appeared to have LNAPL and water inside and were removed. The soil underlying these pipes was also removed. The pipes entered the foundation of Building No. 9. The pipes were removed to the foundation, where they were sealed with concrete. This portion of the excavation was advanced to a depth of approximately 4 feet, while the remainder of the excavation was advanced to a depth of 2 feet.

With the exception of the eastern sidewall, the surficial excavation was advanced to its practical limits. The northern limits were defined by Building No. 9, the southern limits were defined by the 20 foot no-dig zone measured from the base of the Duke Energy dike, and the western limits of the excavation consisted of the previous excavation of the structures northeast and southeast of Structure 3B.

The laboratory analytical results of the eastern sidewall samples indicated sidewall samples exceeded surface ROs and further excavations were needed. On September 6, 2002, further surficial excavations were conducted in an easterly direction. The excavation was brought approximately 16 feet east until a concrete slab was encountered. The slab was located approximately 3-4 inches BSG and extended the width of the excavation. Sidewall samples were collected from the north and south wall at the eastern-most limit of the excavation, however, further excavations in these directions was not possible due to the 20-foot setback limit from the Duke Energy dike to the south and the presence of the partially demolished Building No. 9 to the north.

Area 3 Excavations

Structure Excavations

Removal of the salt-water intake structure began on June 11, 2002 and these activities were conducted during low tide conditions. Removal was accomplished by excavating approximately 1.5 feet BSG of the surrounding sheet piling and the sheet piling was cut with an acetylene torch. The piping associated with the structure was removed and stockpiled on the MHA for recycling. LNAPL was observed on the water surface during the removal activities within the structure and additional absorbent booms were placed around the former structure for containment and collection. Removal of the salt-water intake was completed on June 14, 2002.

Structure content excavations began at Structure 18 on June 26, 2002. The laboratory analytical results from waste characterization samples collected from within Structure 18 are presented in Table 2 (see Tables section) and are identified as TP-17, TP-18, and TP-20.

Once excavation started, it became evident that the structure was made up of six cells with concrete dividing walls. There was also a gap observed in the middle of the structure that ran the length of the structure, was oriented in a north/south direction and divided the three east and three west cells. This gap did not have a concrete bottom and the soil which filled the gap was excavated to an approximate maximum depth of 14 feet BSG. There were several pipes connecting the east and west cells that were removed and stockpiled for disposal.

After each cell was excavated and scraped with a smooth-edged excavator bucket, photographs were taken to document the conditions. On July 9, 2002, Mr. Joseph Martella of RIDEM's Office of Waste Management visited the Site to inspect the northeast cell, the final cell to be excavated, and approved the backfilling of that cell.

On July 12, 2002, CHES began the excavation of Structure 14B, one of the former filters. The structure is approximately 20 feet by 15 feet in area and is approximately 10 feet deep. The laboratory analytical results from a waste characterization sample collected from within the structure is presented in Table 2 (see Tables section) and is identified as TP-13.

The northwest corner was initially excavated to create a sump for dewatering of the structure. The contents of the structure generally consisted of approximately 2-3 feet of what appeared to be coal tar overlying approximately 3 feet of coal. It is presumed that the coal acted as the filtering medium. Excavation and cleaning of the structure was completed on July 16, 2002. On July 18, 2002, excavation and cleaning of Structure 14A was completed. The contents of this structure were similar to that of Structure 14B. Photographs of the interiors of the structures were taken and the structures were subsequently backfilled.

Excavation of Structure 17 contents began on July 16, 2002. Structure 17 is approximately 50 feet by 50 feet in area and 11 feet deep. Laboratory analytical results of a waste characterization sample collected from Structure 17 is presented in Table 2 (see Tables section) and is identified as TP-15.

On July 31, 2002, CHES completed the excavation and cleaning of Structure 17. During soil excavations, pipes were discovered to run from Structures 14A and 14B to Structure 17. These pipes were removed and the pipe outlets were sealed with concrete.

Stabilization of the contents of Structure 19 began on July 30, 2002. Laboratory analytical results of a waste characterization sample from Structure 19 are presented in Table 6. Structure 19 contained three concrete arch walls providing support for the concrete cover. These walls were oriented in a north-south direction and were eventually demolished and removed during the excavation and cleaning of the structure. The concrete was segregated and disposed of at Keystone Sanitary Landfill. The contents of this structure were very viscous, making dewatering and/or stabilization with soil impractical. CHES accomplished stabilization using a combination of soil and a "speedi-dry"-type material that was delivered to the Site in approximately 2,200-pound packages. CHES used approximately 23 tons of the absorbent material to stabilize the contents to a point that they were suitable to be loaded and transported for disposal. On July 31, 2002, CHES completed the excavation and cleaning of Structure 19.

Subsurface Soil Excavations

During previous remedial actions undertaken in this area, the surface soil (0-2 feet BSG) had already been removed and was not replaced. As such, all references to depths of subsurface excavations in this area are based on the surface grades that were encountered during the subsurface excavations. Figure 7 depicts the excavations conducted in Area 3.

Table 6
Laboratory Analytical Results of Waste Characterization Sample from Structure 19.

Analyte (mg/Kg)/Sample ID	Structure 19
TPH	75,600
SVOCs	
Acenaphthylene	989
Anthracene	764
Fluoranthene	735
Fluorene	925
2-Methylnaphthalene	3,270
Naphthalene	5,180
Phenanthrene	2,610
Pyrene	1,310
VOCs	
Benzene	297
Ethylbenzene	88.1
Naphthalene	4,750
Styrene	185
1,2,4-Trimethylbenzene	74.6
1,3,5-Trimethylbenzene	29.3
Toluene	315
Xylenes (total)	230
TCLP Benzene	10.1
PCBs	1.063*
Metals	
Arsenic	6.38
Barium	744
Cadmium	ND
Chromium	6
Lead	417
Mercury	0.244
TCLP Lead	0.2
pH	8.41
Ignitability	>200°F

* Compounds identified as Arochlor 1242 and 1254.

On June 25, 2002, soil excavations within Area 3 (the North Algonquin area) began in the vicinity of RCA-40. Per the Bid Specification provided by NEGC and based on design calculations by Paul A. Aldinger & Associates, Inc., dated August 1997, it was concluded that a limited open cut excavation design was the best option for excavations proximate to the Duke Energy LNG containment dike. As such, these excavations were limited to a series of 15-foot wide trenches placed at least 20 feet from the Duke Energy dike. Excavations in this area commenced on the surface advancing in a westerly direction (perpendicular to the dike) at a horizontal to vertical slope ratio of 1.5H:1.0V. Because excavation options were limited when immediately adjacent to the dike, compliance samples were not collected on the wall facing the dike.

During the first pass of the excavator bucket, an approximately 4-inch pipe was uncovered approximately 7 feet north of the northwest corner of Structure 25. The pipe was oriented in an east/west direction and was observed to contain thick coal tar. Because the pipe appeared to extend under the containment dike, no effort was made to remove the pipe. The coal tar within the pipe was removed to practical extents possible and the pipe was subsequently sealed with hydraulic cement. There were no indications of any impacts to the soil underlying the pipe. A water main that feeds the fire hydrant in Area 3 was located along the western extent of the excavation at a depth of approximately 7 feet BSG.

A small excavation was conducted east of the fire hydrant at the location of TP-5. Based on data from a soil sample collected below the water table from a waste characterization test pit, excavations were conducted 2 feet into the groundwater table.

On June 27, 2002, excavation of subsurface soil between Structure 18 and Structure 16 began. As shown in Figure 7, this excavation was eventually extended north to the access road and east between Structures 17 and 18 and beyond Structure 19. Groundwater was encountered at approximately 8 feet BSG (during mid-tidal cycle) and the excavation was advanced approximately two feet into the groundwater throughout the excavation. LNAPL was encountered throughout the excavation, however, it never appeared to exceed the RAWP action threshold of 1/8 inch in thickness. The LNAPL varied in colors from a dark brown to a greenish to a reddish color. Although the threshold thickness was not exceeded, two locations within the excavation were chosen for the placement of recovery wells to facilitate LNAPL recovery. These recovery wells were installed on September 13, 2002.

Several remnant subsurface footings were uncovered in this excavation south of Structure 14B. LNAPL observed in this portion of the excavation appeared to be greenish in color. An approximately 12-inch pipe was observed running parallel to the eastern sides of Structures 17 and 18. The pipe was believed to be a water main and was left intact in the excavation. This pipe did not appear to be a source of subsurface impacts.

Laboratory analytical results from confirmatory samples collected from the northeastern and southeastern portions of the excavation indicated that additional excavation was needed. Initially, the over-excavation at confirmatory sample points EXA3-23 and EXA3-24 were extended an additional 5 feet. Laboratory analytical results of the over-excavation samples (EXA3-23A and EXA3-24A) indicated that additional excavations were needed at confirmatory sample point EXA3-23A. This portion of the excavation was excavated an additional 12 feet based on PID screening and visual observations. Laboratory analysis of confirmatory sample EXA3-23B indicated that ROs had been achieved.

The southeastern portion of the excavation with the confirmatory sample that exceeded the ROs (EXA3-21) was advanced southerly to Structure 19. The laboratory analysis of confirmatory sample EXA3-21A indicated that the ROs had been achieved.

During excavation, two 6-inch diameter cast iron pipes were observed extending from the riverbank northeast/east of Structures 14A and 14B. The United States Coast Guard and RIDEM identified these pipes on March 24, 1998 during an investigation of an abutting property. While tracing a sheen along the shoreline, one of the pipes was reportedly observed to be discharging oil and water. This 1998 Site visit is documented in RIDEM's Office of Compliance and Inspection (OCI) Response Report Form (Report No. 98-133). A copy of this report is included in Appendix F.

The removal of these pipes had been complicated because of a high pressure natural gas pipeline that is situated adjacent to this area. This natural gas pipeline was removed as part of this project and allowed an investigation of the pipes on July 29, 2002. CHES uncovered the subject pipes from the point where they extend from the riverbank to approximately 30 feet south of the riverbank.

Upon excavation of the riverbank pipes, the western pipe was observed to run approximately 30 feet in a southerly direction, where it turned at a 90-degree angle in a westerly direction and entered Structure 14A approximately 4 feet below the top of the structure. During the excavation, the right-angled pipe was broken. The inside of the pipe appeared to be filled with rust and sandy textured soil and there was no tar or LNAPL observed in the pipe. The material in the pipe did not exhibit any olfactory indications of impacts and this was later documented with a photoionization detector (PID). On June 29, 2002, Mr. James Ball of RIDEM's OCI visited the Site to observe the pipe locations and conditions. Mr. Ball indicated that he would be out of town for the remainder of the excavation and requested that we photo-document the removal of the eastern pipe. Photographs are included in Appendix D.

On July 30, 2002, excavation of the pipes resumed and started with the removal of the western pipe. The pipe was transported to the on-site Material Handling Area (MHA) and stockpiled for recycling/disposal. Soil samples were collected from the pipe grave at 15- foot intervals (Refer to Figure 6) and screened for total volatile organic compounds (TVOCs) using a PID and the jar-headspace method. All samples screened under the western pipe indicated TVOC concentrations as non-detectable.

Based on the non-detectable PID screenings and laboratory analytical results from samples collected by ESS at a depth of 0 to 4 feet along the access road that indicated no exceedances of RIDEM soil objectives, no samples below the pipe run were submitted for laboratory analysis.

Excavation of the eastern pipe was resumed in a southerly direction. The excavation was brought back approximately 22 feet more, where the eastern pipe turned at a 90-degree angle in a westerly direction and entered Structure 14B. The cast iron pipe was removed from the structure and the entire pipe was stockpiled at the MHA. The inside of the eastern pipe appeared to be coated with what appeared to be coal tar. The pipes appeared to be rusty; however, there were no perforations observed and the joints appeared to be intact. The piping was removed utilizing the excavator. Soil samples were collected from the pipe grave at intervals of approximately 15 feet (Refer to Figure 6) and screened for TVOCs using a PID and the jar-headspace method. Results of the soil screening are presented in Table 7.

Table 7
PID Screening Results, Structure 14B, Eastern Pipe Run

Sample ID	TVOC Screening (ppm)
Pipe Run Sample 1	0.0
Pipe Run Sample 2	0.0
Pipe Run Sample 3	0.0
Pipe Run Sample 4	1.2
Pipe Run Sample 5	32.8

Based on the relatively low PID screening results and laboratory analytical results from samples collected by ESS at a depth of 0 to 4 feet along the access road that indicated no exceedances of subsurface ROs, no samples below the pipe run were submitted for laboratory analysis. The exterior openings where the pipes entered the structures were sealed with concrete. The photo-documentation and a letter summarizing the pipe removal actions was submitted to Mr. James Ball on August 19, 2002.

On August 7, 2002, excavation of the "seep area" began subsequent to the removal of the natural gas pipeline that was located under the northern access road. Excavations commenced in front of Structure 14B and were continued in a westerly direction. All overburden material was stockpiled separately for later re-use as subsurface fill. The excavation was advanced approximately 2 feet into the groundwater table and soil removed from below the water table was treated/disposed of off-site. LNAPL was encountered intermittently on the eastern portion of the excavation and its presence appeared to increase towards the western end. The LNAPL encountered on the western portion of the excavation was reddish in color and never exceeded 1/8-inch in thickness.

When completed, the excavation was approximately 100 feet in length, extending approximately 25 feet east of the eastern edge of Structure 17 and approximately 25 feet west of the western edge of Structure 17. During excavations, there were two approximately 6-inch diameter pipes encountered within the excavation that were oriented in a south to north direction. One of the pipes was located at the western end of the excavation and the other was located on the eastern end of the excavation. The pipes appeared to extend beneath the row of hay bales and silt fence that were installed per the CRMC permit toward the river. These hay bales served as the maximum limit of disturbance. To remove the western pipe that extended beneath the hay bales, the excavator bucket was used to "grab" the pipe and pulled the pipe in a southerly direction. The section of pipe that extended beneath the hay bales was removed and was disposed of with the other scrap metal stockpiled on Site. Based on an inspection of the end of the pipe that was beneath and beyond the hay bales, it appeared that the pipe end had a clean edge and that it was not broken off, indicating that the entire pipe section was removed.

The eastern pipe consisted of a shorter section of pipe that could not be removed by excavation. Hydraulic cement was used to seal the end of the pipe. Other than these pipes, there were no other obvious direct conduits to the Providence River.

The excavation was slightly sloped to the west to facilitate dewatering. Groundwater was pumped from the west end of the excavation and backfilling was started from the east end. Any groundwater remaining in the excavation was "pushed" to the west, towards the dewatering pump. Any accumulated LNAPL on the surface of the water was also pumped to the one of the on Site frac tanks.

Processed aggregate material was placed in the excavation to bridge the groundwater table and clay was placed in lifts on top of the processed material layer and compacted using compaction equipment. Subsequent compaction testing indicated that the target compaction rates were achieved and the excavation was backfilled to grade with material meeting the subsurface and surface ROs.

The natural gas pipeline was subsequently re-installed beneath the access road by NEGC contractors and the road was brought to finish grade with stone dust.

Surface Soil Excavations

Based on data from soil samples collected from a depth of 0-2 feet from borings completed by ESS, there were several exceedances of the surface soil ROs. These areas were located west of Structure 16, just outside the fenceline to Area 3 and north and west of Building 20 and are depicted in Figure 8.

Excavations were initially advanced in discrete areas surrounding the known exceedances. However, based on laboratory analytical results of the sidewall samples from the excavations that indicated elevated concentrations of benzo (a) pyrene, lead, and arsenic and from visual observations of the soil profile (generally 0 to 0.5 feet of

brown fine sandy loam overlying greater than 1.5 feet of urban fill consisting of slag, ash, brick, glass), it was decided that the approximate maximum extent of excavations would have to be advanced. As such, the Area 3 surficial excavation was eventually connected to the Building No. 20 surficial excavation. These excavations were phased to allow continued access of trucks for the transportation and disposal of soil and for continued Site work.

Confirmatory samples collected from the excavation sidewall west of the Area 3 fence line indicated exceedances of Surface ROs. The project team decided to remove the fence and excavate the soil beneath it. By doing so, the excavation linked with the Area 3 surficial excavation and, as such, no confirmatory soil samples were collected from the eastern sidewall.

Confirmatory Soil Samples

Soil confirmation samples were collected from excavations at approximately 15 linear foot intervals and floor samples were collected from the approximate center of each 15-foot square grid segment for excavations that did not extend into the water table. Samples were collected from a depth of 0-2 feet for comparison with the Surface Soil ROs and from greater than 2 feet for comparison with the Subsurface Soil ROs. Generally, the subsurface soil samples were collected between 1 and 2 feet above the water table.

VHB collected confirmatory soil samples from 43 locations in Area 2 that consisted of sidewall and floor samples. VHB collected confirmatory soil samples from 149 locations in Area 3 (including the Building 20 surficial excavation) that consisted of sidewall and floor samples.

Previous remedial actions conducted at the site included the removal of the surficial (0-2 feet BSG) soils in Area 3. As such, no surficial confirmatory soil samples were collected for comparison to the Surface Soil ROs, with the exception of the surface soil excavation conducted just outside Area 3, west of the fence line and north of Building No. 20.

Some locations in the excavations required more than one attempt to obtain soils that did not exceed the ROs. If not attained on the first try, additional soil was excavated at the location prior to collecting another confirmatory sample. The following is a sample identification example: EXA3-23 (first attempt); EXA3-23A (second attempt); and EXA3-23B (final attempt/confirmation). Following favorable laboratory analytical results of confirmatory soil samples, the excavation was backfilled with material meeting the ROs. Refer to the figures section for site plans depicting the excavation limits and confirmatory sample points and to Appendix D for photographs depicting excavation activities.

Recovery Wells

It should be noted that at no time during excavations was the RAWP-threshold of 1/8-inch LNAPL thickness ever exceeded. However, based on observations of LNAPL, two recovery wells were installed in Area 2 and three recovery wells were installed in Area 3 to aid in future recovery of LNAPL. Recovery well construction specifications are presented in Appendix E.

The first recovery well (RW-1) was installed along the northern wall of the Area 2 subsurface excavation. This location was chosen due to the observation of LNAPL from the excavation sidewall and the inability to further excavate due to the presence of two, full frac tanks, an apparent gas line, and the paved road.

RW-2 was placed in the approximate center of TP-50 and was installed based on the presence of LNAPL observed on the water surface subsequent to excavation of the test pit. RW-3 is located in Area 3 and is between Structure 16 and Structure 17 and RW-4 was installed proximate to the fire hydrant in Area 3. Both of these wells were installed based on observations of LNAPL during excavations. RW-5 was installed proximate to RCA-40. This recovery well was installed based on the presence of LNAPL historically observed in RCA-40 and the inability to conduct excavations in the "No Dig Zone."

These wells were gauged on September 23, 2002, October 8, 2002, and October 22, 2002 and the results are presented in Table 8. All measurements were taken from the top of the well casing.

Subsequent to the initial gauging of the recovery wells on September 23, 2002, CHES developed the wells using on-Site groundwater pumping equipment. The development water was pumped to 55-gallon drums and the contents of the drums were transferred to one of the on-Site frac tanks for future wastewater treatment. Well covers and absorbent material were installed for each recovery well. CHES will monitor and gauge each recovery well once every two weeks and will replace the spent absorbents once every month for a period of six months. If the presence of LNAPL does not persist, gauging and recovery of the wells will be discontinued.

Table 8
Gauging Data from On-Site Recovery Wells

Recovery Well ID	Depth to LNAPL (ft.)	Depth to Water (ft.)	LNAPL Thickness (ft.)	Depth to Bottom (ft.)
September 23, 2002				
RW-1	7.0	7.1	0.1	10.8
RW-2	9.93	9.94	0.01	16.86
RW-3	-	12.34	0.0	18.18
RW-4	11.02	11.08	0.06	12.02
RW-5	11.78	11.81	0.03	13.77
October 8, 2002				
RW-1	8.08	8.11	0.03	10.8
RW-2	-	10.25	0.0	16.86
RW-3	-	12.26	0.0	18.18
RW-4	11.37	11.4	0.03	12.02
RW-5	12.04	12.09	0.05	13.77
October 22, 2002				
RW-1	7.76	7.8	0.04	10.8
RW-2	-	10.2	0.00	16.86
RW-3	-	12.56	0.0	18.18
RW-4	11.48	11.50	0.02	12.02
RW-5	12.17	12.21	0.04	13.77

- = No LNAPL Measured

4

Laboratory Analysis

Confirmatory Laboratory Analysis

VHB collected confirmatory samples and submitted them to Test America, Inc. of Nashville, Tennessee and Thielsch Engineering, Inc., of Cranston, RI for laboratory analysis. Samples were analyzed for Total Petroleum Hydrocarbons (TPH) by gas chromatography equipped with a flame ionization detector (GC/FID), volatile organic compounds (VOCs) via EPA Method 8260, polynuclear aromatic hydrocarbons (PAHs) via EPA Method 8270, total arsenic and total lead via EPA Method 6010, and total cyanide via EPA Method 9010. Laboratory analytical results are presented below. Copies of the Laboratory Certificates of Analysis are included as Appendix G.

Laboratory Analytical Results from Area 2 Excavations

The Area 2 excavation uncovered several subsurface structures, foundations, and piping. The amount of material excavated and the placement of the confirmatory sample point locations was limited by these structures, foundations, and piping.

As shown in Table 9 (see Tables section), there were four surficial soil samples that exceeded the surficial soil ROs at points where it was not possible to excavate further. Confirmatory sample point EXA2-1 exceeded the benzo (a) pyrene and benzo (b) fluoranthene ROs and was located along the wall parallel to a Duke Energy containment berm and further excavation was not possible because of the berm. Confirmatory sample points EXA2-3 and EXA2-5 are located along the western wall of the excavation. Both of these sample results exceeded the arsenic RO. Confirmatory sample point EXA2-9, also located along the west wall exceeded the TPH RO. Further excavation to the west was not practical because of the presence of several above ground structures and subsurface piping. There were no surficial soil samples collected from the eastern sidewall due to the presence of concrete foundations.

Confirmatory sample point EXA2-10 exceeded subsurface ROs for TPH, benzene, and xylenes (total); however, this sample was located along the north wall and further excavations were not possible due to the presence of frac tanks, apparent gas piping and the paved road.

Table 11 (see Tables section) summarizes the sidewall confirmatory samples collected from the surficial excavation conducted south of Building No. 9. As shown, there were compounds that exceeded the surface soil ROs. Confirmatory sample points EXA2-23, 24, and 25 were located along the eastern sidewall. Additional excavations were conducted to the east and samples were collected from the northern and southern sidewalls. Collection of eastern confirmation samples was not possible due to the presence of a concrete foundation. Confirmatory sample EXA2-33 was collected from the north wall of the additional excavation and laboratory analysis indicated concentrations of Benzo (a) pyrene, Benzo (a) anthracene, and Benzo (b) fluoranthene that exceed the ROs. Further excavation to the north of EXA2-33 was not practical due to the presence of a partially demolished building (Building No. 9) and several rubble piles surrounding the building footprint.

As shown in Table 12 (see Tables section), there were no floor samples collected from the surficial excavation behind Building No. 9 that exceeded the subsurface ROs.

The subsurface confirmatory sample results for the excavation conducted west of Building No. 9 indicated that there was no subsurface soil ROs that were exceeded. Sampling of this excavation was limited by the presence of concrete foundations to the north, east and south of the excavation. These results are presented in Table 13 (see Tables section).

Laboratory Analytical Results from Area 3 Excavations

Excavations were conducted in the vicinity of RCA-40 based on the presence of LNAPL observed in this well. Based on the proximity of this excavation to the Duke Energy containment dike, excavations were advanced per the protocol described in the Area 3, Subsurface Soil Excavation section of this report. There were no confirmatory soil samples that exceeded the subsurface soil ROs. Because soil samples collected below the water table from waste characterization test pits in this area did not indicate the presence of soil exceeding ROs, the excavation was completed before encountering groundwater. Floor samples were collected and the western wall samples were collected from below the fire hydrant water main, at a depth of approximately 7 feet BSG.

An excavation was advanced proximate to the fire hydrant. Based on the waste characterization test pit results, the excavation was extended approximately 2 feet into the water table. Laboratory analytical results of the confirmatory samples collected from this excavation indicated the subsurface ROs has been achieved.

Laboratory analytical results of confirmatory samples collected from the Area 3 excavation indicated concentrations of TPH and naphthalene that exceed the ROs. These occurred along the southern wall (EXA3-21), and the northern wall (EXA3-23 and EXA3-24) and at all these locations over-excavation was conducted until the ROs were achieved. At confirmatory sample point EXA3-23, two separate over-

excavations were conducted until a sample that did not exceed the ROs was collected.

Tables 17 and 18 (see Tables section) summarize the laboratory analytical results of the surficial soil excavation sidewall samples from the excavations conducted outside Area 3 and north and west of Building 20. This excavation was originally attempted as discrete excavations surrounding known exceedances of surficial ROs. Based on the analytical results from confirmatory samples collected from these discrete excavations and from observations of the fill material present, there were indications that the maximum limits of excavation would have to be completed. There are several confirmatory sidewall sample points that exceed the surficial soil ROs and are typically from elevated concentrations of arsenic, lead, and benzo (a) pyrene. It should be noted, however, that there were no floor samples collected that exceeded the subsurface soil Ros, as shown in Tables 19 and 20 (see Tables section).

The confirmatory sample points located along the northern and western sidewalls that indicated concentrations of compounds that exceeded the surficial have been excavated to the maximum extents as presented in the RAWP. The confirmatory sample points that exceeded the surficial ROs along the southern sidewall of the "EXA3" excavation and from the "EXB20" have been excavated to the maximum extent based on site limitations. The presence of the elevated platform, north of Building No. 20, made further excavations impractical.

5

Soil Management

A total of approximately 16,864 tons of FMGP-impacted material was excavated, transported and treated/disposed of during remedial activities. Approximately 9,558 tons was classified as hazardous and approximately 7,307 tons was classified as non-hazardous. The FMGP-impacted material was shipped to three facilities: Keystone Sanitary Landfill (Keystone) in Dunmore, PA; Environmental Soil Management, Inc. (ESMI) in Loudon, NH; and Chemical Waste Management, Inc. (WM Emelle) in Emelle, AL. Table 21 summarizes the weights of material by facility.

Table 21
Approximate Total Weight of FMGP-impacted Material Shipped to Each Facility

Facility	Material Classification	Weight (Tons)
Keystone	Non-hazardous	3,554.74
	Hazardous (asbestos insulation)	0.58
		Total = 3,555.32
ESMI	Non-hazardous	3,752.68
	Hazardous	6,204.88
		Total = 9,957.56
WM Emelle	Non-hazardous	0
	Hazardous	3,352.02
		Total = 3,352.02

Soils from surficial excavations that exceeded the surficial soil ROs but were below the subsurface soil ROs were either used as subsurface (> 2 feet BSG) fill, used to stabilize structure contents, or were stockpiled on the Materials Handling Area (MHA). The soil on the MHA is anticipated to be used as subsurface fill during the next remedial phase of the project. This soil is stockpiled on liner material that overlaps the concrete containment blocks and is covered with an ultra-violet resistant tarpaulin.

During the remediation project, the Site was secured with a chain link fence to prevent trespassers and secured at the end of each workday. Copies of weight slips,

manifests, and Bills of Lading are located in Appendix C and is provided as a separate document.

Site Restoration

Upon completion of soil removal activities, subsurface excavations were backfilled to approximately 2 feet below final grade with soil that met the subsurface ROs. The remaining two feet of subsurface excavations and surficial excavations were backfilled with approximately 18 to 20 inches of clean fill and approximately 4 to 6 inches of crushed stone (Area 3) or 18 to 20 inches of clean fill with approximately 4 to 6 inches of loam that received an application of hydroseed (Area 2). Unimproved roadways that were excavated were backfilled with stone dust and were track-compacted with on Site equipment. Current Site wide soil caps are depicted in Figure 9.

The replacement of the NEGC pipeline was completed after the Seep Area excavation and Structure 17 were backfilled. As shown in Figure 7, the original pipeline was bent around the front side of Structure 17. During replacement activities, cuts were made of the east and west sides of Structures 17 and 14A and the pipeline was laid through the backfilled structure above the water table. The embankment leading down to the Providence River was re-graded with subsurface soil that meets subsurface ROs, a geotextile fabric was placed over the embankment, and riprap stone was placed on top of the fabric in accordance with the CRMC Assent. As such, all areas of excavation have been capped with approximately 2 feet of material that meets surficial ROs. Refer to Appendix D for photographs documenting site restoration.

Samples of all sand and loam fill delivered from off site sources were analyzed for the compounds listed in Table 1. Samples were collected for approximately every 1,000 cubic yards of material brought on-Site. The laboratory Certificates of Analysis for these samples are provided in Appendix G.

Additional soil excavation was conducted in Area 1 and the description of activities will be provided in a separate document.

6 Conclusions

Based on the laboratory analytical results of the confirmatory soil samples, it is VHB's opinion that the FMGP-impacted soil has been remediated as well as Site constraints will allow and therefore, no additional soil remedial actions are necessary in Areas 2 and 3 at the Site.

The extent of remedial activities was guided by data from previous investigations conducted by RCA, ESS, and the test pits advanced as part of this remedial action. During these remedial activities the following has been accomplished:

- Approximately 9,558 tons of hazardous material and 7,307 tons of non-hazardous material have been excavated and disposed of at licensed facilities;
- All structures identified in the RAWP have been excavated, cleaned with a smooth-edged excavator bucket as specified in the RAWP and has either been inspected by RIDEM personnel or photo-documented prior to backfilling with material meeting subsurface ROs;
- All observed FMGP remnant piping has been either removed or sealed with hydraulic cement;
- All observed potential sources of FMGP waste in the Seep Area have been uncovered, removed, and/or sealed (piping);
- Surficial soils exceeding the ROs were excavated to the extent possible; and
- Groundwater recovery wells have been installed for the removal of LNAPL.

7

References

Environmental Science Services, December 4, 1998. *Remedial Action Work Plan, Providence Gas Company, Providence, Rhode Island.*

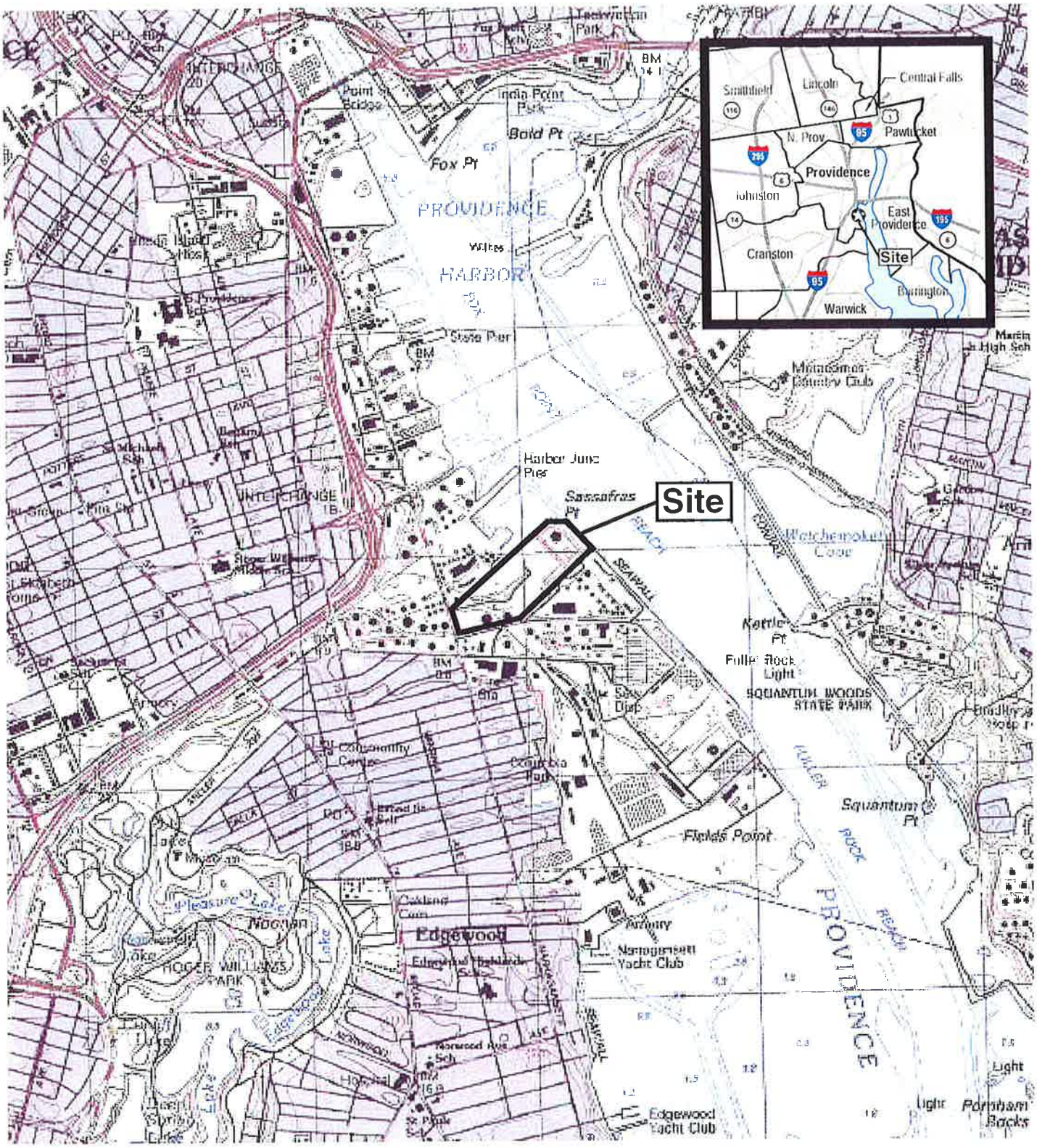
Resource Control Associates, Inc., June 28, 1996. *Summary Report, Phase IB Field Characterization Investigations, Providence Gas Company, 642 Allens Avenue, Providence, Rhode Island.*

Rhode Island Department of Environmental Management, March 1993, as Amended August 1996. *Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases.*

Rhode Island Department of Environmental Management, October 1998. *Groundwater Classification Map.*

US Geological Survey 7.5 Minute Series Topographic Map Providence Quadrangle 1970.

Figures



Source: Providence, RI U.S.G.S. Quadrangle.

0 1000 2000 Feet

Vanasse Hangen Brustlin, Inc.

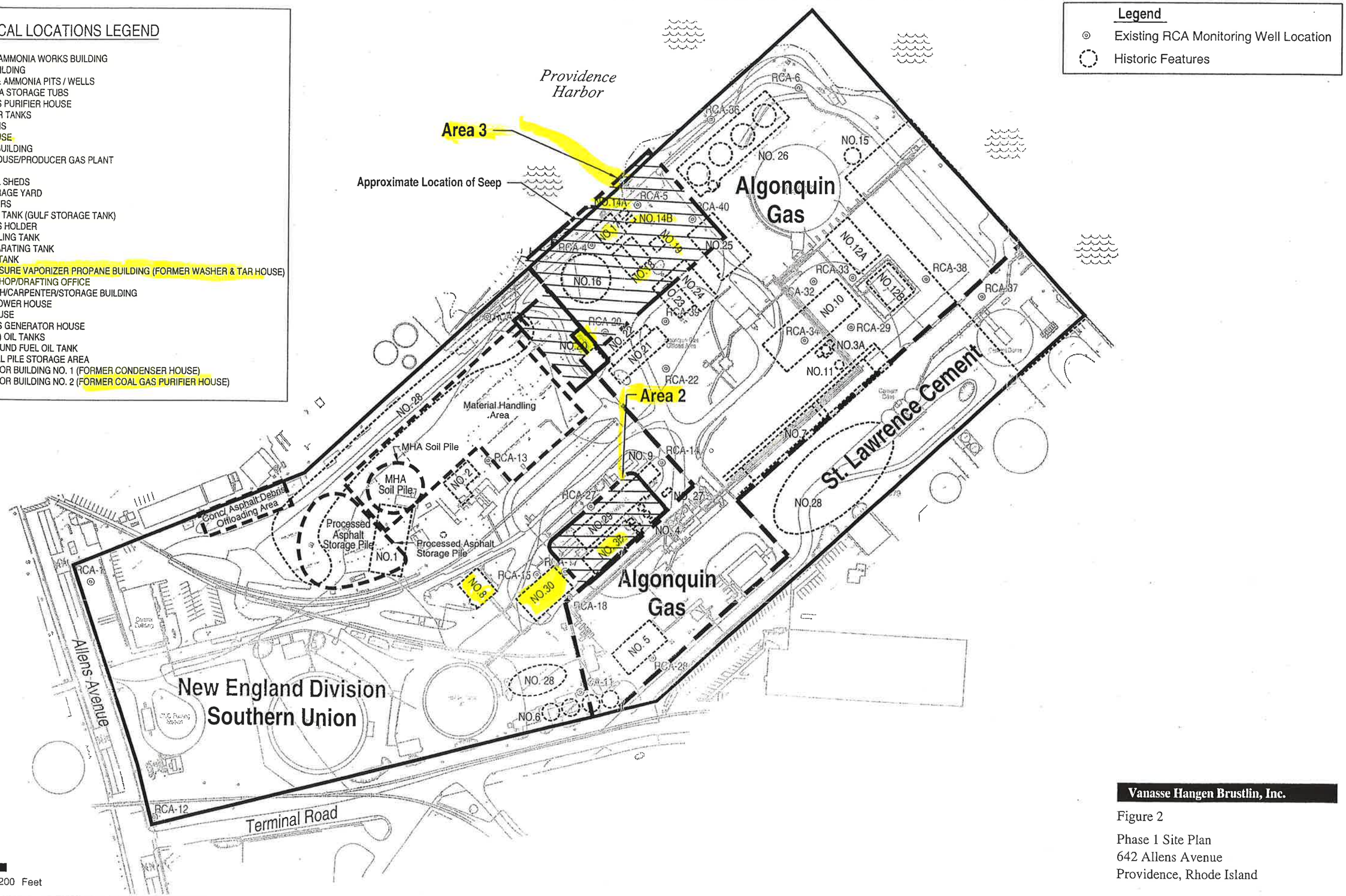
Site Location Map
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Figure 1

71415 SitePlan-Phase1.dwg 10-30-02 by dwhite...

HISTORICAL LOCATIONS LEGEND

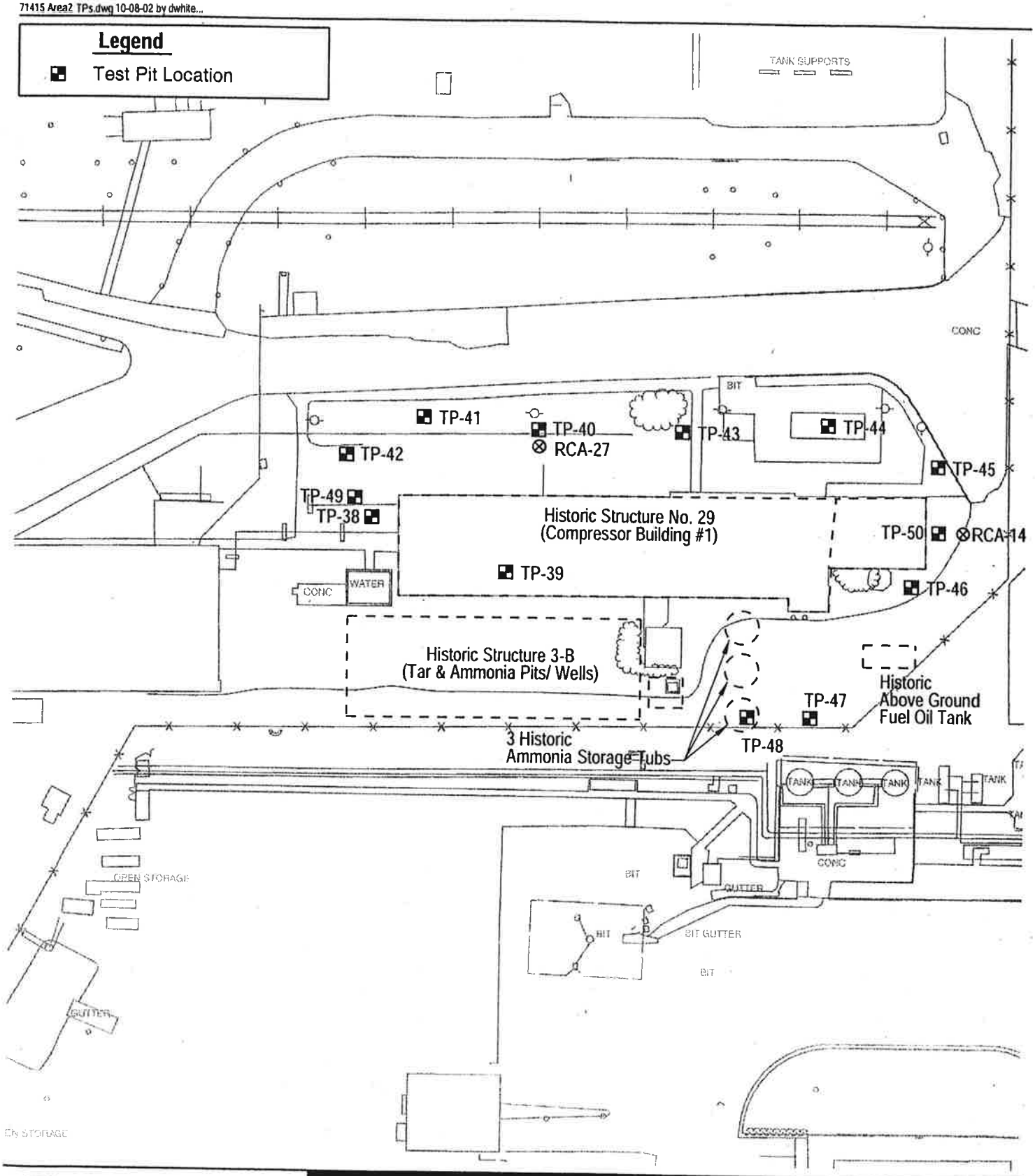
1- B.P CLAPP AMMONIA WORKS BUILDING
2- BENZOL BUILDING
3- (A&B) TAR & AMMONIA PITS / WELLS
4- (3) AMMONIA STORAGE TUBS
5- WATER GAS PURIFIER HOUSE
6- (4) PURIFIER TANKS
7- COKE OVENS
8- METER HOUSE
9- SANITARY BUILDING
10- RETORT HOUSE/PRODUCER GAS PLANT
11- TAR TANK
12- (A&B) COAL SHEDS
13- COAL STORAGE YARD
14- (A&B) FILTERS
15- KEROSENE TANK (GULF STORAGE TANK)
16- RELIEF GAS HOLDER
17- OPEN COOLING TANK
18- OPEN SEPARATING TANK
19- OPEN TAR TANK
20- HIGH-PRESSURE VAPORIZER PROPANE BUILDING (FORMER WASHER & TAR HOUSE)
21- MACHINE SHOP/DRAFTING OFFICE
22- BLACKSMITH/CARPENTER/STORAGE BUILDING
23- ENGINE / POWER HOUSE
24- BOILER HOUSE
25- WATER GAS GENERATOR HOUSE
26- (2) TAR & (2) OIL TANKS
27- ABOVEGROUND FUEL OIL TANK
28- COKE / COAL PILE STORAGE AREA
29- COMPRESSOR BUILDING NO. 1 (FORMER CONDENSER HOUSE)
30- COMPRESSOR BUILDING NO. 2 (FORMER COAL GAS PURIFIER HOUSE)



Vanasse Hangen Brustlin, Inc.

Figure 2

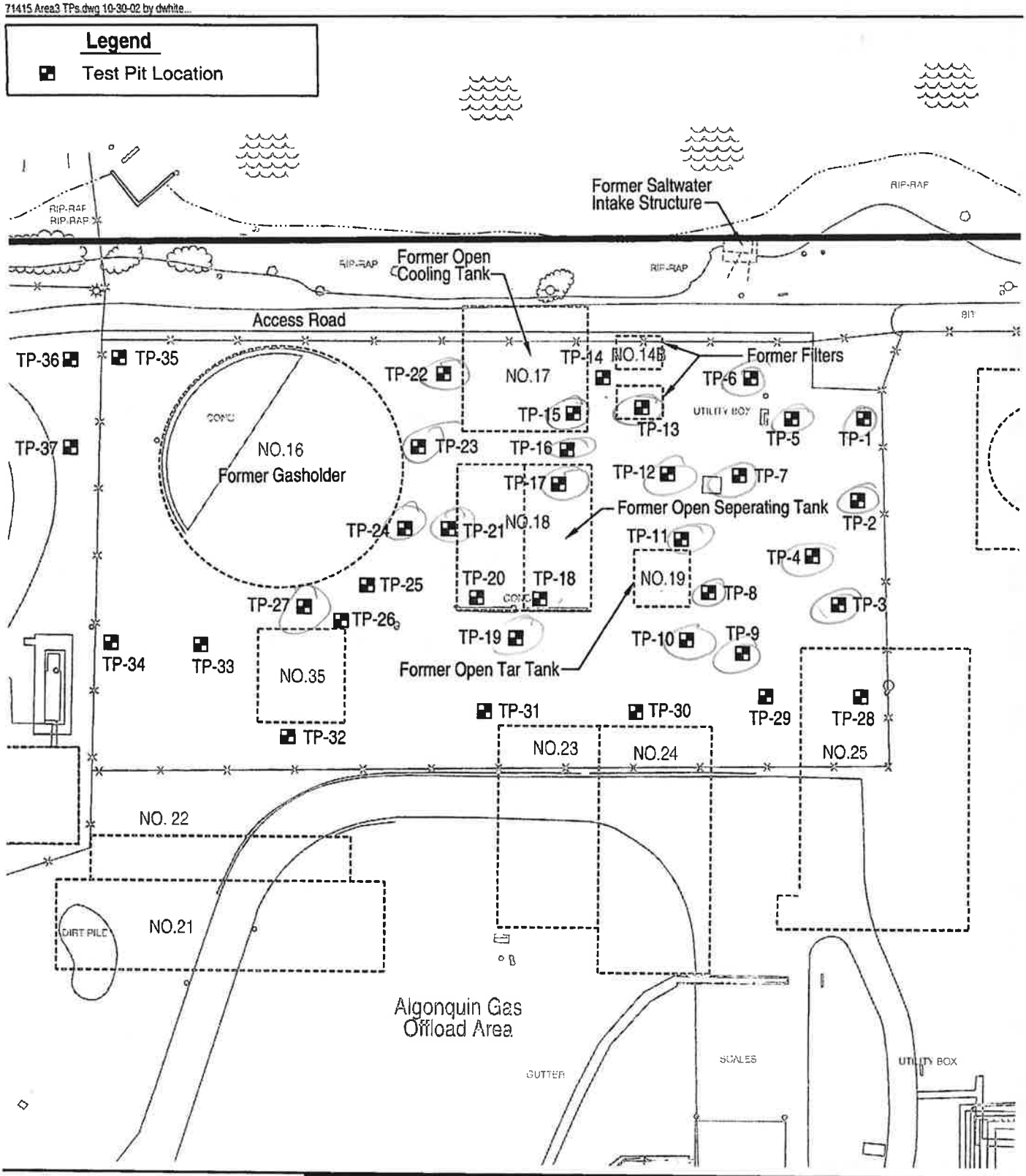
Phase 1 Site Plan
642 Allens Avenue
Providence, Rhode Island



Vanasse Hangen Brustlin, Inc.

Area 2 In-Situ Waste
Characterization Test Pits
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Figure 3



Vanasse Hangen Brustlin, Inc.

Area 3 In-Situ Waste Characterization Test Pits
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Figure 4

71415 Area2 CompliianceSamples.dwg 10-31-02 by dwhite

Note:
1. Excavations without floor samples depicted were advanced approximately 2 feet into the groundwater table.

Legend
- Test Pit Location
- Sample Location
- Recovery Well Location
- Soil Excavation Limits
- Excavated Structures
- Concrete Foundation

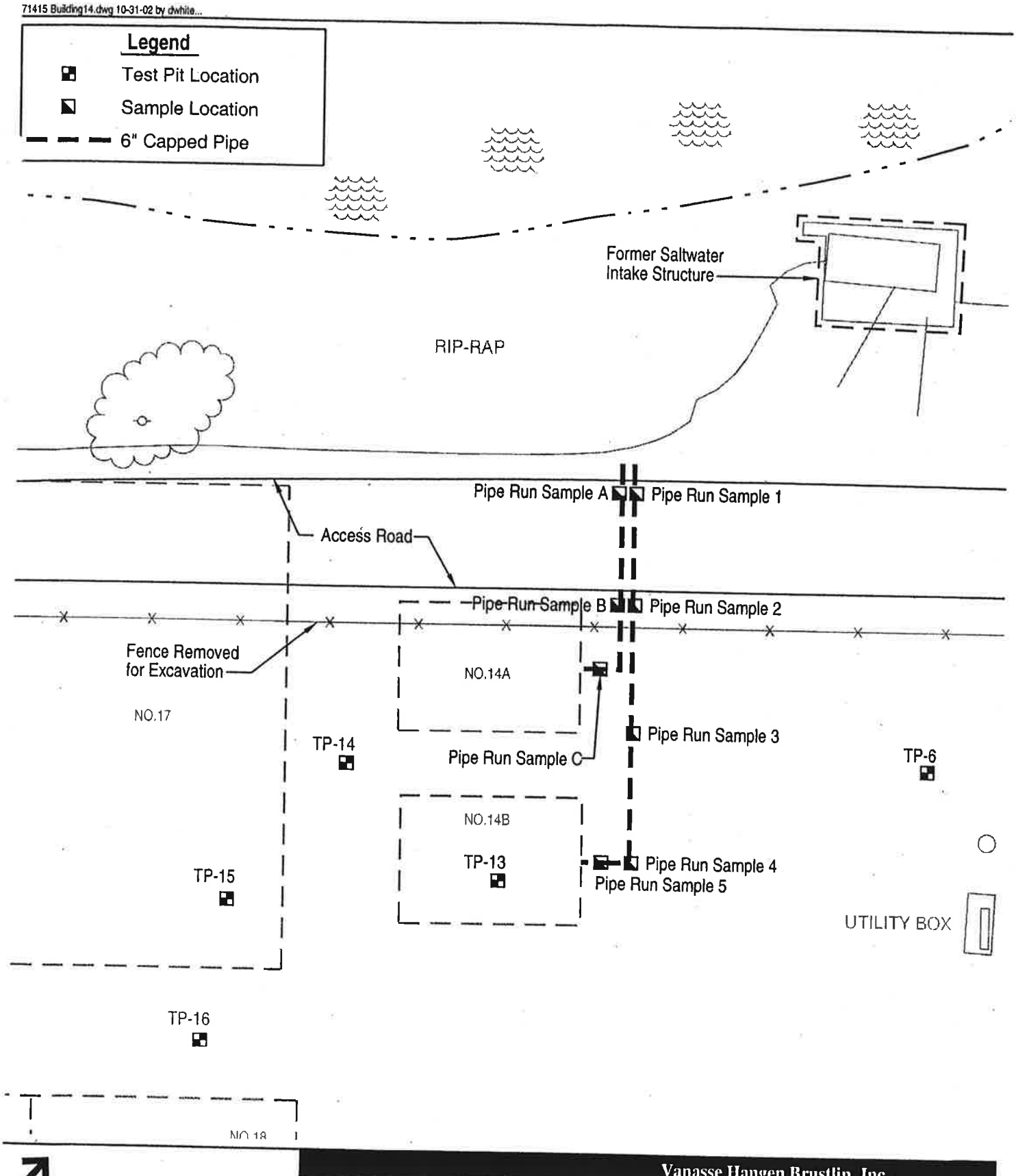
Subsurface Pipes Approx. 4 and 5 Feet Below Grade
Approx. 24" Pipe that was ruptured
EXA2-11
EXA2-12
EXA2-13
EXA2-14
EXA2-10
RW-1
EXA2-15
EXA2-9
EXA2-8
EXA2-16
Approximate 30-Inch Pipe
Portion of Concrete Foundation Removed
EXA2-7
EXA2-17
EXA2-6
EXA2-18
CONC
WATER
EXA2-5
Limits of Excavation
EXA2-3
EXA2-2
EXA2-1
Two Subsurface Pipes
Subsurface Structures Found at Sinkhole and Removed
EXB9-1
EXB9-2
EXB9-3
Presumed Knockdown Pipes
Structure 3BNE
Historic Structure 3-B (Tar & Ammonia Pits/ Wells)
Structure 3BSE
Pipes Removed
EXA2-F6
EXA2-F8
EXA2-25
EXA2-33
EXA2-F4
EXA2-F3
EXA2-F9
EXA2-24
EXA2-F7
EXA2-29
EXA2-28
EXA2-F5
EXA2-26
EXA2-F2
EXA2-23
EXA2-F1
EXA2-32
EXA2-F10
20' Offset from Berm
BIT
CONC
Above Grade Rubble Areas
Historic Structure No. 29 (Compressor Building #1)
Building No. 9
EXA2-21
TP-50
EXA2-20
EXA2-19
RW-2
EXA2-22
Rubble Pile
TANK
TANK
TANK
TANK
TANK
TANK
CONC
Gt

0 15 30 Feet

Vanasse Hangen Brustlin, Inc.

Figure 5

Area 2 Compliance Samples
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

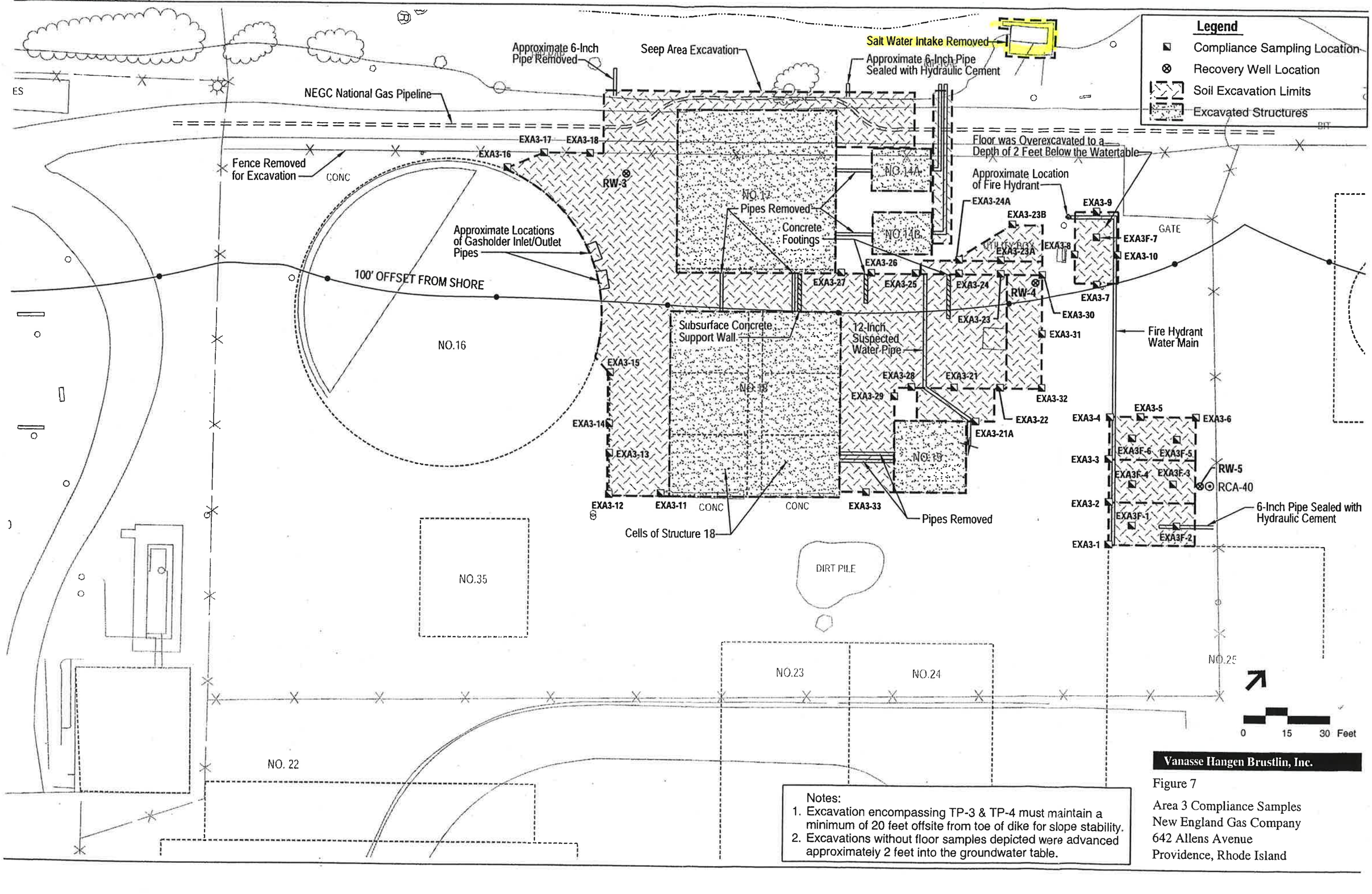


Vanasse Hangen Brustlin, Inc.

Riverbank Pipes Excavation
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Figure 6

71415 Area3 ComplianceSamples.dwg 10-30-02 by dwhite...

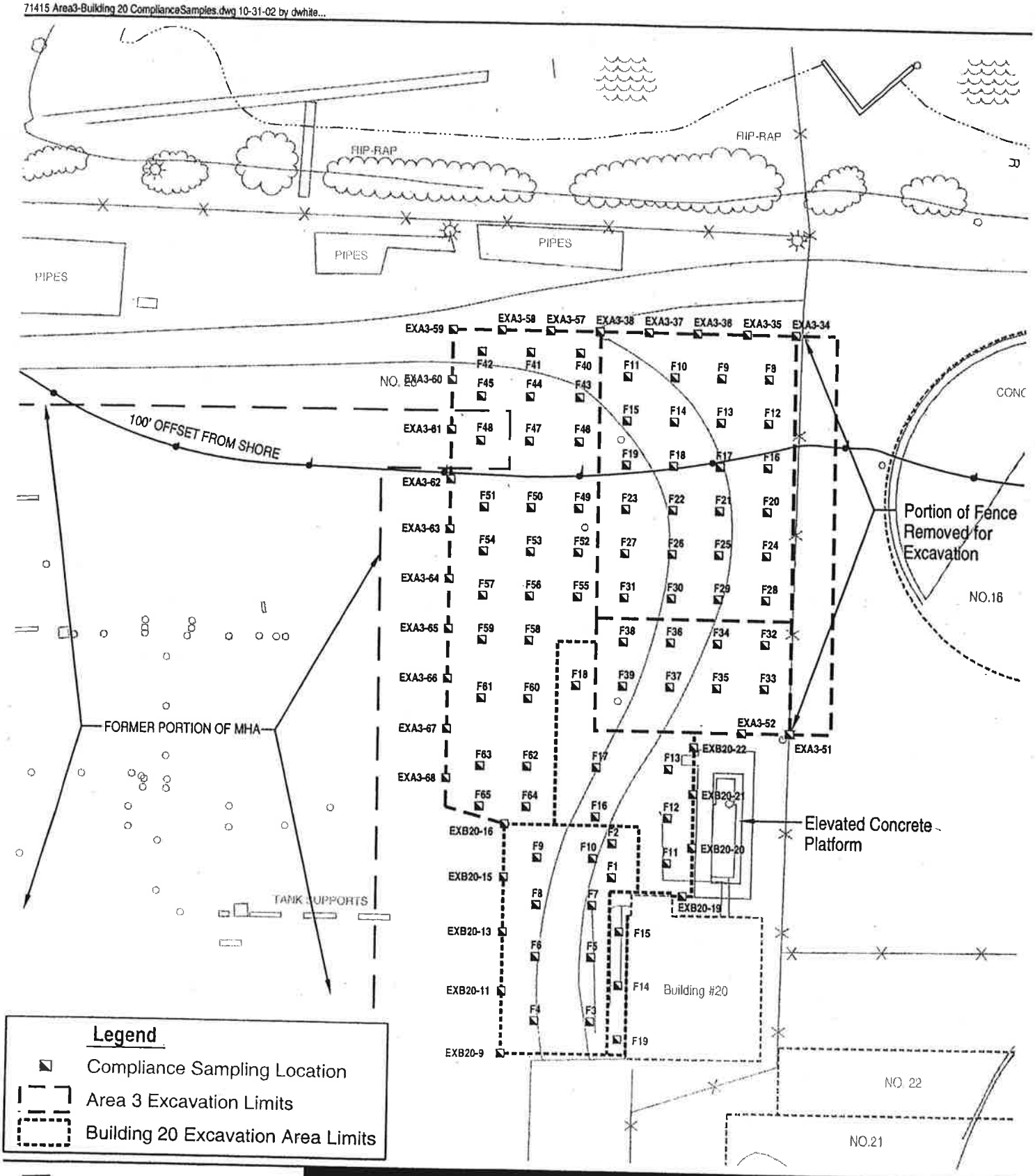


Notes:
1. Excavation encompassing TP-3 & TP-4 must maintain a minimum of 20 feet offsite from toe of dike for slope stability.
2. Excavations without floor samples depicted were advanced approximately 2 feet into the groundwater table.

Vanasse Hangen Brustlin, Inc.

Figure 7

Area 3 Compliance Samples
New England Gas Company
642 Allens Avenue
Providence, Rhode Island



Vanasse Hangen Brustlin, Inc.

Area 3/ Building 20 Compliance Samples Figure 8
New England Gas Company
642 Allens Avenue
Providence, Rhode Island

Tables

Table 1
Remedial Objectives for Soil

Constituent (mg/Kg)	Surface Soil	Subsurface Soil <100 feet from Shore	Subsurface Soil >100 feet from Shore
TPH	2,500	15,000	30,000
VOCs			
Benzene	200	4.3	43
Ethylbenzene	10,000	62	620
Toluene	10,000	54	540
Xylenes	10,000	540	540
PAHs			
Acenaphthene	10,000	10,000	10,000
Acenaphthylene	10,000	10,000	10,000
Anthracene	10,000	10,000	10,000
Benzo(a) Anthracene	7.8	10,000	10,000
Benzo (a) Pyrene	0.8	10,000	10,000
Benzo (b) Fluoranthene	7.8	10,000	10,000
Benzo (g,h,i) perylene	10,000	10,000	10,000
Benzo (k) fluoranthene	78	10,000	10,000
Chrysene	780	10,000	10,000
Dibenzo (a,h) Anthracene	0.8	10,000	10,000
Fluoranthene	10,000	10,000	10,000
Fluorene	10,000	10,000	10,000
Indeno (1,2,3) Pyrene	7.8	10,000	10,000
2-Methylnaphthalene	10,000	10,000	10,000
Naphthalene	10,000	500	5,000
Phenanthrene	10,000	10,000	10,000
Pyrene	10,000	10,000	10,000
2,4-Dimethylphenol	10,000	10,000	10,000
2,6-Dinitrotoluene	10,000	10,000	10,000
Pentachlorophenol	48	10,000	10,000
PCBs	10	10,000	10,000
Metals			
Arsenic	7	-	-
Lead	500	-	-
Cyanide	10,000	-	-

- No RO established for constituent.

Table 2 Area 2 Waste Characterization Test Pit Results

Sample ID/Depth (ft.) Date Sampled Analyte Name	Remedial Objective Surface Soil	TP-38 0-2 5/23/2002	TP-39 0-2 5/30/2002	TP-40 0-2 6/3/2002	TP-41 0-2 6/3/2002	TP-42 0-2 6/3/2002
TPH (mg/Kg)	2500					
TPH (Gasoline Range)		ND	ND	ND	ND	ND
TPH (Diesel Range)		ND	1040	66.2	31.5	ND
Metals (mg/Kg)						
Arsenic	7	3.44	3.63	6.24	6.01	**20.4**
Lead	500	129	298	419	58.9	**539**
Cyanide	10000	NA	NA	2.12	ND	4.08
PAHs (mg/Kg)						
Acenaphthene	10000	ND	ND	ND	ND	ND
Acenaphthylene	10000	ND	ND	ND	ND	ND
Anthracene	10000	ND	ND	ND	ND	ND
Benzo(a)anthracene	7.8	ND	1.98	ND	0.561	ND
Benzo(a)pyrene	0.8	ND	**1.98**	0.726	0.66	ND
Benzo(b)fluoranthene	7.8	ND	3.3	1.32	1.09	ND
Benzo(g,h,i)perylene	10000	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	78	ND	ND	ND	0.528	ND
Chrysene	780	ND	1.98	ND	0.627	ND
Fluoranthene	0.8	2.31	ND	ND	0.792	ND
Fluorene	10000	ND	ND	ND	ND	ND
2-Methylnaphthalene	10000	ND	2.31	ND	ND	ND
2-Methylphenol	NC	ND	ND	ND	ND	ND
m,p-Methylphenol	NC	ND	ND	ND	ND	ND
Naphthalene	10000	ND	85.8	ND	ND	ND
Phenanthrene	10000	ND	3.46	ND	ND	ND
Phenol	NC	ND	ND	ND	ND	ND
Pyrene	10000	ND	3.3	ND	0.792	ND
VOCs (mg/Kg)						
Acetone	NC	0.0693	ND	0.0195	0.0115	0.0183
Benzene	200	ND	ND	0.0014	0.0012	ND
Ethylbenzene	10000	ND	ND	ND	ND	ND
Naphthalene	NC	0.278	600	0.0084	0.005	0.0028
Toluene	10000	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NC	0.0066	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NC	0.0048	ND	ND	ND	ND
Xylenes (Total)	10000	0.0075	ND	0.0012	ND	ND

Notes:

All concentrations are equivilant to parts per million (ppm).

All concentrations reported in **BOLD** exceed the Remedial Action Work Plan (RAWP) remedial objectives for surficial soil.

Concentrations boxed exceed the RAWP remedial objectives for subsurface soil.

ND - Not detected above method reporting limit; NC - No criteria listed in the RAWP.

Table 2 Cont'd

Sample ID/Depth (ft.) Date Sampled Analyte Name	Remedial Objective Surface Soil	TP-43 0-2 6/3/2002	TP-44 0-2 6/3/2002	TP-45 0-2 6/3/2002	TP-46 0-2 6/3/2002	TP-47 0-2 6/3/2002	TP-48 0-2 6/3/2002
TPH (mg/Kg)	2500						
TPH (Gasoline Range)		ND	ND	ND	ND	ND	ND
TPH (Diesel Range)		804	297	26.7	86	30.5	413
Metals (mg/Kg)							
Arsenic	7	5.93	5.39	4.26	5.59	5.46	3.41
Lead	500	26.7	9.58	38.5	74.3	30.8	28.9
Cyanide	10000	ND	ND	ND	2.78	3.08	ND
PAHs (mg/Kg)							
Acenaphthene	10000	ND	ND	ND	ND	ND	ND
Acenaphthylene	10000	ND	ND	ND	0.924	ND	0.693
Anthracene	10000	ND	ND	ND	0.792	ND	ND
Benzo(a)anthracene	7.8	ND	ND	ND	5.81	0.33	1.56
Benzo(a)pyrene	0.8	ND	ND	ND	**5.94**	0.396	**2.21**
Benzo(b)fluoranthene	7.8	ND	ND	ND	**8.58**	0.693	3.14
Benzo(g,h,i)perylene	10000	ND	ND	ND	1.58	ND	ND
Benzo(k)fluoranthene	78	ND	ND	ND	4.09	ND	3.96
Chrysene	780	ND	ND	ND	5.94	0.396	1.68
Dibenz(a,h)anthracene	0.8	ND	ND	ND	0.66	ND	ND
Fluoranthene	10000	ND	ND	ND	10.9	0.495	1.95
Fluorene	10000	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	7.8	ND	ND	ND	1.85	ND	0.726
Naphthalene	10000	0.528	6.76	ND	ND	ND	0.693
Phenanthrene	10000	ND	ND	ND	3.37	ND	ND
Phenol	NC	ND	ND	ND	ND	ND	ND
Pyrene	10000	ND	ND	ND	7.92	0.429	1.98
VOCs (mg/Kg)							
Acetone	NC	ND	ND	ND	ND	0.0186	0.0182
Benzene	200	ND	ND	0.0113	0.0015	0.0016	0.0009
Ethylbenzene	10000	ND	ND	0.0015	ND	ND	0.0164
Hexachlorobutadiene	NC	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NC	ND	4.88	ND	ND	ND	0.0066
4-Isopropyltoluene	NC	ND	ND	ND	ND	ND	0.0068
Methylene chloride	NC	ND	0.105	ND	0.0014	0.0014	0.0014
Naphthalene	NC	3.22	4.88	0.005	0.0024	0.0026	2.6
n-Propylbenzene	NC	ND	ND	ND	ND	ND	0.0023
Styrene	NC	ND	ND	ND	ND	ND	0.0011
Toluene	10000	ND	ND	0.0026	ND	ND	0.0023
Trichloroethene	NC	ND	ND	ND	0.0011	0.0011	0.0013
1,2,4-Trimethylbenzene	NC	0.125	0.105	0.0014	0.0012	ND	0.0835
1,3,5-Trimethylbenzene	NC	0.17	0.06	0.001	ND	ND	0.0441
Xylenes (Total)	10000	ND	ND	ND	ND	ND	0.0589

Notes:

All concentrations are equivilant to parts per million (ppm).

All concentrations reported in **BOLD** exceed the Remedial Action Work Plan (RAWP) remedial objectives for surficial soil.

Concentrations boxed exceed the RAWP remedial objectives for subsurface soil.

ND - Not detected above method reporting limit; NC - No criteria listed in the RAWP.

Table 2 Cont'd

Sample ID/Depth (ft.) Date Sampled Analyte Name	Remedial Objective Subsurface Soil > 100 feet	TP-39 2-6 5/30/2002	TP-40 2-4 6/4/2002	TP-43 2-4 6/4/2002	TP-44 2-4 6/4/2002	TP-48 2-4 6/4/2002	TP-49 2-4 6/4/2002
TPH (mg/Kg)	30000						
TPH (Gasoline Range)		62	9.8	ND	12	ND	ND
TPH (Diesel Range)		6360	1240	48.4	1430	503	13.3
Metals (mg/Kg)							
Arsenic	7	1.19	4.63	3.78	5.22	4.24	3.21
Barium	NC	21.8	20.1	19.3	18.1	21	13.2
Chromium	NC	7.13	12.4	6.96	7.43	6.26	8.42
Lead	NC	4.55	132	30	19.3	25.7	10
Mercury	NC	ND	0.13	ND	ND	ND	ND
Reactive Cyanide (mg/Kg)	NC	ND	ND	ND	ND	ND	ND
Reactive Sulfide (mg/Kg)	NC	ND	ND	ND	ND	ND	ND
Ignitability	NC	>200	>200	>200	>200	>200	>200
PAHs (mg/Kg)							
Acenaphthene	10000	ND	1.82	ND	3.46	ND	ND
Acenaphthylene	10000	ND	ND	ND	ND	2.64	ND
Anthracene	10000	ND	ND	ND	ND	2.48	ND
Benzo(a)anthracene	10000	ND	ND	0.429	ND	3.63	ND
Benzo(a)pyrene	10000	ND	ND	0.462	ND	3.46	ND
Benzo(b)fluoranthene	10000	ND	1.82	0.726	ND	5.12	ND
Benzo(k)fluoranthene	10000	ND	ND	ND	ND	2.14	ND
Chrysene	10000	ND	ND	0.495	ND	3.14	ND
Dibenzofuran	10000	ND	ND	ND	ND	1.82	ND
Fluoranthene	10000	ND	1.82	0.693	ND	7.1	ND
Fluorene	10000	ND	ND	ND	1.65	ND	ND
2-Methylnaphthalene	10000	297	11.1	ND	15.3	2.48	ND
Naphthalene	5000	10,500	48.2	ND	52.1	4.46	ND
Phenanthrene	10000	ND	2.31	ND	2.64	7.59	ND
Pyrene	10000	ND	ND	0.726	ND	4.78	ND
VOCs (mg/Kg)							
Acetone	NC	ND	ND	0.0293	ND	ND	0.0162
Benzene	43	ND	ND	ND	ND	ND	ND
Ethylbenzene	620	6.8	2.74	ND	1.94	ND	0.0013
Isopropylbenzene	NC	ND	0.34	ND	0.4	ND	ND
4-Isopropyltoluene	NC	ND	0.24	ND	0.37	ND	ND
Naphthalene	NC	1340	173	0.0058	171	1.96	0.0059
Toluene	540	ND	0.75	ND	ND	ND	0.0012
1,2,4-Trimethylbenzene	NC	8	5.42	ND	6.1	ND	0.0033
1,3,5-Trimethylbenzene	NC	ND	2.9	0.0014	2.5	ND	ND
Xylenes (Total)	540	2.14	7.74	ND	3.91	ND	0.0035
PCBs (mg/Kg)	10						
Aroclor 1016		ND	ND	ND	ND	ND	ND
Aroclor 1221		ND	ND	ND	ND	ND	ND
Aroclor 1232		ND	ND	ND	ND	ND	ND
Aroclor 1242		ND	ND	ND	ND	ND	ND
Aroclor 1248		ND	ND	ND	ND	ND	ND
Aroclor 1254		ND	ND	ND	ND	ND	ND
Aroclor 1260		ND	ND	ND	ND	ND	ND

Notes:

All concentrations are equivilant to parts per million (ppm).

All concentrations reported in **BOLD** exceed the Remedial Action Work Plan (RAWP) remedial objectives for surficial soil.

Concentrations boxed exceed the RAWP remedial objectives for subsurface soil.

ND - Not detected above method reporting limit; NC - No criteria listed in the RAWP.

Table 2 Cont'd

Sample ID/Depth (ft.)	Remedial Objective	TP-38 2-13.5	TP-40 6-7	TP-41 8	TP-42 8	TP-43 6	TP-44 8	TP-45 8	TP-46 8	TP-47 10	TP-48 8
Date Sampled	Subsurface Soil	5/23/2002	6/3/2002	6/3/2002	6/3/2002	6/3/2002	6/3/2002	6/3/2002	6/3/2002	6/3/2002	6/3/2002
Analyte Name	> 100 ft.										
TPH (mg/Kg)	30000										
TPH (Gasoline Range)		ND	148	617	ND	32.1	158	ND	ND	ND	1290
TPH (Diesel Range)		ND	4060	11800	ND	1640	4010	1880	ND	ND	24300
Metals (mg/Kg)											
Arsenic	NC	3.28	4.8	5.84	5.07	4.84	3.7	2.17	4.84	3.38	17.3
Barium	NC	123	18.8	18.7	27.9	9.27	10.3	12.8	29.2	12.9	7.2
Chromium	NC	8.11	7.4	6.81	11.5	6.65	6.61	5.73	7.06	5.77	5.25
Lead	NC	91.7	93	70.2	8.58	6.65	5.45	4.74	5.85	5.17	3.89
Mercury	NC	1.11	ND	0.11	ND	ND	ND	ND	ND	ND	ND
Reactive Cyanide (mg/Kg)	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Reactive Sulfide (mg/Kg)	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
pH	NC	NA	6.2	5.5	5.7	6.7	6.4	5.7	7.8	6.7	6.2
Ignitability	NC	> 200F	> 200F	> 200F	> 200F	> 200F	> 200F	> 200F	> 200F	> 200F	> 200F
PAHs (mg/Kg)											
Acenaphthene	10000	ND	5.61	10.9	ND	1.88	8.91	0.924	ND	ND	46.1
Acenaphthylene	10000	ND	3.96	9.24	ND	ND	ND	0.99	ND	ND	ND
Anthracene	10000	ND	ND	ND	ND	ND	ND	1.39	ND	ND	ND
Benzo(a)anthracene	10000	ND	ND	ND	ND	ND	ND	1.52	ND	ND	ND
Benzo(a)pyrene	10000	ND	ND	ND	ND	ND	ND	1.32	ND	ND	ND
Benzo(b)fluoranthene	10000	ND	ND	ND	ND	ND	ND	1.65	ND	ND	ND
Chrysene	10000	ND	ND	ND	ND	ND	ND	1.45	ND	ND	ND
Dibenzofuran	10000	ND	3.63	8.25	ND	0.891	3.63	1.12	ND	ND	36.2
Fluoranthene	10000	1.98	ND	ND	ND	0.363	ND	3.96	ND	ND	39.5
Fluorene	10000	ND	3.96	8.25	ND	0.924	3.96	1.72	ND	ND	39.5
2-Methylnaphthalene	10000	ND	49.5	ND	ND	9.9	ND	ND	ND	ND	362
Naphthalene	5000	6.93	300	808	0.363	33.7	284	ND	ND	ND	2270
Phenanthrene	10000	1.82	6.27	12.9	ND	1.58	5.94	4.62	ND	ND	82.2
Pyrene	10000	ND	ND	ND	ND	ND	ND	3.1	ND	ND	ND
VOCs (mg/Kg)											
Acetone	NC	0.0551	ND	ND	0.369	ND	ND	ND	ND	0.0098	ND
Benzene	43	0.002	ND	14.3	0.0034	ND	ND	ND	ND	ND	ND
2-Butanone	NC	ND	ND	ND	0.102	ND	ND	ND	ND	ND	ND
Carbon disulfide	NC	0.0199	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	620	0.0508	12.1	67.4	ND	ND	17	ND	ND	ND	195
Isopropylbenzene	NC	0.026	1.4	5.9	ND	ND	2.1	ND	ND	ND	15.6
4-Isopropyltoluene	NC	0.0118	1.2	4.8	ND	ND	ND	ND	ND	ND	8.5
Naphthalene	NC	19.7	1430	2740	0.0048	69.9	1680	12.2	0.003	0.0031	3960
n-Propylbenzene	NC	0.0095	ND	1.5	ND	ND	ND	ND	ND	ND	6.7
Toluene	540	0.0238	5.4	43.8	ND	ND	ND	ND	ND	ND	19.4
1,2,4-Trimethylbenzene	NC	1.96	23.3	87.3	ND	2	25.1	ND	ND	ND	149
1,3,5-Trimethylbenzene	NC	0.117	12.1	44.9	ND	ND	5	ND	ND	ND	66.3
Xylenes (Total)	540	0.119	31	181	0.0019	ND	17.4	ND	ND	ND	454
PCBs (mg/kg)	10										
Aroclor 1016		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1221		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1232		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1242		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1248		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1254		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Aroclor 1260		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes:

All concentrations are equivilant to parts per million (ppm).

All concentrations reported in **BOLD** exceed the Remedial Action Work Plan (RAWP) remedial objectives for surficial soil.

Concentrations boxed exceed the RAWP remedial objectives for subsurface soil.

ND - Not detected above method reporting limit; NC - No criteria listed in the RAWP.

Table 3 Area 3 Waste Characterization Test Pit Results

Sample ID	VHB TP-1	VHB TP-2	VHB TP-3	VHB TP-4	VHB TP-5	VHB TP-6	VHB TP-7	VHB TP-8	VHB TP-9	VHB TP-10	VHB TP-11	VHB TP-12	VHB TP-13	VHB TP-14	VHB TP-15	VHB TP-16	VHB TP-17	VHB TP-18	VHB TP-19	VHB TP-20	VHB TP-21	VHB TP-22	VHB TP-23	VHB TP-24	VHB TP-25	VHB TP-26	VHB TP-27
Date Collected								5/20/02														5/21/02					
VOCs (mg/Kg)																											
Benzene	ND	ND	0.165	ND	ND	ND	6.40	2.70	ND	ND	1.00	ND	1.40	ND	42.8	ND	17.2	ND	ND	ND	ND	88.0	26.0	ND	ND	2.95	2.60
n-Butylbenzene	ND	ND	0.880	ND	ND	1.45	ND	ND	ND	4.35	ND	9.20	ND	ND	ND	3.10	ND	ND	3.24	ND	ND	ND	ND	ND	ND	ND	ND
Sec-Butylbenzene	ND	ND	0.370	ND	1.70	ND	3.85	ND	ND	1.25	ND	2.10	ND	ND	ND	ND	ND	ND	1.47	ND	ND	ND	ND	ND	ND	ND	3.00
t-Butylbenzene	ND	ND	0.130	0.160	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.125	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	1.65	0.380	0.930	0.200	12.2	1.15	101.0	22.5	1.85	6.00	13.6	33.8	8.45	ND	200	3.30	42.8	20.0	ND	ND	60.0	486.0	162.0	3.0	4.50	37.6	97.3
Isopropylbenzene	ND	ND	0.320	ND	2.25	ND	17.0	4.10	ND	1.60	1.35	6.60	ND	ND	15.3	ND	1.50	1.50	0.785	ND	5.50	45.0	11.5	ND	1.20	ND	8.90
4-Isopropyltoluene	2.00	0.570	ND	0.325	4.45	ND	20.8	4.15	ND	1.80	ND	5.55	ND	0.0056	17.8	ND	2.15	1.40	0.250	ND	4.40	50.0	ND	ND	1.40	ND	14.4
Naphthalene	51.0	9.71	1.58	3.97	260.0	23.7	1770	779	123.0	83.0	367	545.0	204.0	0.0441	3,380	142	2030.0	462	4.06	15.0	251.0	4,100	860.0	47	25.2	825.0	760.0
n-Propylbenzene	ND	ND	0.490	ND	2.05	ND	9.50	1.20	ND	1.70	ND	4.25	ND	ND	9.40	ND	1.90	ND	1.97	ND	3.30	21.0	ND	ND	1.15	2.30	5.60
Styrene															22.8		37.4	ND	ND	ND	ND	ND	ND	ND	ND	77.0	ND
Toluene	ND	ND	ND	ND	ND	ND	2.30	3.70	ND	ND	ND	ND	ND	ND	125.0	ND	71.0	3.15	ND	ND	ND	82.5	ND	ND	ND	81.0	ND
1,2,4-Trimethylbenzene	13.3	3.44	2.22	3.08	42.9	5.90	163.0	47.2	9.50	21.4	16.4	70.5	7.20	0.0045	165.0	18.2	71.5	17.2	0.140	ND	41.2	366.0	106.0	11.1	11.4	68.0	95.3
1,3,5-Trimethylbenzene	4.35	0.670	0.175	2.08	17.4	2.10	70.0	24.0	2.70	4.10	7.80	9.60	2.65	ND	72.5	ND	28.8	6.50	ND	ND	15.2	144.0	37.0	2.45	5.10	27.8	30.2
Xylenes (total)	3.95	0.900	0.390	1.20	20.5	1.09	176	61.9	2.95	3.80	16.8	23.0	9.95	ND	275.0	ND	132	25.6	ND	ND	66.4	632.0	101.0	3.75	7.40	165.0	107.0
PAHs (mg/Kg)																											
Acenapthene	3.23	11.2	11.6	16.5	23.1	19.1	28.9	14.8	14.2	10.6	24.1	26.7	49.5	ND	54.4	15.2	ND	ND	ND	ND	19.9	160.0	61.2	55.1	ND	10.4	62.3
Acenaphthylene	ND	ND	ND	ND	23.1	ND	12.4	23.9	4.95	4.29	3.30	ND	ND	6.60	22.8	ND	109.0	ND	ND	ND	ND	46.5	10.5	ND	ND	40.4	27.4
Anthracene	ND	6.27	5.61	ND	ND	11.2	21.4	20.6	14.5	7.59	15.5	14.2	56.1	ND	33.0	9.57	66.0	ND	ND	ND	ND	111.0	39.5	25.7	ND	12.5	38.5
Benzo (a) anthracene	ND	3.30	ND	ND	ND	5.94	15.7	12.4	6.93	5.28	9.57	7.59	21.4	ND	18.8	4.85	36.3	ND	ND	5.28	ND	59.3	24.3	13.5	ND	6.06	21.6
Benzo (a) pyrene	ND	ND	ND	ND	19.8	4.29	14.6	10.7	5.61	5.61	8.58	5.61	16.5	ND	17.2	3.63	36.3	ND	ND	4.62	ND	46.5	21.7	ND	ND	5.05	18.3
Benzo (b) fluoranthene	ND	ND	ND	ND	21.5	4.62	14.0	10.7	4.62	5.94	8.25	5.61	ND	ND	15.5	3.63	ND	ND	ND	6.60	ND	43.3	16.4	ND	ND	4.04	15.8
Benzo (g,h,i) perylene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo (k) fluoranthene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.28	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	ND	ND	ND	ND	ND	5.28	14.0	10.7	5.28	4.29	7.59	6.60	16.5	ND	15.5	4.29	ND	ND	ND	4.62	ND	46.1	19.7	ND	ND	4.38	18.3
Dibenzofuran	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	33.7	ND	ND	ND	6.40	13.3
Fluoranthene	ND	7.59	5.61	ND	23.1	12.9	31.4	26.4	14.5	9.90	19.1	16.5	47.8	4.62	41.4	10.9	72.6	ND	ND	9.57	ND	117.0	38.8	22.1	ND	12.1	38.2
Fluorene	ND	8.25	8.25	ND	19.8	16.5	24.8	25.6	17.2	9.90	15.8	22.4	46.2	3.63	51.0	12.5	75.9	ND	ND	ND	ND	127.0	44.7	38.0	ND	18.2	49.8
Indeno (1,2,3-cd) pyrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	ND	12.9	19.8	ND	44.6	26.1	74.2	58.6	24.8	ND	27.4	62.7	59.4	ND	117.0	14.2	221.0	ND	ND	ND	31.5	801.0	211.0	194.0	ND	182.0	349.0
Naphthalene	ND	ND	ND	ND	24.8	13.2	67.6	31.4	10.6	ND	3.63	20.5	16.5	ND	22.4	ND	106	ND	ND	ND	ND	1,120	55.9	123.0	ND	108.0	365.0
Phenanthrene	7.42	19.5	21.1	25.2	44.6	33.0	60.2	66.0	59.4	25.7	60.0	62.7	140.0	10.9	130.0	32.7	221.0	75.9	6.27	ND	39.7	521.0	237.0	90.7	ND	40.4	158.0
Pyrene	4.19	11.2	10.6	23.5	39.6	16.5	47.8	38.0	23.8	16.5	36.3	24.4	90.8	6.60	77.6	15.8	158.0	59.4	ND	10.6	33.1	208.0	72.4	40.4	ND	24.9	76.4
Bis (2-ethylhexyl) phthalate	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	300.0	ND	ND	ND	ND	ND	ND	ND
Metals																											
Arsenic	3.62	2.93	3.29	3.54	5.80	6.48	3.33	4.76	4.22	4.02	5.08	3.08	4.82	4.17	3.15	4.40	3.56	1.75	4.57	4.76	3.24	3.52	2.36	3.63	2.38	2.92	3.74
Barium	31.0	28.3	11.2	20.3	14.5	11.8	11.4	20.2	20.2	21.5	20.1	7.88	24.9	9.13	23.8	10.2	35.5	25.1	21.0	44.0	14.7	27.3	17.7	20.7	19.0	14.2	17.1
Cadmium	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chromium	2.62	4.30	3.29	3.54	6.19	8.0	5.48	10.7	11.1	13.1	11.5	4.42	7.32	7.74	6.89	7.80	5.72	5.84	10.5	10.5	8.40	9.96	6.06	9.18	8.51	6.82	8.27
Lead	15.5	23.8	10.6	26.0	46.0	12.4	97.8	11.0	7.29	30.7	18.8	3.27	43.9	15.9	149	7.60	51.3	21.6	21.0	125	165.0	31.2	21.6	52.8	31.7	62.0	134.0
Mercury	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.26	0.41	ND	ND	ND	ND	ND	ND	ND
Selenium	1.61	ND	ND	1.38	ND	1.14	ND	2.29	1.34	3.01	1.76	ND	1.35	1.39	1.57	ND	ND	ND	1.14	ND	ND	ND	ND	ND	ND	ND	ND
Silver	ND	ND	ND	ND	ND	ND	ND	ND	ND	28.3	ND	ND	4.24	ND	ND	ND	ND	ND	ND	ND	7.25	ND	ND	ND	ND	ND	ND
Reactive Cyanide (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
Reactive Sulfur (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
TPH (Gasoline Range) (mg/Kg)	128	77.8	86.7	113	93.7	107	283	588	150	ND	104	344	116	ND	679	118	1150	218	300	ND	473	1130	680	695	11.7	912	1120
TPH (Diesel Range) (mg/Kg)	10,000	11,900	24,400	21,000	16,200	10,000	14,500	12,200	5,420	9,960	2,800	16,900	14,000	559.0	3,660	6,220	15,000	2,030	3,410	108.0	7,400	17,500	11,300	6,550	777.0	2050	10,600
PCBs (mg/Kg)	ND	ND	ND	ND	1.16*	ND	ND	ND	ND	ND	ND	ND	0.59*	ND	0.25**	ND	23.5*	0.60*	0.08*	4.70*	ND	ND	ND	ND	ND	ND	ND

If the total concentration of any constituent exceeds the TCLP hazardous waste level by the ratio of 20:1, TCLP analysis for that constituent is required. Values shown as **bold** require TCLP analysis.

Values that are underlined exceed the Remedial Objectives.

ND=Non-detectable

NT=Not Tested

NR=Non-reactive

*Compound identified as Aroclor 1248.

**Compound identified as Aroclor 1254.

Table 4
Structure 3B Waste Characterization Sample Analytical Results

Analyte (mg/Kg)	Structure 3B Sludge Sample
TPH (Diesel Range)	122,000
SVOCs	
Acenaphthylene	3,190
Anthracene	2,660
Benzo (a) anthracene	2,080
Benzo (a) pyrene	1,650
Benzo (b) fluoranthene	1,350
Benzo (g,h,i) perylene	823
Benzo (k) fluoranthene	1,310
Carbazole	1,450
Chrysene	1,940
Dibenzofuran	2,130
Fluoranthene	4,650
Fluorene	2,850
Indeno (1,2,3-cd) perylene	774
2-Methylnaphthalene	3,290
m,p-Methylphenol	919
Naphthalene	21,500
Phenanthrene	9,440
Phenol	1,210
Pyrene	3,580
VOCs	
Benzene	372
Naphthalene	38,700
Styrene	108
Tetrachloroethene	44
Toluene	342
1,2,4-Trimethylbenzene	220
1,3,5-Trimethylbenzene	108
Xylenes (Total)	475
TCLP Benzene	6.9
Metals	
Arsenic	33.7
Barium	14.1
Cadmium	11.8
Chromium	2.51
Lead	466
Mercury	2.02
Selenium	10.1

Table 5
Laboratory Analytical Results for Structures 3B SE and NE Waste Characterization Samples

Analyte (mg/Kg)/Sample ID	Structure 3B SE	Structure 3B NE
TPH (Gasoline Range)	989	ND
TPH (Diesel Range).	6,480	9,870
SVOCs		
Benzo (a) anthracene	ND	147
Benzo (a) pyrene	ND	134
Benzo (b) fluoranthene	ND	174
Fluoranthene	752	361
2-Methylnaphthalene	594	ND
Naphthalene	3,720	ND.
Phenanthrene	1,110	268
Pyrene	436	201
VOCs		
Naphthalene	1,750	59.5
1,2,4-Trimethylbenzene	ND	2.30
Toluene	120	ND
Xylenes (total)	210	ND
TCLP Benzene	0.61	ND
PCBs	0.298*	0.416**
Metals		
Arsenic	16.5	5.16
Barium	26.4	185
Cadmium	1.21	ND
Chromium	5.43	10.3
Lead	144	617
Mercury	0.16	ND
Reactive Sulfide	1,060	471
pH	7.8	8.60
Ignitability	>200°F	>200°F

* Compound identified as Arochlor 1242.

** Compounds identified as Arochlor 1242 and 1254.

Table 6
Laboratory Analytical Results of Waste Characterization Sample from Structure 19.

Analyte (mg/Kg)/Sample ID	Structure 19
TPH	75,600
SVOCs	
Acenaphthylene	989
Anthracene	764
Fluoranthene	735
Fluorene	925
2-Methylnaphthalene	3,270
Naphthalene	5,180
Phenanthrene	2,610
Pyrene	1,310
VOCs	
Benzene	297
Ethylbenzene	88.1
Naphthalene	4,750
Styrene	185
1,2,4-Trimethylbenzene	74.6
1,3,5-Trimethylbenzene	29.3
Toluene	315
Xylenes (total)	230
TCLP Benzene	10.1
PCBs	1.063*
Metals	
Arsenic	6.38
Barium	744
Cadmium	ND
Chromium	6
Lead	417
Mercury	0.244
TCLP Lead	0.2
pH	8.41
Ignitability	>200°F

* Compounds identified as Arochlor 1242 and 1254.

Table 7
PID Screening Results, Structure 14B, Eastern Pipe Run

Sample ID	TVOC Screening (ppm)
Pipe Run Sample 1	0.0
Pipe Run Sample 2	0.0
Pipe Run Sample 3	0.0
Pipe Run Sample 4	1.2
Pipe Run Sample 5	32.8

Table 8
Gauging Data from On-Site Recovery Wells

Recovery Well ID	Depth to LNAPL (ft.)	Depth to Water (ft.)	LNAPL Thickness (ft.)	Depth to Bottom (ft.)
September 23, 2002				
RW-1	7.0	7.1	0.1	10.8
RW-2	9.93	9.94	0.01	16.86
RW-3	-	12.34	0.0	18.18
RW-4	11.02	11.08	0.06	12.02
RW-5	11.78	11.81	0.03	13.77
October 8, 2002				
RW-1	8.08	8.11	0.03	10.8
RW-2	-	10.25	0.0	16.86
RW-3	-	12.26	0.0	18.18
RW-4	11.37	11.4	0.03	12.02
RW-5	12.04	12.09	0.05	13.77
October 22, 2002				
RW-1	7.76	7.8	0.04	10.8
RW-2	-	10.2	0.00	16.86
RW-3	-	12.56	0.0	18.18
RW-4	11.48	11.50	0.02	12.02
RW-5	12.17	12.21	0.04	13.77

- = No LNAPL Measured

Table 9 Area 2 Subsurface Soil Excavation Laboratory Analytical Results.

Sample ID/Depth (ft.)	Surface Soil	Remedial Objectives Subsurface Soil - 100 Feet From Shore	EXA2-1 0-2' South Wall 4/10/2002	EXA2-1 2-3' South Wall 4/10/2002	EXA2-2 0-2 South Wall 4/10/2002	EXA2-2 2-4 South Wall 4/10/2002	EXA2-3 0-2** West Wall 4/10/2002	EXA2-3 2-4 West Wall 4/10/2002	EXA2-4 0-2** West Wall 4/10/2002	EXA2-4 2-4 West Wall 4/10/2002	EXA2-5 0-2 West Wall 4/11/2002	EXA2-5 2-4 West W-2 4/11/2002	EXA2-6 0-2 West Wall 4/11/2002	EXA2-6 2-4 West Wall 4/11/2002	EXA2-7 0-2 West Wall 4/11/2002	EXA2-7 2-4 West Wall 4/11/2002	EXA2-8 0-2 West Wall 4/11/2002	EXA2-8 2-4** West Wall 4/11/2002	EXA2-9 0-2 West Wall 4/11/2002	EXA2-9 2-4** West Wall 4/11/2002	EXA2-10 0-2 West Wall 4/12/2002	EXA2-10 2-12 North Wall 4/12/2002	EXA2-11 0-2 North Wall 4/12/2002	EXA2-11 2-12 North Wall 4/12/2002	EXA2-12 0-2 North Wall 4/12/2002	EXA2-12 2-12 North Wall 4/12/2002	EXA2-13 0-2 North Wall 4/12/2002	EXA2-13 2-12 North Wall 4/12/2002	EXA2-14 0-2 North Wall 4/12/2002	EXA2-14 2-12 North Wall 4/12/2002	EXA2-15 East Wall 4/26/2002	EXA2-16 East Wall 4/26/2002	EXA2-17 East Wall 4/26/2002	EXA2-18 East Wall 4/26/2002
TPH (mg/Kg)	2500	50000																																
TPH (Gasoline Range)			ND	ND	ND	ND	ND	ND	ND	21.1	ND	ND	ND	ND	NG	NG	ND	526	ND	ND	2770	ND	1290	ND	ND	ND	11.5	ND	ND				
TPH (Diesel Range)			144	504	464	66	632	ND	2540	163	842	165	752	ND	662	864	8420	1520	732	58000	858	15700	416	4310	104	10700	167	8880	2,250	307	127	713		
Metals (mg/Kg)																																		
Arsenic	7	NC	5.73	2.1	6.1	8.05	6.48	4.23	11.8	3.2	5.78	5.82	4.84	3.75	5.34	4.28	4.87	4.81	6.43	3.11	4.73	5.75	4.44	4.3	4.5	2.77	5.26	3.81	2.73	3.3	3.88	5.17		
Lead	500	NC	15.2	5.15	34.7	15.2	128	12.5	422	8	165	8.91	79.8	9.27	25.9	11.7	76.3	50.5	108	11.7	95.5	5.53	76.4	5.27	181	5.34	224	7.43	135	82.4	11.2	720		
Total Cyanide (mg/Kg)	10000	NC	2.64	5.92	ND	2.13	5.81	2.25	10.6	ND	4.6	ND	6.44	ND	5.36	7.45	11	ND	2.83	ND	ND	ND	ND	ND	2.78	ND	2.25	ND	15.4	5.78	14.9	23		
PAHs (mg/Kg)																																		
Acenaphthene	10000	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NO	ND	2.61	NG	ND	ND	ND	ND	ND	ND	ND	43.2	ND	12	ND	ND	NG	NO		
Acenaphthylene	10000	10000	ND	ND	ND	ND	ND	ND	ND	0.782	ND	0.201	ND	ND	NO	ND	11.9	5.91	ND	93.8	ND	32.4	ND	ND	ND	ND	ND	5.97	ND	ND	ND	ND		
Anthracene	10000	10000	ND	6.6	ND	ND	ND	ND	ND	ND	NO	ND	ND	ND	NO	ND	1.82	ND	ND	ND	ND	ND	ND	ND	ND	6.38	ND	ND	ND	ND	ND	ND		
Benzo(a)anthracene	7.8	10000	ND	8.2	ND	ND	ND	ND	ND	0.554	ND	ND	ND	ND	NO	ND	ND	ND	9.46	ND	0.178	ND	ND	ND	0.726	ND	ND	ND	ND	ND	ND	ND		
Benzo(a)pyrene	0.8	10000	9.4	5.15	ND	ND	ND	ND	ND	0.88	ND	0.221	ND	0.178	ND	ND	ND	ND	0.487	ND	ND	ND	ND	ND	0.88	ND	ND	ND	ND	ND	ND	ND		
Benzo(b)fluoranthene	7.8	10000	11.7	5.94	ND	ND	ND	ND	ND	1.12	ND	0.264	ND	0.188	ND	ND	ND	ND	1.0	ND	0.178	ND	ND	ND	1.18	ND	0.662	ND	ND	ND	ND	ND		
Benzo(g,h,i)perylene	10000	10000	ND	ND	ND	ND	ND	ND	ND	0.88	ND	0.462	ND	0.254	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Benzo(k)fluoranthene	78	10000	ND	ND	ND	ND	ND	ND	ND	0.824	ND	0.175	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.422	ND	ND	ND	ND	ND	ND	ND		
Chrysene	780	10000	ND	5.87	ND	ND	ND	ND	ND	0.853	ND	ND	ND	ND	NO	ND	ND	ND	0.513	ND	0.205	ND	ND	ND	0.726	ND	ND	ND	ND	ND	ND	ND		
Dibenzo(a,h)anthracene	0.8	10000	ND	ND	ND	ND	ND	ND	ND	0.263	ND	ND	ND	ND	NO	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Indeno(1,2,3-cd)pyrene	10000	10000	ND	ND	ND	ND	ND	ND	ND	0.824	ND	0.33	ND	0.198	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Fluoranthene	10000	10000	ND	16.5	ND	ND	ND	ND	ND	0.88	ND	ND	ND	0.238	ND	1.49	ND	0.8	ND	0.211	ND	ND	ND	1.12	ND	ND	ND	ND	ND	ND	ND	ND		
Fluorene	7.8	10000	ND	10.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NO	ND	5.61	2.71	ND	48.2	ND	18.9	ND	ND	ND	21.3	ND	9.3	ND	ND	ND	ND		
2-Methylnaphthalene	10000	10000	ND	ND	ND	ND	ND	ND	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	10000	5000	ND	ND	ND	ND	ND	ND	ND	9.24	ND	0.594	ND	ND	ND	ND	0.257	482	208	ND	4920	0.594	1660	7.1	276	0.548	2920	0.444	997	ND	ND	ND	ND		
Phenanthrene	10000	10000	ND	30.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	9.24	6.62	0.38	86.9	ND	29.7	ND	ND	0.403	29.2	ND	12.8	4.53	ND	ND	ND		
Pyrene	10000	10000	ND	18.6	ND	ND	ND	ND	ND	0.881	ND	ND	ND	0.209	ND	ND	ND	ND	0.827	ND	ND	ND	ND	ND	0.99	ND	ND	ND	ND	ND	ND	ND		
VOCs (mg/Kg)																																		
Benzene	288	43	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NO	ND	2.3	ND	ND	126	ND	26.3	ND	18.9	ND	4.6	ND	4.8	ND	0.171	ND	ND		
Ethylbenzene	10000	620	ND	0.38	ND	ND	ND	ND	ND	0.06	ND	ND	ND	ND	NO	ND	20.4	ND	ND	236	ND	85.3	0.043	37.2	ND	74.8	ND	21.4	ND	1.89	ND	ND		
Toluene	10000	540	ND	0.84	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NO	ND	19.8	ND	ND	297	ND	75.4	ND	27.8	ND	84.5	ND	11.3	ND	0.897	ND	ND		
Xylenes (total)	10000	540	ND	6.58	ND	ND	ND	ND	2.803	ND	ND	ND	ND	ND	NO	ND	97.8	0.026	ND	784	ND	249	0.169	91.6	ND	171	ND	46.8	0.264	5.18	ND	9.241		

* Sample collected from wall parallel to Duke Energy containment dike and further excavation to the south was not possible.
** Further excavation to the west was not practical because of the presence of several above ground structures and subsurface piping.
# Continued excavation to the north was not possible due to the presence of trac tones, apparent natural gas piping, and the paved road.

Table 10 TP-50 Subsurface Soil Excavation Laboratory Analytical Results.

Sample ID Aspect Analyte/Date Sampled	Subsurface Soil Remedial Objectives >100 Feet From Shore	EXA2-19 East Wall 8/2/2002	EXA2-20 West Wall 8/2/2002	EXA2-21 North Wall 8/2/2002	EXA2-22 South Wall 8/2/2002
TPH (mg/Kg)	30000	ND	263	28.3	16,300
Metals (mg/Kg)					
Arsenic	NC	6.71	4.89	3.23	6.23
Lead	NC	ND	11.4	ND	67.2
Cyanide	NC	6.2	ND	ND	5.5
PAHs (mg/Kg)					
Acenaphthene	10000	ND	ND	ND	ND
Acenaphthylene	10000	ND	ND	ND	ND
Anthracene	10000	ND	ND	ND	ND
Benzo(a)anthracene	10000	ND	ND	ND	ND
Benzo(a)pyrene	10000	ND	ND	0.472	ND
Benzo(b)fluoranthene	10000	ND	ND	ND	ND
Benzo(g,h,I))perylene	10000	ND	1.02	0.856	ND
Benzo(k)fluoranthene	10000	ND	ND	ND	ND
Chrysene	10000	ND	ND	ND	ND
Dibenzo(a,h)anthracene	10000	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	10000	ND	0.705	ND	ND
Fluoranthene	10000	ND	ND	ND	ND
Fluorene	10000	ND	ND	ND	ND
2-Methylnaphthalene	10000	ND	ND	ND	49.3
Naphthalene	5000	0.637	1.04	1.87	351
Phenanthrene	10000	ND	ND	ND	ND
Pyrene	10000	ND	ND	ND	ND
VOCs (mg/Kg)					
Benzene	43	ND	ND	ND	0.507
Ethylbenzene	620	ND	ND	ND	0.579
Toluene	540	ND	ND	ND	4.2
Xylenes (total)	540	ND	ND	ND	17.8

NOTES:

Values shown as boxed exceed the Subsurface Soil Remedial Objectives.

ND - Non-detectable above the method reporting limit, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 11 Area 2 Surficial Excavation Sidewall Sample Laboratory Analytical Results.

Sample ID Aspect Analyte/Date Sampled	Surface Soil Remedial Objectives	EXA2-23* East Wall 8/29/2002	EXA2-24* East Wall 8/29/2002	EXA2-25* East Wall 8/29/2002	EXA2-26** South Wall 8/29/2002	EXA2-28** South Wall 8/29/2002	EXA2-29** South Wall 8/29/2002	EXA2-32 South Wall 9/6/2002	EXA2-33*** North Wall 9/6/2002
TPH	2,500	90.9	474	348	91.4	884	328	197	947
Metals (mg/Kg)									
Arsenic	7	3.5	ND	ND	6.03	5.92	5.25	ND	ND
Lead	500	77.2	106	114	35.3	20.7	103	75.6	243
Total Cyanide (mg/Kg)	10,000	ND	2.1	5.9	ND	ND	14.6	7.5	4.9
PAHs (mg/Kg)									
2,4-Dimethylphenol	10,000	ND	ND	ND	ND	ND	ND	ND	ND
2,6-Dinitrotoluene	10,000	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	10,000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene	10,000	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	10,000	ND	2.8	ND	ND	ND	ND	ND	ND
Anthracene	10,000	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	7.8	2.41	**10.3**	5.69	ND	ND	ND	2.49	**32.3**
Benzo(a)pyrene	0.8	**2.53**	**14.1**	**7.23**	ND	ND	ND	2.32	**40**
Benzo(b)fluoranthene	7.8	3	**18.8**	6.71	ND	ND	ND	2.5	**40.6**
Benzo(g,h,i)perylene	10,000	ND	8.94	3.22	ND	ND	ND	0.959	ND
Benzo(k)fluoranthene	78	2.69	13.7	6.23	ND	ND	ND	3.03	31.3
Chrysene	780	2.91	11.9	6.48	ND	ND	ND	2.84	37.9
Dibenzo(a,h)Anthracene	0.8	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	10,000	3.53	13.4	7.97	ND	ND	ND	3.11	34.7
Fluorene	10,000	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)Pyrene	7.8	ND	7.48	3.13	ND	ND	ND	0.971	ND
Naphthalene	10,000	ND	ND	ND	ND	ND	ND	ND	ND
Pentachlorophenol	48	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	10,000	ND	2.92	2.36	ND	ND	ND	1.13	ND
Pyrene	10,000	3.56	15.4	8.27	ND	ND	ND	2.5	33.8
VOCs (mg/Kg)									
Benzene	200	ND	0.0684	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	ND	ND	ND	ND	0.245	ND	ND	ND
Toluene	10,000	ND	ND	ND	0.956	7.25	2.57	ND	ND
Xylenes (Total)	10,000	ND	ND	ND	0.164	1.08	0.65	ND	ND

NOTES:

Values shown as bold exceed the Surface Soil Remedial Objectives.

* Excavations continued to the east, but additional sampling was not possible due to presence of concrete foundation.

**Method Reporting Limit (MRL) below the PAH remedial objectives could not be attained due to matrix interference.

***Further excavations to the north was not possible because of the presence of a partially demolished building.

ND - Non-dectaable above MRL, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 12 **Area 2 Surficial Excavation Floor Sample Laboratory Analytical Results.**

Sample ID Analyte/Date Sampled	Subsurface Soil Remedial Objectives (>100 Feet from Shore)	EXA2-F1 8/29/2002	EXA2-F2 8/29/2002	EXA2-F3 8/29/2002	EXA2-F4 8/29/2002	EXA2-F5 8/29/2002	EXA2-F6 8/29/2002	EXA2-F7 8/29/2002	EXA2-F8 8/29/2002	EXA2-F9 9/6/2002	EXA2-F10 9/6/2002
TPH (mg/Kg)	30,000	197	85.3	154	278	993	1710	838	400	738	607
Metals (mg/Kg)											
Arsenic	NC	8.59	5.16	6.37	8.86	10.6	5.48	6.08	7.05	ND	ND
Lead	NC	112	19.2	191	132	75.2	115	99	598	126	ND
Total Cyanide (mg/Kg)	NC	2.52	ND	2.72	ND	2.99	25.6	8.58	5.14	7.8	ND
PAHs (mg/Kg)											
Acenaphthylene	10,000	1.99	ND	1.74	5.19	ND	ND	ND	ND	ND	ND
Anthracene	10,000	ND	ND	ND	3.98	ND	ND	ND	ND	34.6	ND
Benzo(a)anthracene	10,000	16.2	2.74	5.41	21.5	ND	39.5	ND	ND	64.2	ND
Benzo(a)pyrene	10,000	13.9	2.74	10.8	20	ND	ND	ND	ND	61	ND
Benzo(b)fluoranthene	10,000	18.1	4.46	15.8	31.9	ND	46.7	38.5	ND	52.8	ND
Benzo(g,h,i)perylene	10,000	4.34	ND	4.88	6.75	ND	ND	ND	ND	18.2	ND
Benzo(k)fluoranthene	10,000	9.95	ND	6.62	15.4	ND	ND	ND	ND	56.1	ND
Chrysene	10,000	15	2.58	6.1	19.6	ND	ND	ND	ND	64	ND
Dibenz(a,h)anthracene	10,000	ND	ND	ND	2.6	ND	ND	ND	ND	ND	ND
Fluoranthene	10,000	22	3.77	6.8	33.2	ND	79.1	45.4	ND	120	ND
Indeno(1,2,3-cd)pyrene	10,000	4.34	ND	4.88	6.92	ND	ND	ND	ND	18.8	ND
Phenanthrene	10,000	4.88	ND	ND	7.96	ND	75.5	ND	ND	106	ND
Pyrene	10,000	18.1	2.22	6.44	26.9	ND	50.3	ND	ND	89.5	ND
VOCs (mg/Kg)											
Benzene	43	ND	ND	0.119	ND	ND	0.117	0.0953	ND	ND	ND
Ethylbenzene	620	ND	ND	0.0897	ND	ND	0.107	ND	ND	ND	ND
Naphthalene	NC	0.338	0.158	0.588	0.457	0.201	8.21	2.39	0.613	ND	ND
Toluene	540	ND	ND	2.02	1.02	1.7	1.32	1.42	1.27	ND	ND
1,2,4-Trimethylbenzene	NC	ND	ND	0.159	0.133	0.229	0.545	0.53	0.156	ND	ND
1,3,5-Trimethylbenzene	NC	ND	ND	ND	ND	0.0956	0.243	0.477	ND	ND	ND
Xylenes (Total)	540	ND	ND	0.369	0.219	0.325	0.505	0.53	0.29	ND	ND

NOTES:
Values shown as boxed exceed the Subsurface Soil Remedial Objectives.
ND - Non-dectable above method reporting limit, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 13 Building 9 Subsurface Soil Excavation Laboratory Analytical Results.

Sample ID Aspect Analyte/Date Sampled	Subsurface Soil Remedial Objectives >100 Feet From Shore	EXB9-1 North Wall 9/5/2002	EXB9-2 West Wall 9/5/2002	EXB9-3 West Wall 9/5/2002
TPH (mg/Kg)	30000	669	7,380	13,300
Metals (mg/Kg)				
Arsenic	NC	ND	ND	3.9
Lead	NC	152	87.6	7.5
Total Cyanide (mg/Kg)	NC	3.3	3.8	7.7
PAHs (mg/Kg)				
Acenaphthene	10000	5.07	32.4	83.8
Acenaphthylene	10000	5.06	ND	ND
Anthracene	10000	8.65	12.9	35
Benzo(a)anthracene	10000	18.7	12.8	22.8
Benzo(a)pyrene	10000	18	13.4	19
Benzo(b)fluoranthene	10000	15	12.4	17.9
Benzo(g,h,I))perylene	10000	7.23	4.11	ND
Benzo(k)fluoranthene	10000	19.5	12.6	20.4
Chrysene	10000	19	13.3	22.5
Dibenzo(a,h)anthracene	10000	ND	ND	ND
Indeno(1,2,3-cd)pyrene	10000	6.16	4.54	ND
Fluoranthene	10000	38.2	30	60.4
Fluorene	10000	8.63	22.4	ND
2-Methylnaphthalene	10000	14	110	417
Naphthalene	5000	55	465	2,750
Phenanthrene	10000	26.9	41.1	115
Pyrene	10000	29.6	22.1	38.6
VOCs (mg/Kg)				
Benzene	43	ND	ND	ND
Ethylbenzene	620	ND	ND	81.4
Toluene	540	ND	ND	ND
Xylenes (total)	540	ND	ND	399

Notes:

All concentrations are equivilant to parts per million (ppm).

ND - Not detected above method reporting limit; NA - Not analyzed; NC - No criteria listed in the RAWP.

Table 14 RCA-40 Confirmatory Sample Results.

Sample ID Aspect Analyte/Date Sampled	Subsurface Soil Remedial Objectives > 100 feet From Shore	EXA3-1 West Wall 6/25/2002	EXA3-2 West Wall 6/25/2002	EXA3-3 West Wall 6/25/2002	EXA3-4 West Wall 6/26/2002	EXA3-5 North Wall 6/26/2002	EXA3-6 North Wall 6/26/2002	EXA3F-1 Floor 6/25/2002	EXA3F-2 Floor 6/25/2002	EXA3F-3 Floor 6/25/2002	EXA3F-4 Floor 6/25/2002	EXA3F-5 Floor 6/26/2002	EXA3F-6 Floor 6/26/2002
TPH (mg/Kg)	30000												
TPH (Gasoline Range)		ND	ND	ND	53.3	ND	ND	ND	ND	ND	ND	ND	ND
TPH (Diesel Range)		31.9	3,670	347	16,600	98.7	204	558	651	892	141	112	214
Metals (mg/Kg)													
Arsenic	NC	5.99	5.16	4.62	3.34	4.12	6.25	3.98	5.56	4.22	4.44	4.66	4.58
Lead	NC	40.3	16.1	25.5	22.7	14.3	72.5	15.3	26.6	28.7	20.8	33.7	25.6
Total Cyanide (mg/Kg)	NC	ND	11.5	8.52	ND	4.28	2.98	ND	ND	ND	ND	ND	ND
PAHs (mg/Kg)													
Acenaphthene	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	10000	ND	0.924	5.61	ND	ND	ND	ND	ND	ND	0.327	2.83	ND
Anthracene	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	10000	0.759	ND	3.04	ND	ND	1.67	ND	ND	ND	0.429	5.49	ND
Benzo(a)pyrene	10000	0.924	1.06	6.93	ND	ND	1.65	ND	ND	ND	0.561	4.6	ND
Benzo(b)fluoranthene	10000	1.09	0.99	5.61	ND	ND	2.49	ND	1.95	ND	0.792	7.08	ND
Benzo(g,h,i)perylene	10000	0.264	ND	1.72	ND	ND	ND	ND	ND	ND	0.271	ND	ND
Benzo(k)fluoranthene	10000	0.561	ND	1.98	ND	ND	ND	ND	ND	ND	0.363	1.95	ND
Chrysene	10000	0.825	0.343	2.8	ND	ND	1.97	ND	ND	ND	0.495	5.49	ND
Dibenzo(a,h)anthracene	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	10000	0.277	ND	ND	ND	ND	ND	ND	ND	ND	0.244	1.66	ND
Fluoranthene	10000	0.693	0.442	2.31	ND	ND	1.78	ND	ND	ND	0.561	7.79	ND
Fluorene	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-Methylnaphthalene	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	5000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	10000	0.304	ND	ND	ND	ND	ND	ND	3.07	ND	0.277	ND	ND
Pyrene	10000	0.957	1.72	5.94	ND	ND	2.68	ND	3.14	ND	1.19	15	ND
VOCs (mg/Kg)													
Benzene	43	ND	ND	ND	ND	ND	ND	ND	ND	0.669	ND	ND	ND
Ethylbenzene	620	ND	ND	ND	ND	ND	ND	ND	ND	0.375	ND	ND	ND
Toluene	540	ND	ND	ND	ND	ND	ND	ND	ND	0.235	ND	ND	ND
Xylenes (total)	540	ND	0.125	ND	ND	ND	ND	ND	ND	0.478	ND	ND	ND
1,2,4-Trimethylbenzene	NC	ND	ND	ND	ND	ND	ND	ND	ND	0.287	ND	ND	ND
Naphthalene	NC	0.26	0.519	0.554	ND	ND	ND	ND	3.17	1.74	0.495	ND	ND

NOTES:
Values shown as boxed exceed the Subsurface Soil Remedial Objectives.
ND - Non-dectable above method reporting limit, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 15 TP-5 Excavation Confirmatory Results.

Sample ID Aspect Analyte/Date Sampled	Subsurface Soil Remedial Objectives < 100 Feet From Shore	EXA3-7 South Wall 6/26/2002	EXA3-8 West Wall 6/26/2002	EXA3-9 North Wall 6/26/2002	EXA3-10 East Wall 6/26/2002
TPH (mg/Kg)	15,000				
TPH (Gasoline Range)		21	ND	151	ND
TPH (Diesel Range)		3,850	ND	8850	1,180
Metals (mg/Kg)					
Arsenic	NC	4.72	4.85	3.03	4.3
Lead	NC	6.23	155	4.54	75
Cyanide	NC	ND	ND	ND	ND
PAHs (mg/Kg)					
Acenaphthene	10000	ND	ND	ND	ND
Acenaphthylene	10000	ND	ND	ND	ND
Anthracene	10000	ND	ND	ND	ND
Benzo(a)anthracene	10000	ND	ND	ND	ND
Benzo(a)pyrene	10000	ND	ND	11.3	ND
Benzo(b)fluoranthene	10000	ND	ND	7.94	ND
Benzo(g,h,i))perylene	10000	ND	ND	ND	ND
Benzo(k)fluoranthene	10000	ND	ND	ND	ND
Chrysene	10000	ND	ND	ND	ND
Dibenzo(a,h)anthracene	10000	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	10000	ND	ND	ND	ND
Fluoranthene	10000	ND	ND	ND	ND
Fluorene	10000	ND	ND	ND	ND
2-Methylnaphthalene	10000	ND	ND	ND	ND
Naphthalene	500	ND	ND	ND	ND
Phenanthrene	10000	ND	ND	ND	ND
Pyrene	10000	ND	ND	13.6	26.3
VOCs (mg/Kg)					
Benzene	4.3	ND	ND	ND	ND
Ethylbenzene	62	ND	ND	0.379	ND
Toluene	54	ND	ND	ND	ND
Xylenes (total)	540	ND	ND	0.364	ND
n-Butylbenzene	NC	0.173	ND	0.917	ND
sec-Butylbenzene	NC	0.156	ND	0.597	ND
Isopropylbenzene	NC	ND	ND	0.269	ND
4-Isopropyltoluene	NC	0.0996	ND	0.356	ND
n-Propylbenzene	NC	ND	ND	0.556	ND
1,2,4-Trimethylbenzene	NC	0.277	ND	4.16	ND
1,3,5-Trimethylbenzene	NC	ND	ND	0.461	ND
Naphthalene	NC	ND	ND	6.15	0.705

NOTES:

Values shown as boxed exceed the Subsurface Soil Remedial Objectives.

ND - Not-dectable above method reporting limit, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 16 Area 3 Subsurface Confirmatory Sample Results.

Sample ID	Subsurface Soil	Subsurface Soil	EXA3-11	EXA3-12	EXA3-13	EXA3-14	EXA3-15	EXA3-16	EXA3-17	EXA3-18	EXA3-21	EXA3-21A	EXA3-22	EXA3-23	EXA3-23D	EXA3-24	EXA3-24A	EXA3-25	EXA3-26	EXA3-27	EXA3-28	EXA3-29	EXA3-30	EXA3-31	EXA3-32	EXA3-33
Aspect	Remedial Objectives	Remedial Objectives	South Wall	South Wall	West Wall	West Wall	West Wall	North Wall	North Wall	North Wall	North Wall	North Wall	South Wall	North Wall	North Wall	North Wall	North Wall	North Wall	North Wall	North Wall	North Wall	East Wall	East Wall	East Wall	South Wall
Analyte/Sample Date	< 100 Feet From Shore	> 100 Feet From Shore	6/27/2002	6/27/2002	6/27/2002	6/27/2002	6/27/2002	7/9/2002	7/9/2002	7/9/2002	7/15/2002	7/15/2002	7/15/2002	7/15/2002	7/15/2002	7/15/2002	7/15/2002	7/16/2002	7/16/2002	7/16/2002	7/16/2002	7/15/2002	7/15/2002	7/16/2002	7/16/2002	7/19/2002
Sample <100 ft. From Shore?			No	No	No	No	No	Yes	Yes	Yes	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	No	No	No
TPH (mg/Kg)	15,000	30000																							
TPH (Gasoline Range)			15.2	ND	7.37	25.1	462	198	215	21.6	298	242	34.2	381	374	700	234	132	355	8.35	482	285	24.4	29.8	86.4	244
TPH (Diesel Range)			1,040	569	429	2,260	4,190	3,840	4,880	4,640	7,350	7,070	12,300	22,400	12,300	20,000	6,860	4,490	9,540	923	3,500	8,160	3,860	3,150	7,140	5,970
Metals (mg/Kg)																									
Arsenic	NC	NC	4.58	5	2.88	3.98	7.4	4.97	7.04	4.28	7.96	4.75	4.54	4.29	5.19	8.83	4.8	4.82	4.24	6.09	5.81	3.13	4.36	8.82	7.42	3.1
Lead	NC	NC	128	136	7.51	6.12	182	9.3	13	1.1	35.2	12.1	5.68	10.4	8.3	20.5	6.1	34.7	4.57	16.1	9.33	77.2	88.4	23.7	28.4	74.8
Total Cyanide (mg/Kg)	NC	NC	3	5.91	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.95	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
PAHs (mg/Kg)																										
Acenaphthene	10000	10000	ND	ND	1.58	23.1	21.7	12.6	39.8	61.9	595	42.8	ND	81.6	33	134	26.8	12	65.3	13.3	53.9	28.9	ND	ND	ND	ND
Acenaphthylene	10000	10000	ND	ND	0.805	20.8	ND	ND	ND	ND	802		ND	ND	ND	ND	ND	ND	6.16	ND	ND	ND	ND	ND	ND	ND
Anthracene	10000	10000	ND	ND	1.74	48.4	ND	9.9	ND	31.9	566	14.9	ND	46.6	13.9	63.3	12.8	5.99	26.8	ND	25.9	19.9	ND	ND	ND	ND
Benzo(a)anthracene	10000	10000	ND	ND	0.832	31.2	ND	ND	ND	28.2	304	7.62	ND	ND	7.33	31.6	5.72	4.23	10.9	ND	11.3	ND	ND	ND	ND	ND
Benzo(a)pyrene	10000	10000	ND	ND	0.983	25.7	ND	ND	ND	24.4	297	6.52	ND	ND	5.13	22.3	4.66	ND	8.34	ND	9.81	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	10000	10000	ND	ND	0.832	19	ND	ND	ND	22.5	168	8	ND	ND	7.33	18.6	6.08	3.53	8.53	ND	7.71	ND	ND	ND	ND	ND
Benzo(g,h,i)perylene	10000	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	10000	10000	ND	ND	0.401	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chrysene	10000	10000	ND	ND	0.832	22.3	ND	ND	ND	22.5	160	7.62	ND	ND	7.69	20.5	5.36	3.88	9.43	ND	9.81	ND	ND	ND	ND	ND
Dibenzo(a,h)anthracene	10000	10000	ND	ND	ND	ND	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	10000	10000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	10000	10000	ND	ND	2.27	67	ND	ND	ND	ND	526	18.3	18.8	42.8	15.8	54	ND	9.52	26.5	10.6	27.3	30.8	ND	ND	ND	ND
Fluorene	10000	10000	ND	ND	1.97	21.3	19.1	ND	21.8	41.2	663	18.6	26.4	86.1	22.1	72.7	17.5	9.52	39.9	10.6	30.1	ND	ND	ND	ND	ND
2-Methylnaphthalene	10000	10000	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	500	5000	ND	ND	ND	ND	89.8	99	148	39.4	6,780	249	377	388	126	512	78.8	67	218	ND	161	72.3	ND	ND	ND	127
Phenanthrene	10000	10000	19.8	20.6	6.51	227	84.9	30.5	43.5	99.4	2,240	65.2	58.4	155	56.8	205	55.5	23.3	ND	25.6	77.1	57.8	ND	ND	26.4	29.7
Pyrene	10000	10000	21.6	22.7	3.4	112	ND	ND	ND	73.2	1,260	32.8	28.4	73.8	25.7	143	18.8	12	33	15.8	38.9	50.6	ND	ND	ND	
VOCs (mg/Kg)																										
Benzene	4.3	43	0.106	ND	ND	ND	ND	0.204	0.453	0.634	0.826	0.126	1.08	1.74	ND	1.56	ND	ND	ND	ND	2.99	0.198	ND	0.158	ND	0.91
Ethylbenzene	62	620	0.56	0.104	2.28	2.13	56.9	2.72	12.8	6.07	5.99	10.9	8.27	27	0.648	25.6	76.8	13.5	11	ND	18.4	4.55	0.143	0.674	1.96	4.07
Toluene	54	540	0.198	0.115	ND	ND	ND	ND	0.152	0.377	1.31	0.17	0.978	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.121	0.251	ND	0.368
Xylenes (total)	540	540	1.59	0.271	3.21	2.18	40.1	1.7	15.7	8.95	14.7	17.7	16.8	ND	0.64	34.9	82.2	4.87	ND	ND	26.8	3.38	0.345	1.35	4.13	6.08
n-Butylbenzene	NC	NC	ND	ND	ND	ND	ND	1.66	ND	ND	ND	ND	ND	ND	0.626	ND	60.2	ND	ND	ND	ND	ND	ND	ND	ND	ND
sec-Butylbenzene	NC	NC	ND	ND	ND	ND	ND	0.504	0.682	0.355	ND	ND	0.495	ND	ND	ND	24.6	ND	1.22	ND	ND	0.223	ND	ND	ND	0.32
t-Butylbenzene	NC	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.539	ND	ND	ND	ND	ND	ND	0.191	ND	ND	ND	ND
Isopropylbenzene	NC	NC	ND	ND	ND	ND	ND	1.24	2.58	1.69	0.795	1.72	1.37	4.65	0.383	2.62	37.1	1.26	ND	ND	1.41	ND	ND	ND	ND	0.648
4-Isopropyltoluene	NC	NC	0.164	ND	ND	ND	ND	1.47	2.33	4.02	1.26	1.21	3.23	ND	0.307	4.13	30.8	0.535	2.59	ND	1.71	0.659	ND	0.383	ND	0.764
n-Propylbenzene	NC	NC	ND	ND	ND	ND	ND	0.854	1.14	0.759	0.233	0.807	0.749	2.91	0.297	ND	26.3	0.782	2.03	ND	ND	0.284	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NC	NC	1.55	0.239	4.33	4.13	93	10.9	26.5	4.28	16.5	19.2	20.1	55	2.5	24.3	230	14.8	28.4	0.606	16.9	5.32	0.539	2.97	9.03	12.1
1,3,5-Trimethylbenzene	NC	NC	0.965	ND	1.29	1.1	18.5	0.545	7.05	6.61	5.78	9.72	9.36	18.5	0.827	12	85.3	2.49	3.91	ND	8.99	2.61	0.254	1.91	3.76	3.52
Naphthalene	NC	NC	16	4.64	52.8	72.3	412	108	171	122	349	298	297	521	305	122	193	101	436	5.68	368	53.8	7.26	6.53	61	183

Notes:

The surface soil (0-2 feet) in Area 3 has been previously excavated, all A3 samples collected are greater than 2 feet BSG.

Compliance samples EXA3-19 and EXA3-20 were subsequently excavated during the Seep Area excavation.

All concentrations are equivalent to parts per million (ppm).

All concentrations reported in BOLD exceed the Remedial Action Work Plan (RAWP) remedial objectives for surficial soil. Concentrations boxed exceed the RAWP subsurface soil objectives.

ND - Not detected above method reporting limit; NA - Not analyzed; NC - No criteria listed in the RAWP.

Table 17 Outside Area 3 Surficial Excavation Confirmatory Results, Sidewall Samples.

Sample ID Aspect Date Sampled	Surface Soil Remedial Objectives	EXA3-34 North Wall 8/15/2002	EXA3-35* North Wall 8/15/2002	EXA3-36 North Wall 8/15/2002	EXA3-37 North Wall 8/15/2002	EXA3-38 North Wall 8/15/2002	EXA3-51** South Wall 8/15/2002	EXA3-52** South Wall 8/15/2002	EXA3-57* North Wall 9/12/2002	EXA3-58* North Wall 9/12/2002	EXA3-59 West Wall 9/12/2002	EXA3-60* West Wall 9/12/2002	EXA3-61* West Wall 9/12/2002	EXA3-62 West Wall 9/12/2002	EXA3-63 West Wall 9/12/2002	EXA3-64* West Wall 9/12/2002	EXA3-65* West Wall 9/12/2002	EXA3-66* West Wall 9/12/2002	EXA3-67 West Wall 9/12/2002	EXA3-68 West Wall 9/12/2002
TPH (mg/Kg)	2,500	114	1,910	467	44.4	34.5	126	173	137	102	35.3	26.5	96.6	ND	34.3	445	567	246	61.1	113
Metals (mg/Kg)																				
Arsenic	7	3.58	16.2	5.64	4.47	3.54	4.9	5.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.72
Lead	500	195	232	53.3	99.4	52.3	560	838	73.9	96.6	71.6	66.8	64.5	93.1	40.5	160	35.1	91.6	60.2	48.6
Total Cyanide (mg/Kg)	10,000	ND	3.65	ND	ND	ND	4.8	9.8	ND	5	3.8	ND	76.5	ND	ND	ND	ND	5.2	ND	4.9
PAHs (mg/Kg)																				
Acenaphthylene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	10,000	ND	ND	ND	ND	ND	ND	2.12	0.757	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	7.8	ND	ND	ND	ND	ND	2.8	4.63	2.37	2.58	ND	1.19	0.83	ND	ND	1	1.35	0.981	ND	0.442
Benzo(a)pyrene	0.8	ND	ND	ND	ND	ND	**2.73**	**4.11**	**2.12**	**2.29**	ND	1.2	**0.876**	ND	ND	**1.03**	**1.46**	**1.19**	ND	0.439
Benzo(b)fluoranthene	7.8	ND	ND	ND	ND	ND	2.08	4.11	1.88	2.03	0.748	1.21	1.06	ND	ND	2.05	2.21	2.01	ND	0.587
Benzo(g,h,i)perylene	10,000	ND	ND	ND	ND	ND	ND	ND	0.767	1.19	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	78	ND	ND	ND	ND	ND	2.91	3.52	2.53	2.96	ND	1.52	1.06	ND	ND	0.902	1.62	1.33	ND	0.607
Chrysene	780	ND	ND	ND	ND	ND	3.55	5.23	2.34	2.71	ND	1.31	0.995	ND	ND	1.01	1.36	1.01	ND	0.566
Fluoranthene	10,000	ND	ND	ND	ND	1.65	4.76	9.47	3.71	3.97	0.695	1.8	1.24	ND	ND	1.84	2.51	1.63	ND	0.682
Fluorene	10,000	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	7.8	ND	ND	ND	ND	ND	ND	ND	0.759	0.992	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	10,000	ND	ND	ND	ND	ND	3.22	6.83	2.48	2.2	ND	1.24	0.807	ND	ND	0.829	1.24	0.845	ND	0.395
Pyrene	10,000	ND	ND	ND	2.31	2.31	6.11	8.95	4.29	4.89	1.08	2.48	2.11	ND	ND	1.77	2.86	2.2	ND	0.855
VOCs (mg/Kg)																				
Benzene	200	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NC	ND	0.37	ND	ND	ND	ND	0.139	0.0721	0.057	ND	0.141	0.0824	ND	ND	0.051	ND	ND	ND	0.0393
Toluene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0522	ND	ND	ND	ND	ND	ND	ND
Xylenes (Total)	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

Values shown as bold exceed the Surface Soil Remedial Objectives.

*Excavation completed to the approximate maximum limits of excavation as defined in the RAWP.

**Further excavations were not practical due to the presence of a raised concrete platform.

ND - Non-dectable above methode reporting limit, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 18 Building No. 20 Surficial Excavation Confirmatory Results, Sidewall Samples.

Analyte/Sample ID	Surface Soil Remedial Objectives	EXB20-9*	EXB20-11*	EXB20-13*	EXB20-15*	EXB20-16*	EXB20-19*	EXB20-20**	EXB20-21	EXB20-22
TPH (mg/Kg)	2,500	158	218	487	458	61.3	220	128	82.6	ND
Metals (mg/Kg)										
Arsenic	7	7.4	6.5	6.4	4.7	4.3	4.65	5.84	4.3	4.11
Lead	500	470	222	469	173	130	288	700	192	244
Total Cyanide (mg/Kg)	10,000	6	ND	2.8	ND	ND	ND	8.3	3.7	ND
PAHs (mg/kg)										
Acenaphthylene	10,000	ND	ND	2.68	0.731	ND	0.83	0.941	ND	ND
Anthracene	10,000	ND	ND	ND	ND	ND	ND	0.908	ND	ND
Benzo(a)anthracene	7.8	3.64	1.31	4.65	1.37	1.21	1.46	4.86	ND	ND
Benzo(a)pyrene	0.8	4.64	1.59	6.51	1.81	1.25	3.01	4.41	ND	ND
Benzo(b)fluoranthene	7.8	3.53	1.86	4.95	1.71	1.34	2.58	4.31	0.846	0.934
Benzo(g,h,i)perylene	10,000	ND	0.8	5.81	0.892	ND	1.69	1.6	ND	ND
Benzo(k)fluoranthene	78	3.9	1.47	7.35	1.53	1.11	2.41	4.87	ND	ND
Chrysene	780	3.61	1.82	6.15	1.74	1.5	1.87	4.64	ND	ND
Fluoranthene	10,000	5.08	1.58	3.98	1.83	2.11	1.63	7.76	ND	1.09
Indeno(1,2,3-cd)Pyrene	7.8	1.81	0.784	3.48	0.837	ND	0.149	1.7	ND	ND
Naphthalene	10,000	ND	ND	ND	1.57	ND	ND	ND	ND	ND
Phenanthrene	10,000	2.4	0.968	ND	1.04	1.08	ND	2.91	ND	ND
Pyrene	10,000	4.09	1.72	13	2.35	1.97	2.93	7.37	ND	1.29
VOCs (mg/Kg)										
1,2,4-Trimethylbenzene	NC	ND	ND	ND	0.123	ND	ND	ND	ND	ND
Benzene	200	ND	0.23	0.089	0.087	ND	ND	ND	0.175	ND
Ethylbenzene	10,000	ND	ND	ND	0.043	ND	ND	ND	ND	ND
Naphthalene	NC	0.072	0.211	0.082	1.92	0.1	0.0909	0.156	0.119	ND
Toluene	10,000	ND	0.049	ND	ND	ND	ND	ND	0.0545	ND
Xylenes (Total)	10,000	ND	0.1	ND	ND	ND	ND	ND	ND	ND

NOTES:

Values shown as bold exceed the Surface Soil Remedial Objectives.

*Excavation completed to the approximate maximum limits of excavation as defined in the RAWP.

**Further excavations were not practical due to the presence of the raised concrete platform.

ND - Non-dectable above method reporting limits, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 19 Outside Area 3 Surficial Excavation Confirmatory Results, Floor Samples.

Sample ID / Analyte/Date Sampled	Subsurface Soil Remedial Objectives <100 feet from Shore	EXA3-F8 8/15/2002	EXA3-F9 8/15/2002	EXA3-F10 8/15/2002	EXA3-F11 8/15/2002	EXA3-F12 8/15/2002	EXA3-F13 8/15/2002	EXA3-F14 8/15/2002	EXA3-F15 8/15/2002	EXA3-F16 8/15/2002	EXA3-F17 8/15/2002	EXA3-F18 8/15/2002	EXA3-F19 8/15/2002	EXA3-F20 8/15/2002	EXA3-F21 8/15/2002	EXA3-F22 8/15/2002	EXA3-F23 8/15/2002	EXA3-F24 8/15/2002	EXA3-F25 8/15/2002	EXA3-F26 8/15/2002	EXA3-F27 8/15/2002	EXA3-F28 8/15/2002	EXA3-F29 8/15/2002	EXA3-F30 8/15/2002	EXA3-F31 8/15/2002	EXA3-F32 9/3/2002	EXA3-F33 9/3/2002	EXA3-F34 9/3/2002	EXA3-F35 9/3/2002	EXA3-F36 9/3/2002	EXA3-F37 9/3/2002	EXA3-F38 9/3/2002	EXA3-F39 9/3/2002
TPH (mg/Kg)	15,000	428	584	88.5	84.5	1130	278	883	43	846	1050	268	112	241	135	154	64.2	455	90.1	71.6	219	125	1700	267	212	159	131	33.5	115	245	149	118	70.5
Metals (mg/Kg)																																	
Arsenic	NE	10.8	9.75	4.5	6.22	20.5	13	11.9	5.69	11.2	12.3	5.68	7.71	7.4	9.07	6.9	11.4	9.08	9.54	4.72	4.43	9.11	12.5	16.8	12.1	9.3	5.2	ND	4	4.1	4.4	ND	5.3
Lead	NE	237	391	61.3	207	542	113	134	55.7	441	187	99.2	148	42	227	182	115	467	192	97.8	61.6	242	207	223	162	2,210	269	103	1,030	113	187	53.4	174
Total Cyanide (mg/Kg)	NE	2.4	2.4	ND	< 2.00	4.78	17.7	8.1	ND	5.78	7.48	2.78	5.6	ND	3.02	2.85	14	7.97	2.25	2.15	< 2.00	3.25	9.16	9.86	15.7	27	8.9	ND	4.8	19.3	2.6	7.1	ND
PAHs (mg/Kg)																																	
Acenaphthylene	10,000	ND	18.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.08	ND	10.7	ND	ND	ND	ND	ND	3.97	ND	ND	ND	ND
Anthracene	10,000	ND	ND	ND	ND	ND	ND	9.9	ND	ND	ND	ND	ND	2.31	ND	ND	ND	ND	ND	ND	14	2.14	20.6	ND	ND	ND	ND	ND	7.51	ND	ND	ND	ND
Benzo(a)anthracene	10,000	ND	9.9	ND	ND	40.5	ND	15.7	ND	ND	53	10.7	ND	4.78	1.98	ND	ND	ND	ND	ND	19	4.62	66.8	2.64	ND	6.36	ND	ND	6.85	4.13	ND	ND	ND
Benzo(a)pyrene	10,000	ND	ND	ND	ND	43.9	ND	14.8	ND	ND	46.4	ND	ND	3.96	1.82	ND	ND	ND	ND	ND	15.7	4.46	56.9	2.64	ND	5.11	ND	ND	5.17	ND	ND	ND	ND
Benzo(b)fluoranthene	10,000	ND	10.7	ND	1.65	57.4	ND	22.3	ND	10.7	69.5	14.8	ND	5.28	2.48	ND	ND	ND	ND	ND	22.3	6.27	90.8	4.12	ND	9.98	ND	ND	4.51	ND	ND	ND	ND
Benzo(g,h,i)perylene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	< 8.25	ND	14.8	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.14	ND	ND	ND	ND	ND	ND	9.08	2.8	33.6	1.82	ND	5.04	ND	ND	5.13	4.09	ND	ND	ND
Chrysene	10,000	ND	ND	ND	1.82	43.9	ND	18.2	ND	9.08	62.9	12.4	ND	5.23	2.48	ND	ND	ND	ND	ND	21.4	5.44	75.9	3.14	ND	6.66	ND	ND	6.73	4.49	ND	ND	ND
Fluoranthene	10,000	ND	21.4	ND	1.98	64.2	ND	38.8	ND	15.7	92.7	20.6	ND	10.4	3.46	ND	ND	ND	ND	ND	45.4	10.4	153	4.95	ND	12	ND	ND	16	7.14	ND	ND	ND
Fluorene	10,000	ND	10.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.32	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	10,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	16.5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	10,000	ND	23.1	ND	ND	47.3	ND	39.6	ND	12.4	43	6.25	ND	5.94	2.31	ND	ND	ND	ND	ND	14.8	9.74	22.3	2.97	ND	12.7	ND	ND	19.9	ND	ND	ND	ND
Pyrene	10,000	ND	15.7	ND	2.8	57.4	ND	34.6	ND	14	82.8	19	ND	7.76	3.63	ND	ND	ND	ND	ND	33.8	8.91	132	4.95	ND	13.3	ND	ND	11	6.09	ND	ND	ND
VOCs (mg/Kg)																																	
Benzene	4.3	ND	ND	ND	ND	ND	0.0855	ND	ND	0.174	0.591	ND	ND	0.0708	ND	ND	ND	0.0918	ND	0.0581	ND	0.25	1.09	1.79	2.35	ND	ND	ND	ND	0.149	ND	ND	ND
Ethylbenzene	62	ND	ND	ND	ND	ND	0.0858	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0558	0.149	0.238	ND	ND	ND	ND	ND	ND	ND	ND	ND
Toluene	54	ND	ND	ND	ND	ND	ND	ND	ND	0.122	0.388	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.179	1.19	2.65	1.96	ND	ND	ND	ND	0.059	ND	ND	ND
1,2,4-Trimethylbenzene	NE	ND	ND	ND	ND	ND	ND	ND	ND	0.0523	0.0625	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0778	0.209	0.144	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NE	ND	ND	ND	ND	ND	ND	ND	ND	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)	540	0.0946	ND	ND	ND	ND	0.27	ND	ND	0.291	0.381	ND	ND	ND	ND	ND	0.116	0.159	0.0778	ND	0.1	0.238	0.55	1.51	1.18	ND	ND	ND	ND	ND	ND	ND	ND	ND

Table 19 Cont'd

Sample ID / Analyte/Date Sampled	Subsurface Soil Remedial Objectives (<100 feet from Shore)	EXA3-F40 9/12/2002	EXA3-F41 9/12/2002	EXA3-F42 9/12/2002	EXA3-F43 9/12/2002	EXA3-F44 9/12/2002	EXA3-F45 9/12/2002	EXA3-F46 9/12/2002	EXA3-F47 9/12/2002	EXA3-F48 9/12/2002	EXA3-F49 9/12/2002	EXA3-F50 9/12/2002	EXA3-F51 9/12/2002	EXA3-F52 9/12/2002	EXA3-F53 9/12/2002	EXA3-F54 9/12/2002	EXA3-F55 9/12/2002	EXA3-F56 9/12/2002	EXA3-F57 9/12/2002	EXA3-F58 9/12/2002	EXA3-F59 9/12/2002	EXA3-F60 9/12/2002	EXA3-F61 9/12/2002	EXA3-F62 9/12/2002	EXA3-F63 9/12/2002	EXA3-F64 9/12/2002	EXA3-F65 9/12/2002
TPH (mg/Kg)	15,000	69.6	879	89.3	51.2	111	1270	73	150	ND	61.5	ND	67.8	ND	ND	ND	35.8	ND	68.1	156	73.4	297	145	89.2	136	137	88.7
Metals (mg/Kg)																											
Arsenic	NC	ND	25	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.5	ND	ND	4.75	ND	3.67	ND	5.78
Lead	NC	64.1	533	85	46.8	111	36.6	ND	32.3	ND	10.2	ND	30	22.2	28.3	28.5	69.3	6.87	56.1	113	82	107	149	46.7	19.5	24.3	208
Total Cyanide (mg/Kg)	NC	ND	13	4.8	3.3	62.9	80.5	ND	43.8	ND	ND	ND	21.5	3.1	ND	ND	2.8	ND	ND	10.4	ND	3.4	13.6	ND	ND	3.1	ND
PAHs (mg/Kg)																											
Anthracene	10,000	ND	5.52	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	10,000	ND	13	ND	6.05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene	10,000	ND	9.79	ND	4.83	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene	10,000	ND	11.5	ND	5.52	4.02	5.16	3.69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	10,000	ND	12	ND	4.99	ND	3.98	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.32	ND	ND	ND	ND	ND
Chrysene	10,000	ND	11.9	ND	6.45	4.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	10,000	ND	20.4	ND	11.9	7.62	ND	4.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluorene	10,000	ND	3.89	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	500	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5.49	ND	ND	ND	ND	ND
Phenanthrene	10,000	ND	20.7	ND	8.96	8.99	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Pyrene	10,000	ND	20.1	ND	10.2	8.75	ND	7.29	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
VOCs (mg/Kg)																											
1,2,4-Trimethylbenzene	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0607	ND	ND	ND	ND	ND
4-Isopropyltoluene	NC	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.292	ND	ND	ND	ND	ND	ND	ND
Acetone	NC	ND	ND	ND	ND	ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	4.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0724	ND	0.0797	ND	ND	ND	ND	0.0593
Naphthalene	NC	ND	0.11	0.0453	ND	0.0427	0.0793	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.69	ND	ND	ND	ND	0.106
Toluene	54	ND	ND	ND	ND	ND	0.0471	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

NOTES:

Values shown as boxed exceed the Subsurface Soil Remedial Objectives.

ND - Non-dectable above method reporting limits, NA - Not Analyzed, NC - No criteria established in RAWP.

Table 20 Building No. 20 Surficial Excavation Confirmatory Results, Floor Samples.

Analyte/Sample ID	Remedial Objectives Subsurface Soil (> 100')	EXB20-F1	EXB20-F2	EXB20-F3	EXB20-F4	EXB20-F5	EXB20-F6	EXB20-F7	EXB20-F8	EXB20-F9	EXB20-F10	EXB20-F11	EXB20-F12	EXB20-F13	EXB20-F14	EXB20-F15	EXB20-F16	EXB20-F17	EXB20-F18	EXB20-F19
TPH (mg/Kg)	30,000	391	1,530	212	325	9,420	673	1,850	5,090	290	207	205	95.3	99.3	330	251	135	73.3	41.2	122
Metals (mg/Kg)																				
Arsenic	NC	ND	4.3	3.2	5.1	5.3	5.3	6.4	4.4	3.5	ND	5.04	4.48	5.34	5.9	12.9	7.72	4.61	3.56	7.38
Lead	NC	386	371	64.7	219	240	112	142	132	132	145	351	530	457	187	613	289	55.2	67.2	389
Total Cyanide (mg/Kg)	NC	2.7	5.3	ND	3.1	ND	ND	2.4	ND	ND	ND	2.8	ND	3.5	ND	70.3	2.7	4.5	ND	ND
PAHs (mg/Kg)																				
Acenaphthene	10000	ND	ND	ND	ND	ND	ND	ND	3.66	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthylene	10000	ND	0.769	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Anthracene	10000	ND	ND	ND	ND	4.6	ND	ND	3.07	ND	2.89	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene	10000	2.23	1.08	ND	ND	ND	ND	ND	2.03	ND	12.3	ND	5.77	ND	ND	11.4	ND	ND	ND	ND
Benzo(a)pyrene	10000	2.08	1.31	ND	ND	ND	ND	ND	2.13	ND	9.84	ND	5.52	ND	ND	10.1	ND	ND	ND	ND
Benzo(b)fluoranthene	10000	2.62	1.23	ND	ND	1.83	ND	ND	2.55	2.08	8.19	3.82	6.45	3670	ND	10.1	4.1	ND	ND	3.45
Benzo(g,h,i)perylene	10000	ND	0.767	ND	ND	ND	ND	ND	ND	ND	2.34	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene	10000	2.34	1.47	ND	1.82	ND	ND	ND	2.15	ND	10.9	ND	5.86	ND	ND	10.7	ND	ND	ND	ND
Chrysene	10000	2.98	1.39	ND	ND	ND	ND	ND	2.34	ND	12.4	ND	5.57	ND	ND	11.4	ND	ND	ND	ND
Indeno(1,2,3-cd)pyrene	10000	ND	0.685	ND	ND	ND	ND	ND	ND	ND	2.49	ND	ND	ND	ND	ND	ND	ND	ND	ND
Fluoranthene	10000	3.12	1.28	ND	ND	ND	ND	ND	4.41	ND	18.9	ND	9.86	ND	ND	24	ND	ND	ND	ND
2-Methylnapnthalene	10000	ND	ND	ND	ND	5.78	ND	ND	13.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	5,000	ND	0.548	ND	ND	6.28	4.64	ND	21.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene	10000	ND	0.681	ND	ND	ND	ND	ND	9.3	ND	7.28	ND	ND	ND	ND	16.2	ND	ND	ND	ND
Pyrene	10,000	3.53	1.91	ND	2.32	3.61	ND	ND	6.84	3.48	17.7	3.67	8.78	ND	ND	17.2	ND	ND	ND	ND
VOCs (mg/Kg)																				
Benzene	43	0.131	0.415	0.184	0.819	2.28	0.331	0.406	0.527	0.193	ND	0.0464	0.0812	ND	0.237	ND	0.0759	ND	ND	0.365
Ethylbenzene	620	ND	0.0882	0.049	0.273	0.346	0.152	0.123	0.769	ND	ND	ND	ND	ND	0.0813	ND	ND	ND	ND	0.0408
Toluene	540	0.0579	0.188	ND	ND	0.89	ND	ND	ND	ND	ND	0.119	0.0457	ND	0.374	ND	ND	ND	ND	0.105
Xylenes (total)	540	ND	0.162	ND	0.252	0.995	0.113	ND	0.449	0.139	ND	ND	ND	ND	0.206	ND	ND	ND	ND	ND
sec-Butylbenzene	NC	ND	ND	ND	ND	0.051	ND	ND	0.295	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Isopropylbenzene	NC	ND	ND	ND	ND	ND	ND	ND	0.228	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Isopropyltoluene	NC	ND	0.132	ND	ND	0.35	ND	ND	0.605	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Propylbenzene	NC	ND	ND	ND	ND	0.054	ND	ND	0.228	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2,4-Trimethylbenzene	NC	ND	0.389	ND	0.158	2	0.261	0.106	4.1	0.103	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,3,5-Trimethylbenzene	NC	ND	0.186	ND	0.065	1.4	0.057	ND	0.617	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Naphthalene	NC	0.151	2.32	0.11	1.25	2.39	7.15	0.122	43.4	1.48	0.116	0.166	0.115	0.088	0.0533	0.179	0.0575	ND	ND	0.0872

Notes:

All concentrations are equivilant to parts per million (ppm).

All concentrations reported in BOLD exceed the Remedial Action Work Plan (RAWP) remedial objectives for surficial soil. Concentrations boxed exceed the RAWP subsurface soil objectives.

ND - Not detected above method reporting limit; NA - Not analyzed; NC - No criteria listed in the RAWP.

Table 21
Approximate Total Weight of FMGP-impacted Material Shipped to Each Facility

Facility	Material Classification	Weight (Tons)
Keystone	Non-hazardous	3,554.74
	Hazardous (asbestos insulation)	0.58
		Total = 3,555.32
ESMI	Non-hazardous	3,752.68
	Hazardous	6,204.88
		Total = 9,957.56
WM Emelle	Non-hazardous	0
	Hazardous	3,352.02
		Total = 3,352.02

Appendix A – Limitations

New England Gas Company
Providence, RI

- This report has been prepared for the sole and exclusive use of New England Gas Company (Client), and is subject to and issued in connection with the Agreement and the provisions thereof. Any use or reliance upon information provided in this report, without the specific written authorization of Client and VHB, shall be at the User's sole risk.

- In conducting this remedial action, VHB has obtained and relied upon information from multiple sources to form certain conclusions regarding potential environmental issues at and in the vicinity of the subject property. Except as otherwise noted, no attempt has been made to verify the accuracy or completeness of such information.

- No attempt has been made to assess the compliance status of any past or present Owner or Operator of the Site with any federal, state, or local laws or regulations.

- The findings, observations, and conclusions presented in this report are limited by the scope of services outlined in our Agreement, which reflects schedule and budgetary constraints imposed by the Client for the current phase of environmental assessment. Furthermore, the assessment has been performed in accordance with generally accepted engineering practices. No other warranty, expressed or implied, is made.

- The assessment presented in this report is based solely upon information gathered to date. Should further environmental or other relevant information be developed at a later date, Client should bring the information to the attention of VHB as soon as possible. Based upon an evaluation, VHB may modify the report and its conclusions.

Appendix B – Waste Disposal Letters

ESMI
ENVIRONMENTAL SOIL MANAGEMENT INC.

May 14, 2002

Clean Harbors Environmental Services
642 Allens Avenue
Providence, RI 02902
Attention: Bob Parkinson

RE: Providence Gas Company - Providence, Rhode Island

Dear Mr. Parkinson:

Please acknowledge this correspondence as our letter of intent to receive and treat coal tar contaminated soil generated at the Providence Gas site provided that certain soil conditions are met. Environmental Soil Management, Inc. (ESMI) will accept such soils upon review and approval of a generator profile and required analytical results. Attached for your review is our Material Analytical Requirements, I have highlighted the coal tar analytical protocol needed and sample frequency.

Environmental Soil Management, Incorporated operates under permit No. DES-SW-SP-96-002 issued by the New Hampshire Department of Environmental Services as a Solid Waste Management Facility.

On October 13, 2001, the New Hampshire Department of Environmental Services adopted a rule allowing manufactured gas plant (MGP) waste failing the test for the toxicity characteristic of hazardous waste number D018 (benzene) only, to be regulated as a solid waste. That is provided the waste is treated in an incinerator or a thermal desorption unit that is authorized under the destination states rules. This rule is listed under Env-WM 401.03(b)(22). This type of waste is not subject to any hazardous waste fee in the State of New Hampshire.

The facility is not limited on a weekly or yearly basis for the disposal volume estimate of 20,000 tons over the length of the contract, provided facility permit conditions are met. In general, daily volumes of approximately 400 tons are acceptable. At the time of the project, daily volumes over 400 tons may be acceptable with prior facility approval.

Should you have any questions or comments regarding the above acceptance, please do not hesitate to contact me.

Sincerely,

Michele Montpetit
Technical Representative

67 International Drive, Loudon, NH 03307 • (603) 783-0228 • Fax (603) 783-0104

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
NHDES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2900 FAX (603) 271-2456

May 24, 2002

Ms. Michele Montpetit
Environmental Soil Management, Inc.
67 International Drive
Loudon, NH 03307

Subject: Manufactured Gas Plant Contaminated Media and Debris

Dear Ms. Montpetit:

Pursuant to our telephone conversation on May 23, 2002, manufactured gas plant contaminated media and debris that fails for the toxicity characteristic of benzene (D018) only and is treated at a thermal desorption unit that is authorized under the destination state's rules are not considered hazardous wastes under the New Hampshire Hazardous Waste Rules (ref. Env-Wm 401.03(b)(22)). Environmental Soil Management, Inc. (ESMI) in Loudon, New Hampshire is a thermal desorption unit authorized pursuant to Permit No. DES-SW-SP-96-002 for the treatment of non-hazardous contaminated soils and inorganic media. Acceptable contaminants, which include coal tar and coal tar residue, are identified in the attached table. Therefore, contaminated soils and inorganic media meeting the exemption identified above are authorized for management at the ESMI facility.

Should you require any additional information, please contact me at (603) 271-2934.

Sincerely,

Michael McCluskey, P.E., Civil Engineer IV
Permitting & Design Review Section
Waste Management Division

cc: Richard Reed, SWMB
Wendy Bonner, HWCS
SWMB file

P.O. Box 249 Dunham Drive Dunmore, PA 18512

Keystone
Sanitary Landfill, Inc.

May 15, 2002

Susan Groce
Southern Union Company
Four Barton Skyway, Suite 400
1301 South Mopac Expressway
Austin, TX 78746

Dear Ms. Groce:

Keystone Sanitary Landfill, Inc. is pleased to inform you that we have received approval from the Pennsylvania Department of Environmental Protection to accept approximately 16,000 tons of the non-hazardous material at our facility. Effective immediately, Keystone is prepared to accept the contaminated soil from the New England Gas Project at 642 Allens Ave. Providence, RI. We would ask that you notify us at your earliest convenience with regard to the start date and anticipated daily tonnages.

Keystone Sanitary Landfill appreciates the opportunity to assist you with your disposal needs and please feel free to call either Bernie or me should you have any questions.

Sincerely,

Dan O'Brien

Dan O'Brien
Business Manager

DOB/kas
Attachments

Phone
(570) 343-5782
FAX
(570) 348-3135

Pennsylvania Department of Environmental Protection

2 Public Square
Wilkes-Barre, PA 18711-0790
570-826-2511

May 9, 2002

Northeast Regional Office

SENT VIA FACSIMILE

Keystone Sanitary Landfill
P.O. Box 249, Dunham Drive
Dunmore, PA 18512

Attn: Mr. Joseph Dexter, Site Manager

RE: New England Gas Corp.
Keystone Sanitary Landfill
I.D.# 101247
Dunmore borough, Lackawanna County

Dear Mr. Dexter:

This office has reviewed the Form U application for disposal of FC1 contaminated soil from the New England Gas Corporation in Providence, Rhode Island.

Keystone Landfill is approved to dispose of 16,000 tons of the contaminated soil from New England Gas Corp at its facility.

If you have any questions regarding this matter, please feel free to contact me.

Sincerely,

Reno Ducceschi
Regional Facilities Supervisor

WASTE MANAGEMENT

Emelle Treatment Facility
Highway 17 N., Mile Marker 163
P.O. Box 55
Emelle, AL 35459
(205) 652-9721

June 7, 2002

Allan Fish
Southern Union Gas Company
1301 South Mopac Dr.
Austin, TX 78746

Subject: **New England Gas MGP Remediation Site, Providence, Rhode Island**
Approval for Disposal at Waste Management's Emelle, Alabama Facility

Dear Mr. Fish:

Waste Management has received approval from the Alabama Department of Environmental Management (ADEM) for the disposal of remediation waste from the New England Gas MGP remediation site, in Providence, Rhode Island, also known as the Algonquin Gas Site. Waste Management profile CT1813 was submitted for the waste under your direction by Derek Tomka of ENSR. Because MGP remediation waste is nonregulated in Alabama, the profile was approved at the Emelle facility as a nonhazardous waste stream. It was then submitted to ADEM for final approval, which was granted on June 4, 2002. Approvals from ADEM are provided to our approval chemists via e-mail, indicating the profile number and the ADEM approval number (please see the attached document). We receive no other documentation from ADEM concerning approvals of waste streams.

Preprinted manifests for shipment of the waste will be sent today for Monday delivery to Mr. Tomka at the Providence site. Each manifest will provide the profile number for this waste stream, along with the ADEM approval number. Shipment of waste from the site to our facility can begin immediately. In the next few days you will receive a formal confirmation letter from our Emelle facility detailing the agreed upon pricing for disposal of this waste stream. If you have questions please call me at 513-731-8549. Thanks for working with Waste Management.

Sincerely,

Pete Zelinskas
Account Representative

Enclosure

cc: Derek Tomka, ENSR
Polly Goodwin, Waste Management

ADEM

ALABAMA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
POST OFFICE BOX 301463 36130-1463 • 1400 COLISEUM BLVD. 36110-2059
MONTGOMERY, ALABAMA
WWW.ADEM.STATE.AL.US
(334) 271-7700

JAMES W. WARR
Director

DON SIEGELMAN
Governor

Facsimiles: (334)
Administration: 271-7950
General Counsel: 394-4332
Air: 279-3044
Land: 279-3060
Water: 279-3051
Groundwater: 270-5631
Field Operations: 272-8131
Laboratory: 277-6718
Mining: 394-4326
Education/Outreach: 394-4383

April 25, 2002

Mr. Pete Zelinskas
Waste Management
2904 Markbreit Ave.
Cincinnati, OH 45209

Re: Manufactured Gas Plant Waste

Dear Mr. Zelinskas;

In *Association of Battery Recyclers v. EPA. 208 F.3rd 1047*, the U. S. Court of Appeals for the District of Columbia vacated a portion of the Phase IV Land Disposal Restrictions (LDR) which, in essence, provided an exemption for manufactured gas plant (MGP) waste. Pursuant to this exemption, MPG waste is no longer subject to the Toxic Characteristic Leaching Procedure (TCLP) in determining whether the waste is hazardous. This ruling was subsequently codified by EPA in the *Federal Register* on March 13, 2002, and promulgated at 40 CFR 261.24.

Although state programs may, in certain cases, be more stringent than the federal program, the *Alabama Hazardous Waste Management and Minimization Act* (AHWMMA) prohibits this Department from regulating as hazardous any waste that is specifically excluded or exempted from regulation by the federal rules. Unless it is otherwise listed, or is characteristic for ignitability, corrosivity, or reactivity (D001, D002, or D003), Alabama is prohibited by statute from regulating as hazardous MPG waste which may fail the TCLP test.

Should you have any additional questions or if we might be of further assistance please call me at 334/271-7741, or e-mail at rwb@adem.state.al.us.

Sincerely,

Robert W. Barr, Chief
Environmental Compliance Section
Hazardous Waste Branch

CC: Vanessa Watkins
Waste Management
Emelle Treatment Facility
P. O. Box 55
Emelle, AL 35459

File:CWM/TSDF/Sumter Co.

Birmingham Branch
110 Vulcan Road
Birmingham, Alabama 35209-4702
(205) 942-6168
(205) 941-1603 (Fax)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, Alabama 35603-1333
(256) 353-1713
(256) 340-9359 (Fax)

Mobile Branch
2204 Perimeter Road
Mobile, Alabama 36615-1131
(251) 450-3400
(251) 479-2593 (Fax)

Mobile – Coastal
4171 Commanders Drive
Mobile, Alabama 36615-1421
(251) 432-6533
(251) 432-6598 (Fax)

Appendix C – Disposal Documentation

Provided in a separate document

Appendix D – Photographs

View of Area 2 excavation from west side.

LNAPL from north wall of Area 2 excavation.

Western cell of Structure 3B after excavation/cleaning.

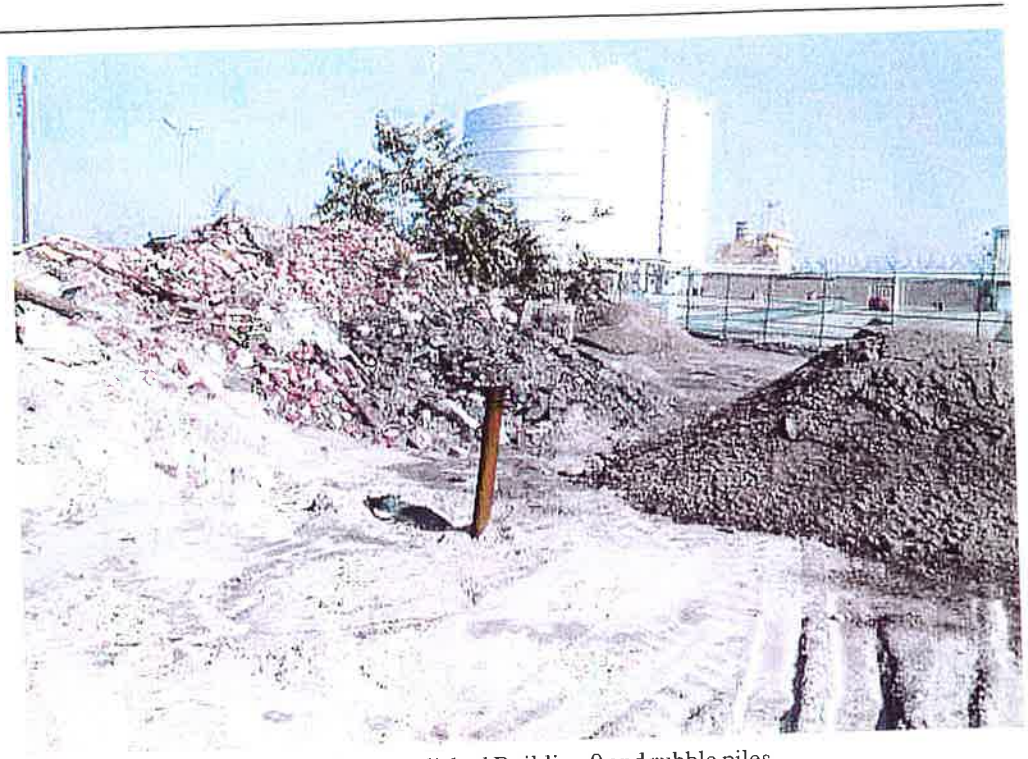
Structure 3B NE.

Area 2 excavation with CHES applying odor-suppressing foam.

View of contents of Structure 14A.

View of surficial excavation completed south of Building No. 9.

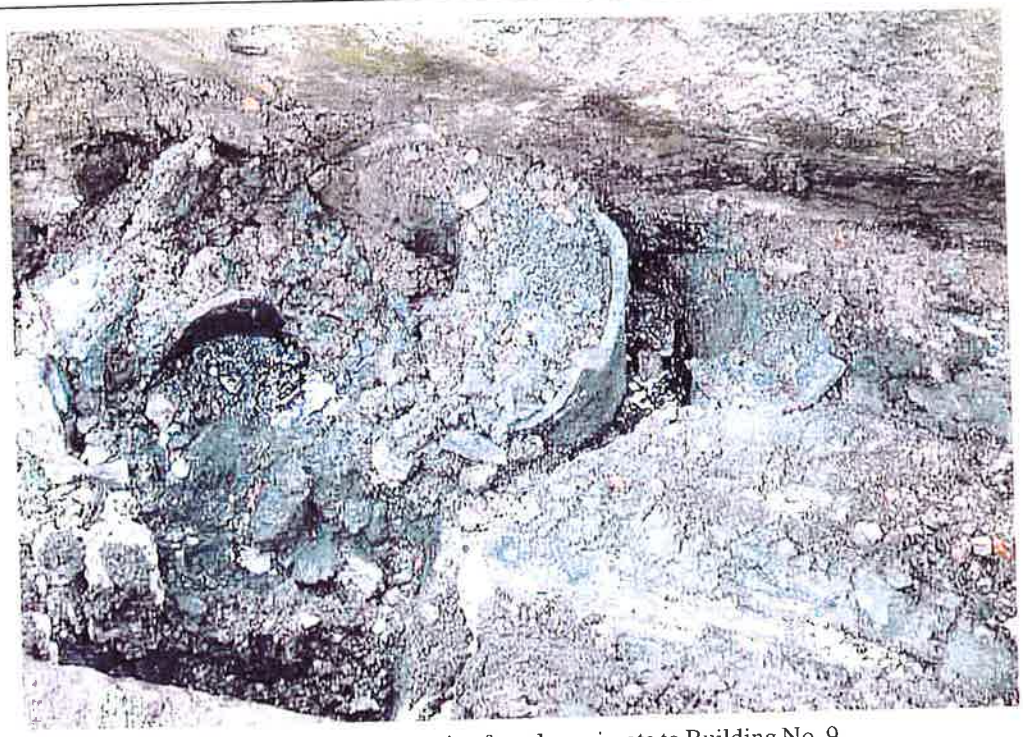
Additional surficial excavations outside area 3 following removal of fence.



Partially demolished Building 9 and rubble piles.

On Site dust suppression using water truck.

Site Photographs
642 Allens Avenue
Providence, Rhode Island



Presumed knockdown pipe found proximate to Building No. 9.

Soil conditions proximate to knockdown pipe.

View of knockdown pipe after removed. (Note flanged bottom and rivots).

Demolition of subsurface structures next to knockdown pipe.

Site Photographs
642 Allens Avenue
Providence, Rhode Island

Salt-water intake structure before removal.

Salt-water intake structure piping after removal.

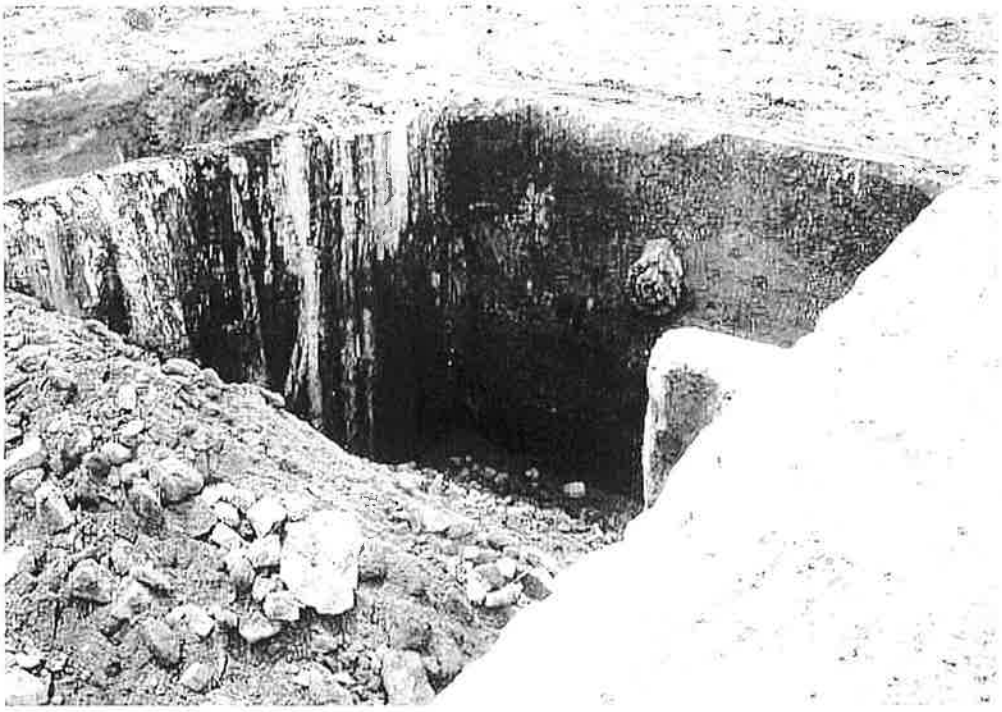
Site Photographs
642 Allens Avenue
Providence, Rhode Island

Demolition of salt water intake structure.

LNAPL recovery following removal of saltwater intake structure.

Excavation and stabilization of contents of Structure 18.

View of gap in Structure 18 seperating eastern and western cells.

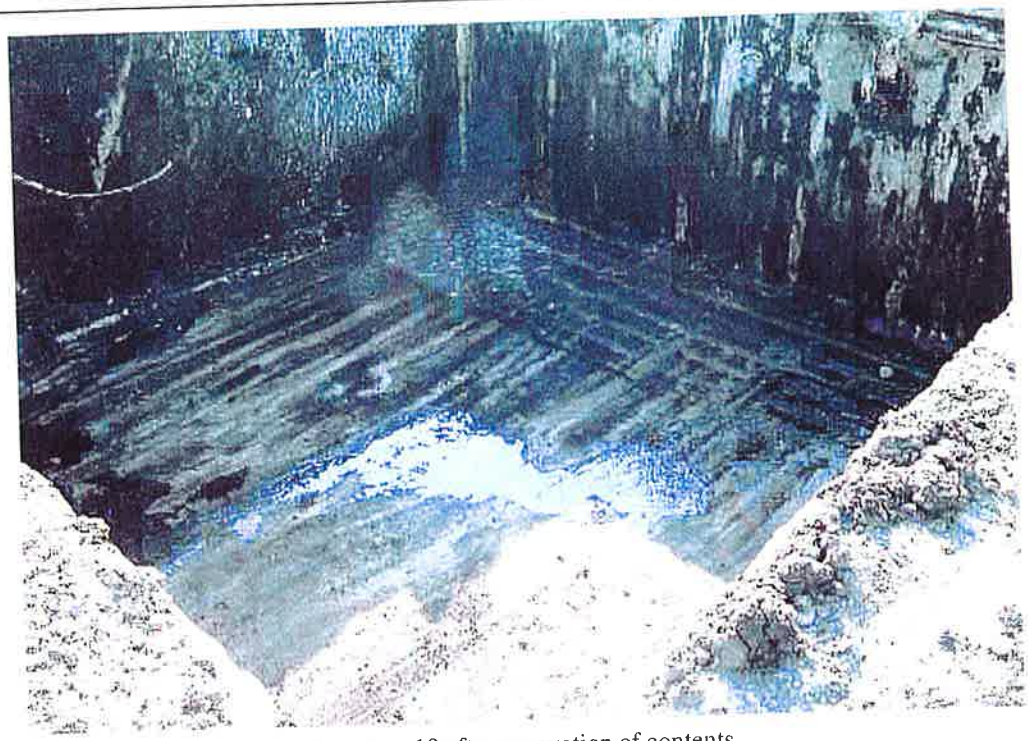


Structure 14A partially backfilled.

View of portion of bottom of Structure 17.

Structure 19 uncovered.

Stabilization of contents of Structure 19 using "speedi-dry".



Structure 19 after excavation of contents.

Excavation next to base of Gasholder 16 with inlet/outlet pipes shown.

Site Photographs
642 Allens Avenue
Providence, Rhode Island

Subsurface soil excavation east of Structures 17 and 18.

Northeast wall of Area 3 subsurface soil excavation.
Note approximately 12 inch pipe below excavator, presumed to be a water pipe.

Seep area excavation with north sides of Structure 14A in foreground and Structure 17 next to excavator.

Seep trench excavated in front of Structure 17.

Clay backfill placed in front of Structure 17.

Accumulated groundwater and SPP at west end of trench.

View of surficial excavation outside Area 3 and north of Building No. 20.

View of excavation conducted west of platform

View of rip-rap restoration.

Site Photographs
642 Allens Avenue
Providence, Rhode Island

View of Area 2 restoration.

View of Area 3 restoration.

Site Photographs
642 Allens Avenue
Providence, Rhode Island

View of restored areas north of Building No. 20.

View of Access Road restoration.

View of rip-rap restoration.

Site Photographs
642 Allens Avenue
Providence, Rhode Island

Appendix E – Recovery Well Specifications

Recovery Well Specifications

From: Bid Specification for Phase 1 Remedial Action at a
Former Manufactured Gas Plant,
642 Allens Avenue, Providence, RI

The recovery wells will consist of 12-inch diameter, 1/8-inch slot perforated, high-density polyethylene (HDPE) pipe, or an NEGC-approved alternate. Each well will be screened from 2 feet below the mean low-tide groundwater table to 2 feet above the mean high tide groundwater table. Each recovery well screen will be a minimum of 6 feet in length. If installed during backfilling operations, the well screen will be bedded on the bottom of the excavation. An area extending a minimum of 2 feet around the well screen, and equal to the height of the screen, will be filled with clean pea gravel or clean crushed stone. Well casing will extend from the screen to a minimum of 3 feet above the final graded backfill surface. If installed during backfill operations, soil will be compacted around the well casing until it reaches the surface. The wells will be finished with 3-foot by 3-foot concrete pads and lockable covers.

The Contractor will use a pump to develop the wells. The wells will be developed to remove accumulated silt and sediment resulting from installation. Development water will be collected and transferred to the on-site wastewater treatment system for treatment and disposal. Once developed, each well will be fitted with a retrievable absorbent sock or pad, or other material capable of collecting infiltrating LNAPL. It is not anticipated that skimmer pumps will be required for the recovery wells.

The Contractor will be required to perform maintenance of the recovery well network once it is installed. Maintenance will consist of inspections of each recovery well once every two weeks, the collection of groundwater and LNAPL measurements, the replacement of spent absorbents with new once per month, and the collection, handling and transfer of spent absorbents. Once every month the Contractor will prepare a brief report to NEGC noting the results of the site inspection and reporting the collected data.

Appendix F – RIDEM OCI Response Report Form

RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF COMPLIANCE AND INSPECTION
RESPONSE REPORT FORM

CITY/TOWN: PROVIDENCE

REPORT #: 98-133
SRM #:

PROGRAM

OIL: XXX
HAZMAT:
SITE REMEDIATION:
LUST:
OTHER: (Program)

ACTIVITY

EMERGENCY RESPONSE:
COMPLAINT: XXX

OMPLAINT RECEIVED*

RECEIVED BY: Jim Ball
DATE: 24-Mar-98 TIME: 2:00

AME AND ADDRESS OF COMPLAINANT*

ME:
DDRESS:
TY:
ATE: ZIP:
ELEPHONE:

NAME AND ADDRESS OF ALLEGED SOURCE

NAME: Prov. Gas
ADDRESS: 642 Allens Avenue
CITY: Providence
STATE: ZIP:
TELEPHONE:

RMISSION TO DISCLOSE NAME:

ATURE OF INCIDENT: Oil sheen on the water in the area along the coast of Prov. Gas.

TERIAL INVOLVED: Petroleum

AMOUNT: Sheen UNITS:

PACTS:

CIDENT LOCATION*

ROPERTY OWNER:
DDRESS:
Y:
ATE: ZIP:
ELEPHONE:

ARY: We have been doing some work at Star Enterprise were they have oil disharging from the outfall. Discussion with DEM personnel have indicated that some oil maybe coming from Prov. Gas. On 2/24/98 Lane Hurly (USCG) and I checked out the area along the Prov. Gas shoreline. There was a small sheen that we tried to track. After a thurough search we noticed two 6" pipes under some old rubble dicharging to the bay. One was discharging water and the other was dicharging oil and water. The oil appeared to be a heavy coal gas tar

that smelt like creosote. The rocks around the dicharge point were covered with this black oil. We notified the Prov. Gas employees and they tried to block up the pipe with hydraulic cement. They also removed some of the contaminated rocks and installed absorbent boom. I then set up a for 9:00 the following day with Paul Seddon (Prov. Gas). On 2/25/98 I met Paul Seddon and Lane Hurly at the site. We showed Paul the location of the discharge. I indicated that the pipe had to be capped today since it was still leaking. I then explained that they will have to find out where the pipes go and what they maybe attached to. They will have to excavate the pipe and cleanup up the contaminated soil. In locations where the pipe can not be removed, they will have to clean out the pipe, cap it and fill it in place. Paul mentioned he would like to do this when they start there remediation of the area being reviewed by Gregg Fine. I explained that the pipe had to be addressed within the very near future. If the remediation plan is not implemented within approximately 30 days they will have to remove the pipe first and then go back and do the site remediation work. Paul Seddon, 100 Weybosset Street, Providence, RI 02903

THER AGENCIES*

NAME: Prov. Gas	CONTACT: Paul Seddon	PHONE: 272-5040
ME:	CONTACT:	PHONE:
ME:	CONTACT:	PHONE:
NAME:	CONTACT:	PHONE:

NVESTIGATOR(S): James Ball

DATE: 25-Mar-97
TIME: 2:00

SIGNATURE(S): James Ball

Appendix G – Laboratory Certificates of Analysis

NOT INCLUDED