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Soil Pre-Design Investigation Report

for

Old Fire Fighting Training Area
Naval Station Newport
Newport, Rhode Island

Engineering Field Activity Northeast
Naval Facilities Engineering Command

Contract Number N62467-94-D-0888
Contract Task Order 0833

April 2005

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SOIL PRE-DESIGN INVESTIGATION REPORT

FOR

OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT
NEWPORT, RHODE ISLAND

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT

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1.0 INTRODUCTION

This report presents the results of the pre-design investigation (PDI) for soils at the Old Fire Fighting Training Area (OFFTA Site or Site) conducted under Contract Task Order (CTO) 833, under the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract No. N62467-94-D-0888. Pursuant to the CTO, Tetra Tech NUS, Inc. carried out a soil pre-design investigation at the OFFTA Site, at Naval Station Newport (NAVSTA Newport), in Newport, Rhode Island. The objective of the PDI was to acquire data to assess the horizontal and vertical extent of construction debris, and the extent of soil contamination to determine the volume of debris and soil that will be removed in accordance with the proposed removal action described at the public meeting in 2003. Additionally, data was collected to evaluate geotechnical parameters for possible installation of a stone revetment at the shoreline. The first action, addressed in the mound summary report (TtNUS 2004), removed debris and soil contained in three mounds above the base grade elevation of the Site (conducted September 2004 through March 2005). The second action will remove soil and fill exceeding removal action goals located below the base grade elevation of the site (subsurface material). These subsurface materials are the subject of this Soil Pre-Design Investigation Report.

Removal action goals are to be established for the site in order to target contaminants for removal that pose risk to receptors under expected future use of the property. In the RI and the FS reports, Contaminants of Potential Concern (COPCs) were identified as those contaminants that provide risk at or above the target risk levels set by the EPA and RIDEM. In the Feasibility Study and supporting documents, Preliminary Remediation Goals (PRGs) were calculated for those COPCs using the exposure assumptions used for the risk assessment, but also with consideration to RIDEM regulatory guidelines, and chemical-specific ARARs. Removal action goals are typically derived from the PRGs and documented in a decision document, anticipated to be provided in the form of an Action Memorandum (Action Memo) for a non-time critical removal action at the site.

Because removal action goals have not yet been selected, contaminant concentrations measured at the site in this Soil Pre-Design Investigation were compared with selected PRGs published in the FS. Refer to Table 1-1 for OFFTA Site PRGs. However, the data collected during this Soil Pre-Design Investigation has been used to provide a basis for the recommendation of removal action goals. Recommended removal action goals and associated target excavation depths are provided in Section 5 of this report.

This report includes five sections and five appendices:

Section 1.0 – Introduction (this section);

Section 2.0 – Background Information provides an expanded site history discussion, a summary of previous studies and findings, and a description of the soil removal action goals;

Section 3.0 – Site investigation Activities describes the PDI activities;

Section 4.0 – Investigation Findings presents the results of the RI and PDI specific to the subsurface soils; and

Section 5.0 – Subsurface Discussion provides an evaluation of the subsurface soil results, and recommendations of removal action goals and recommendations of target excavation depths.

This information is supported by the following appendices:

Appendix A – Site Photographs

Appendix B – Soil Boring Logs

Appendix C – Survey Data

Appendix D – Chemical Data

- Appendix D1 – Mounds
- Appendix D-2 – Subsurface Soil
- Appendix D-2 – Grainsize Analysis

Appendix E – Calculations for Metals Data Assessment

2.0 BACKGROUND INFORMATION

This section presents background information for the OFFTA Site, including its location and description, its history, and a brief summary of previous investigations results.

2.1 SITE LOCATION AND DESCRIPTION

NAVSTA Newport is located approximately 60 miles southwest of Boston, Massachusetts, and 25 miles south of Providence, Rhode Island. It occupies approximately 1,063 acres, with portions of the facility located in the City of Newport and Towns of Middletown and Portsmouth, Rhode Island. The facility layout is long and narrow, following the western shoreline of Aquidneck Island for approximately 6 miles facing the east passage of Narragansett Bay.

2.1.1 Site Conditions

The OFFTA Site is located at the northern end of Coasters Harbor Island (see Figure 2-1). Site photographs are presented in Appendix A. The Site occupies approximately 5.5 acres and is bordered by Taylor Drive to the south and is surrounded by Coasters Harbor (part of Narragansett Bay) to the east, north, and west. With the exception of three mounds, which are the main Site topographic features, the OFFTA Site is generally flat, with base grade surface elevations ranging from 8 to 12 feet above MLW. The mounds are scheduled to be removed between June and October, 2004.

The shoreline has been partially eroded by wave action, particularly on the western side of the Site. Tide change over a six month period ranges between 2.6 and 4.5 vertical feet (Newport).

The Site is entirely vegetated with grass except for a gravel-surfaced temporary parking lot located in the center portion of the site. The temporary parking lot was occupied by a baseball field until 2002. A one-story concrete block building (Building 144), used for recruiting offices, is located along the southern side of the Site. Recreational equipment north of the building has been fenced off to restrict access. Access to the Site is restricted by a chain link fence along its eastern, southern, and western sides, except for the temporary parking lot, which has been cordoned off from the rest of the site.

2.1.2 Geology and Hydrogeology

The geology and hydrogeologic conditions at the OFFTA Site are summarized in the RI Report (TtNUS, 2001). The following paragraphs summarize the conclusions from the RI Report.

Geologic cross sections from the RI Report indicate the Site is underlain by sand and gravel fill containing construction debris; sand and gravel containing variable amounts of silt; peat; dense silt with fine to medium sand, gravel and rock fragments (glacial till); and bedrock. Construction debris consisted generally of rock fragments, asphalt, concrete, metal, wood and glass. The thickness of the overburden ranges from approximately 6 to 27 feet excluding the thickness of the three mounds, which reportedly consist of construction debris and other materials. Two borings advanced through the largest mound, located north of Building 144, indicated it is directly underlain by bedrock. Materials underlying the two remaining mounds, located west of the former baseball field, consist of glacial till or silty sand and gravel.

Bedrock encountered beneath the Site consists of weathered phyllite and conglomerate with quartz pebbles. The Rhode Island Formation mapped in the area consists of metaconglomerates, metasandstones, schist, graphite, and carbonaceous schist. In the central portion of the Site, bedrock was blasted during Site development. Bedrock surface elevation contours indicate a bedrock “high” in the southeastern portion of the Site (east of Building 144) that drops about 5 feet and extends as a “peninsula” northwest to beneath a mound located north of Building 144. Presence of foundations beneath this mound has complicated the determination of bedrock in this area. From beneath this mound, the bedrock surface slopes north toward Coasters Harbor and west toward Narragansett Bay.

2.2 SITE HISTORY

The NAVSTA Newport facility has been in use by the Navy since the era of the Civil War. During World Wars I and II, military activities at the facility increased significantly and the base provided housing for many servicemen. In subsequent peacetime years, use of on-site facilities was slowly phased out until Newport became the headquarters of the Commander Cruiser-Destroyer Force Atlantic in 1962. In April 1973, the Shore Establishment Realignment Program (SER) resulted in the reorganization of naval forces, and activity at the base again declined. This reorganization resulted in the Navy excessing some 1,629 acres of its 2,420 acres. Portions of the facility are currently leased by the Navy to the State of Rhode Island Port Authority and Economic Development Corporation. Some of these areas are, in turn, subleased to private enterprises.

The entire NAVSTA Newport was listed on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) of abandoned or uncontrolled hazardous waste Sites in November 1989. The NPL identifies those Sites that pose a significant threat to the public health and environment. The OFFTA Site was listed as one of the Sites requiring RI/FS activities. It is currently being studied by the Navy under the Department of Defense Installation Restoration Program (IRP). This program is similar to the EPA's Superfund Program authorized under CERCLA in 1980, as amended by SARA in 1986.

A Federal Facilities Interagency Agreement (FFA) for NAVSTA Newport (then NETC) was signed by the Navy, the State of Rhode Island, and the EPA on March 23, 1992. The FFA outlines response action requirements under the Department of Defense IRP at NAVSTA Newport. The FFA was developed, in part, to provide a framework to address environmental impacts associated with past and present activities at NAVSTA Newport. As part of the FFA, regulatory agencies must review all documents pertaining to cleanup of the OFFTA site.

The OFFTA Site was home to a Navy fire fighting training facility from World War II until 1972. During the training operations, fuel oils were ignited in various structures at the Site including burn pits, so-called Christmas Tree above-ground nozzle array, and small buildings that simulated shipboard compartments. Ignited fires were then extinguished by sailors. It was reported that the two "Carrier Compartment" buildings were injected with a water/oil mixture which was subsequently set on fire for fire fighting practice. Underground piping reportedly carried the water/oil mixture to the buildings and from the buildings to an oil-water separator. Drainage piping from historic photos and maps provided in the FS report (TtNUS September 2002) show pipes from the separator discharged to Coasters Harbor to the north.

The fire fighting training facility was closed in 1972. Upon closure, the training structures were reportedly demolished and buried and compacted into mounds on the Site, and then the entire area was covered with topsoil. The Site was then converted to a recreational area with a playground, a baseball field, and a picnic area with an open pavilion and barbecue grills. The field was dedicated on July 4, 1976, and used as a recreational area until its closure in October 1998.

In its 22 years as a recreational area, the Site was used for organized activities including youth day camps, picnic functions, and little league baseball (1 year only), as well as for general recreation. A child day care center operated out of Building 144 on the Site from approximately 1983 through January 1994 when it was relocated off-site to a larger facility on base.

Aerial photos and facility maps for the period from 1939 through 1988 were reviewed to better evaluate the Site history. Activity on the Site appears to date back to approximately 1943. A 1953 facility design map indicates the locations of structures and Site features associated with fire fighting training exercises. An aerial photo taken in May 1944 depicts the Site with structures in a similar layout to that shown on the 1953 facility design map. Based on the design map and subsequent facility condition maps, on-site structures included an administration building, hose house, two carrier compartments, smothering pit, separator pit, foam pit, simulated ship structures, suction pumps, and oil tanks.

The indexes that accompanied some of the facility conditions maps indicate that the on-Site structure that was used in recent years as a day care center was once used as "wash and dressing rooms." No significant visible Site changes are noted from 1944 until a 1975 aerial photo of the Site, when the structures and facilities associated with the fire fighting training area are no longer evident, with the exception of the "hose house" and Building 144. As of 1987, the Site appears similar to its current condition, with soil mounds visible in the central and western portions of the Site and a pavilion in the east-central portion of the Site.

2.3 PREVIOUS STUDIES RESULTS

This pre-design investigation is preceded by a Remedial Investigation and a Feasibility Study completed in 2001 and 2002, respectively. Data from all prior investigations conducted by TtNUS and TRC Environmental Corporation (TRC) were assimilated into these reports, including three phases of the RI, a source removal investigation, risk assessment reports, etc. The overall findings reported in these studies are summarized below:

- Semivolatile organic compounds (SVOCs) were detected in all media across the Site. The most prevalent SVOCs detected were polynuclear aromatic hydrocarbons (PAHs) with the highest concentrations detected in surface and subsurface soil and groundwater sampling locations near Coasters Harbor. PAH concentrations in surface soils, subsurface soils, groundwater and storm water exceed RIDEM Residential Direct Exposure Criteria for soils.

- Metals were detected throughout the Site. Metals concentrations were generally higher in site soil and groundwater relative to the same metals in background soil and upgradient groundwater locations. Metals concentrations in both surface soils and subsurface soils exceeding RIDEM Residential Direct Exposure Criteria for soils were arsenic, beryllium, lead, and manganese.

- Total petroleum hydrocarbons (TPHs) were detected in the subsurface throughout the Site exceeding RIDEM Residential Direct Exposure Criteria at depths ranging from 3 to 11 feet bgs. Petroleum contamination was observed visually in the central portion of the Site in soils sampled immediately above the water table.

2.4 FEASIBILITY STUDY SUMMARY

A Feasibility Study (FS) was completed in 2002 to evaluate remedial alternatives for the site. The FS (TtNUS 2002) evaluated remedial alternatives for soil groundwater and marine sediment near the site. The FS did not recommend selection of any of the alternatives, it only provided a basis to compare the

alternatives against seven criteria identified in the national contingency plan. For soil, the FS screened out cleanup technologies that were not acceptable for use at the site, and focused on three possible alternatives to reduce risk: 1) No action, 2) removal and disposal, and 3) removal, treatment and backfill.

In July 2003, the Navy recommended conducting a soil removal action as described in the FS alternative 2 – removal and disposal. This recommendation was brought to the public in a Fact Sheet, and presented at a public meeting and open house.

The first portion of the soil removal action is to conduct a soil pre-design investigation. The soil pre-design investigation is conducted to further define the extent of debris and contamination in the subsurface soil. Using the information from the pre-design investigation in conjunction with the data already documented in the RI, a detailed cost estimate can be generated and the removal action can be scoped out. This soil pre-design investigation is the subject of this report.

3.0 SUBSURFACE SOIL PRE-DESIGN INVESTIGATION ACTIVITIES

This section discusses the procedures and methodologies employed during the implementation of the Soil Pre-Design Investigation (PDI) activities, including the field investigation activities, sample analysis and data review, and data evaluation and reduction.

The objective of the OFFTA Soil PDI is to provide data to assess the horizontal and vertical extent of construction debris, and the extent of soil which exceeds selected PRGs across the site. The resulting data will be evaluated to determine the volume of material in the subsurface below the base grade that will be considered for removal. This section presents a summary of the subsurface soil investigation activities, which were conducted as part of the OFFTA Soil PDI. The resulting data is presented in this report and will support the development of the subsurface soil remedial action plans.

The PDI included advancing 30 soil borings across the site to characterize the subsurface conditions and to collect soil samples; advancing an additional 5 soil borings along the shoreline to collect geotechnical data to support design of shoreline erosion protection measures; and surveying to locate the soil borings, map the shoreline topography for purposes of understanding high and low limits of tide changes.

3.1 SUBSURFACE SOIL FIELD INVESTIGATIONS

Subsurface field investigation tasks included soil boring advancement and soil sample collection; and a survey. A full description of the methodology used in conducting the field investigation is presented in the Work Plan for Soil Pre-Design Investigation (TtNUS, November 2003).

3.1.1 Subsurface Soil Boring Advancement and Soil Sampling

Soil borings were advanced to evaluate the existing subsurface conditions. A total of 35 soil borings were advanced across the site. Several of the borings were advanced through soil mounds on-site; characterization of the mounds is discussed separately in the Mound Summary Report (TtNUS, 2004). The soil mounds removal is nearly completed as of the date of this report.

Continuous samples were collected from each of the 35 borings from 2-foot intervals, starting from 2 feet below the base grade elevation. Borings were advanced to the top of bedrock or a maximum depth of 20 feet below the base-grade elevation. Samples from every other interval below base grade (i.e. 2-4 feet, 6-8 feet, 10-12 feet, and 14-16 feet) were selected for laboratory analysis for gasoline-range organics (GRO), PAHs, TPH, and Target Analyte List (TAL) metals.

All soil samples were collected using a conventional hollow-stem auger rig and split-barrel samplers by TtNUS' drilling subcontractor, American Drilling, under the supervision of a TtNUS geologist. Samples were acquired by driving three-inch split barrel samplers ahead of 4-inch (inner diameter) hollow-stem augers. The split-barrel samplers were driven using a 300-lb slide hammer dropped 18 inches. Augers were advanced after collection of each split-barrel sampler. Upon sampler retrieval, soil samples were collected for volatile organic vapor jar headspace screening, using a flame ionization detector (FID) and a photoionization detector (PID). The sample was then inspected by the TtNUS geologist for visual evidence of construction debris and potential contamination and visually classified in accordance with the Unified Soil Classification System (USCS). A log of each boring was maintained by the field geologist. Any foreign materials (brick, asphalt, concrete, glass etc.) present was described and noted in the geologic log. Boring logs are presented in Appendix B of this report.

GRO samples were collected using EPA method 5035 (a soil preparation method), and En-Core samplers. GRO samples were collected directly from the soil core using the En-Core sampler prior to homogenization. En-Core samples were capped and bagged in accordance with the manufacturer's instructions, placed on ice, and then hand-delivered to the analytical laboratory within 24 hours of collection. The laboratory performed the sample extraction within 48 hours of collection.

For collection of other analytes, soil not containing debris as described above, was placed in a decontaminated stainless steel bowl, homogenized after gravel removal, and placed in appropriate sample containers. If insufficient sample was obtained from the soil core, the next interval was sampled in the same manner. If two consecutive intervals provided no recovery in the split barrel sampler, a second boring was advanced to acquire samples at the missed interval(s). Additional borings advanced due to refusal or insufficient recovery are noted on the boring logs (Appendix B). All samples were labeled after collection and placed on ice immediately. Samples were hand-delivered with a chain-of-custody to Mitkem Corporation, of Warwick, Rhode Island.

The drill rigs, augers, and other tools in contact with subsurface soils were decontaminated by steam cleaning before starting the drilling program and after completion of each boring. All non-disposable sampling equipment was decontaminated between each use in accordance with the procedures identified in the work plan (TtNUS, 2003).

3.1.2 Surveying

The horizontal location and vertical elevation of each new boring was surveyed to the RI State Plane Coordinate system NAD 1927 and NAVSTA Mean Low Water datum, respectively, by Louis Federici and Associates, Inc. Additional topographic survey along the shoreline between the top of slope to mean low

water was also performed by the land surveyor. This survey data was used to update the site base map provided in the Feasibility Study report (TtNUS, 2002). The soil boring location survey data is presented in Appendix C. The base map, revised with borings and shoreline topography, is provided as Figure 4-1.

3.2 SAMPLE ANALYSIS AND DATA REVIEW

A subcontracted laboratory (Mitkem Corp.) analyzed field samples and associated quality control samples using the analytical methods listed below:

Analytes	Method
PAHs	USEPA SW-846 GCMS Selected Ion Monitoring (SIM)
TAL Metals	USEPA SW-846 Method 6010B Trace
TPH	USEPA SW-846 Method 8015 Modified for C9-C36 Hydrocarbons
GRO	USEPA SW-846 Method 8015 Modified for Gasoline-Range Hydrocarbons includes compounds with a boiling point between 60° and 220°C, corresponds to and is inclusive of methyl t-butyl ether and naphthalene

Note that there is some overlap between the results of the TPH and GRO analyses. The TPH analysis provides a quantification of the C-9 to C-36 hydrocarbons. The GRO analysis provides a quantification of the C-5 to C-11 hydrocarbons using modified 8015 method. However only TPH has a PRG at this site.

The analytical data was validated using a Tier 1 validation effort, which is limited to review of sample results and QC results for completeness of the analytical packages.

4.0 INVESTIGATION FINDINGS

This section presents a summary of the findings of the OFFTA subsurface soil investigations. Relevant data from the remedial investigations (TtNUS, 2001) were used in addition to data from the pre-design investigation to support the findings in this report. The following subsections summarize the physical, geological, and analytical results from subsurface soil testing. Soil characterization and samples from the mounds are discussed in the Mound Summary Report (TtNUS, 2004). However, analytical data for samples taken from the mounds is provided in Appendix D-2 of the report. Table 4-1 presents a summary of the subsurface samples collected and the analyses conducted for these efforts and for previous investigations. Table 4-2 presents jar headspace screening results. Complete RI and PDI analytical results from subsurface soil samples are provided in Appendix D1. Figures 4-1 through 4-9 present site topography, boring locations, cross sections, and selected analytical results described in this summary report.

For the purposes of this discussion, the Site has been divided into three sections based on lithologies encountered and contamination levels. For each section, the shoreline is discussed separately from the rest of the section. The western section has low levels of contamination and is underlain by phyllite. The central section has the deepest soil units on the Site and relatively high levels of contamination in the southern area. The eastern section has shallow bedrock made up of conglomerate and higher levels of contamination to the north. For the purpose of this report, all elevations are reported in feet above mean low water (MLW).

4.1 WESTERN SECTION FINDINGS

Areas 1 and 2 comprise the western portion of the Site. Area 1 includes the borings to the west of the temporary parking lot and directly north of Taylor Drive. Area 2 is comprised of the shoreline of the western section. The different areas of the site are presented in Figure 4-1. The western portion of the Site is covered with grass, with a few ornamental cedar trees in the vicinity of the mounds. Subsurface conditions at areas 1 and 2 are depicted by cross-sections A, B, C, and D (see Figures 4-2 and 4-4).

4.1.1 Area 1 Findings

Area 1 is characterized from evaluation of five soil borings advanced during the PDI (SB415 through 418 and 433) and three borings (B-9 through B-11) advanced during previous investigations (TtNUS, 2001). These borings indicate that the material directly below the base grade elevation consists of fill overlying sandy and silty deposits, which in turn overlie glacial till. The fill consists of sand to silt with construction debris (concrete, brick, and/or asphalt fragments) and occasional burn layers with ash and/or charcoal.

The soil below the fill consists of silt and sand, with gravel present in some of the borings. The deeper borings (B-11 and SB416 through 418) indicate that the natural soil is above a layer of till, which was generally described as a dense gravelly silt with some sand. The elevation of the top of till ranges from -7 to -0.5 feet. The bedrock underlying Area 1 appears to be a phyllite, based on materials encountered in boring SB418.

No evidence of petroleum contamination was detected in borings B-9 through B-11, SB415 and SB416. In boring SB417, petroleum staining was noted at elevations of 0.5 to 4.5 feet and an odor was noted from 2.5 to 4.5 feet. In boring SB418, oil-saturated soils were noted from 0 to 2 feet and -2 to -4 feet, with a petroleum odor from -6 to 2 feet. However, samples from this boring did not exceed the PRG of 500 mg/kg. For jar headspace readings, refer to table 4-2A.

A total of 21 samples were collected below the base grade elevation from the 8 borings in Area 1. No samples below base grade elevation were collected from borings B-9 and B-10. The concentrations exceeding the PRGs and all TPH values are depicted in Figure 4-6 and on Table 4-3. A complete list of analytical results is presented in Appendix D1. The table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in 9 of 20 samples analyzed, with detections ranging from 13 to 310 mg/kg, all below the PRG of 500 mg/kg. GRO was detected in 3 of 20 samples analyzed for GRO, with detections ranging from 3,600 to 34,000 µg/kg. There is not a PRG for GRO.

Area 1 PRG Exceedance Summary

Parameter	No. Samples above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)pyrene	1/21	820 µg/kg	400 µg/kg
Benzo(b)fluoranthene	1/21	1,100 µg/kg	900 µg/kg
Chrysene	1/21	890 µg/kg	400 µg/kg
Arsenic	12/21	7.8 – 25.9 mg/kg	7.0 mg/kg
Beryllium	11/21	0.41 – 0.56 mg/kg	0.4 mg/kg
Lead	4/21	182 – 321 mg/kg	150 mg/kg
Manganese	11/21	496 – 3,210 mg/kg	390 mg/kg

4.1.2 Area 2 Findings

Area 2 is characterized from evaluation of three soil borings advanced during the PDI (SB405 through 407) and two borings (B-7/MW-4 and B-8) advanced during previous investigations (TtNUS, 2001). The borings indicate that the material directly below the base grade elevation consists of fill overlying sand and silt with varied amounts of gravel, which in turn overlie glacial till. The fill consists of sand to silt with construction debris (mainly brick and asphalt fragments). The soil below the fill consists of silt and sand, with gravel present in some of the borings. The boring logs indicate that the natural soil overlies a layer of till, which was generally described as a dense gravelly silt with some sand. The thickness of the till

appears to increase from west to east. The bedrock in Area 2 appears to be a phyllite, based on borings SB406 and SB407.

No evidence of petroleum contamination was detected in borings SB405 and SB406. Apparent oil saturation and a sheen was encountered from elevation -5 to 1 foot (12 to 18 feet bgs) in SB-407. Petroleum odors were noted in borings B-7 and B-8. For jar headspace readings, refer to table 4-2A.

Fifteen samples were collected below the base elevation from the five borings in Area 2. The concentrations exceeding the PRGs and all TPH values are depicted in Figure 4-6 and on Table 4-3. A complete list of analytical results is presented in Appendix D1. The table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in 8 of 12 samples. GRO was detected in 2 of 12 samples analyzed for GRO, with detections of 4,600 and 31,000 µg/kg. GRO does not have a PRG.

Area 2 PRG Exceedance Summary

Parameter	No. Samples above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)anthracene	3/15	1,300 J – 2,200 µg/kg	900 µg/kg
Benzo(a)pyrene	7/15	560 – 1,700 µg/kg	400 µg/kg
Benzo(b)fluoranthene	3/15	1,200 – 2,800 µg/kg	900 µg/kg
Chrysene	7/15	520 – 2,100 µg/kg	400 µg/kg
Arsenic	4/15	7.3 – 25.4 mg/kg	7.0 mg/kg
Beryllium	4/15	0.45 – 0.58 mg/kg	0.4 mg/kg
Lead	2/15	189 – 846 mg/kg	150 mg/kg
Manganese	7/15	409 – 3,520 mg/kg	390 mg/kg
TPH	1/12	900 mg/kg	500 mg/kg

4.1.3 Cross-Section Results

Subsurface conditions in the western section of the Site are depicted by cross-sections B-B', C-C', and D-D', as well as the western portion of cross-section A-A'. Refer to Figure 4-2 and Figure 4-3 for cross-sections. Cross-section locations are provided in Figure 4-1.

The bottom of fill elevations for cross-section B-B' range from -4.0 to 4.3 feet, with an average elevation of 0.2 feet. The fill elevations for cross-section C-C' range from -0.5 to 1.4 feet, with an average elevation of 0.5 feet. The bottom of fill elevations for cross-section D-D' range from 3.0 to 6.9 feet, with an average elevation of 5.0 feet.

4.2 CENTRAL SECTION FINDINGS

Areas 3 and 4 comprise the central portion of the Site. Area 3 includes the current temporary parking lot. Area 4 includes the central portion of the shoreline north of the parking lot. Subsurface conditions at the central section are depicted by cross-sections E-E', F-F', and G-G'. Figure 4-1 depicts the boring and area locations, and Figure 4-4 depicts the cross-sections for this area.

4.2.1 Area 3 Findings

Area 3 is roughly outlined by the temporary parking lot and the area west of Building 144. The parking lot consists of rubbleized asphalt and gravel, which is cordoned off from the surrounding grassy areas. All of Area 3 is considered to be at base grade elevation.

Area 3 is characterized from evaluation of sixteen out of nineteen borings and testpits. Eight borings were advanced during the PDI (SB408 through 410, SB419 through 422, and SB432); and four borings (B-6, MW-3S, MW-7S, and MW-101) and seven test pits (TP1A through 1C, TP10 through 12, and TP17) advanced during previous investigations (TtNUS, 2001). Samples were not collected from TP-10, and were composited from TP1A-TP1C. The boring logs from Area 3 indicate that the material encountered consists of fill overlying natural soil, which covers a layer of glacial till. Fill consists of silt/sand mixtures with varied amounts of gravel. In several of the borings in the southeast portion of the area (SB421, SB422, SB432, B-6, MW-3, and MW-101), these materials are mixed with construction debris (asphalt, brick and concrete fragments). A geosynthetic liner, used to separate the temporary parking lot material from the existing soil, was encountered at 2 feet below the base grade elevation. The fill varies in thickness from nonexistent at MW-7S to 6 feet thick in SB410, and is generally 4 to 6 feet thick. Refer to Figure 4-2 for fill elevation details. Natural soils consist of silt and sand mixtures with some gravel.

Most of the borings in Area 3 (SB408, SB409, SB419-421, SB432, and MW-101) were advanced beyond the soils and into till. The till was characterized as a dense silt with a mixture of angular gravel pieces and sand and was encountered at elevations of 4.5 feet (MW-101) to -8.5 feet NGVD (SB432). The bedrock noted in Area 3 was generally highly weathered, but appeared to be a phyllite in the southern portion of the area (SB420) and a conglomerate to the north (SB419 and SB409). The bedrock in Area 3 slopes down toward the east, and was not found in borings terminating at elevation -12 feet, indicating that there is a bedrock trough in the area of cross-section G-G' (Figure 4-3)

Area 3 was the most visibly contaminated with petroleum products, with oil-saturated soils noted in the boring and test pit logs from MW-3, SB409, SB410, SB420, SB421, and TP-11, located in the central and eastern portions of the area. The most contaminated soils were generally encountered at elevations of 2

to 6 feet. A sheen on water in the sample, staining, and/or odors were noted at B-6, MW-7S, TP-17, MW-101, SB419, and SB432. The other borings and test pits did not have visible contamination or odors. Jar headspace results are presented in Table 4-2B.

A total of 44 samples were collected at Area 3 from 16 of 19 borings and test pits. The concentrations exceeding the PRGs and all TPH values are depicted in Figure 4-7 and on Table 4-3. A complete list of analytical results is presented in Appendix D1. Samples were not collected from TP-10, and were composited from TP1A-TP1C. The table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in 29 of 36 samples analyzed for TPH. GRO was detected in 18 of 32 soil samples analyzed for GRO, with detections ranging from 2,100 to 2,300,000 µg/kg. The higher GRO concentrations indicate that a large proportion of the TPH in some samples may be composed of GRO, which are lighter and may be more mobile than other petroleum products. There is no PRG for GRO.

Area 3 PRG Exceedance Summary

Parameter	No. Samples Above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)anthracene	8/43	910 – 18,000 µg/kg	900 µg/kg
Benzo(a)pyrene	12/43	430 – 15,000 µg/kg	400 µg/kg
Benzo(b)fluoranthene	7/43	1,200 – 17,000 µg/kg	900 µg/kg
Benzo(g,h,i)perylene	4/43	830 – 10,000 J µg/kg	800 µg/kg
Benzo(k)fluoranthene	3/43	1,400-13,000 J µg/kg	900 µg/kg
Chrysene	13/43	460 – 15,000 µg/kg	400 µg/kg
Dibenzo(a,h)anthracene	2/43	1,900 – 4,000 J µg/kg	400 µg/kg
Ideno(1,2,3-cd)pyrene	3/43	1,500 – 8,900 J µg/kg	900 µg/kg
Antimony	6/43	10.5 – 17.3 mg/kg	10 mg/kg
Arsenic	23/43	7.2 – 69.2 mg/kg	7.0 mg/kg
Beryllium	18/43	0.41 – 1.0 mg/kg	0.4 mg/kg
Lead	7/43	158 – 563 mg/kg	150 mg/kg
Manganese	23/43	396 J – 3,000 mg/kg	390 mg/kg
TPH	13/32	600 – 8,400 mg/kg	500 mg/kg

4.2.2 Area 4 Findings

Area 4 is comprised of the central portion of the shoreline. Area 4 is flat and covered with grass, and is bounded by the edge of the temporary parking lot to the south, by SB400 to the west, and SB402 to the east. All of Area 4 is considered to be at base grade elevation.

Area 4 is characterized from evaluation of four borings advanced during the PDI (SB400 through 402 and SB427); and four borings (B-5, B-12, and MW-11S and 11R) advanced during previous investigations (TtNUS 2001). The boring logs indicate that the material encountered consists of fill overlying natural soil, which covers a layer of glacial till. Fill consists of riprap (boulders and large cobbles) and silt/sand

mixtures with some construction debris (brick and concrete fragments). The fill in this area was found to be 0.5 feet to 10 feet thick. Natural soils generally consist of silt and sand mixtures with some gravel; however, organic layers (peat and organic muck) were noted to the east (SB402 and B-5). Till was noted in one boring (SB402) and consisted of a sandy silt with angular gravel. The bedrock encountered in Area 4 appeared to be a conglomerate, based on the SB427 boring log. Bedrock material was not removed from the other borings.

Several borings at Area 4 contained evidence of petroleum contamination, including staining at SB427 and odors at SB427, B-12, and MW11R and MW11S. All of these borings were located in the central portion of Area 4. Odors and/or staining were noted at elevations of 2.3 to 4.3 feet at SB427, 1.9 to 3.9 feet at B-12, and at -2 to 0 feet at MW-11S and MW-llR. Jar headspace results are provided in Table 4-2B.

A total of 16 samples were collected at Area 4 from 7 borings. The concentrations exceeding the PRGs and all TPH values are depicted in Figure 4-7 and on Table 4-3. A complete list of analytical results is presented in Appendix D. No samples were collected from MW-11R. The table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in 9 of 12 samples analyzed for TPH, at concentrations ranging from 15 to 400 mg/kg, below the PRG of 500 mg/kg. GRO was detected in 5 of 12 samples analyzed for GRO, with detections ranging from 4,700 to 63,000 µg/kg. There is no PRG for GRO.

Area 4 PRG Exceedance Summary

Parameter	No. Samples Above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)pyrene	1/16	480 µg/kg	400 µg/kg
Chrysene	2/16	430 – 520 µg/kg	400 µg/kg
Arsenic	3/16	8.0 – 8.6 mg/kg	7.0 mg/kg
Beryllium	1/16	0.44 mg/kg	0.4 mg/kg
Lead	2/16	554 – 1,300 mg/kg	150 mg/kg
Manganese	7/16	401 J – 1,140 mg/kg	390 mg/kg

4.2.3 Cross-Section Results

Subsurface conditions in the central section of the Site are depicted by cross-sections E-E', F-F' and G-G', as well as the central portion of cross-section A-A'. Refer to Figure 4-2 and Figure 4-4 for cross-sections.

The bottom of fill elevations for cross-section E-E' is approximately 4 feet in the south and drops to 0.0 feet at SB400. The fill elevations for cross-section F-F' average 5.6 feet in the southern portions of the

cross-section, then the fill pinches out to almost nonexistent (0.5 feet of topsoil) north of SB-409 until SB-401. At MW-11S, bottom of fill extends to -2.0 feet, and rises to 4.3 feet at SB427. The filled area at cross-section G-G' begins at SB421. From SB421 north, the elevation of the bottom of fill drops from 5.8 feet to 2.0 feet.

4.3 EASTERN SECTION FINDINGS

Areas 5 and 6 comprise the eastern portion of the Site. Area 5 includes the borings east of the temporary parking lot. Area 6 includes the eastern portions of the shoreline. Locations at the most eastern portions of the Site (SB426, TP-05, and B-1) are included with Area 5 due to stratigraphic and chemical similarities with the former picnic area north and east of Building 144. Figure 4-1 depicts boring and area locations. Cross-sections H through K (see Figure 4-5) depict the eastern section subsurface conditions.

4.3.1 Area 5 Findings

Area 5 includes the borings north and east of Building 144. Area 5 is vegetated with grass and several large ornamental cedar trees that range up to 20 feet in height. The area includes the large picnic area and former playground north of Building 144, which is presently used as a recruiting office for the Marines.

The subsurface soils of Area 5 were characterized from evaluation of soil samples from soil borings and test pits. The 14 soil borings consisted of B-1, B-2, B-4, and B-17, and MW-1R, 8R, and 9R, advanced during previous investigations (TtNUS, 2001); and SB411, 412, 423 through 426, and 434, advanced for the PDI. Thirteen test pits from previous investigations were located in Area 3, including TP2, TP3, TP-01 through 09, TP-13, and TP-16. The boring and test pit logs indicate that the material below base grade elevation generally consists of fill overlying bedrock. The fill material generally consists of fine to coarse sand and gravel mixed with construction debris (asphalt, concrete fragments, and brick pieces). Few man-made materials were encountered in the picnic area east of the central mound; the soils in the area were generally less than four feet thick and appear to be natural material. Remnant piping was encountered in test pits TP-01, TP-04, and TP-08, and concrete slabs/foundations were encountered in test pit TP-06.

Natural soils consist of sand with varied amounts of silt and gravel. The bedrock in Area 5 is generally conglomerate, with the exception of TP-08, which was characterized as a shale. For the purposes of this report, the shale/phyllite is considered to be a single unit. Data from the borings indicate that the contact between the conglomerate and shale/phyllite runs through the southwest portion of Area 5. Bedrock elevations are highest in the central and eastern portions of the area, with elevations of approximately 7

feet. To the northwest and in the vicinity of Building 144, the bedrock is generally deeper and is covered with natural soil below the fill.

The boring and test pit logs at Area 5 that indicated potential petroleum contamination included B-4, which had a slight petroleum odor from elevations 0.5 to 7.5 feet; and B-2 and TP-16, which was stained and had potential free oil at an elevation of 5 feet and elevation of 2.0 to 3.0 feet, respectively. Table 4-2C presents a jar headspace summary for the area.

A total of 27 samples were collected at Area 5 from intervals below the base grade elevation. The concentrations exceeding the PRGs and all TPH values are depicted in Figure 4-8 and on Table 4-3. A complete list of analytical results is presented in Appendix D. No samples below base grade elevation were sent for laboratory analysis from borings B-14 and B-15. No analytes from the soil samples collected at B-4 and TP-02 exceeded the PRGs. The table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in 13 of 17 soil samples analyzed for this parameter. GRO was detected in 4 of 20 samples, with detections ranging from 3,700 to 23,000 µg/kg; there is no PRG for GRO.

Area 5 PRG Exceedance Summary

Parameter	No. Samples Above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)anthracene	1/29	2,400 J µg/kg	900 µg/kg
Benzo(a)pyrene	4/29	460 J – 2,900 µg/kg	400 µg/kg
Benzo(b)fluoranthene	1/29	2,300 J µg/kg	900 µg/kg
Benzo(g,h,i)perylene	1/29	1,700 J µg/kg	800 µg/kg
Benzo(k)fluoranthene	1/29	2,500 J µg/kg	900 µg/kg
Chrysene	5/29	580 J – 2,500 J µg/kg	400 µg/kg
Dibenzo(a,h)anthracene	1/29	780 J µg/kg	400 µg/kg
Indeno(1,2,3-cd)pyrene	1/29	1,700 J µg/kg	900 µg/kg
Antimony	2/29	10.9 – 39.2 J mg/kg	10 mg/kg
Arsenic	10/29	8.0 – 74.4 J mg/kg	7.0 mg/kg
Beryllium	2/29	0.44 – 0.69 mg/kg	0.4 mg/kg
Lead	5/29	529 – 7,820 J mg/kg	150 mg/kg
Manganese	21/29	402 – 4,850 mg/kg	390 mg/kg
TPH	2/17	6,400 J – 7,400 J mg/kg	500 mg/kg

4.3.2 Area 6 Findings

Area 6 is comprised of the eastern portion of the shoreline. The area is vegetated with grass and several large trees. The entire area is considered to be at base grade elevation.

Area 6 was characterized from evaluation of soil samples from 14 soil borings and 12 test pits. Soil borings B-3, B-13, B-16, MW-2, MW-10, and MW-102 were advanced during previous investigations

(TtNUS, 2001) and borings SB403, 404, 413, 414, and 428 through 431 were advanced during the PDI. Test pits TP-14 and TP-15 were also advanced during previous investigations. The borings and test pits indicate that the material below base grade elevation consists of fill overlying native soils, which overlie bedrock. The fill material consists of fine to coarse sand, silt and gravel mixed with construction debris (asphalt, concrete fragments, and brick pieces), as well as plastic, slag, glass, and ceramic fragments. Natural soils consist of sand with varied amounts of silt and gravel. Peat layers were noted in borings B-13, SB428, and SB429 at elevations ranging from -8 to 2 feet. Till was encountered in the northwest portion of Area 6, at borings MW-102, SB403, and SB429. The top of the till ranged from -10 to -7 feet in elevation. The bedrock in Area 6 is conglomerate, based on boring SB413. Other boring logs from Area 6 did not specify bedrock material. The elevation of the top of bedrock drops from about -5 feet at SB431 in the east to below -15 feet in the northwestern portion of the area.

Several boring and test pit logs from Area 6 indicated potential petroleum contamination. Petroleum saturated soils were noted in borings SB403, SB404, SB429, MW-102, and MW-2S, which are located directly north of the central mound. The heaviest contamination visible was generally found at elevations of -1 to 5 feet. Borings with staining, a sheen on water in samples collected below the water table, and/or odor included SB414, SB430, SB431, MW-10S, B-3, and B-13. The bottom of test pits TP-14 and TP-15 also had stained soils. Jar headspace results are provided in Table 4-2C.

A total of 42 samples were collected at Area 6 from intervals below the base grade elevation. The concentrations exceeding the PRGs and all TPH values are depicted in Figure 4-8 and on Table 4-3. A complete list of analytical results is presented in Appendix D. No analytes exceeded the PRGs below base grade elevation at B-13. The table below provides a summary of the analyte detections exceeding PRGs. TPH was detected in 25 of 34 soil samples analyzed for this parameter. GRO was detected in 21 of 31 samples, with detections ranging from 3,900 to 430,000 µg/kg; there is no PRG for GRO. The higher GRO concentrations indicate that a large proportion of the TPH in some samples may be composed of GRO, which are lighter and may be more mobile than other petroleum products.

Area 6 PRG Exceedance Summary

Parameter	No. Samples Above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Benzo(a)anthracene	13/42	935 – 14,000 µg/kg	900 µg/kg
Benzo(a)pyrene	16/42	470 – 11,600 µg/kg	400 µg/kg
Benzo(b)fluoranthene	11/42	1,100 – 13,500 µg/kg	900 µg/kg
Benzo(g,h,i)perylene	4/42	890 – 6,650 µg/kg	800 µg/kg
Benzo(k)fluoranthene	3/42	1400 J – 5,850 µg/kg	900 µg/kg
Chrysene	16/42	410 – 9,900 µg/kg	400 µg/kg
Dibenzo(a,h)anthracene	2/42	820 J – 1,550 µg/kg	400 µg/kg
Ideno(1,2,3-cd)pyrene	2/42	2,300 J – 6,050 µg/kg	900 µg/kg
Antimony	6/41	10.7 – 62.7 mg/kg	10 mg/kg

Parameter	No. Samples Above PRG/No. Samples	Range of PRG Exceedance	Soil PRG
Arsenic	18/41	7.3 – 53.6 J mg/kg	7.0 mg/kg
Beryllium	3/41	0.42 – 0.55 mg/kg	0.4 mg/kg
Lead	15/41	183 – 8,250 mg/kg	150 mg/kg
Manganese	14/41	397 – 1,080 mg/kg	390 mg/kg
TPH	14/34	780 – 21,000 J mg/kg	500 mg/kg

4.3.3 Cross-Section Results

Subsurface conditions in the eastern section of the Site are depicted by cross-sections H-H', I-I', J-J', and K-K', as well as the eastern portion of cross-section A-A'. Refer to Figure 4-2 and Figure 4-5 for cross-sections.

The bottom of fill elevations for cross-section H-H' average 8.1 feet for the southern portion of the cross section (through SB411), then drop to an average of 2.4 feet north of the central mound. In cross-section I-I' two fill areas are found, at SB423 (fill bottom 6.0 feet) and from SB412 to SB 404. Northward from SB412, the fill elevation drops from 10.5 feet to -3.1 feet at SB404. In cross-section J-J', the fill is intermittent and the elevation of the bottom of fill averages approximately 7 feet (or about 4 feet thick). In cross-section K-K', the fill bottom elevation averages 11 feet and pinches out by SB425.

4.4 GEOTECHNICAL INFORMATION

Table 4-4 presents a summary of the soil types as determined from both a mechanical analysis and hydrometer analysis to determine the grain size. The soil samples were classified using the Unified Soil Classification System. This analytical method provides data on the sand and fine gravel fraction and the silt and clay fractions of the soils. A review of Table 4-4 indicates that the soils tested consist of silty sands with a few samples of clayey sands, silt, and two gravel samples. All of the gravel samples consist of fine gravel. It should be noted that some coarse gravel to cobbles are noted on the boring logs for these samples. The boring logs are presented in Appendix B. Grain size analysis data is provided in Appendix D.

The blows counts recorded during sample collection are also presented on the table. These blow counts are for a 3-inch split barrel sampler advanced using a 300-pound hammer falling 18 inches. This sampling method was used in order to collect a large enough sample volume for all analytical parameters including grain size. Further review of the table indicates that the sample collected from SB-428 was advanced by placing the 300-pound hammer on the drill rods and did not require any driving to advance the sampler. This would indicate that these are very loose sands.

Table 4-4 also presents the sample depth for the lowest blow counts for each of the boring where grain size analysis was conducted. A review of these data indicates that low blow counts indicating loose sands were observed at SB-429, 404, and 430. These locations may also represent areas of concern regarding the stability of these materials.

These very loose and loose sands may represent potential stability problems during soil excavation and later construction. The stability issues may extent past the construction period and may impact some structures if settlement should occur after construction. Further investigation of the properties and extent of the subsurface materials within the proposed revetment may be appropriate as part of the revetment design.

4.5 GROUNDWATER ELEVATION

During evaluation of soil data, it became apparent that groundwater elevation will impact any possible excavation of contaminated soils at the site. Additionally, it was recognized that the water table fluctuates not only with season, but also with the 12 hour tidal cycle. Therefore, existing data was researched to estimate a low observed groundwater contour. The groundwater levels used for this evaluation are presented on Table 4-5. The contours are presented on Figure 4-9.

5.0 SUMMARY AND CONCLUSIONS

This section presents a summary of the results of the OFFTA subsurface soil investigations, including a basis for possible excavations for the soil removal action. The analytical data at various depths were compared against fill, water table, and bedrock elevations. This analysis was conducted in order to determine trends in the data and provide support for proposed excavation depths. In general, metals exceeded the PRGs over the entire site and at all sample depths, while PAH and TPH concentrations varied widely.

5.1 ORGANICS SUMMARY

PAH and TPH concentrations varied over the site; however, the analytical data indicates that the majority of organics exceeding the PRGs were clustered in specific areas and depths. Exceedances for each section are depicted on Figure 4-6 through 4-9. All of the boring locations are presented on Figure 4-1.

5.1.1 Western Section

The lowest organic concentrations overall were located in the western section of the Site. Locations exceeding the site PRGs are depicted in Figure 4-6; refer to Appendix D1 for the complete analytical results, including exceedances.

At Area 1, PAHs exceeding the PRGs were limited to the fill at boring SB416, with a minimum elevation of 2.5 feet (6 feet below base grade elevation). Along the shoreline (Area 2), the deepest samples in each boring exceeding the organic PRGs were found from elevations of -1.1 to 3.4 feet. Two of the borings (MW-4S/SB-7 and SB407) had PAH exceedances of the PRGs below both the water table and the bottom of fill.

TPH did not exceed the Site PRGs at Area 1. At Area 2, only one sample from SB407 exceeded the PRG for TPH. The sample elevation of -1 to 1 foot was below the water table (3 feet) and the bottom of fill (7 feet).

5.1.2 Central Section

The highest concentrations of PAHs and TPH were encountered from Area 3, in the southern portion of the central section. The shoreline (Area 4) had much lower concentrations of organics. Locations exceeding the site PRGs are depicted in Figure 4-7; refer to Appendix D1 for complete analytical results, including exceedances.

PAH exceedances were found mainly in the southeast portion of Area 3, at elevations ranging from the base grade elevation to between 0 and 8 feet. The maximum exceedance depths were above or within two feet of the water table. The fill at Area 3 did not extend below the water table. At Area 4, the only PAH samples exceeding the PRGs were found at elevations of 4 to 6.5 feet and were located at or above the water table and bottom of fill.

TPH exceeded the PRG laterally throughout Area 3. The zone of TPH contamination is generally located at elevations of 1 to 6 feet, with deeper contamination (down to -2 feet) at SB420. The contamination is generally within two feet of the water table and at or below the bottom of fill. At Area 4, none of the samples collected exceeded the PRG for TPH.

5.1.3 Eastern Section

The eastern section of the Site had more contamination to the north (along the shoreline), where the fill depth and depth to bedrock was much deeper. Locations exceeding the site PRGs are depicted in Figure 4-8; complete analytical results and exceedances are provided in Appendix D1.

Samples exceeding the PRGs were located close to the shoreline and in the western portion of the section; the only exceedances in Area 5 were located near the edge of Area 3 to the west and Area 6 to the north. The PAH exceedances in Area 5 were found at the water table (around 6 feet), which was generally at the same elevation as the bottom of fill. PAH detections were below the PRGs in the southern portion of Area 5, where the bedrock was generally within 6 feet of the ground surface. The PAH exceedances in Area 6 ranged in elevation from 0 to 6.5 feet, with the deepest exceedances within two feet of the water table.

TPH concentrations exceeding the PRG in the eastern section were located close to the shoreline. Two samples in Area 5 exceeded the TPH PRG, at elevations of 5 to 7 feet. At area 6, TPH was detected at concentrations above the PRG from elevations of -3 to 10 feet, in zones that were up to six feet thick. The bottom of the TPH exceedance zone tended to be below the water table in most borings.

5.2 METALS SUMMARY

Almost every sample analyzed for metals exceeded at least one PRG, usually arsenic or manganese. Unlike the other contaminants, the metals exceedances did not decrease at depth. In order to determine whether the high metals concentrations at the Site are naturally occurring or are present as a result of the fill, the samples from different soil units across the site (natural soil, fill, and till) were averaged and compared. The table below presents a summary of the average metals concentrations for fill, natural soil,

and till. In order to remove any ambiguity caused by reworked natural materials and clean fill, only samples with or present at elevations above manmade materials found were considered to be “fill” and only samples at or below soils with intact structures (varves or organic deposits) were considered to be “natural soil”. Data used for this summary is presented in Appendix E. For this summary, only metals with a site PRG are listed.

Metals Exceedance Comparison

	Till Average (mg/kg)	No. of detects	No. of samples collected	Natural soil Average (mg/kg)	No. of detects	No. of samples collected	Fill Average (mg/kg)	No. of detects	No. of samples collected
Antimony	4.3	14	17	4.4	7	8	5.0	27	41
Arsenic	12.9	17	17	6.0	9	9	10.7	40	41
Beryllium	0.37	16	17	0.28	8	8	0.30	31	41
Lead	12.6	17	17	160.1	9	9	888.1	41	41
Manganese	899.2	17	17	334.3	9	9	408.0	41	41

The summary table above shows that average concentrations of manganese and arsenic are higher in till than in natural soil or fill. The presence of these metals in the till indicates that the metals are a product of bedrock degradation, or other natural process. Contrarily, the average concentration of lead is higher in fill than in the till or natural soils, clearly showing an association of lead with the fill material at the site. Average concentrations of beryllium and antimony are similar in all three units.

The till at the site is generally a very dense gravelly and/or sandy silt with occasional clay noted. As an ice-deposited material, the till may have incorporated local and foreign (brought to the site from previous glacial events) material. Till found during the PDI field work that are over 4 feet thick is shown in borings SB409, SB416, SB417, and SB433. The high density of the till is reflected in the blow counts for each of these borings, which range from 12 to 120 blows per 6-inch interval in the second and third sections of each 2-foot sample. This high-density material shows that till is a confining layer on this site and significant penetration of contaminants (particularly water soluble contaminants), in or out of the till is highly unlikely. Thus, the concentrations of metals detected in the till are most likely components of the till or bedrock and not a man-made source.

This data indicates that lead is the only metal which is clearly associated with the site fill and associated contamination. Therefore, of the metals for which PRGs were calculated, only lead should be used to consider soils actionable or to direct excavations as part of the soil removal actions.

5.3 CONCLUSIONS

5.3.1 Recommended Removal Action Goals

Removal action goals need to be established for the site in order to target contaminants for removal that pose risk to receptors under expected future use of the property. Removal action goals will be developed in the Action Memorandum, based on the data accumulated to date, and provided in this and other reports. Removal action goals are based on risk based data and refined through risk-management processes, which have been conducted for this site through meetings held between the stakeholders. This section provides a basis for determining the removal action goals, utilizing the data collected as part of the soil pre-design investigation, and other information published in the RI and the FS for the site.

In the RI and the FS reports, Contaminants of Potential Concern (COPCs) were identified as those contaminants that provide risk at or above the target risk levels considered actionable by the EPA and RIDEM. In the FS, Preliminary Remediation Goals (PRGs) were calculated for those COPCs using the exposure assumptions used for the risk assessment, but also with consideration to RIDEM regulatory guidelines, and chemical-specific ARARs. Candidate PRGs were developed in the FS for each of the COPCs with the following considerations:

Risk-Based PRGs: PRGs for carcinogens were based on a cancer risk of 1 x 10-6 for carcinogens and an HQ of 1.0 for non-carcinogens, with the more conservative of the two being chosen as the risk-based PRG.

RIDEM-Based PRGs: The lower of the Residential DEC and GB Leachability Criteria was considered as a possible PRG for each chemical.

Chemical-Specific ARARs/TBCs: Candidate PRGs for three chemicals were determined by guidance and TBCs. These chemicals are Aroclor-1254, lead, and 2,3,7,8-TCDD (dioxin) equivalents.

Detection Limits: Two semivolatile chemicals, benzo(a)pyrene and dibenz(a,h)anthracene, are controlled by quantitation limits, as footnoted in the RIDEM Method 1 Direct Exposure tables.

Background Concentrations: Metals are naturally present in soil, and therefore, the background concentration values were measured, calculated and negotiated with RIDEM, and considered in the PRG and Removal Action Goals selection process.

The candidate PRGs identified for each contaminant using the methods described above were screened to select the PRG for that contaminant in the FS. Following selection of the PRGs, Contaminants of

Concern (COCs) for the site were selected from the PRG list. COCs were defined as contaminants that would require removal for the purposes of the FS. All the contaminants from the PRG list were selected as COCs in the FS with the exception of Aroclor 1254 and dioxin (2,3,7,8 TCDD) equivalents. These were removed from the COC list because the highest concentrations of these contaminants detected at the site were still below the PRG concentration selected.

State regulatory standards for petroleum and petroleum contaminants that were not selected from the risk assessment were also selected as PRGs, and the contaminants were retained as COCs. These were chosen since they are likely to be associated with the petroleum released at the site, and because state regulations require criteria for petroleum be met if site use is not restricted.

After evaluation of the soil pre-design investigation data described in previous sections of this report, removal action goals for soil have been selected and are recommended for implementation. These removal action goals have been selected based on the risk-based processes stated in the RI and the FS and supporting documents, and based on the conditions found at the site during this and other investigations.

Table 5-1 presents the chemicals retained as COCs from the Feasibility Study, and the PRGs recommended for implementation as removal action goals. The notes on the table provide a basis of the recommendation to use or not use the PRG as a removal action goal.

5.3.2 Excavation Depths

Utilizing the recommended removal action goals provided in Table 5-1, excavation extent was evaluated for the soil removal action at the OFFTA site. Excavation extents are based on the following factors:

- Risk-based remediation goals are applicable to a depth of 10 feet below ground surface.
- Some regulatory goals are limited to the vadose zone (direct exposure criteria), though others (free product) have no such limitation, and are applicable to any media.
- Excavation extents will be limited by physical conditions of the site (water table).

This subsection describes development of target depths of excavations for the soil removal action.

Risk Based Criteria:

While residential risk is based on possible exposure to soils within 10 feet of the ground surface, the water table at the site is noted to be above that level (within 5-6 feet of the ground surface). It is likely

that the shallow water table would preclude residential exposure to soils below that level, however, based on EPA guidance and risk parameters published in the RI report for this site, it is presumed that there is some possibility for residential exposure to a depth of 10 feet. Based on the data provided in this report, it is noted that some of the contaminants that exceed risk based the removal action goals exist at the site below the low observed water table.

The Navy correspondence dated December 23, 2004 presented several excavation options to acquire different groups of contaminants below the water table by isolating the areas and dewatering, or digging "in the wet". A second correspondence from the Navy (January 11, 2005) presented an abbreviated residual risk calculation for each of the excavation options. The residual risk calculations indicated that an excavation to the water table would likely result in a condition within the acceptable risk range (cancer risk less than 1E-5) from site related COCs, and that conducting additional excavations below the water table would not significantly reduce the risk further.

However, lead, which is a site-related contaminant, and which is not addressed in the residual cancer risk calculations, is present at concentrations exceeding acceptable concentrations above the target depth of 10 feet below ground surface. A blood-lead model would be used to calculate residual risk to this contaminant as well, although it has not been conducted as was the residual cancer risk. Therefore, elevated concentrations of lead will also require excavation below the water table to acquire these contaminants.

<u>RIDEM Criteria:</u>

RIDEM Direct Exposure Criteria (DECs) were selected as PRGs for some of the contaminants as described in Table 5-1. In accordance with RIDEM regulations, DECs are not applicable below the water table.

However, during subsequent discussions with the regulatory parties held January 13, 2005, February 3, 2005, and February 22, 2005, RIDEM stated that the presence of free product is also an actionable condition similar to the exceedance of a PRG (RIDEM remediation Regulations Section 8.07A). RIDEM stated that the oily soil found at and below the water table contained free product (refer to meeting minutes from January 13, 2005). In consideration of this, it is recommended that the excavation extend below the water table in areas where oily soil is present and TPH was found in excess of the RIDEM residential criteria of 500 mg/kg. The removal of oily soils and soils with TPH exceeding 500 mg/kg will further aid in reduction of the residual concentrations of petroleum related contaminants that pose risk.

Physical Limitations:

Although it is recognized that some of these oily soils could extend well below the water table, the excavation will need to be halted at a depth at which continued excavation is no longer effective. Excavation more than 2-3 feet below the standing water table will undermine and destabilize side walls of the adjacent work areas. Because the site is tidal on three sides, and ocean water table elevation is expected be between 0 and + 4.0 (+/- approximately 1 foot) feet elevation it is anticipated that this limitation will be encountered in some areas. During excavation in the water table, diligent use of oil booms and silt curtains will be necessary to prevent contaminant migration.

Estimation of Depth and Volume:

The site remains subdivided into grid cells, approximately 100 feet x 100 feet, as shown on figures presented in previous sections (refer to Figure 4-9). The data from the borings within each grid cell were considered and used to develop a target depth of excavation for that cell. This cell-by-cell assessment is presented in Table 5-2. The cell-by-cell assessment was conducted for the purposes of quantifying volume of soil and fill that exceed the recommended removal action goals. It is not likely that a removal action would be conducted cell-by-cell, a work plan or design document for excavation will be prepared to describe how the removal would actually be conducted when it is planned.

As shown on Table 5-2, a total of 66,000 cubic yards of soil and fill is present in place that contains contaminants exceeding recommended removal action goals, based on the data available.

This volume presumes excavation of each grid cell to the deepest point in that cell where data shows that the recommended removal action goals are exceeded. Depths are calculated based on the designed elevation of the ground surface after the soil mounds are removed ("Base Grade Elevation"), and the bottom-most elevation in the grid cell at which recommended removal action goals are exceeded. Volumes are calculated based on the surface area of the grid cells and the depth of the exceedances in each cell. Target contaminants for each cell are identified and target elevations for those depths are shaded.

Excavation Limitation:

Table 5-3 presents a target excavation elevation and depth for each grid cell based on the data evaluated in this report. A recommended excavation limitation is based on the same information presented in Table 5-2, although depths are limited in some cells based on the standing water table.

As shown in Table 5-3, the removal action goals are exceeded near or just below the water table in most grid cells. In some areas, no goals are exceeded although fill is present from demolition of former buildings. As stated in the FS, fill above the water table will require removal and disposal as a part of this action. In other areas, the removal action goals are exceeded below the depths that excavation is likely to be possible (excavation to more than 3 feet below the water table is not likely to be possible due to side slope undermining and failure). The Target Grid Cell Excavation column presents the maximum excavation elevation, adjusted to be no more than three feet below the low observed water table in any area.

Based on these evaluations, an estimated volume of 59,000 cubic yards of material may be removed (Table 5-3). Actual excavations and volumes would depend on the extent of petroleum and contaminants encountered, the actual elevation of the water table, the stability of the side slopes of the areas adjacent to the active excavation, and the resulting ability to effectively dig into the soils below the water table.

REFERENCES

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U. S. Navy, February 9, 2005. Final Minutes from Conference Call Held January 13, 2005. Electronic Mail.

TABLES

TABLE 1-1

SOIL PRELIMINARY REMEDIATION GOALS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Parameter		Soil PRG	units
SVOCs	Benzo(a)anthracene	900	µg/kg
	Benzo(a)pyrene	400	µg/kg
	Benzo(b)fluoranthene	900	µg/kg
	Benzo(g,h,i)perylene	800	µg/kg
	Benzo(k)fluoranthene	900	µg/kg
	Chrysene	400	µg/kg
	Dibenzo(a,h)anthracene	400	µg/kg
	Indeno(1,2,3-cd)pyrene	900	µg/kg
TPH	TPH	500	mg/kg
Metals	Antimony	10	mg/kg
	Arsenic	6.2	mg/kg
	Beryllium	0.4	mg/kg
	Lead	150	mg/kg
	Manganese	390	mg/kg

Notes:
Source: Table 2-9, Feasibility Study for OFFTA, NAVSTA Newport, RI; TtNUS, September 2002

µg/kg	microgram per kilogram
mg/kg	milligram per kilogram
PCBs	polychlorinated biphenyls
PRG	Preliminary Remediation Goal
SVOCs	semivolatile organic compounds
TCDD	tetrachlorodibenzo-p-dioxin
TPH	total petroleum hydrocarbons

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 1																	
B-9	RI (Ph II)	11/23/1993	17.7	8.0	(no subsurface soil samples)					--	--	--	--	--	--	--	--
B-10	RI (Ph II)	11/23/1993	13.7	8.0	(no subsurface soil samples)					--	--	--	--	--	--	--	--
B-11	RI (Ph II)	11/24/1993	8.4	8.4	B112-112493	4.0	6.0	4.4	2.4	X	X	--	X	X	X	--	--
SB415	PDI	11/18/2003	13.3	8.0	SB-415-0608	6.0	8.0	7.3	5.3	--	--	X	--	X	--	X	X
					SB-415-1012	10.0	12.0	3.3	1.3	--	--	X	--	X	--	X	X
SB416	PDI	11/19/2003	11.5	8.5	SB-416-0406	4.0	6.0	7.5	5.5	--	--	X	--	X	--	X	X
					SB-416-0810	8.0	10.0	3.5	1.5	--	--	X	--	X	--	X	X
					SB-416-1214	12.0	14.0	-0.5	-2.5	--	--	X	--	X	--	X	X
					SB-416-1618	16.0	18.0	-4.5	-6.5	--	--	X	--	X	--	X	X
SB417	PDI	11/19/2003	8.5	8.5	SB-417-0406	4.0	6.0	4.5	2.5	--	--	X	--	X	--	X	X
					SB-417-0608	6.0	8.0	2.5	0.5	--	--	X	--	X	--	X	X
					SB-417-1012	10.0	12.0	-1.5	-3.5	--	--	X	--	X	--	X	X
					SB-417-1416	14.0	16.0	-5.5	-7.5	--	--	X	--	X	--	X	X
					SB-417-1820	18.0	20.0	-9.5	-11.5	--	--	X	--	X	--	X	X
SB418	PDI	12/3/2003	10.0	8.0	SB-418-0406	4.0	6.0	6.0	4.0	--	--	X	--	X	--	X	X
					SB-418-0810	8.0	10.0	2.0	0.0	--	--	X	--	X	--	X	X
					SB-418-1214	12.0	14.0	-2.0	-4.0	--	--	X	--	X	--	X	X
					SB-418-1618	16.0	18.0	-6.0	-8.0	--	--	X	--	X	--	X	X
SB433	PDI	11/26/2003	17.3	8.0	SB-433-1214	12.0	14.0	5.3	3.3	--	--	X	--	X	--	X	X
					SB-433-1618	16.0	18.0	1.3	-0.7	--	--	X	--	X	--	X	X
					SB-433-2022	20.0	22.0	-2.7	-4.7	--	--	X	--	X	--	X	X
					SB-433-2426	24.0	26.0	-6.7	-8.7	--	--	X	--	X	--	X	X
					SB-433-2830	28.0	30.0	-10.7	-12.7	--	--	X	--	X	--	X	X
Area 2																	
B-8	RI (Ph II)	11/22/1993	11.5	7.0	B82-112293	8.0	10.0	3.5	1.5	X	X	X	--	X	X	--	--
MW-4S(B-7)	RI (Ph I)	4/19/1990	8.1	8.1	B071-419	4.0	6.0	4.1	2.1	X	X	X	--	X	X	--	--
					B072-419	6.0	8.0	2.1	0.1	X	X	X	--	X	X	--	--

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 2 (cont.)																	
SB405	PDI	11/18/2003	7.0	7.0	SB-405-0204	2.0	4.0	5.0	3.0	--	--	X	--	X	--	X	X
					SB-405-0608	6.0	8.0	1.0	-1.0	--	--	X	--	X	--	X	X
					SB-405-1012	10.0	12.0	-3.0	-5.0	--	--	X	--	X	--	X	X
					SB-405-1416	14.0	16.0	-7.0	-9.0	--	--	X	--	X	--	X	X
SB406	PDI	12/3/2003	11.4	7.0	SB-406-0608	6.0	8.0	5.4	3.4	--	--	X	--	X	--	X	X
					SB-406-1012	10.0	12.0	1.4	-0.6	--	--	X	--	X	--	X	X
					SB-406-1416	14.0	16.0	-2.6	-4.6	--	--	X	--	X	--	X	X
					SB-406-1820	18.0	20.0	-6.6	-8.6	--	--	X	--	X	--	X	X
SB407	PDI	12/1/2003	12.9	7.0	SB-407-0810	8.0	10.0	4.9	2.9	--	--	X	--	X	--	X	X
					SB-407-1214	12.0	14.0	0.9	-1.1	--	--	X	--	X	--	X	X
					SB-407-1618	16.0	18.0	-3.1	-5.1	--	--	X	--	X	--	X	X
					SB-407-2022	20.0	22.0	-7.1	-9.1	--	--	X	--	X	--	X	X
Area 3																	
B-6	RI (Ph I)	4/19/1990	10.1	10.1	B061-419	4.0	6.0	6.1	4.1	X	X	X	--	--	--	--	--
					B062-419	10.0	12.0	0.1	-2.0	X	X	X	--	X	X	--	--
MW-3	RI (Ph I)	4/24/1990	9.8	9.8	MW31-424	6.0	8.0	3.8	1.8	X	X	X	--	X	X	--	--
					MW32-424	12.0	14.0	-2.2	-4.2	X	X	X	--	X	X	--	--
MW-7S	RI (Ph II)	11/29/1993	10.9	10.9	M72-112993	2.0	4.0	8.9	6.9	X	X	X	--	X	X	--	--
TP1A, B, C	RI (Ph II)	1/11/1994	10.5	10.5	TP11	(pipe)	4.0	6.0	6.5	X	X	X	--	X	X	--	--
					TP13	1.5	2.0	9.0	8.5	X	X	X	--	X	X	--	--
					TP12	3.5	4.0	7.0	6.5	X	X	X	--	X	X	--	--
TP-10	SRE	7/2/1997	10.5	10.5	(no subsurface soil samples)					--	--	--	--	--	--	--	--
TP-11	SRE	7/2/1997	10.0	10.0	TP-11-0506	5.0	6.0	5.0	4.0	X	X	--	X	X	--	X	--
TP-12	SRE	7/2/1997	9.0	9.0	TP-12-0405	4.0	5.0	5.0	4.0	X	X	--	X	X	--	X	--
TP-17	SRE	7/7/1997	10.0	10.0	TP-17-0809	8.0	9.0	2.0	1.0	X	X	--	X	X	--	X	--
MW-101	SRE	7/9/1997	9.4	9.4	SB-101-0608	6.0	8.0	3.4	1.4	X	X	--	X	X	--	X	--
SB408	PDI	11/17/2003	8.0	8.0	SB-408-0204	2.0	4.0	6.0	4.0	--	--	X	--	X	--	X	X
					SB-408-0608	6.0	8.0	2.0	0.0	--	--	X	--	X	--	X	X

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 3 (cont.)																	
SB409	PDI	11/20/2003	9.1	9.1	SB-409-0406	4.0	6.0	5.1	3.1	--	--	X	--	X	--	X	X
					SB-409-0608	6.0	8.0	3.1	1.1	--	--	X	--	X	--	X	X
					SB-409-1012	10.0	12.0	-0.9	-2.9	--	--	X	--	X	--	X	X
SB410	PDI	11/21/2003	9.4	9.4	SB-410-0204	2.0	4.0	7.4	5.4	--	--	X	--	X	--	X	X
					SB-410-0608	6.0	8.0	3.4	1.4	--	--	X	--	X	--	X	X
					SB-410-1012	10.0	12.0	-0.6	-2.6	--	--	X	--	X	--	X	X
					SB-410-1416	14.0	16.0	-4.6	-6.6	--	--	X	--	X	--	X	X
					SB-410-1820	18.0	20.0	-8.6	-10.6	--	--	X	--	X	--	X	X
SB419	PDI	11/18/2003	8.4	8.4	SB-419-0204	2.0	4.0	6.4	4.4	--	--	X	--	X	--	X	X
					SB-419-0608	6.0	8.0	2.4	0.4	--	--	X	--	X	--	X	X
					SB-419-1012	10.0	12.0	-1.6	-3.6	--	--	X	--	X	--	X	X
SB420	PDI	11/21/2003	10.0	10.0	SB-420-0204	2.0	4.0	8.0	6.0	--	--	X	--	X	--	X	X
					SB-420-0608	6.0	8.0	4.0	2.0	--	--	X	--	X	--	X	X
					SB-420-1012	10.0	12.0	0.0	-2.0	--	--	X	--	X	--	X	X
					SB-420-1416	14.0	16.0	-4.0	-6.0	--	--	X	--	X	--	X	X
					MW32-424	12.0	14.0	-12.0	-14.0	X	X	X	--	X	X	--	--
SB421	PDI	11/21/2003	10.8	10.8	SB-421-0204	2.0	4.0	8.8	6.8	--	--	X	--	X	--	X	X
					SB-421-0608	6.0	8.0	4.8	2.8	--	--	X	--	X	--	X	X
					SB-421-1214	12.0	14.0	-1.2	-3.2	--	--	X	--	X	--	X	X
					SB-421-1416	14.0	16.0	-3.2	-5.2	--	--	X	--	X	--	X	X
					SB-421-1820	18.0	20.0	-7.2	-9.2	--	--	X	--	X	--	X	X
SB422	PDI	12/3/2003	11.8	11.8	SB-422-0204	2.0	4.0	9.8	7.8	--	--	X	--	X	--	X	X
					SB-422-0608	6.0	8.0	5.8	3.8	--	--	X	--	X	--	X	X
					SB-422-1012	10.0	12.0	1.8	-0.2	--	--	X	--	X	--	X	X
					SB-422-1416	14.0	16.0	-2.2	-4.2	--	--	X	--	X	--	X	X
					SB-422-1820	18.0	20.0	-6.2	-8.2	--	--	X	--	X	--	X	X
SB432	PDI	11/20/2003	9.8	9.8	SB-432-0204	2.0	4.0	7.8	5.8	--	--	X	--	X	--	X	X
					SB-432-0608	6.0	8.0	3.8	1.8	--	--	X	--	X	--	X	X
					SB-432-1012	10.0	12.0	-0.2	-2.2	--	--	X	--	X	--	X	X
					SB-432-1416	14.0	16.0	-4.2	-6.2	--	--	X	--	X	--	X	X
					SB-432-1820	18.0	20.0	-8.2	-10.2	--	--	X	--	X	--	X	X

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 4																	
B-5	RI (Ph I)	4/17/1990	7.8	7.8	B051-417	4.0	6.0	3.8	1.8	X	X	X	--	X	X	--	--
					B052-417	6.0	8.0	1.8	-0.2	X	X	X	--	X	X	--	--
B-12	RI (Ph II)	11/24/1993	7.9	7.9	B122-112493	2.0	4.0	5.9	3.9	X	X	X	--	X	X	--	--
MW-11S	RI (Ph II)	12/1/1993	7.9	7.9	M112-112993	2.0	4.0	5.9	3.9	X	X	X	--	X	X	--	--
MW-11R	RI (Ph II)	12/15/1993	7.6	7.6	(no subsurface soil samples)					--	--	--	--	--	--	--	--
SB400	PDI	12/1/2003	7.3	7.3	SB-400-0002	0.0	2.0	7.3	5.3	--	--	X	--	X	--	X	X
					SB-400-0608	6.0	8.0	1.3	-0.7	--	--	X	--	X	--	X	X
SB401	PDI	11/19/2003	7.9	7.9	SB-401-0204	2.0	4.0	5.9	3.9	--	--	X	--	X	--	X	X
					SB-401-0810	8.0	10.0	-0.1	-2.1	--	--	X	--	X	--	X	X
					SB-401-1012	10.0	12.0	-2.1	-4.1	--	--	X	--	X	--	X	X
SB402	PDI	11/18/2003	8.4	8.4	SB-402-0204	2.0	4.0	6.4	4.4	--	--	X	--	X	--	X	X
					SB-402-0810	8.0	10.0	0.4	-1.6	--	--	X	--	X	--	X	X
					SB-402-1214	12.0	14.0	-3.6	-5.6	--	--	X	--	X	--	X	X
					SB-402-1618	16.0	18.0	-7.6	-9.6	--	--	X	--	X	--	X	X
					SB-402-1820	18.0	20.0	-9.6	-11.6	--	--	X	--	X	--	X	X
SB427	PDI	11/24/2003	8.3	8.3	SB-427-0204	2.0	4.0	6.3	4.3	--	--	X	--	X	--	X	X
					SB-427-0608	6.0	8.0	2.3	0.3	--	--	X	--	X	--	X	X
Area 5																	
B-1	RI (Ph I)	4/18/1990	12.5	12.5	B011-418	6.0	8.0	6.5	4.5	X	X	X	--	X	X	--	--
B-2	RI (Ph I)	4/18/1990	12.9	12.9	B021-418	2.0	4.0	10.9	8.9	X	X	X	--	X	X	--	--
					B022-418	6.0	8.0	6.9	4.9	X	X	X	--	X	X	--	--
					B023-418	8.0	10.0	4.9	2.9	X	X	X	--	X	X	--	--
B-4	RI (Ph I)	4/20/1990	11.5	11.5	B041-420	4.0	6.0	7.5	5.5	X	X	X	--	X	X	--	--
					B042-420	10.0	12.0	1.5	-0.5	X	X	X	--	X	X	--	--
B-14	RI (Ph II)	12/13/1993	30.7	10.5	(no subsurface soil samples)					--	--	--	--	--	--	--	--
B-15	RI (Ph II)	12/13/1993	27.6	10.5	B152-121393	17.0	19.0	10.6	8.6	X	X	X	--	X	X	--	--
B-17	RI (Ph II)	11/24/1993	11.5	11.5	B132-112393	2.0	4.0	9.5	7.5	X	X	X	--	X	X	--	--
MW-1R	RI (Ph I)	4/23/1990	11.3	11.3	(no subsurface soil samples)					--	--	--	--	--	--	--	--
MW-8R	RI (Ph II)	12/13/1993	12.7	12.7	(no subsurface soil samples)					--	--	--	--	--	--	--	--
MW-9R	RI (Ph II)	12/13/1993	11.7	11.0	(VOC samples only)					X	--	--	--	--	--	--	--

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 5 (cont.)																	
TP2	RI (Ph II)	1/11/1994	13.0	10.0	TP22	4.5	4.5	8.5	8.5	X	X	--	X	X	X	--	--
					TP21	7.0	8.0	6.0	5.0	X	X	--	X	X	X	--	--
TP3	RI (Ph II)	1/11/1994	15.0	10.0	TP31	7.0	8.0	8.0	7.0	X	X	--	X	X	X	--	--
					TP32	7.0	7.0	8.0	8.0	X	X	--	X	X	X	--	--
TP-01	SRE	6/30/1997	12.0	12.0	(no subsurface soil samples)					--	--	--	--	--	--	--	--
TP-02	SRE	6/30/1997	12.0	12.0	TP02-0203	2.0	3.0	10.0	9.0	X	X	--	X	X	--	X	--
TP-03	SRE	6/30/1997	12.5	12.5	(no subsurface soil samples)					--	--	--	--	--	--	--	--
TP-04	SRE	7/1/1997	12.5	12.5	(no subsurface soil samples)					--	--	--	--	--	--	--	--
TP-05	SRE	7/1/1997	11.0	11.0	TP-05-0708	7.0	8.0	4.0	3.0	X	X	--	X	X	--	X	--
TP-06	SRE	7/1/1997	12.5	12.5	TP-06-0607	6.0	7.0	6.5	5.5	X	X	--	X	X	--	X	--
TP-07	SRE	7/2/1997	12.5	12.5	TP-07-0708	7.0	8.0	5.5	4.5	X	X	--	X	X	--	X	--
TP-08	SRE	7/2/1997	11.5	11.5	TP-08-0304	3.0	4.0	8.5	7.5	X	X	--	X	X	--	X	--
TP-09	SRE	7/2/1997	12.0	12.0	(no subsurface soil samples)					--	--	--	--	--	--	--	--
TP-13	SRE	7/3/1997	13.0	10.0	TP-13-0607	6.0	7.0	7.0	6.0	X	X	--	X	X	--	X	--
TP-16	SRE	7/7/1997	14.0	10.0	TP-16-1011	10.0	11.0	4.0	3.0	X	X	--	X	X	--	X	--
SB411	PDI	11/24/2003	31.0	10.5	SB-411-2022	20.0	22.0	11.0	9.0	--	--	X	--	X	--	X	X
					SB-411-2224	22.0	24.0	9.0	7.0	--	--	X	--	X	--	X	X
					SB-411-2628	26.0	28.0	5.0	3.0	--	--	X	--	X	--	X	X
SB412	PDI	11/25/2003	24.5	10.5	SB-412-1416	14.0	16.0	10.5	8.5	--	--	X	--	X	--	X	X
SB423	PDI	11/25/2003	11.9	11.9	SB-423-0204	2.0	4.0	9.9	7.9	--	--	X	--	X	--	X	X
SB424	PDI	11/26/2003	12.0	12.0	SB-424-0204	2.0	4.0	10.0	8.0	--	--	X	--	X	--	X	X
SB425	PDI	11/26/2003	12.1	12.1	SB-425-0204	2.0	4.0	10.1	8.1	--	--	X	--	X	--	X	X
SB426	PDI	11/25/2003	11.5	11.5	SB-426-0204	2.0	4.0	9.5	7.5	--	--	X	--	X	--	X	X
SB434	PDI	12/2/2003	11.5	11.5	SB-434-0204	2.0	4.0	9.5	7.5	--	--	X	--	X	--	X	X
					SB-434-0608	6.0	8.0	5.5	3.5	--	--	X	--	X	--	X	X
Area 6																	
B-3	RI (Ph I)	4/18/1990	10.1	10.1	B031-418	2.0	4.0	8.1	6.1	X	X	X	--	--	--	--	--
					B032-418	8.0	10.0	2.1	0.1	X	X	X	--	X	X	--	--
					B033-418	12.0	14.0	-1.9	-3.9	X	X	X	--	X	X	--	--
B-13	RI (Ph II)	11/23/1993	8.9	8.9	B132-112393	4.0	6.0	4.9	2.9	X	X	X	--	X	X	--	--

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 6 (cont.)																	
SB426	PDI	11/25/2003	11.5	11.5	SB-426-0204	2.0	4.0	9.5	7.5	--	--	X	--	X	--	X	X
SB434	PDI	12/2/2003	11.5	11.5	SB-434-0204	2.0	4.0	9.5	7.5	--	--	X	--	X	--	X	X
					SB-434-0608	6.0	8.0	5.5	3.5	--	--	X	--	X	--	X	X
B-3	RI (Ph I)	4/18/1990	10.1	10.1	B031-418	2.0	4.0	8.1	6.1	X	X	X	--	--	--	--	--
					B032-418	8.0	10.0	2.1	0.1	X	X	X	--	X	X	--	--
					B033-418	12.0	14.0	-1.9	-3.9	X	X	X	--	X	X	--	--
B-13	RI (Ph II)	11/23/1993	8.9	8.9	B132-112393	4.0	6.0	4.9	2.9	X	X	X	--	X	X	--	--
B-16	RI (Ph II)	11/23/1993	9.2	9.2	B162-112393	2.0	4.0	7.2	5.2	X	X	X	--	X	X	--	--
					B163-112393	6.0	7.0	3.2	2.2	X	--	--	--	--	--	--	--
MW-2S	RI (Ph I)	4/23/1990	9.1	9.1	MW21-423	6.0	8.0	3.1	1.1	X	X	X	--	X	X	--	--
					MW22-423	12.0	14.0	-2.9	-4.9	X	X	X	--	X	X	--	--
MW-2D	RI (Ph II)	11/29/1993	9.2	9.2	(no subsurface soil samples)					--	--	--	--	--	--	--	--
MW-10S	RI (Ph II)	11/29/1993	10.4	10.4	M102-112993	4.0	6.0	6.4	4.4	X	X	X	--	X	X	--	--
MW-102	SRE	7/7/1997	8.3	8.3	SB-102-0608	6.0	8.0	2.3	0.3	X	X	--	X	X	--	X	--
TP-14	SRE	7/3/1997	10.0	10.0	TP-14-0304	3.0	4.0	7.0	6.0	X	X	--	X	X	--	X	--
TP-15	SRE	7/3/1997	9.0	9.0	TP-15-0506	5.0	6.0	4.0	3.0	X	X	--	X	X	--	X	--
SB403	PDI	11/25/2003	9.4	9.4	SB-403-0204	2.0	4.0	7.4	5.4	--	--	X	--	X	--	X	X
					SB-403-0608	6.0	8.0	3.4	1.4	--	--	X	--	X	--	X	X
					SB-403-1012	10.0	12.0	-0.6	-2.6	--	--	X	--	X	--	X	X
					SB-403-1416	14.0	16.0	-4.6	-6.6	--	--	X	--	X	--	X	X
					SB-403-1820	18.0	20.0	-8.6	-10.6	--	--	X	--	X	--	X	X
SB404	PDI	11/25/2003	8.9	8.9	SB-404-0204	2.0	4.0	6.9	4.9	--	--	X	--	X	--	X	X
					SB-404-0608	6.0	8.0	2.9	0.9	--	--	X	--	X	--	X	X
					SB-404-1012	10.0	12.0	-1.1	-3.1	--	--	X	--	X	--	X	X
					SB-404-1618	16.0	18.0	-7.1	-9.1	--	--	X	--	X	--	X	X
					SB-404-1820	18.0	20.0	-9.1	-11.1	--	--	X	--	X	--	X	X
SB413	PDI	12/4/2003	10.6	10.6	SB-413-0204	2.0	4.0	8.6	6.6	--	--	X	--	X	--	X	X
SB414	PDI	12/2/2003	10.7	10.7	SB-414-0204	2.0	4.0	8.7	6.7	--	--	X	--	X	--	X	X
					SB-414-0608	6.0	8.0	4.7	2.7	--	--	X	--	X	--	X	X
					SB-414-1012	10.0	12.0	0.7	-1.3	--	--	X	--	X	--	X	X

TABLE 4-1

SUBSURFACE SOIL SAMPLE ANALYSIS SUMMARY
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Event	Date	Surface Elevation (1)	Base Grade Elevation (1)	Sample ID	Sample Depth (2)		Sample Elevation (1)		Analysis							
										VOC	SVOC	PAH	Pest/ PCBs	TAL Metals	Cyanide	TPH	GRO
Area 6 (cont.)																	
SB428	PDI	11/24/2003	8.0	8.0	SB-428-0204	2.0	4.0	6.0	4.0	--	--	X	--	X	--	X	X
					SB-428-0608	6.0	8.0	2.0	0.0	--	--	X	--	X	--	X	X
					SB-428-1012	10.0	12.0	-2.0	-4.0	--	--	X	--	X	--	X	X
					SB-428-1416	14.0	16.0	-6.0	-8.0	--	--	X	--	X	--	X	X
					SB-428-1820	18.0	20.0	-10.0	-12.0	--	--	X	--	X	--	X	X
SB429	PDI	11/25/2003	8.6	8.6	SB-429-0406	4.0	6.0	4.6	2.6	--	--	X	--	X	--	X	X
					SB-429-0608	6.0	8.0	2.6	0.6	--	--	X	--	X	--	X	X
					SB-429-1012	10.0	12.0	-1.4	-3.4	--	--	X	--	X	--	X	X
					SB-429-1416	14.0	16.0	-5.4	-7.4	--	--	X	--	X	--	X	X
					SB-429-1820	18.0	20.0	-9.4	-11.4	--	--	X	--	X	--	X	X
SB430	PDI	12/2/2003	9.8	9.8	SB-430-0204	4.0	6.0	5.8	3.8	--	--	X	--	X	--	X	X
					SB-430-0810	8.0	10.0	1.8	-0.2	--	--	X	--	X	--	X	X
					SB-430-1214	12.0	14.0	-2.2	-4.2	--	--	X	--	X	--	X	X
					SB-430-1416	14.0	16.0	-4.2	-6.2	--	--	X	--	X	--	X	X
SB431	PDI	11/26/2003	11.1	11.1	SB-431-0204	2.0	4.0	9.1	7.1	--	--	X	--	X	--	X	X
					SB-431-0810	8.0	10.0	3.1	1.1	--	--	X	--	X	--	X	X
					SB-431-1012	10.0	12.0	1.1	-0.9	--	--	X	--	X	--	X	X

Notes:

(1)	elevations presented in feet NGVD 1929 (MLW)	TPH	total petroleum hydrocarbons
(2)	feet below ground surface (November 2003)	VOC	volatile organic compounds
GRO	gasoline range organics	X	sample was analyzed
ID	identifier	--	sample was not analyzed
Pest	pesticides		
RI (Ph I)	Phase I Remedial Investigation		
RI (Ph II)	Phase II Remedial Investigation		
RI (Ph III)	Phase III Remedial Investigation		
PCBs	polychlorinated biphenyls		
PAH	polynuclear aromatic hydrocarbons		
PDI	Pre-Design Investigation		
SVOC	semivolatile organic compounds		
TAL	Target Analyte List		

TABLE 4-2A

JAR HEADSPACE SUMMARY
WESTERN SECTION (AREA 1 AND 2)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
AREA 1										
B-9	17.7	9.0	11.0	8.7	6.7	ND	ND	na	--	--
		11.0	12.0	6.7	4.7	NR	NR	na	--	--
		12.0	14.0	5.7	3.7	ND	ND	na	--	--
B-10	13.7	**0.0**	**2.0**	13.7	12.7	ND	ND	na	--	--
		2.0	4.0	11.7	9.7	ND	ND	na	--	--
		4.0	6.0	9.7	7.7	NR	NR	na	--	--
		6.0	8.0	7.7	5.7	ND	ND	na	--	--
B-11	8.4	2.0	4.0	6.4	4.4	ND	ND	na	170	--
		4.0	**6.0**	4.4	2.4	ND	ND	na	--	--
		6.0	8.0	2.4	0.4	1.0	ND	na	ND	--
		8.0	10.0	0.4	-1.6	1.0	ND	na	--	--
		10.0	12.0	-1.6	-3.6	ND	ND	na	ND	--
		12.0	14.0	-3.6	-5.6	ND	ND	na	ND	--
		14.0	16.0	-5.6	-7.6	ND	ND	na	--	--
		16.0	18.0	-7.6	-9.6	ND	ND	na	13	--
		18.0	20.0	-9.6	-11.6	ND	ND	na	--	--
		20.0	22.0	-11.6	-13.6	ND	ND	na		--
		22.0	24.0	-13.6	-15.6	ND	ND	na		--
		25.0	27.0	-16.6	-18.6	ND	ND	na		--
SB415	13.3	4.0	6.0	9.3	7.3	na	ND	0.0	--	--
		6.0	**8.0**	7.3	5.3	na	NR	NR	ND	--
		8.0	10.0	5.3	3.3	na	ND	0.0	--	--
		10.0	**12.0**	3.3	1.3	na	NR	NR	39	--
SB416	11.5	**4.0**	**6.0**	7.5	5.5	na	0.9	0.0	170	--
		6.0	8.0	5.5	3.5	na	0.5	0.0	--	--
		8.0	**10.0**	3.5	1.5	na	1.3	0.0	ND	--
		10.0	12.0	1.5	-0.5	na	0.8	0.0	--	--
		12.0	**14.0**	-0.5	-2.5	na	1.8	0.5	ND	--
		14.0	**16.0**	-2.5	-4.5	na	0.9	0.0	ND	--
		16.0	18.0	-4.5	-6.5	na	1.5	3.0	--	--
		18.0	**20.0**	-6.5	-8.5	na	0.6	11.4	13	--
		20.0	22.0	-8.5	-10.5	na	na	na	--	--
SB417	8.5	2.0	4.0	6.5	4.5	na	na	na	--	--
		4.0	**6.0**	4.5	2.5	na	122.0	10.9	310	staining/petroleum odor
		6.0	**8.0**	2.5	0.5	na	7.0	0.0	175	staining
		8.0	10.0	0.5	-1.5	na	11.0	0.0	--	--
		10.0	**12.0**	-1.5	-3.5	na	1.0	0.0	ND	--
		12.0	14.0	-3.5	-5.5	na	0.3	0.0	--	--
		14.0	**16.0**	-5.5	-7.5	na	0.6	0.0	ND	--
		16.0	18.0	-7.5	-9.5	na	1.0	0.0	--	--
		18.0	**20.0**	-9.5	-11.5	na	2.2	0.0	ND	--
SB418	10.0	**4.0**	**6.0**	6.0	4.0	na	4.1	3.9	32	--
		6.0	8.0	4.0	2.0	na	151.0	23.5	--	--
		8.0	**10.0**	2.0	0.0	na	139.0	23.5	44	strong petroleum odor/potential saturation
		10.0	12.0	0.0	-2.0	na	38.5	38.5	--	strong petroleum odor
		12.0	**14.0**	-2.0	-4.0	na	25.0	25.0	ND	petroleum odor/potential saturation
		14.0	16.0	-4.0	-6.0	na	20.8	20.8	--	petroleum odor
		16.0	**18.0**	-6.0	-8.0	na	3.6	0.0	ND	--
		18.0	20.0	-8.0	-10.0	na	11.5	2.1	--	--
		20.0	22.0	-10.0	-12.0	na	na	na	--	--

TABLE 4-2A

JAR HEADSPACE SUMMARY
WESTERN SECTION (AREA 1 AND 2)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
AREA 1 (cont.)										
SB433	17.3	**12.0**	**14.0**	5.3	3.3	na	24.6	47.3	190	--
		14.0	16.0	3.3	1.3	na	116.0	326.7	--	--
		16.0	**18.0**	1.3	-0.7	na	0.4	0.0	170	--
		18.0	20.0	-0.7	-2.7	na	1.7	0.8	--	--
		20.0	**22.0**	-2.7	-4.7	na	5.4	8.0	92	--
		22.0	24.0	-4.7	-6.7	na	0.0	0.0	--	--
		24.0	**26.0**	-6.7	-8.7	na	1.6	0.8	ND	--
		26.0	28.0	-8.7	-10.7	na	0.1	0.0	--	--
AREA 2										
B-7(MW-4)	8.1	0.0	2.0	8.1	6.1	na	2.5	na	--	--
		2.0	**4.0**	6.1	4.1	na	3.8	na	--	--
		4.0	6.0	4.1	2.1	na	23.0	na	--	petroleum odor
		6.0	**8.0**	2.1	0.1	na	37.0	na	--	strong petrol odor
		8.0	10.0	0.1	-1.9	na	NR	na	--	petroleum odor
		10.0	**12.0**	-1.9	-3.9	na	6.0	na	--	--
B-8	11.5	4.0	6.0	7.5	5.5	NR	NR	na	--	--
		6.0	8.0	5.5	3.5	0.0	6.0	na	--	--
		8.0	10.0	3.5	1.5	0.0	7.0	na	--	--
		10.0	12.0	1.5	-0.5	NR	NR	na	--	--
		12.0	14.0	-0.5	-2.5	28.0	20.0	na	--	strong odor/staining
		14.0	16.0	-2.5	-4.5	0.0	6.0	na	--	odor
		16.0	18.0	-4.5	-6.5	NR	NR	na	--	slight odor
		18.0	20.0	-6.5	-8.5	1.0	8.0	na	--	slight odor
		20.0	22.0	-8.5	-10.5	1.0	2.0	na	--	slight odor
		22.0	23.0	-10.5	-12.5	ND	4.0	na	--	--
SB405	7.0	**2.0**	**4.0**	5.0	3.0	na	0.0	0.0	43	--
		4.0	6.0	3.0	1.0	na	0.0	0.0	--	--
		6.0	**8.0**	1.0	-1.0	na	0.0	0.0	92	--
		8.0	10.0	-1.0	-3.0	na	0.0	0.0	--	--
		10.0	**12.0**	-3.0	-5.0	na	0.0	0.0	ND	--
		12.0	14.0	-5.0	-7.0	na	0.0	0.0	--	--
		14.0	**16.0**	-7.0	-9.0	na	0.0	0.0	ND	--
SB406	11.4	4.0	6.0	7.4	5.4	na	1.8	0.0	--	--
		6.0	**8.0**	5.4	3.4	na	3.8	0.0	170	--
		8.0	10.0	3.4	1.4	na	3.7	1.3	--	--
		10.0	**12.0**	1.4	-0.6	na	2.7	5.2	69	--
		12.0	14.0	-0.6	-2.6	na	0.6	0.0	--	--
		14.0	**16.0**	-2.6	-4.6	na	3.5	0.8	15	--
		16.0	18.0	-4.6	-6.6	na	3.1	0.0	--	--
		18.0	**20.0**	-6.6	-8.6	na	2.6	0.0	ND	--
SB407	12.9	6.0	8.0	6.9	4.9	na	0.0	0.0	--	--
		8.0	**10.0**	4.9	2.9	na	0.0	0.0	48	--
		10.0	12.0	2.9	0.9	na	0.0	0.0	--	--
		12.0	**14.0**	0.9	-1.1	na	19.1	29.2	900	sheen/potential petroleum saturation
		14.0	16.0	-1.1	-3.1	na	0.1	1.1	--	sheen/potential petroleum saturation
		16.0	**18.0**	-3.1	-5.1	na	4.1	4.7	23	sheen/potential petroleum saturation
		18.0	20.0	-5.1	-7.1	na	3.8	6.9	--	--
		20.0	**22.0**	-7.1	-9.1	na	2.1	4.8	ND	--
		22.0	24.0	-9.1	-11.1	na	0.0	0.0	--	--
		24.0	26.0	-11.1	-13.1	na	0.0	0.6	--	--

TABLE 4-2A

JAR HEADSPACE SUMMARY
WESTERN SECTION (AREA 1 AND 2)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Notes:

(1)	elevations are presented as feet NGVD 1929 (MLW)

See boring logs for detailed description.
Bold number indicates the soil sample was collected from that depth interval.

FID	flame ionization detector
ft bgs	feet below ground surface
na	not applicable
NR	no reading
ND	not detected
OVA	organic vapor analyzer
PID	photoionization detector
ppm	parts per million (above background readings)
--	not analyzed for TPH/no evidence of TPH
	exceeds the TPH PRG of 500 mg/kg

TABLE 4-2B

JAR HEADSPACE SUMMARY
CENTRAL SECTION (AREA 3 AND 4)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 3										
B-6	10.1	2.0	4.0	8.1	6.1	na	4.3	na	--	--
		4.0	**6.0**	6.1	4.1	na	11.2	na	--	petroleum odor
		6.0	8.0	4.1	2.1	na	na	na	--	--
		8.0	10.0	2.1	0.1	na	10.2	na	--	slight odor
		10.0	**12.0**	0.1	-1.9	na	3.4	na	--	slight odor
		12.0	14.0	-1.9	-3.9	na	3.6	na	--	--
MW-3S	9.8	2.0	4.0	7.8	5.8	na	14.2	na	--	--
		4.0	6.0	5.8	3.8	na	10.0	na	--	oily staining/strong petroleum odor
		6.0	**8.0**	3.8	1.8	na	144.0	na	--	oily staining/strong petroleum odor
		8.0	10.0	1.8	-0.2	na	59.0	na	--	strong petroleum odor
		10.0	12.0	-0.2	-2.2	na	24.0	na	--	strong petroleum odor
		12.0	**14.0**	-2.2	-4.2	na	18.2	na	--	slight odor
MW-7S	10.9	**2.0**	**4.0**	8.9	6.9	ND	ND	na	--	--
		4.0	6.0	6.9	4.9	7.0	6.0	na	--	petroleum odor
		6.0	8.0	4.9	2.9	ND	ND	na	--	slight odor
		8.0	10.0	2.9	0.9	ND	ND	na	--	slight odor
		10.0	12.0	0.9	-1.1	ND	ND	na	--	--
		12.0	14.0	-1.1	-3.1	ND	ND	na	--	--
TP-1A,B,C	10.5	no samples collected for jar headspace							na	some contam. from broken pipe only
TP-10	10.5	no samples collected for jar headspace							na	--
TP-11	10.0	0.0	0.5	10.0	9.5	na	na	0.0	--	--
		5.0	**6.0**	5.0	4.0	na	na	3.5	7500	stained/saturated with oil
TP-12	9.0	0.0	5.0	9.0	4.0	na	na	0.0	4100 J	pipe containing oil found
TP-17	10.0	0.0	3.0	10.0	7.0	na	na	0.0	--	--
		3.0	**8.0**	7.0	2.0	na	na	9.0	200	oily water entering excavation
MW-101	10.9	2.0	4.0	8.9	6.9	na	na	0.0	--	--
		4.0	6.0	6.9	4.9	na	na	NR	--	odor/sheen
		6.0	**8.0**	4.9	2.9	na	na	NR	1900 J	slight odor/sheen
		8.0	10.0	2.9	0.9	na	na	NR	--	oil sheen/odor
		10.0	12.0	0.9	-1.1	na	na	NR	--	--
		12.0	14.0	-1.1	-3.1	na	na	NR	--	--
SB408	8.0	**2.0**	**4.0**	6.0	4.0	na	0.0	0.0	600	--
		4.0	6.0	4.0	2.0	na	0.0	0.0	--	--
		6.0	**8.0**	2.0	0.0	na	1.8	0.0	150	--
		8.0	10.0	0.0	-2.0	na	na	na	--	--
		10.0	12.0	-2.0	-4.0	na	na	na	--	--
		12.0	14.0	-4.0	-6.0	na	na	na	--	--
SB409	9.1	2.0	4.0	7.1	5.1	na	0.0	1.5	--	--
		4.0	**6.0**	5.1	3.1	na	130.0	70.0	4800	heavy staining, trace free oil
		6.0	**8.0**	3.1	1.1	na	193.0	240.7	4200	heavy staining, trace free oil
		8.0	10.0	1.1	-0.9	na	62.0	23.2	--	sheen
		10.0	**12.0**	-0.9	-2.9	na	44.0	24.0	38	slight odor
		12.0	14.0	-2.9	-4.9	na	69.0	26.5	--	slight odor
		14.0	16.0	-4.9	-6.9	na	37.0	8.3	--	--
SB410	9.4	**2.0**	**4.0**	7.4	5.4	na	0.0	1.5	52	--
		4.0	6.0	5.4	3.4	na	127.0	122.5	--	petroleum odor/staining
		6.0	**8.0**	3.4	1.4	na	52.0	1438	2900	very strong petroleum odor/free oil
		8.0	10.0	1.4	-0.6	na	88.7	107.6	--	sheen
		10.0	**12.0**	-0.6	-2.6	na	60.6	61.6	110	sheen
		12.0	14.0	-2.6	-4.6	na	5.3	0.0	--	slight odor
		14.0	**16.0**	-4.6	-6.6	na	NR	NR	25	odor/slight sheen
		16.0	18.0	-6.6	-8.6	na	4.5	4.0	--	--
		18.0	**20.0**	-8.6	-10.6	na	0.0	3.2	ND	--

TABLE 4-2B

JAR HEADSPACE SUMMARY
CENTRAL SECTION (AREA 3 AND 4)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 3 (cont.)										
SB419	8.4	**2.0**	**4.0**	6.4	4.4	na	59.9	44.6	1600	petroleum odor/slight staining
		4.0	6.0	4.4	2.4	na	277.0	289.0	--	--
		6.0	**8.0**	2.4	0.4	na	294.0	174.0	2650	petroleum odor
		8.0	10.0	0.4	-1.6	na	23.3	34.9	--	sheen
		10.0	**12.0**	-1.6	-3.6	na	27.7	20.9	35	slight odor
		12.0	14.0	-3.6	-5.6	na	52.6	40.0	--	odor
SB420	10.0	**2.0**	**4.0**	8.0	6.0	na	2.5	4.6	46	--
		4.0	6.0	6.0	4.0	na	560.0	684.3	--	staining/petroleum odor
		6.0	**8.0**	4.0	2.0	na	280.0	1555	8400	oil squeezing out of pores in soil
		8.0	10.0	2.0	0.0	na	249.0	1298	--	oil squeezing out of pores in soil
		10.0	**12.0**	0.0	-2.0	na	158.0	480.0	710	petroleum odor
		12.0	14.0	-2.0	-4.0	na	37.3	23.0	--	--
		14.0	**16.0**	-4.0	-6.0	na	63.4	35.3	70	--
SB421	10.8	**2.0**	**4.0**	8.8	6.8	na	0.0	143.7	125	--
		4.0	6.0	6.8	4.8	na	270	832.7	--	stained/free product
		6.0	**8.0**	4.8	2.8	na	250	672.8	7300	free product - appears to be heavy oi
		8.0	10.0	2.8	0.8	na	22.4	232.9	--	sheen
		10.0	12.0	0.8	-1.2	na	na	na	--	--
		12.0	**14.0**	-1.2	-3.2	na	8.8	NR	ND	slight odor
		14.0	**16.0**	-3.2	-5.2	na	NR	NR	16	--
		16.0	18.0	-5.2	-7.2	na	3.9	NR	--	slight odor
		18.0	**20.0**	-7.2	-9.2	na	1.1	NR	18	--
SB422	11.8	**2.0**	**4.0**	9.8	7.8	na	0	0.0	360	--
		4.0	6.0	7.8	5.8	na	0	186.0	--	--
		6.0	**8.0**	5.8	3.8	na	0.4	334.1	37	--
		8.0	10.0	3.8	1.8	na	0	3.2	--	--
		10.0	**12.0**	1.8	-0.2	na	1.3	1.1	ND	--
		12.0	14.0	-0.2	-2.2	na	1	3.7	--	--
		14.0	**16.0**	-2.2	-4.2	na	0.5	0.0	ND	--
		16.0	18.0	-4.2	-6.2	na	0.0	0.0	--	--
		18.0	**20.0**	-6.2	-8.2	na	0.0	186.0	ND	--
SB432	9.8	**2.0**	**4.0**	7.8	5.8	na	2000	5425	1100	slight sweet odor
		4.0	6.0	5.8	3.8	na	2000	2929	--	--
		6.0	**8.0**	3.8	1.8	na	2000	5677	910	--
		8.0	10.0	1.8	-0.2	na	153.0	241.0	--	strong petroleum odor
		10.0	**12.0**	-0.2	-2.2	na	485.0	365.0	93	petroleum staining/odor
		12.0	14.0	-2.2	-4.2	na	28.3	12.6	--	--
		14.0	**16.0**	-4.2	-6.2	na	12.0	1.9	ND	--
		16.0	18.0	-6.2	-8.2	na	7.7	0.0	--	--
		18.0	**20.0**	-8.2	-10.2	na	0.0	0.0	ND	--
Area 4										
B-5	7.8	2.0	4.0	5.8	3.8	758.0	na	na	--	--
		4.0	**6.0**	3.8	1.8	100.0	na	na	--	strong petroleum odor/oily staining
		6.0	**8.0**	1.8	-0.2	>1000	na	na	--	swamp odor
		8.0	10.0	-0.2	-2.2	10.0	na	na	--	swamp odor
		10.0	12.0	-2.2	-4.2	200.0	na	na	--	organic odor
B-12	7.9	**2.0**	**4.0**	5.9	3.9	ND	ND	na	--	--
		4.0	6.0	3.9	1.9	1.0	ND	na	--	petroleum odor
		6.0	8.0	1.9	-0.1	ND	ND	na	--	--

TABLE 4-2B

JAR HEADSPACE SUMMARY
CENTRAL SECTION (AREA 3 AND 4)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 4 (cont.)										
MW-11S	7.9	**2.0**	**4.0**	5.9	3.9	ND	ND	na	--	--
		4.0	6.0	3.9	1.9	15.0	5.0	na	--	--
		6.0	8.0	1.9	-0.1	1.0	ND	na	--	--
		8.0	10.0	-0.1	-2.1	2.0	ND	na	--	slight petroleum odor
		10.0	12.0	-2.1	-4.1	NR	NR	na	--	--
MW-11R	7.6	2.0	4.0	5.6	3.6	ND	ND	na	--	--
		4.0	6.0	3.6	1.6	15.0	5.0	na	--	--
		6.0	8.0	1.6	-0.4	1.0	ND	na	--	--
		8.0	10.0	-0.4	-2.4	2.0	ND	na	--	slight petroleum odor
		10.0	12.0	-2.4	-4.4	NR	NR	na	--	--
SB400	7.3	0.0	2.0	7.3	5.3	na	0.0	0.0	--	--
		2.0	**4.0**	5.3	3.3	na	0.0	0.0	16	--
		4.0	6.0	3.3	1.3	na	6.8	9.4	--	--
		6.0	**8.0**	1.3	-0.7	na	NR	NR	170	--
SB401	7.9	**2.0**	**4.0**	5.9	3.9	na	0.0	0.0	29	--
		4.0	6.0	3.9	1.9	na	5.3	32.4	--	--
		6.0	8.0	1.9	-0.1	na	na	na	--	--
		8.0	**10.0**	-0.1	-2.1	na	0.0	17.4	19	--
		10.0	**12.0**	-2.1	-4.1	na	0.0	5.7	15	--
		12.0	14.0	-4.1	-6.1	na	0.0	15.4	--	--
SB402	8.4	**2.0**	**4.0**	6.4	4.4	na	84.2	15.0	63	--
		4.0	6.0	4.4	2.4	na	81.0	23.6	--	faint sweet odor
		6.0	8.0	2.4	0.4	na	72.8	28.3	--	--
		8.0	**10.0**	0.4	-1.6	na	7.5	417.2	180	organic odor
		10.0	12.0	-1.6	-3.6	na	23.9	157.0	--	--
		12.0	**14.0**	-3.6	-5.6	na	6.1	452.3	ND	slight odor
		14.0	16.0	-5.6	-7.6	na	11.3	17.0	--	--
		16.0	**18.0**	-7.6	-9.6	na	1.6	17.9	ND	--
		18.0	**20.0**	-9.6	-11.6	na	0.0	0.0	ND	--
SB427	8.3	**2.0**	**4.0**	6.3	4.3	na	0.0	0.0	370	--
		4.0	6.0	4.3	2.3	na	123	90.5	--	oily sand/petroleum odor
		6.0	**8.0**	2.3	0.3	na	52.1	29.3	400	sulfur odor
		8.0	10.0	0.3	-1.7	na	26.3	13.6	--	--
		10.0	12.0	-1.7	-3.7	na	na	na	--	--

Notes:
(1) elevations are presented as feet NGVD 1929 (MLW)
See boring logs for detailed description.
Bold number indicates the soil sample was collected from that depth interval.
ft bgs feet below ground surface
FID flame ionization detector
NR no reading
ND not detected
na not applicable
-- not analyzed for TPH/no evidence of TPH
OVA organic vapor analyzer
ppm parts per million (above background readings)
PID photoionization detector

TABLE 4-2C

JAR HEADSPACE SUMMARY
EASTERN SECTION (AREA 5 AND 6)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location/ Date	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 5										
B-1	12.5	2.0	4.0	10.5	8.5	0.8	na	na	--	--
		4.0	6.0	8.5	6.5	0.5	na	na	--	--
		6.0	8.0	6.5	4.5	4.0	na	na	--	--
		8.0	10.0	4.5	2.5	1.2	na	na	--	--
B-2	12.9	2.0	4.0	10.9	8.9	3.7	na	na	--	--
		4.0	6.0	8.9	6.9	3.8	na	na	--	--
		6.0	8.0	6.9	4.9	6.0	na	na	--	oily staining/petroleum odor
		8.0	10.0	4.9	2.9	5.6	na	na	--	slight petroleum odor
		10.0	12.0	2.9	0.9	NR	na	na	--	--
B-4	11.5	2.0	4.0	9.5	7.5	0.3	na	na	--	--
		4.0	6.0	7.5	5.5	na	na	na	--	light hydrocarbons odor (ie diesel)
		6.0	8.0	5.5	3.5	1.2	na	na	--	light hydrocarbons odor
		8.0	10.0	3.5	1.5	0.8	na	na	--	light hydrocarbons odor
		10.0	12.0	1.5	-0.5	0.9	na	na	--	light hydrocarbons odor
		12.0	14.0	-0.5	-2.5	NR	na	na	--	--
B-15	27.6	17.0	19.0	10.6	8.6	NR	NR	na	--	--
B-17	11.5	2.0	4.0	9.5	7.5	ND	ND	na	--	--
		4.0	6.0	7.5	5.5	NR	NR	na	--	--
MW-1R	11.3	no samples collected for jar headspace							na	--
MW-8R	11.5	2.0	4.0	9.5	7.5	ND	ND	na	--	--
MW-9R	11.7	2.0	4.0	9.7	7.7	ND	ND	na	--	--
		4.0	6.0	7.7	5.7	ND	ND	na	--	--
		6.0	8.0	5.7	3.7	NR	NR	na	--	--
TP2	13.0	**2.0**	**2.0**	11.0	11.0	NR	NR	na	--	--
		4.0	**5.0**	9.0	8.0	NR	NR	na	--	--
		7.0	**8.0**	6.0	5.0	NR	1200.0	na	--	black staining/strong petroleum odor
TP-01	12.0	no subsurface samples collected							na	Pipe was removed
TP-02	12.0	0.5	2.5	11.5	9.5	na	na	30.0	--	--
		2.5	**3.5**	9.5	8.5	na	na	30.0	140 J	--
TP-03	12.5	0.5	2.5	12.0	10.0	na	na	0.0	--	--
TP-04	12.5	no samples collected for jar headspace							--	3 Pipes were removed
TP-05	11.0	0.5	5.0	10.5	6.0	na	na	0.0	--	--
		7.0	**8.0**	4.0	5.0	na	na	0.0	ND	--
TP-06	12.5	0.0	6.0	12.5	6.0	na	na	0.0	--	--
		6.0	**7.0**	6.5	5.0	na	na	0.0	130 J	Concrete slab encountered
TP-07	12.5	0.0	7.0	12.5	5.0	na	na	0.0	--	--
		7.0	**8.0**	5.5	4.0	na	na	0.0	ND	--
TP-08	11.5	0.0	7.0	11.5	5.0	na	na	0.0	--	6" Pipe was removed
		7.0	**8.0**	4.5	4.0	na	na	0.0	ND	--
TP-09	12.0	no subsurface samples collected							na	--
TP-13	13.0	0.5	7.0	12.5	4.0	na	na	0.0	--	--
		7.0	**7.0**	4.0	4.0	na	na	3.2	7400 J	oil-stained
TP-16	14.0	0.0	10.0	14.0	3.0	na	0.0	na	--	--
		10.0	**11.0**	3.0	2.0	na	4.0	na	6400 J	potentially oil-laden soil
SB411	31.0	18.0	20.0	13.0	11.0	na	NR	0.0	--	--
		20.0	**22.0**	11.0	9.0	na	NR	0.0	300	--
		22.0	**24.0**	9.0	7.0	na	NR	0.0	170	--
		24.0	26.0	7.0	5.0	na	NR	0.0	--	--
		26.0	**28.0**	5.0	3.0	na	na	na	380	--

TABLE 4-2C

JAR HEADSPACE SUMMARY
EASTERN SECTION (AREA 5 AND 6)
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location/ Date	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 5 (cont.)										
SB412	24.5	12.0	14.0	12.5	10.5	na	38.9	103.3	--	--
		14.0	**16.0**	10.5	8.5	na	50.3	137.3	100	--
		16.0	18.0	8.5	6.5	na	636.0	132.6	--	--
		18.0	20.0	6.5	4.5	na	na	na	--	--
SB423	11.9	**2.0**	**4.0**	9.9	7.9	na	0.0	0.0	78	--
		4.0	6.0	7.9	5.9	na	0.0	0.0	--	--
SB424	12.0	**2.0**	**4.0**	10.0	8.0	na	0.0	0.0	ND	--
		4.0	6.0	8.0	6.0	na	na	na	--	--
SB425	12.1	**2.0**	**4.0**	10.1	8.1	na	0.0	0.0	15	--
		4.0	6.0	8.1	6.1	na	0.0	0.0	--	--
SB426	11.5	**2.0**	**4.0**	9.5	7.5	na	0.0	0.0	38	--
SB434	11.5	**2.0**	**4.0**	9.5	7.5	na	0.0	5.1	41	--
		4.0	6.0	7.5	5.5	na	0.0	2.3	--	--
		6.0	**8.0**	5.5	3.5	na	7.7	101.0	38	--
		8.0	10.0	3.5	1.5	na	0.0	24.6	--	--
Area 6										
B-3	10.1	2.0	4.0	8.1	6.1	na	1.5	na	--	--
		4.0	6.0	6.1	4.1	na	5.0	na	--	--
		6.0	8.0	4.1	2.1	na	40.0	na	--	slight petroleum odor
		8.0	**10.0**	2.1	0.1	na	12.0	na	--	staining/some odor
		10.0	12.0	0.1	-1.9	na	9.0	na	--	petroleum odor
		12.0	**14.0**	-1.9	-3.9	na	17.0	na	--	petroleum odor
B-13	8.9	2.0	4.0	6.9	4.9	ND	3.0	na	--	--
		4.0	**6.0**	4.9	2.9	35.0	25.0	na	--	petroleum odor
		6.0	8.0	2.9	0.9	700.0	55.0	na	--	petroleum odor
		8.0	10.0	0.9	-1.1	NR	55.0	na	--	petroleum odor
		10.0	12.0	-1.1	-3.1	ND	3.0	na	--	petroleum odor
		12.0	14.0	-3.1	-5.1	>1000	28.0	na	--	petroleum odor
		14.0	16.0	-5.1	-7.1	200.0	20.0	na	--	petroleum odor
		16.0	18.0	-7.1	-9.1	250.0	15.0	na	--	petroleum odor
		18.0	20.0	-9.1	-11.1	ND	ND	na	--	--
		20.0	22.0	-11.1	-13.1	ND	ND	na	--	--
		22.0	24.0	-13.1	-15.1	ND	ND	na	--	--
		24.0	26.0	-15.1	-17.1	ND	ND	na	--	--
		26.0	28.0	-17.1	-19.1	ND	ND	na	--	--
		28.0	30.0	-19.1	-21.1	ND	ND	na	--	--
B-16	9.2	2.0	4.0	7.2	5.2	0.5	ND	na	--	--
		4.0	**6.0**	5.2	3.2	ND	ND	na	--	--
		6.0	8.0	3.2	1.2	5.0	1.0	na	--	petroleum odor
		8.0	10.0	1.2	-0.8	ND	ND	na	--	petroleum odor
		10.0	12.0	-0.8	-2.8	ND	ND	na	--	petroleum odor
		12.0	14.0	-2.8	-4.8	ND	ND	na	--	petroleum odor
		14.0	16.0	-4.8	-6.8	ND	ND	na	--	--
		16.0	18.0	-6.8	-8.8	ND	5.0	na	--	--
		18.0	20.0	-8.8	-10.8	ND	5.0	na	--	--
		20.0	22.0	-10.8	-12.8	ND	2.0	na	--	--
		22.0	22.5	-12.8	-12.3	0*	0*	na	--	--
MW-2	9.1	2.0	4.0	7.1	5.1	na	15.1	na	--	--
		4.0	6.0	5.1	3.1	na	68.0	na	--	oily staining
		6.0	**8.0**	3.1	1.1	na	76.0	na	--	oily staining/petroleum odor
		8.0	10.0	1.1	-0.9	na	80.0	na	--	strong odor
		10.0	12.0	-0.9	-2.9	na	67.0	na	--	strong odor
		12.0	**14.0**	-2.9	-4.9	na	82.0	na	--	strong odor

TABLE 4-2C
JAR HEADSPACE SUMMARY
EASTERN SECTION (AREA 5 AND 6)
SOIL PRE-DESIGN INVESTIGATION
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location/ Date	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 6 (cont.)										
MW-10S	10.4	2.0	4.0	8.4	6.4	NR	NR	na	--	--
		4.0	**6.0**	6.4	4.4	ND	ND	na	--	--
		6.0	8.0	4.4	2.4	ND	ND	na	--	petroleum odor/staining
		8.0	10.0	2.4	0.4	ND	ND	na	--	petroleum odor
		10.0	**12.0**	0.4	-1.7	ND	ND	na	--	petroleum odor
		12.0	14.0	-1.7	-3.7	ND	ND	na	--	slight petroleum odor
MW-102	8.3	2.0	4.0	6.3	4.3	na	na	8.0	--	--
		4.0	**6.0**	4.3	2.3	na	na	120.0	8200 J	oily sand
		6.0	8.0	2.3	0.3	na	na	700.0	--	oily sand
		8.0	10.0	0.3	-1.7	na	na	28.0	--	oily sand
		10.0	12.0	-1.7	-3.7	na	na	10.0	--	--
		12.0	14.0	-3.7	-5.7	na	na	400.0	--	--
		14.0	16.0	-5.7	-7.7	na	na	50.0	--	--
		16.0	18.0	-7.7	-9.7	na	na	20.0	--	--
		18.0	20.0	-9.7	-11.7	na	na	8.0	--	--
		20.0	22.0	-11.7	-13.7	na	na	3.0	--	--
		22.0	24.0	-13.7	-15.7	na	na	5.0	--	--
		24.0	26.0	-15.7	-17.7	na	na	5.0	--	--
		26.0	28.0	-17.7	-19.7	na	na	5.0	--	--
		28.0	29.5	-19.7	-21.2	na	na	5.0	--	--
TP-14	10.0	0.5	4.0	9.5	6.0	na	na	0.0	--	--
		3.0	**4.0**	6.0	4.0	na	na	10.0	4800	stained/potentially oil-impacted
TP-15	9.0	0.0	4.5	9.0	5.5	na	na	0.0	--	--
		5.0	**6.0**	5.0	4.0	na	na	10.0	21,000 J	potentially oil-impacted
SB403	9.4	**2.0**	**4.0**	7.4	5.4	na	188.0	0.0	780	some staining
		4.0	6.0	5.4	3.4	na	101.0	79.1	--	--
		6.0	**8.0**	3.4	1.4	na	215.0	5400	4300	petroleum odor/sheen/oil-saturated soil
		8.0	10.0	1.4	-0.6	na	34.3	170.1	--	similar to above
		10.0	**12.0**	-0.6	-2.6	na	NR	NR	21	--
		12.0	14.0	-2.6	-4.6	na	35.6	158.0	--	--
		14.0	**16.0**	-4.6	-6.6	na	14.0	24.3	ND	--
		16.0	18.0	-6.6	-8.6	na	1.8	0.0	--	--
		18.0	**20.0**	-8.6	-10.6	na	7.3	0.0	ND	--
SB404	8.9	**2.0**	**4.0**	6.9	4.9	na	0.0	13.5	66	--
		4.0	6.0	4.9	2.9	na	9.8	22.4	--	--
		6.0	**8.0**	2.9	0.9	na	77.0	187.1	8800	petroleum odor/petroleum saturated
		8.0	10.0	0.9	-1.1	na	19.8	21.3	--	oil sheen/petroleum saturated
		10.0	**12.0**	-1.1	-3.1	na	NR	NR	2100	odor/petroleum saturated
		12.0	14.0	-3.1	-5.1	na	50.0	258.4	--	--
		14.0	16.0	-5.1	-7.1	na	14.1	60.2	--	--
		16.0	**18.0**	-7.1	-9.1	na	7.3	15.3	ND	--
		18.0	**20.0**	-9.1	-11.1	na	1.7	15.3	ND	--
SB413	10.6	**2.0**	**4.0**	8.6	6.6	na	0.0	0.8	945	staining, possible burn zone
		4.0	6.0	6.6	4.6	na	0.0	0.2	--	--
SB414	10.7	**2.0**	**4.0**	8.7	6.7	na	0.0	0.0	110	--
		4.0	6.0	6.7	4.7	na	0.0	0.0	--	--
		6.0	**8.0**	4.7	2.7	na	0.0	0.0	180	--
		8.0	10.0	2.7	0.7	na	0.0	0.8	--	sheen
		10.0	**12.0**	0.7	-1.3	na	0.0	2.7	1200	sheen
		12.0	14.0	-1.3	-3.3	na	0.0	3.5	--	sheen
		14.0	16.0	-3.3	-5.3	na	0.0	1.4	--	sheen

TABLE 4-2C
JAR HEADSPACE SUMMARY
EASTERN SECTION (AREA 5 AND 6)
SOIL PRE-DESIGN INVESTIGATION
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Location/ Date	Surface Elevation (1)	Sample Depth (ft bgs)		Sample Elevation (1)		OVA (ppm)	PID (ppm)	FID (ppm)	TPH (mg/kg)	Petroleum Evidence from Boring Log
Area 6 (cont.)										
SB428	8.0	**2.0**	**4.0**	6.0	4.0	na	15.5	0.0	1700	--
		4.0	6.0	4.0	2.0	na	0.5	21.8	--	--
		6.0	**8.0**	2.0	0.0	na	1.3	0.0	290	--
		8.0	10.0	0.0	-2.0	na	0.0	0.0	--	--
		10.0	**12.0**	-2.0	-4.0	na	0.0	301.0	56	organic odor
		12.0	14.0	-4.0	-6.0	na	0.0	26.0	--	--
		14.0	**16.0**	-6.0	-8.0	na	NR	NR	ND	--
		16.0	18.0	-8.0	-10.0	na	0.0	0.0	--	--
		18.0	**20.0**	-10.0	-12.0	na	0.0	0.0	ND	--
SB429	8.6	2.0	4.0	6.6	4.6	na	6.0	23.9	--	--
		4.0	**6.0**	4.6	2.6	na	0.0	7.1	2600	(black soil last 0.5 feet)
		6.0	**8.0**	2.6	0.6	na	51.8	28.7	8000	oil-saturated soil
		8.0	10.0	0.6	-1.4	na	48.1	395.0	--	oil-saturated soil
		10.0	**12.0**	-1.4	-3.4	na	26.2	126.0	250	--
		12.0	14.0	-3.4	-5.4	na	52.5	433.1	--	--
		14.0	**16.0**	-5.4	-7.4	na	6.4	10.9	ND	--
		16.0	18.0	-7.4	-9.4	na	2.1	10.9	--	--
		18.0	**20.0**	-9.4	-11.4	na	NR	NR	ND	--
SB430	9.8	**2.0**	**4.0**	7.8	5.8	na	0.0	0.4	330	--
		4.0	6.0	5.8	3.8	na	0.0	0.0	--	--
		6.0	8.0	3.8	1.8	na	na	na	--	--
		8.0	**10.0**	1.8	-0.2	na	0.0	0.0	2800	petroleum odor
		10.0	12.0	-0.2	-2.2	na	0.0	0.0	--	petroleum odor
		12.0	**14.0**	-2.2	-4.2	na	NR	NR	290	--
		14.0	16.0	-4.2	-6.2	na	0.0	0.0	--	--
		16.0	**18.0**	-6.2	-8.2	na	0.0	0.0	ND	--
SB431	11.1	**2.0**	**4.0**	9.1	7.1	na	4.0	2.0	50	--
		4.0	6.0	7.1	5.1	na	na	na	--	--
		6.0	8.0	5.1	3.1	na	na	na	--	--
		8.0	**10.0**	3.1	1.1	na	14.0	8.2	2300	oil-stained soil/petroleum odor
		10.0	**12.0**	1.1	-0.9	na	38.2	14.0	3200	oil-stained soil/slight petroleum odor
		12.0	14.0	-0.9	-2.9	na	26.1	12.3	--	--

Notes:
(1) elevations are presented as feet NGVD 1929 (MLW)
See boring logs for detailed description.
Bold number indicates the soil sample was collected from that depth interval.
ft bgs feet below ground surface
FID flame ionization detector
NR No reading
ND not detected
na not applicable
-- not analyzed for TPH/no evidence of TPH
OVA organic vapor analyzer
ppm parts per million (above background readings)
PID photoionization detector

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB400		SB401			SB402					SB403		
Sample Number		OFF-SB-400-0002	OFF-SB-400-0608	OFF-SB-401-0204	OFF-SB-401-0810	OFF-SB-401-1012	OFF-SB-402-0204	OFF-SB-402-0810	OFF-SB-402-1214	OFF-SB-402-1618	OFF-SB-402-1820	OFF-SB-403-0204	OFF-SB-403-0608	OFF-SB-403-1012
Depth BGS		0.0-2.0	6.0-8.0	2.0-4.0	8.0-10.0	10.0-12.0	2.0-4.0	8.0-10.0	12.0-14.0	16.0-18.0	18.0-20.0	2.0-4.0	6.0-8.0	10.0-12.0
Sample Elevation (1)		7.3 / 5.3	1.3 / -0.7	5.9 / 3.9	-0.1 / -2.1	-2.1 / -4.1	7.5 / 5.5	1.5 / -0.5	-2.5 / -4.5	-6.5 / -8.5	-8.5 / -10.5	7.4 / 5.4	3.4 / 1.4	-0.6 / -2.6
QC Identifier		None	None	None	None	None	None	None	None	None	None	None	None	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	140	110	520 *	75	36	170	11 U	3.7 U	3.7 U	3.5 U	240	1700	36
Benzo(a)pyrene	400	130	96	480 *	54	24	180	11 U	3.7 U	3.7 U	3.5 U	530 *	1400	36
Benzo(b)fluoranthene	900	170	120	610 *	61	27	180	11 U	3.7 U	3.7 U	3.5 U	590 *	1600	37
Benzo(g,h,i)perylene	900	84	87	240	29	13	77	11 U	3.7 U	3.7 U	3.5 U	430	580	24
Benzo(k)fluoranthene	800	59	39	220	29	18	89	11 U	3.7 U	3.7 U	3.5 U	210	840	15
Chrysene	400	130	110	520 *	74	37	170	11 U	3.7 U	3.7 U	3.5 U	250	1800	37
Dibenzo(a,h)anthracene	400	24	15	69	8.7	3.4 U	22	11 U	3.7 U	3.7 U	3.5 U	77	200	5.4
Indeno(1,2,3-cd)pyrene	900	74	38	220	24	10	70	11 U	3.7 U	3.7 U	3.5 U	360	550	18
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		2700 U	5300	3400 U	3200 U	2900 U	16000	44000	4700	3300 U	3500 U	51000	430000	4300 U
TAL Metal Analysis (MG/KG)														
Antimony	10	0.98 BN*	0.38 BN*	0.22 UN	9.3 N	8.2 N	0.79 BN	1.7 UN	0.70 BN	1.0 BN	0.89 BN	1.0 BN	3.9 N	0.77 BN
Arsenic	7.0	0.49 B*	4.3 *	6.5	5.4	2.2	4.0 B	4.4 B	3.3 B	8.0	8.6	6.7 *	9.4 *	3.2 *
Beryllium	0.4	0.011 U*	0.20 B*	0.27 B	0.27	0.25	0.24 B	0.19 B	0.23 B	0.44 B	0.34 B	0.22 B	0.30	0.16 B
Lead	150	8.9 *	33.2 *	56.1	20.2 E	15.1 E	147 N*	1300 N*	37.7 N*	17.4 N*	12.9 N*	22.3 NE*	1950 NE*	69.9 NE*
Manganese	390	313 *	516 *	547	1140 E	883 E	220 *	152 *	92.5 *	297 *	311 *	471 E	382 E	166 E
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	16	170	29	19	15	63	180	13 U	13 U	12 U	780	4300	21

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB403 (cont.)		SB404					SB405					SB406
Sample Number		OFF-SB-403-1416	OFF-SB-403-1820	OFF-SB-404-0204	OFF-SB-404-0608	OFF-SB-404-1012	OFF-SB-404-1618	OFF-SB-404-1820	OFF-SB-405-0204	OFF-SB-405-0608	OFF-SB-405-1012	OFF-SB-DUP02	OFF-SB-405-1416	OFF-SB-406-0608
Depth BGS		14.0-16.0	18.0-20.0	2.0-4.0	6.0-8.0	10.0-12.0	16.0-18.0	18.0-20.0	2.0-4.0	6.0-8.0	10.0-12.0	10.0-12.0	14.0-16.0	6.0-8.0
Sample Elevation (1)		-4.6 / -6.6	-8.6 / -10.6	6.9 / 4.9	2.9 / 0.9	-1.1 / -3.1	-7.1 / -9.1	-9.1 / -11.1	5.0 / 3.0	1.0 / -1.0	-3.0 / -5.0	-3.0 / -5.0	-7.0 / -9.0	5.4 / 3.4
QC Identifier		None	None	None	None	None	None	None	None	None	Field Dup.	Field Dup.	None	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	4.1 U	4.8	1100	480	210	3.8 U	4.7 U	390	640 *	64	15	3.5 U	680 *
Benzo(a)pyrene	400	4.1 U	3.9 U	990	330	190	3.8 U	4.7 U	370	560 *	62	14	3.5 U	650 *
Benzo(b)fluoranthene	900	4.1 U	3.9 U	1100	380	230	3.8 U	4.7 U	460	690 *	78	18	3.5 U	770 *
Benzo(g,h,i)perylene	900	4.1 U	3.9 U	530	140	110	3.8 U	4.7 U	210	180	29	3.5 U	3.5 U	330
Benzo(k)fluoranthene	800	4.1 U	3.9 U	570	170	78	3.8 U	4.7 U	150	260	26	8.1	3.5 U	280
Chrysene	400	4.1 U	4.0	1100	530	210	3.8 U	4.7 U	380	620 *	71	17	3.5 U	560 *
Dibenzo(a,h)anthracene	400	4.1 U	3.9 U	140	64 U	29	3.8 U	4.7 U	52	58	9.7	3.5 U	3.5 U	92
Indeno(1,2,3-cd)pyrene	900	4.1 U	3.9 U	470	130	92	3.8 U	4.7 U	180	180	25	3.5 U	3.5 U	300
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		3100 U	25000	25000	180000	110000	3900	3600 U	3200 U	2900 U	2300 U	3100 U	4000 U	4600
TAL Metal Analysis (MG/KG)														
Antimony	10	0.54 BN	0.71 BN	39.4 N	3.4 N	2.3 N	0.51 BN	1.2 BN	0.90 BN	0.84 BN	0.98 BN	1.1 BN	0.99 BN	8.7 N
Arsenic	7.0	6.2 *	4.6 *	27.8	9.3 *	8.6 *	2.6 *	7.3 *	10.7	3.8 B	7.7	9.3	25.4	2.9
Beryllium	0.4	0.22 B	0.30	0.42 B	0.55	0.23 B	0.35	0.28 B	0.26 B	0.21 B	0.32 B	0.34 B	0.45 B	0.50
Lead	150	12.3 NE*	11.5 NE*	8250	2490 NE*	729 NE*	8.1 NE*	11.4 NE*	846 N*	64.9 N*	15.9 N*	13.8 N*	10.1 N*	107 E
Manganese	390	180 E	860 E	806	185 E	351 E	268 E	444 E	543 *	279 *	245 *	284 *	3520 *	481 E
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	14 U	14 U	66	8800	2100	13 U	17 U	43	92	13 U	13 U	13 U	170

Notes:
(1) - elevation = feet NGVD (MSL) 1929
UJ - Detection limit approximate
J - Quantitation approximate
R - Rejected
NA - Not Analyzed
* - From dilution analysis
E - Estimated due to interference
N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB406 (cont.)				SB407					SB408		SB409	
Sample Number		OFF-SB-406-1012	OFF-SB-406-1416	OFF-SB-DUP14	OFF-SB-406-1820	OFF-SB-407-0810	OFF-SB-407-1214	OFF-SB-407-1618	OFF-SB-407-2022	OFF-SB-DUP11	OFF-SB-408-0204	OFF-SB-408-0608	OFF-SB-409-0406	OFF-SB-DUP05
Depth BGS		10.0-12.0	14.0-16.0	14.0-16.0	18.0-20.0	8.0-10.0	12.0-14.0	16.0-18.0	20.0-22.0	20.0-22.0	2.0-4.0	6.0-8.0	4.0-6.0	4.0-6.0
Sample Elevation (1)		1.4 / -0.6	-2.6 / -4.6	-2.6 / -4.6	-6.6 / -8.6	4.9 / 2.9	0.9 / -1.1	-3.1 / -5.1	-7.1 / -9.1	-7.1 / -9.1	6.0 / 4.0	2.0 0.0	5.1 / 3.1	5.1 / 3.1
QC Identifier		None	Field Dup.	Field Dup.	None	None	None	None	Field Dup.	Field Dup.	None	None	Field Dup.	Field Dup.
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	150	7.4	17	28	680 *	1400 *	80	6.5	12	3700 *	1800	120	110
Benzo(a)pyrene	400	140	5.6	11	23	610 *	1100 *	64	4.7	9.3	3600 *	1400	94 U	94 U
Benzo(b)fluoranthene	900	170	7.2	14	28	740 *	1200 *	72	5.8	11	4100 *	1600	94 U	94 U
Benzo(g,h,i)perylene	900	96	3.8 U	4.0	13	350	490 *	33	3.7 U	4.7	1600	830	94 U	94 U
Benzo(k)fluoranthene	800	69	3.8 U	5.6	12	250	640 *	31	3.7 U	4.2	1400	710	94 U	94 U
Chrysene	400	160	7.4	15	25	520 *	1100 *	70	5.6	10	3600 *	1700	140	140
Dibenzo(a,h)anthracene	400	24	3.8 U	3.7 U	3.8 U	93	120	8.9	3.7 U	3.8 U	120	230	94 U	94 U
Indeno(1,2,3-cd)pyrene	900	83	3.8 U	3.8	11	290	470 *	29	3.7 U	4.1	1500	710	94 U	94 U
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		3600 U	2600 U	2800 U	2700 U	2400 U	31000	2400 U	2200 U	2400 U	4300 U	4200 U	120000	120000
TAL Metal Analysis (MG/KG)														
Antimony	10	7.7 N	9.3 N	9.0 N	6.6 N	0.76 BN*	0.11 UN*	0.56 BN*	0.99 BN*	1.2 N*	0.54 BN	0.77 BN	0.48 UN	0.47 UN
Arsenic	7.0	0.75 B	3.8	4.5	3.1	7.3 *	2.5 *	4.0 *	2.1 *	4.7 *	4.3 B	5.8	15.1	13.8
Beryllium	0.4	0.58	0.51	0.52	0.22 B	0.17 B*	0.086 B*	0.30 *	0.34 *	0.38 *	0.20 B	0.35 B	0.73 B	0.69 B
Lead	150	36.1 E	12.1 E	10.8 E	10.9 E	57.5 *	79.4 *	13.1 *	6.9 *	12.7 *	71.2 N*	24.1 N*	30.6	26.6
Manganese	390	362 E	323 E	300 E	335 E	409 *	741 *	352 *	425 *	436 *	1010 *	1860 *	3200	2800
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	69	17	13 U	13 U	48	900	23	13 U	13 U	600	150	4400	5200

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB409 (cont.)		SB410	SB410 (cont.)				SB411			SB412	SB413	
Sample Number		OFF-SB-409-0608	OFF-SB-409-1012	OFF-SB-410-0204	OFF-SB-410-0608	OFF-SB-410-1012	OFF-SB-410-1416	OFF-SB-410-1820	OFF-SB-411-2022	OFF-SB-411-2224	OFF-SB-411-2628	OFF-SB-412-1416	OFF-SB-413-0204	OFF-SB-DUP12
Depth BGS		6.0-8.0	10.0-12.0	2.0-4.0	6.0-8.0	10.0-12.0	14.0-16.0	18.0-20.0	20.0-22.0	22.0-24.0	26.0-28.0	14.0-16.0	2.0-4.0	2.0-4.0
Sample Elevation (1)		3.1 / 1.1	-0.9 / -2.9	7.4 / 5.4	3.4 / 1.4	-0.6 / -2.6	-4.6 / -6.6	-8.6 / -10.6	11.0 / 9.0	9.0 / 7.0	5.0 / 3.0	10.5 / 8.5	8.6 / 6.6	8.6 / 6.6
QC Identifier		None	None	None	None	None	None	None	None	None	None	None	Field Dup.	Field Dup.
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	82	3.6 U	150	84	65	3.6 U	3.7 U	48	290	50	34	11000 *	17000 *
Benzo(a)pyrene	400	76 U	3.6 U	140	59	70	3.6 U	3.7 U	47	250	35	31	9200 *	14000 *
Benzo(b)fluoranthene	900	76 U	3.6 U	190	74	90	3.6 U	3.7 U	60	330	42	43	12000 *	15000 *
Benzo(g,h,i)perylene	900	76 U	3.6 U	71	32	52	3.6 U	3.7 U	30	120	24	21	5400 *	7900 *
Benzo(k)fluoranthene	800	76 U	3.6 U	68	25	36	3.6 U	3.7 U	25	110	21	13	3900 *	7800 *
Chrysene	400	110	3.6 U	150	98	75	3.6 U	3.7 U	72	270	42	35	7800 *	12000 *
Dibenzo(a,h)anthracene	400	76 U	3.6 U	20	7.9	13	3.6 U	3.7 U	24 U	33	6.3	6.1	1300	1800
Indeno(1,2,3-cd)pyrene	900	76 U	3.6 U	66	27	43	3.6 U	3.7 U	24 U	110	22	16	4900 *	7200 *
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		110000	2800 U	3500 U	110000	37000	2200 U	2100	2900 U	3200 U	22000	3000 U	4700	5800
TAL Metal Analysis (MG/KG)														
Antimony	10	0.47 UN	0.47 UN	0.54 UN	0.53 UN	0.20 UN	0.46 UN	0.52 UN	0.76 BN	0.82 BN	0.71 BN	0.67 BN	7.0 N	5.5 N
Arsenic	7.0	7.3	13.2	10.0	8.3	4.6	7.0	6.7	4.3 *	4.7 *	4.4 *	4.3 *	0.64 B	1.4
Beryllium	0.4	0.22 B	0.28 B	0.22 B	0.25 B	0.24 B	0.40 B	0.41 B	0.081 B	0.27 B	0.69	0.11 B	0.41	0.39
Lead	150	14.2	32.2	42.4	19.6	113	12.0	13.3	16.2 NE*	71.7 NE*	22.1 NE*	15.5 NE*	11.2 E	10.3 E
Manganese	390	1280	716	274	563	173	2120	316	409 E	775 E	4850 E	402 E	407 E	386 E
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	4200	38	52	2900	110	25	13 U	300	170	380	100	890	1000

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB414			SB415		SB416				SB417			
Sample Number		OFF-SB-414-0204	OFF-SB-414-0608	OFF-SB-414-1012	OFF-SB-415-0608	OFF-SB-415-1012	OFF-SB-416-0406	OFF-SB-416-0810	OFF-SB-416-1214	OFF-SB-416-1618	OFF-SB-417-0406	OFF-SB-417-0608	OFF-SB-DUP04	OFF-SB-417-1012
Depth BGS		2.0-4.0	6.0-8.0	10.0-12.0	6.0-8.0	10.0-12.0	4.0-6.0	8.0-10.0	12.0-14.0	16.0-18.0	4.0-6.0	6.0-8.0	6.0-8.0	10.0-12.0
Sample Elevation (1)		6.9 / 4.9	2.9 / 0.9	-1.1 / -3.1	7.3 / 5.3	3.3 / 1.3	7.5 / 5.5	3.5 / 1.5	-0.5 / -2.5	-4.5 / -6.5	4.5 / 2.5	2.5 / 0.5	2.5 / 0.5	-1.5 / -3.5
QC Identifier		None	None	None	None	None	None	None	None	None	None	Field Dup.	Field Dup.	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	1000 *	1400 *	94	19	270	880	12	3.5 U	62	56	170	170	22
Benzo(a)pyrene	400	1100 *	1000 *	71	18	280	820	11	3.5 U	55	56	130	150	21
Benzo(b)fluoranthene	900	1100 *	1200 *	83	22	340	1100	13	3.5 U	67	68	140	180	24
Benzo(g,h,i)perylene	900	550 *	440 *	46	11	180	450	3.8 U	3.5 U	32	36	58	80	12
Benzo(k)fluoranthene	800	350	400 *	30	7.9	150	470	3.8 U	3.5 U	25	25	72	64	9.8
Chrysene	400	1100 *	1100 *	93	21	340	890	11	3.5 U	60	55	160	150	20
Dibenzo(a,h)anthracene	400	110	110	11	3.6 U	44	120	3.8 U	3.5 U	7.8	8.4	16	18	3.7 U
Indeno(1,2,3-cd)pyrene	900	350	390 *	36	8.8	140	370	3.8 U	3.5 U	28	31	56	72	9.8
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		2500 U	2200 U	23000	2500 U	3300 U	3300 U	2000 U	2100 U	3500 U	34000	23000	3000 U	2600 U
TAL Metal Analysis (MG/KG)														
Antimony	10	0.38 BN*	0.56 BN*	0.37 BN*	7.5 N	8.5 N	6.2 N	7.1 N	9.1 N	8.9 N	5.5 N	4.4 N	5.4 N	4.2 N
Arsenic	7.0	5.2 *	8.5 *	4.3 *	23.6	17.6	11.8	12.4	15.6	25.9	7.8	8.2	8.6	5.8
Beryllium	0.4	0.15 B*	0.23 B*	0.21 B*	0.35	0.35	0.43	0.52	0.48	0.42	0.44	0.31	0.35	0.35
Lead	150	183 *	34.4 *	47.7 *	182	199	136	20.7	12.7	12.4	101	95.2	108	15.1
Manganese	390	1080 *	666 *	390 *	197	582	570	189	357	3210	129	194	191	114
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	110	180	1200	13 U	39	170	13 U	12 U	13	310	180	170	13 U

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB417 (cont.)		SB418					SB419				SB420	
Sample Number		OFF-SB-417-1416	OFF-SB-417-1820	OFF-SB-418-0406	OFF-SB-418-0810	OFF-SB-418-1214	OFF-SB-418-1618	OFF-SB-DUP13	OFF-SB-419-0204	OFF-SB-419-0608	OFF-SB-DUP01	OFF-SB-419-1012	OFF-SB-420-0204	OFF-SB-420-0608
Depth BGS		14.0-16.0	18.0-20.0	4.0-6.0	8.0-10.0	12.0-14.0	16.0-18.0	16.0-18.0	2.0-4.0	6.0-8.0	6.0-8.0	10.0-12.0	2.0-4.0	6.0-8.0
Sample Elevation		-5.5 / -7.5	-9.5 / -11.5	6.0 / 4.0	2.0 / 0.0	-2.0 / -4.0	-6.0 / -8.0	-6.0 / -8.0	6.4 / 4.4	2.4 / 0.4	2.4 / 0.4	-1.6 / -3.6	7.4 / 5.4	3.4 / 1.4
QC Identifier		None	None	None	None	None	Field Dup.	Field Dup.	None	Field Dup.	Field Dup.	None	None	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	3.8 U	3.8 U	150	15	3.8 U	3.7 U	4.9	71	33	32	3.7 U	510 *	96
Benzo(a)pyrene	400	3.8 U	3.8 U	150	11	3.8 U	3.7 U	3.8 U	70	15	14	3.7 U	430 *	55
Benzo(b)fluoranthene	900	3.8 U	3.8 U	200	13	3.8 U	3.7 U	4.2	70	18	17	3.7 U	530 *	65
Benzo(g,h,i)perylene	900	3.8 U	3.8 U	95	4.4	3.8 U	3.7 U	3.8 U	44	7.7	7.4	3.7 U	200	23
Benzo(k)fluoranthene	800	3.8 U	3.8 U	62	5.9	3.8 U	3.7 U	3.8 U	26	18	9.7	3.7 U	170	43
Chrysene	400	3.8 U	3.8 U	150	16	3.8 U	3.7 U	4.0	93	39	42	3.7 U	540 *	110
Dibenzo(a,h)anthracene	400	3.8 U	3.8 U	25	3.8 U	3.8 U	3.7 U	3.8 U	9.6	3.4 U	3.5 U	3.7 U	56	6.2
Indeno(1,2,3-cd)pyrene	900	3.8 U	3.8 U	81	4.2	3.8 U	3.7 U	3.8 U	34	6.0	6.0	3.7 U	180	22
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		2600 U	3000 U	2900 U	3600	2700 U	2700 U	2600 U	380000	680000	120000	33000	2900 U	210000
TAL Metal Analysis (MG/KG)														
Antimony	10	9.7 N	8.7 N	8.2 N	9.5 N	9.7 N	5.7 N	8.0 N	1.3 BN	0.76 BN	0.85 BN	0.87 BN	0.20 UN	13.0 N
Arsenic	7.0	14.3	14.1	3.7	1.1	3.8	3.1	7.3	34.7	19.7	24.3	69.2	9.1	14.2
Beryllium	0.4	0.41	0.45	0.56	0.48	0.44	0.28	0.50	0.60 B	0.45 B	0.47 B	0.66 B	0.73	0.59 B
Lead	150	14.8	12.2	321 E	14.5 E	12.7 E	8.4 E	12.2 E	14.3 N*	9.4 N*	11.5 N*	6.6 N*	77.7	14.3 *
Manganese	390	1540	219	496 E	333 E	759 E	1020 E	1700 E	209 *	451 *	439 *	737 *	448	543
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	13 U	13 U	32	44	13 U	13 U	13 U	1600	2700	2600	35	46	8400

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB420 (cont.)		SB421						SB422				
Sample Number		OFF-SB-420-1012	OFF-SB-420-1416	OFF-SB-421-0204	OFF-SB-DUP06	OFF-SB-421-0608	OFF-SB-421-1214	OFF-SB-421-1416	OFF-SB-421-1820	OFF-SB-422-0204	OFF-SB-422-0608	OFF-SB-422-1012	OFF-SB-422-1416	OFF-SB-422-1820
Depth BGS		10.0-12.0	14.0-16.0	2.0-4.0	2.0-4.0	6.0-8.0	12.0-14.0	14.0-16.0	18.0-20.0	2.0-4.0	6.0-8.0	10.0-12.0	14.0-16.0	18.0-20.0
Sample Elevation		-0.6 / -2.6	-4.6 / -6.6	8.8 / 6.8	8.8 / 6.8	4.8 / 2.8	-1.2 / -3.2	-3.2 / -5.2	-7.2 / -9.2	9.8 / 7.8	5.8 / 3.8	1.8 / -0.2	-2.2 / -4.2	-6.2 / -8.2
QC Identifier		None	None	Field Dup.	Field Dup.	None	None	None	None	None	None	None	None	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	24	3.4 U	820	590	1100	17	37	3.9 U	18000 *	79	3.6 U	3.8 U	3.6 U
Benzo(a)pyrene	400	11	3.4 U	810	570	1100	12	21	3.9 U	15000 *	84	3.6 U	3.8 U	3.6 U
Benzo(b)fluoranthene	900	14	3.4 U	870	670	1200	10	26	3.9 U	17000 *	110	3.6 U	3.8 U	3.6 U
Benzo(g,h,i)perylene	900	4.2	3.4 U	440	340	650	4.5 U	3.8 U	3.9 U	9000 *	55	3.6 U	3.8 U	3.6 U
Benzo(k)fluoranthene	800	5.7	3.4 U	440	260	460	4.5 U	13	3.9 U	7800 *	36	3.6 U	3.8 U	3.6 U
Chrysene	400	27	3.4 U	880	580	1000	17	39	3.9 U	15000 *	79	3.6 U	3.8 U	3.6 U
Dibenzo(a,h)anthracene	400	3.5 U	3.4 U	130	98	140	4.5 U	3.8 U	3.9 U	1900	17	3.6 U	3.8 U	3.6 U
Indeno(1,2,3-cd)pyrene	900	4.1	3.4 U	390	290	550	4.5 U	3.8 U	3.9 U	7500 *	50	3.6 U	3.8 U	3.6 U
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		56000	2500	4200 U	3600 U	150000	27500	11000	25000	3200 U	3600 U	3000 U	2700 U	2900 U
TAL Metal Analysis (MG/KG)														
Antimony	10	13.9 N	17.3 N	5.5 N	4.4 N	9.9 N	13.3 N	10.0 N	11.3 N	6.4 N	5.0 N	8.0 N	9.0 N	10.5 N
Arsenic	7.0	7.2	7.6	10.1	8.4	8.4	11.6	9.1	11.9	3.5	0.87 B	4.6	2.1	2.0
Beryllium	0.4	0.38 B	0.60 B	0.64	0.42	0.34 B	0.53 B	0.42 B	0.44 B	0.44	0.22 B	0.62	0.64	0.40
Lead	150	8.5 *	16.1 *	215 *	186 *	29.8 *	14.6 *	11.0 *	10.6 *	39.3 E	27.5 E	9.8 E	10.0 E	10.7 E
Manganese	390	428	2780	237	212	374	567	534	284	334 E	160 E	528 E	917 E	514 E
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	710	70	110	140	7300	16 U	16	18	360	37	13 U	13 U	13 U

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB423	SB424	SB425	SB426		SB427		SB428					SB429
Sample Number		OFF-SB-423-0204	OFF-SB-424-0204	OFF-SB-425-0204	OFF-SB-426-0204	OFF-SB-DUP08	OFF-SB-427-0204	OFF-SB-427-0608	OFF-SB-428-0204	OFF-SB-428-0608	OFF-SB-428-1012	OFF-SB-428-1416	OFF-SB-428-1820	OFF-SB-429-0406
Depth BGS		2.0-4.0	2.0-4.0	2.0-4.0	2.0-4.0	2.0-4.0	2.0-4.0	6.0-8.0	2.0-4.0	6.0-8.0	10.0-12.0	14.0-16.0	18.0-20.0	4.0-6.0
Sample Elevation		9.9 / 7.9	10.0 / 8.0	10.1 / 8.1	9.5 / 7.5	9.5 / 7.5	6.3 / 4.3	2.3 / 0.3	6.0 / 4.0	2.0 / 0.0	-2.0 / -4.0	-6.0 / -8.0	-10.0 / -12.0	4.6 / 2.6
QC Identifier		None	None	None	Field Dup.	Field Dup.	None	None	None	None	None	None	None	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	290	30	26	94	89	460	52	1200	1900 *	200	3.6 U	3.4 U	2200 *
Benzo(a)pyrene	400	290	32	22	93	92	400	42	1100	1600 *	190	3.6 U	3.4 U	1800 *
Benzo(b)fluoranthene	900	380	33	26	110	100	530	50	1400	1900 *	220	3.6 U	3.4 U	2100 *
Benzo(g,h,i)perylene	900	120	19	15	52	51	180	28	770	890 *	89	3.6 U	3.4 U	990 *
Benzo(k)fluoranthene	800	130	17	12	37	34	200	18	580	830 *	120	3.6 U	3.4 U	780 *
Chrysene	400	280	33	28	100	100	430	52	1300	1700 *	210	3.6 U	3.4 U	1800 *
Dibenzo(a,h)anthracene	400	37	5.3	3.7	14	13	58	5.3	160	190	26	3.6 U	3.4 U	190
Indeno(1,2,3-cd)pyrene	900	110	16	12	43	42	160	22	610	770 *	87	3.6 U	3.4 U	850 *
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		23000	3600 U	3400 U	2600 U	3300 U	17000	63000	59000	100000	22000	12000	15000	92000
TAL Metal Analysis (MG/KG)														
Antimony	10	6.2 N	0.92 BN	1.1 N	12.1 N	9.6 N	6.0 N	2.9 N	19.3 N	7.5 N	3.6 N	8.6 N	10.7 N	2.1 N
Arsenic	7.0	5.5	5.1	9.8	11.0	8.3	8.3	5.0	17.3	9.1	4.4	8.0	7.6	6.9 *
Beryllium	0.4	0.26	0.35	0.27	0.42	0.34	0.39	0.35	0.32 B	0.38 B	0.18 B	0.38 B	0.34 B	0.29
Lead	150	14.3	16.1 E	36.7 E	42.0	31.2	47.1 *	13.4 *	760 *	72.6 *	25.8 *	8.0 *	7.6 *	2490 NE*
Manganese	390	506	1210 E	803 E	961	741	342	167	383	311	99.9	165	421	173 E
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	78	12 U	15	35	41	370	400	1700	290	56	13 U	12 U	2600

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB429 (cont.)					SB430				SB431			SB432
Sample Number		OFF-SB-429-0608	OFF-SB-DUP06	OFF-SB-429-1012	OFF-SB-429-1416	OFF-SB-429-1820	OFF-SB-430-0204	OFF-SB-430-0810	OFF-SB-430-1214	OFF-SB-430-1416	OFF-SB-431-0204	OFF-SB-431-0810	OFF-SB-431-1012	OFF-SB-432-0204
Depth BGS		6.0-8.0	6.0-8.0	10.0-12.0	14.0-16.0	18.0-20.0	2.0-4.0	8.0-10.0	12.0-14.0	14.0-16.0	2.0-4.0	8.0-10.0	10.0-12.0	2.0-4.0
Sample Elevation		2.6 / 0.6	2.6 / 0.6	-1.4 / -3.4	-5.4 / -7.4	-9.4 / -11.4	5.5 / 3.5	1.5 / -0.5	-2.5 / -4.5	-4.5 / -6.5	9.1 / 7.1	3.1 / 1.1	1.1 / -0.9	7.5 / 5.5
QC Identifier		Field Dup.	Field Dup.	None	None	None	None	None	None	None	None	None	None	None
Criteria	PRG													
Low Concentration PAH (SIM) Analysis (UG/KG)														
Benzo(a)anthracene	900	1000	870	35	4.2 U	4.2 U	400 *	140	530 *	3.8 U	58	130	340	1400
Benzo(a)pyrene	400	770	670	30	4.2 U	4.2 U	470 *	120	370 *	3.8 U	58	180	280	1200
Benzo(b)fluoranthene	900	910	770	37	4.2 U	4.2 U	620 *	130	460 *	3.8 U	76	240	380	1600
Benzo(g,h,i)perylene	900	400	330	21	4.2 U	4.2 U	640 *	84	220	3.8 U	36	120	190	430
Benzo(k)fluoranthene	800	380	350	12	4.2 U	4.2 U	280	60	150	3.8 U	27	93	120	520
Chrysene	400	1000	930	36	4.2 U	4.2 U	410 *	140	400 *	3.8 U	59	120	210	1400
Dibenzo(a,h)anthracene	400	110	87	5.3	4.2 U	4.2 U	150	16	56	3.8 U	9.9	30	46	140
Indeno(1,2,3-cd)pyrene	900	340	280	16	4.2 U	4.2 U	410 *	64	190	3.8 U	31	100	150	400
Gasoline Range Organic Analysis (UG/KG)														
Gasoline Range Organics		130000	310000	3000 U	3700 U	3000 U	4300	27000	11000	2800 U	2300 U	67000	73000	2300000
TAL Metal Analysis (MG/KG)														
Antimony	10	53.7 N	71.6 N	3.4 N	0.84 BN	0.59 BN	19.7 N	8.5 N	8.3 N	8.8 N	0.67 BN	1.1 N	0.57 BN	0.20 UN
Arsenic	7.0	36.3 *	53.3 *	1.6 *	6.1 *	4.9 *	0.16 U	0.26 B	2.9	11.1	4.2	7.6	5.3	6.2
Beryllium	0.4	0.094 B	0.075 B	0.16 B	0.24 B	0.25 B	0.33	0.34	0.29	0.54	0.14 B	0.20 B	0.24 B	0.35 B
Lead	150	1890 NE*	1820 NE*	183 NE*	28.0 NE*	11.7 NE*	127 E	101 E	197 E	18.4 E	26.5 E	242 E	69.4 E	158
Manganese	390	238 E	462 E	143 E	198 E	270 E	557 E	290 E	305 E	284 E	805 E	613 E	383 E	314
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	8200	7800	250	15 U	15 U	330	2800	290	13 U	50	2300	3200	1100

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3A

SUBSURFACE SOIL ANALYTICAL RESULTS, PDI BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		SB432 (cont.)						SB433										SB434	
Sample Number		OFF-SB-432-0608		OFF-SB-432-1012		OFF-SB-432-1416		OFF-SB-432-1820		OFF-SB-433-1214		OFF-SB-433-1618		OFF-SB-433-2022		OFF-SB-DUP09		OFF-SB-433-2426		OFF-SB-DUP10		OFF-SB-433-2830		OFF-SB-434-0204		OFF-SB-434-0608	
Depth BGS		6.0-8.0		10.0-12.0		14.0-16.0		18.0-20.0		12.0-14.0		16.0-18.0		20.0-22.0		20.0-22.0		24.0-26.0		24.0-26.0		28.0-30.0		2.0-4.0		6.0-8.0	
Sample Elevation		3.5 1.5		-0.5 / -2.5		-4.5 / -6.5		-8.5 / -10.5		5.3 / 3.3		1.3 / -0.7		-2.7 / -4.7		-2.7 / -4.7		-6.7 / -8.7		-6.7 / -8.7		-10.7 / -12.7		9.5 / 7.5		5.5 / 3.5	
QC Identifier		None		None		None		None		None		None		Field Dup.		Field Dup.		Field Dup.		Field Dup.		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
Benzo(a)anthracene	900	910		54		3.6	U	4.7		310		170		140		280		3.7	U	3.6	U	6.3		200		94	
Benzo(a)pyrene	400	720		40		3.6	U	3.8	U	270		150		130		250		3.7	U	3.6	U	4.7		180		91	
Benzo(b)fluoranthene	900	870		45		3.6	U	3.8	U	360		170		160		290		3.7	U	3.6	U	5.7		230		110	
Benzo(g,h,i)perylene	900	370		20		3.6	U	3.8	U	310		78		72		140		3.7	U	3.6	U	3.7	U	120		62	
Benzo(k)fluoranthene	800	370		17		3.6	U	3.8	U	110		85		73		140		3.7	U	3.6	U	3.7	U	74		49	
Chrysene	400	920		54		3.6	U	4.4		310		160		140		300		3.7	U	3.6	U	5.2		180		80	
Dibenzo(a,h)anthracene	400	91		3.7	U	3.6	U	3.8	U	52		21		17		33		3.7	U	3.6	U	3.7	U	32		15	
Indeno(1,2,3-cd)pyrene	900	310		16		3.6	U	3.8	U	150		70		61		120		3.7	U	3.6	U	3.7	U	99		48	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		890000		91000		2100	U	2100	U	2400	U	3100	U	3200	U	2500	U	2400	U	2300	U	2400	U	5200		3700	
TAL Metal Analysis (MG/KG)																											
Antimony	10	0.21	UN	0.21	UN	0.54	UN	0.51	UN	1.5	N	0.55	BN	0.61	BN	0.67	BN	1.1	N	0.86	BN	0.78	BN	0.90	BN*	0.53	BN*
Arsenic	7.0	7.2		7.3		8.8		4.5	B	15.0		3.6		5.1		6.1		4.3		3.8		2.1		8.0	*	6.0	*
Beryllium	0.4	0.42	B	0.37	B	0.39	B	0.15	B	0.34		0.085	B	0.21	B	0.25	B	0.42		0.40		0.20	B	0.30	*	0.21	B*
Lead	150	188		26.0		15.8		8.8		55.0	E	101	E	71.8	E	55.0	E	13.5	E	16.0	E	8.4	E	24.4	*	21.5	*
Manganese	390	344		260		1000		181		582	E	171	E	249	E	308	E	2120	E	2290	E	511	E	1330	*	765	*
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	910		93		13	U	13	U	190		170		92		98		13	U	12	U	13	U	41		38	

Notes:

(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate

J - Quantitation approximate

R - Rejected

NA - Not Analyzed

* - From dilution analysis

E - Estimated due to interference

N - Spike %R outside limits

TABLE 4-3B

SUBSURFACE SOIL ANALYTICAL RESULTS, PREVIOUS INVESTIGATION BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		B-1	B-2			B-3			B-4		B-5		B-6	
Sample Number		FF-B011-418	FF-B021-418	FF-B022-418	FF-B023-418	FF-B031-418	FF-B032-418	FF-B033-418	FF-B041-420	FF-B042-420	FF-B051-417	FF-B052-417	FF-B061-419	FF-B062-419
Depth BGS		6.0-8.0	2.0-4.0	6.0-8.0	8.0-10.0	6.0-8.0	8.0-10.0	12.0-14.0	4.0-6.0	10.0-12.0	4.0-6.0	6.0-8.0	4.0-6.0	10.0-12.0
Sample Elevation		6.5 / 4.5	10.9 / 8.9	6.9 / 4.9	4.9 / 2.9	8.1 / 6.1	2.1 / 0.1	-1.9 / -3.9	7.5 / 5.5	1.5 / -0.5	3.8 / 1.8	1.8 / -0.2	6.1 / 4.1	0.1 / -1.9
QC Identifier		None	None	None	None	None	None	None	None	None	None	None	None	None
Criteria	PRG													
Semivolatile Organic Analysis (UG/KG)														
Benzo(a)anthracene	900	330 J	89 J	NA	NA	670	NA	73 J	140 J	NA	110 J	NA	NA	NA
Benzo(a)pyrene	400	300 J	84 J	NA	NA	660	330 J	NA	100 J	NA	100 J	NA	NA	NA
Benzo(b)fluoranthene	900	330 J	85 J	NA	NA	580	300 J	NA	97 J	NA	83 J	NA	NA	NA
Benzo(g,h,i)perylene	900	210 J	84 J	NA	NA	740	310 J	NA	NA	NA	NA	NA	75 J	NA
Benzo(k)fluoranthene	800	240 J	62 J	NA	NA	510	210 J	NA	120 J	NA	89 J	NA	98 J	NA
Chrysene	400	330 J	92 J	NA	NA	770	NA	62 J	140 J	NA	76 J	NA	NA	NA
Dibenzo(a,h)anthracene	400	60 J	NA	NA	NA	140 J	93 J	NA	NA	NA	NA	NA	NA	NA
Indeno(1,2,3-cd)pyrene	900	180 J	71 J	NA	NA	620	280 J	NA	NA	NA	NA	NA	NA	NA
TAL Metal Analysis (MG/KG)														
Antimony	10	9.5 U*	NA	NA	NA	9.5 U*	NA	NA	NA	NA	NA	NA	NA	5.5
Arsenic	7.0	9.6 J*	3.1 J*	8.6	5.4 J*	4.1 J*	NA	13.5 J*	3.4 J*	5.3 J*	2.4	1.4	NA	1.3 J*
Beryllium	0.4	NA	NA	NA	NA	NA	NA	NA	0.26	0.20	NA	NA	NA	0.31
Lead	150	529	61.0	66.0	5.2	118	NA	67.6	NA	2.2 J*	104	7.0	NA	6.6 J*
Manganese	390	301 J*	492 J*	584 J*	646 J*	243 J*	NA	285 J*	215	72.4	960 J*	70.7	NA	780 J*
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate
J - Quantitation approximate
R - Rejected
NA - Not Analyzed
* - From dilution analysis
E - Estimated due to interference
N - Spike %R outside limits

TABLE 4-3B

SUBSURFACE SOIL ANALYTICAL RESULTS, PREVIOUS INVESTIGATION BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		B-7		B-8	B-11	B-12	B-13	B-15	B-16		B-17	MW-2		MW-3
Sample Number		FF-B071-419	FF-B072-419	OFF-B82-112293	OFF-B112-112493	OFF-B122-112493	OFF-B132-112393	OFF-B153-121393	OFF-B162-112393	OFF-B163-112393	OFF-B172-112493	FF-M21-423	FF-M22-423	FF-M31-424
Depth BGS		4.0-6.0	6.0-8.0	8.0-10.0	4.0-6.0	2.0-4.0	4.0-6.0	17.0-19.0	2.0-4.0	6.0-8.0	2.0-4.0	6.0-8.0	12.0-14.0	6.0-8.0
Sample Elevation		4.1 / 2.1	2.1 / 0.1	3.5 / 1.5	4.4 / 2.4	5.9 / 3.9	4.9 / 2.9	10.6 / 8.6	7.2 / 5.2	3.2 / 2.2	9.5 / 7.5	3.1 / 1.1	-2.9 / -4.9	3.8 / 1.8
QC Identifier		None	None	None	None	None	None	None	None	None	None	None	None	None
Criteria	PRG													
Semivolatile Organic Analysis (UG/KG)														
Benzo(a)anthracene	900	1300 J	550	2200	120 J	320 J	360 J	1300	1200	NA	360 U	1800 J	NA	52 J
Benzo(a)pyrene	400	1000 J	490	1700	110 J	280 J	280 J	760	1200	NA	360 U	1600 J	NA	NA
Benzo(b)fluoranthene	900	1300 J	400	2800	220 J	560	510	1400	1900	NA	47 J	1400 J	NA	NA
Benzo(g,h,i)perylene	900	NA	520	610	360 U	110 J	88 J	360 J	510 J	NA	360 U	NA	NA	NA
Benzo(k)fluoranthene	800	520 J	530	360 U	360 U	370 U	420 U	370 U	730 U	NA	360 U	1400 J	NA	NA
Chrysene	400	1000 J	540	2100	130 J	290 J	320 J	1100	1400	NA	360 U	1700 J	NA	51 J
Dibenzo(a,h)anthracene	400	NA	140 J	370	360 U	64 J	66 J	200 J	170 J	NA	360 U	NA	NA	NA
Indeno(1,2,3-cd)pyrene	900	420 J	380 J	860	48 J	160 J	120 J	380	500 J	NA	360 U	NA	NA	NA
TAL Metal Analysis (MG/KG)														
Antimony	10	5.3	NA	5.2 UJ	5.4 UJ	5.3 UJ	5.9 UJ	5.7 J	6.8 J	NA	5.3 UJ	4.7 U*	12.2 J*	NA
Arsenic	7.0	1.9 J*	3.0 J*	6.4 J	10.0 J	5.1 J	6.3 J	5.5	5.8 J	NA	3.2 J	6.3 J*	8.7 J*	4.4 J*
Beryllium	0.4	NA	NA	0.33 B	0.36 B	0.29 B	0.25 B	0.36 B	0.22 U	NA	0.44 B	0.28 B1	NA	0.24 B1
Lead	150	52.0 J*	67.0 J*	189	314	71.4	68.6	292	92.9	NA	14.6	777 J*	962 J*	24.0 J*
Manganese	390	138	167	540 J	627 J	551 J	309	419 J	303 J	NA	477 J	323 J*	464 J*	311 J*
Total Petroleum Hydrocarbon Analysis (MG/KG)														
Total Petroleum Hydrocarbons	500	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate
J - Quantitation approximate
R - Rejected
NA - Not Analyzed
* - From dilution analysis
E - Estimated due to interference
N - Spike %R outside limits

TABLE 4-3B

SUBSURFACE SOIL ANALYTICAL RESULTS, PREVIOUS INVESTIGATION BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		MW-3 (cont.)	MW-7	MW-10	MW-11	MW-101	MW-102	TP1		TP2		TP3	
Sample Number		FF-M32-424	OFF-M72-112993	OFF-M102-112993	OFF-M112-112993	OFF-S-MW101-0608	OFF-S-MW102-0608	OFF-TP12-011194	OFF-TP13-011194	OFF-TP21-011194	OFF-TP22-011194	OFF-TP31-011194	OFF-TP32-011194
Depth BGS		12.0-14.0	2.0-4.0	4.0-6.0	2.0-4.0	6.0-8.0	6.0-8.0	3.5-4.0	1.5-2.0	7.0-8.0	4.5-4.5	7.0-8.0	7.0-7.0
Sample Elevation		-2.2 / -4.2	8.9 / 6.9	3.9 / 1.9	5.9 / 3.9	3.4 / 1.4	2.3 / 0.3	6.5 / 6.0	9.0 / 8.5	6.0 / 5.0	8.5 / 8.5	8.0 / 7.0	8.0 / 8.0
QC Identifier		None	None	None	None	None	None	None	None	None	None	None	None
Criteria	PRG												
Semivolatile Organic Analysis (UG/KG)													
Benzo(a)anthracene	900	NA	1300	240 J	140 J	470	3400	660 J	370 J	7700 U	380 UJ	500 J	2400 J
Benzo(a)pyrene	400	NA	1000	220 J	77 J	380	4000	660 J	440 J	7700 U	380 UJ	6700 UJ	2900 J
Benzo(b)fluoranthene	900	NA	1800	400	180 J	260 J	2700 J	500 J	320 J	7700 U	380 UJ	430 J	2300 J
Benzo(g,h,i)perylene	900	NA	420	89 J	57 J	180 J	1900 J	440 J	230 J	7700 U	380 UJ	6700 UJ	1700 J
Benzo(k)fluoranthene	800	NA	380 U	370 U	440 U	310 J	2200 J	600 J	380 J	7700 U	380 UJ	850 J	2500 J
Chrysene	400	NA	1100	230 J	130 J	430	3200 J	730 J	410 J	7700 U	380 UJ	690 J	2500 J
Dibenzo(a,h)anthracene	400	NA	220 J	370 U	440 U	360 UJ	820 J	170 J	110 J	7700 U	380 UJ	6700 UJ	780 J
Indeno(1,2,3-cd)pyrene	900	NA	550	100 J	48 J	210 J	2300 J	390 J	230 J	7700 U	380 UJ	6700 UJ	1700 J
TAL Metal Analysis (MG/KG)													
Antimony	10	NA	5.5 UJ	5.3 UJ	5.4 UJ	0.35 UR	12.0 J	6.3 U	5.8 U	6.3 U	5.8 U	6.7	6.0 U
Arsenic	7.0	3.1 J*	6.2 S	7.0	3.9	9.3 J	53.6 J	4.1 J	2.6 J	3.7 J	4.3 J	16.3 J	2.9 J
Beryllium	0.4	0.48 B1	0.33 B	0.32 B	0.34 B	0.24 U	0.15 U	0.28 B	0.37 B	0.23 U	0.37 B	0.24 U	0.29 B
Lead	150	7.8 J*	19.5	42.3	554	12.7	5400	475 J	40.1 J	10.8 J	6.9 J	3090 J	67.6 J
Manganese	390	292 J*	396 J	588 J	401 J	144 J	562 J	255 J	186 J	243 J	139 J	299 J	413 J
Total Petroleum Hydrocarbon Analysis (MG/KG)													
Total Petroleum Hydrocarbons	500	NA	NA	NA	NA	1900 J	8200 J	NA	NA	NA	NA	NA	NA

Notes:
(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate
J - Quantitation approximate
R - Rejected
NA - Not Analyzed
* - From dilution analysis
E - Estimated due to interference
N - Spike %R outside limits

TABLE 4-3B

SUBSURFACE SOIL ANALYTICAL RESULTS, PREVIOUS INVESTIGATION BORINGS
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Sample Location		TP-02	TP-05	TP-06	TP-07	TP-08	TP-11	TP-12	TP-13	TP-14	TP-15	TP-16	TP-17
Sample Number		OFF-S-TP-02-0203	OFF-S-TP-05-0708	OFF-S-TP-06-0607	OFF-S-TP-07-0708	OFF-S-TP-08-0304	OFF-S-TP-11-0506-MAX	OFF-S-TP-12-0405	OFF-S-TP-13-0607	OFF-S-TP-14-0304-MAX	OFF-S-TP-15-0506	OFF-S-TP-16-1011	OFF-S-TP-17-0809-MAX
Depth BGS		2.0-3.0	7.0-8.0	6.0-7.0	7.0-8.0	3.0-4.0	5.0-6.0	4.0-5.0	6.0-7.0	3.0-4.0	5.0-6.0	10.0-11.0	8.0-9.0
Sample Elevation		10.0 / 9.0	4.0 / 3.0	6.5 / 5.5	5.5 / 4.5	8.5 / 7.5	5.0 / 4.0	5.0 / 4.0	7.0 / 6.0	7.0 / 6.0	4.0 - 3.0	4.0 - 3.0	2.0 / 1.0
QC Identifier		None	None	None	None	None	Field Dup.	None	None	Field Dup.	None	None	Field Dup.
Criteria	PRG												
Semivolatile Organic Analysis (UG/KG)													
Benzo(a)anthracene	900	360 U	840	610	350 J	170 J	580	360 U	230 J	430 U	1200 J	5000 U	400 U
Benzo(a)pyrene	400	360 U	690	500	360 J	400 U	350	360 U	200 J	430 U	970 J	5000 U	400 U
Benzo(b)fluoranthene	900	360 U	650	380 J	240 J	400 U	430	360 U	400 U	430 U	610 J	300 J	400 U
Benzo(g,h,i)perylene	900	360 U	360 U	400 U	400 U	400 U	430 U	360 U	400 U	430 U	460 UJ	5000 U	400 U
Benzo(k)fluoranthene	800	360 U	530	410	270 J	400 U	490	360 U	400 U	430 U	730 J	5000 U	400 U
Chrysene	400	360 U	810	650	380 J	160 J	460	170 J	280 J	170	1700 J	5000 U	400 U
Dibenzo(a,h)anthracene	400	360 U	180 J	190 J	400 U	400 U	430 U	360 U	400 U	430 U	460 UJ	5000 UJ	400 U
Indeno(1,2,3-cd)pyrene	900	360 U	520	350 J	280 J	400 U	350	360 U	400 U	180	800 J	5000 U	400 U
TAL Metal Analysis (MG/KG)													
Antimony	10	0.34 UR	0.49 U	0.36 U	0.93 U	0.35 UR	0.51 U	0.44 U	39.2 J	0.41 U	0.76 U	4.0 J	0.36 U
Arsenic	7.0	4.1 J	14.3 J	5.7 J	6.2 J	13.8 J	8.3	4.8 J	18.3 J	10.5	9.9 J	74.4 J	8.2
Beryllium	0.4	0.27 U	0.27 U	0.32 U	0.29 U	0.35 U	0.46 U	0.22 U	0.20 U	0.28 U	0.38 U	0.24 J	0.32 U
Lead	150	46.6 J	540 J	55.5 J	40.7 J	57.8 J	563	283 J	7820 J	42.0	766 J	3350	13.3
Manganese	390	292 J	698 J	410 J	417 J	478 J	306	516 J	898 J	231	157 J	1110 J	267
Total Petroleum Hydrocarbon Analysis (MG/KG)													
Total Petroleum Hydrocarbons	500	140 J	40 U	130 J	59 U	31 U	7500	4100 J	7400 J	4800	21000 J	6400 J	200

Notes:
(1) - elevation = feet NGVD (MSL) 1929

UJ - Detection limit approximate
J - Quantitation approximate
R - Rejected
NA - Not Analyzed
* - From dilution analysis
E - Estimated due to interference
N - Spike %R outside limits

TABLE 4-4

SUMMARY OF GEOTECHNICAL DATA
OLD FIRE FIGHTING TRAINING AREA
NAVSTA NEWPORT, NEWPORT, RHODE ISLAND

Boring Number	**SB-415**	**SB-405**	**SB-406**	**SB-407**	**SB-400**	**SB-427**	**SB-428**	**SB-429**	**SB-404**	**SB-430**	**SB-414**
Depth of Sample (feet)	10 to 12	10 to 12	14 to 16	16 to 18	6 to 8	6 to 8	10 to 12	14 to 16	16 to 18	8 to 10	2 to 4
Blow Counts(1)	28	12	15	56	94(3)	13	WOH(2)	21	29	20	12
Soil Description	SM	SM/SC	SC/ML	SM/SC	SM	GM	SM	ML	SM	GP	SM
	Sample With Lowest Blow Counts (Below 4-feet)										
Depth of Sample (feet)	8 to 10	8 to 10	10 to 12	20 to 22	4 TO 6	6 to 8	10 to 12	12 TO 14	6 TO 8	12 TO 14	4 TO 6
Blow Counts(1)	21	11	14	10	52	13	WOH(2)	4	8	8	14
Soil Description	SP	ML/FILL	ML	ML/FILL	SP & SM	GM	SM	PT/SP	SM	SW	SW

Notes:
1) Samples were collectted using a 3-inch diameter split barrel sampler. The sampler was driven with a 300# weight falling 18-inches.
2) WOH = Weight of Hammer
3) Blow counts elevated due to gravel or cobble in sampler.

TABLE 4-5

GROUNDWATER ELEVATION SUMMARY
OLD FIRE FIRE TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

Well ID	Ground Water Elevations (relative to MLW) (1)									Observed maximum	Observed minimum	Variance	Tidal variation	High GW elevation	Low GW elevation
	6/17/1990	9/20/1990	1/31/1991	1/4/1994	2/22/1994	5/12/1994	7/7/1997	8/8/2002	8/23/2004						
MW-2S	2.89	2.36	4.36	3.56	2.85	3.64	2.57	--	3.25	4.36	2.36	2	0.89	5.25	1.47
MW-3S	3.53	3.74	4.24	4.64	4.27	4.19	3.63	4.2	4.75	4.75	3.53	1.22	0.07	4.82	3.46
MW-4S	1.8	2.72	3.4	3.36	3.35	3.2	2.4	3.05	3.1	3.4	1.8	1.6	0.92	4.32	0.88
MW-5S	5.61	5.31	6.02	6.02	6.33	5.76	--	5.28	5.88	6.33	5.28	1.05	0.03	6.36	5.25
MW-6S	--	--	--	6.32	6.93	5.99	4.9	5.27	6.38	6.93	4.9	2.03	0.01	6.94	4.89
MW-7S	--	--	--	6.48	--	5.45	4.83	--	--	6.48	4.83	1.65	0	6.48	4.83
MW-10S	--	--	--	3.9	3.42	3.6	2.93	3.99	3.41	3.99	2.93	1.06	0.33	4.32	2.6
MW-11S	--	--	--	3.78	3.7	3.52	3.24	3.75	3.87	3.87	3.24	0.63	0.02	3.89	3.22
MW-101	--	--	--	--	--	--	3.49	3.54	4.39	4.39	3.49	0.9	--	--	--
MW-102	--	--	--	--	--	--	2.13	3.97	3.01	3.97	2.13	1.84	--	--	--

Elevations are calculated from field measurements taken from the top of PVC/riser then converted to elevations based on survey data to the top of PVC and relative to Mean Low Water (MLW)

(1) OFFTA RI, 1994

(2) Observed high groundwater table elevation was calculated, by adding the tidal variation to the maximum observed water table elevation, of the groundwater data.

(3) Observed low groundwater table elevation was calculated, by subtracting the tidal variation from the minimum observed water table elevation, of the groundwater data.

TABLE 5-1

SELECTION OF RECOMMENDED REMOVAL ACTION GOALS
OLD FIREFIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT RHODE ISLAND

Parameter	PRG	Recommended / Not Recommended	Basis
Benzo(a)anthracene	900 ug/kg	Recommended	Note 1
Benzo(a)pyrene	400 ug/kg	Recommended	Note 1
Benzo(b)fluoranthene	900 ug/kg	Recommended	Note 1
Benzo(g,h,I) perylene	800 ug/kg	Recommended	Note 3
Benzo(k)fluoranthene	900 ug/kg	Recommended	Note 3
Chrysene	400 ug/kg	Recommended	Note 3
Dibenzo(a,h)anthracene	400 ug/kg	Recommended	Note 1
Indeno(1,2,3-cd)pyrene	900 ug/kg	Recommended	Note 1
Dieldrin	40 ug/kg	Not Recommended	Note 2
Total Petroleum Hydrocarbons	500 mg/kg	Recommended	Note 3
Antimony	10 mg/kg	Not Recommended	Note 2
Arsenic	7.0 mg/kg*	Not Recommended	Note 4
Beryllium	0.4 mg/kg	Not Recommended	Note 2, 4
Lead	150 mg/kg	Recommended	Note 5
Manganese	390 mg/kg	Not Recommended	Note 2, 4

* - RIDEM direct exposure criteria for arsenic was revised with the 2004 amendment to the remediation regulations.

Notes:

Note 1: These PAHs are fuel-related contaminants found to provide elevated risk to humans under a residential land use scenario. These fuel related contaminants are present at the site as a result of releases of such fuels during the site use as a fire training facility, and therefore the PRGs for these contaminants <u>are recommended</u> to be retained as Removal Action Goals to direct soil removal actions at the site.

Note 2: These contaminants were included as PRGs because they exceed RIDEM Direct Exposure criteria, they were not selected through a risk based process. They do not contribute greatly to the measured risk at the site. These contaminants have no known connection to the releases from fire training operations. Therefore, they are <u>not recommended</u> to be used to direct removal of soils at the site.

Note 3: These fuel related contaminants in soils do not have risk based PRGs, however, they exceed RIDEM Remediation Regulations direct exposure criteria for residential use soil. These contaminants are present in soil presumably as a result of releases of fuel used in fire training operations, therefore, these criteria <u>are recommended</u> to be used as action levels for soil removal actions at this site.

Note 4: These metals are naturally present in soil, and during the PDI have been found above PRGs in till and other soils not impacted by the site contaminants associated with the fire training operations. Average concentrations of these metals measured in till at the site exceed PRGs. Because the till is assumed to be unaffected by site releases, it is presumed that these metals are natural components of the mineral composition of the soil and degraded bedrock. Therefore, these criteria alone are <u>not recommended</u> to be used to direct soil removal actions at the site.

Note 5: Lead was found co-located in soil with fill and with fuel-related contaminants. Lead is not likely to be naturally occurring. Therefore, lead is likely to be present as a result of the releases from fire training operations or fill remaining from building demolition, and the action level cited (RIDEM DEC) <u>is recommended</u> to be used as a removal action goal.

TABLE 5-2

ESTIMATED VOLUME OF SOIL EXCEEDING REMOVAL ACTION GOALS
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

					Exceeded Removal Action Goals										
Grid Cell	Boring Number	Ground Surface Elevation (1)	Base Grade Elevation (1)	Water Table Elevation (1, 3)	Fill	PAH	TPH	Indication of Free Product	Lead	Maximum Excavation	Deepest Grid Cell Exceedance		Target Contaminant	Cell Surface Area (sq ft)	Excavation Volume (CY)
					Elevation (1)					Elevation (1)	Elevation (1)	Depth			
AREA 1															
C1	SB415	13.3	8.0	1.5	7.3	ND	ND	--	1.3	1.3	1.3	6.7	Lead	3,675	912
C2	B-10	13.7	8.0	1.5	5.0	NS	NS	--	NS	5.0	2.4	6.1	Lead	9,350	2,112
	B-11	8.4	8.4	2.0	4.4	ND	NA	--	2.4	2.4					
	SB416	11.5	8.5	1.7	2.5	5.5	ND	--	NA	5.5					
C3	SB417	8.5	8.5	2.1	-0.5	ND	ND	2.5	NA	-0.5	-0.5	8.8	Fill, Indication of Free Product	7,675	2,487
	SB433	17.3	8.0	1.7	1.3	ND	ND	--	NA	2.2					
C4	B-9	17.7	8.0	1.7	3.0	NS	NS	--	NS	3.0	3.0	5.0	Fill, Lead	8,625	1,597
	SB418	10.0	8.0	1.7	3.0	ND	ND	--	4.0	4.0					
														AREA 1 sub total	**7,109**
AREA 2															
B2	SB405	7.0	7.0	1.2	-3.0	-1.0	ND	--	3.0	-1.0	-1.0	8.0	PAHs	3,525	1,044
B3	SB406	11.4	7.0	1.2	1.4	3.4	ND	--	NA	3.4	1.4	5.6	Fill, PAHs	4,650	964
B4	B-8	11.5	7.0	0.5	0.5	1.5	NA	--	1.5	1.5	-5.1	12.5	PAHs, Indication of Free Product	7,500	3,463
	MW-4S(B-7)	8.1	8.1	0.9	0.1	0.1	NA	--	NA	0.1					
	SB407	12.9	7.0	0.5	6.9	-1.1	-1.1	-5.1	NA	-5.1					
														AREA 2 sub total	**5,472**
AREA 3															
B5	SB408	8.0	8.0	1.4	4.8	0.0	4.0	--	NA	0.0	0.0	8.0	PAH	10,000	2,963
B6	TP-12	9.0	9.0	2.6	4.0	ND	4.0	4.0	4.0	4.0	1.1	8.0	TPH	10,000	2,963
	SB409	9.1	9.1	2.3	5.0	ND	1.1	1.1	NA	1.1					
B7	MW-3S	9.8	9.8	3.5	5.8	NA	NA	1.8	NA	1.8	1.4	8.0	TPH	10,000	2,963
	TP-11	10.0	10.0	3.9	5.0	4.0	4.0	4.0	4.0	4.0					
	SB410	9.4	9.4	3.2	3.4	ND	1.4	1.4	NA	1.4					
C5	SB419	8.4	8.4	2.2	4.4	ND	0.4	--	NA	0.4	0.4	8.0	TPH	9,675	2,867
C6	TP-17	10.0	10.0	3.6	7.0	ND	ND	2.0	NA	2.0	-2.0	11.8	TPH	10,000	4,370
	MW-101	9.4	9.4	3.5	4.4	1.4	1.4	--	NA	1.4					
	SB420	10.0	10.0	3.7	6.0	6.0	-2.0	0.0	NA	-2.0					
	SB432	9.8	9.8	3.8	1.8	1.8	1.8	--	1.8	1.8					
C7	B-6	10.1	10.1	4.1	8.1	ND	NA	--	NA	8.1	2.8	8.0	TPH, PAHs, Foundations present	10,000	2,963
	MW-7S	10.9	10.9	4.8	10.4	6.9	NA	--	NA	6.9					
	TP1	10.5	10.5	4.3	5.5	6.5	NA	--	6.5	6.5					
	TP-10	10.5	10.5	4.3	7.7	NS	NS	--	NS	10					
	SB421	10.8	10.8	4.3	6.8	2.8	2.8	2.8	6.8	2.8					
C8	SB422	11.8	11.8	4.0	11.3	7.8	ND	--	NA	7.8	7.8	4.0	PAHs	3,475	515
														AREA 3 sub total	**19,604**
AREA 4															
A5	SB400	7.3	7.3	0.7	0.3	ND	ND	--	NA	0.3	0.3	7.0	Fill	5,175	1,342
A6	B-5	7.8	7.8	3.0	4.8	NA	NA	--	NA	4.8	2.3	5.8	Indication of Free Product	10,850	2,331
	B-12	7.9	7.9	3.2	7.4	ND	NA	--	NA	7.4					
	MW-11R	7.6	7.6	3.0	-2.4	NA	NA	--	3.6	3.6					
	MW-11S	7.9	7.9	3.0	-2.2	NA	NA	--	3.9	3.9					
	SB401	7.9	7.9	3.2	7.4	3.9	ND	--	NA	3.9					
	SB427	8.3	8.3	2.7	1.3	4.3	ND	2.3	NA	2.3					
A7	SB402	8.4	8.4	2.1	0.4	ND	ND	--	-1.6	-1.6	-1.6	10.0	Lead	7,575	2,806
														AREA 4 sub total	**6,478**

TABLE 5-2

ESTIMATED VOLUME OF SOIL EXCEEDING REMOVAL ACTION GOALS
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND

					Exceeded Removal Action Goals										
Grid Cell	Boring Number	Ground Surface Elevation (1)	Base Grade Elevation (1)	Water Table Elevation (1, 3)	Fill	PAH	TPH	Indication of Free Product	Lead	Maximum Excavation	Deepest Grid Cell Exceedance		Target Contaminant	Cell Surface Area (sq ft)	Excavation Volume (CY)
					Elevation (1)					Elevation (1)	Elevation (1)	Depth			
AREA 5															
B8	B-14	30.7	10.5	3.0	7.7	NS	NS	--	NS	10	5.0	5.5	Fill, Foundations present	10,000	2,037
	TP2	13.0	10.0	3.4	5.0	ND	NA	--	NA	5.0					
	SB411	31.0	10.5	3.4	10.0	ND	ND	--	NA	10					
B9	MW-9R	11.7	11.0	4.5	10.5	NS	NS	--	NS	10.5	3.0	7.5	TPH, Lead, Fill, Foundations present	10,000	2,778
	TP-16	14.0	10.0	2.0	3.0	ND	3.0	3.0	3.0	3.0					
	B-15	27.6	10.5	2.5	8.6	NS	NS	--	NA	8.6					
	SB412	24.5	10.5	3.3	10.0	ND	ND	--	NA	10					
	TP-13	13.0	10.0	2.0	3.0	ND	6.0	3.0	3.0	3.0					
B10	SB413	10.6	10.6	3.4	7.6	ND	6.6	6.6	NA	6.6	6.6	4.0	TPH	5,000	741
C8	TP-08	11.5	11.5	3.8	9.0	ND	ND	--	NA	9	8.5	3.2	Fill	4145	486
	TP-09	12.0	12.0	3.5	11.5	NS	NS	--	NA	11.5					
	B-4	11.5	11.5	4.0	8.5	NA	NA	--	NA	8.5					
C9	B-2	12.9	12.9	3.8	10.9	NA	NA	--	NA	10.9	5.9	6.1	Fill	6,150	1,378
	B-17	11.5	11.5	3.6	11.0	NA	NA	--	NA	11.0					
	SB423	11.9	11.9	3.8	5.9	ND	ND	--	NA	5.9					
	SB434	11.5	11.5	3.4	11.0	ND	ND	--	NA	11.0					
C10	MW-8R	12.7	12.7	4.0	12.2	NS	NS	--	NS	12.2	4.5	7.9	Fill	9,450	2,774
	TP-06	12.5	12.5	4.2	5.5	5.5	ND	--	NA	5.5					
	TP-07	12.5	12.5	4.2	4.5	NA	ND	--	NA	4.5					
	SB424	12.0	12.0	3.5	11.5	ND	ND	--	NA	11.5					
C11	MW-1R	11.3	11.3	2.4	10.8	NS	NS	--	NS	10.8	10.0	2.0	Fill	10,000	731
	TP-02	12.0	12.0	3.8	11.5	NA	ND	--	NA	11.5					
	TP-03	12.5	12.5	3.3	10.0	NS	NS	--	--	10					
	SB425	12.1	12.1	3.2	11.6	ND	ND	--	NA	11.6					
C12	B-1	12.5	12.5	2.0	12.0	NA	NA	--	4.5	4.5	3.0	8.9	PAHs, Lead	8,875	2,917
	TP-04	12.5	12.5	3.0	9.5	NS	NS	--	--	9.5					
	TP-05	11.0	11.0	2.0	3.0	3.0	ND	--	3.0	3.0					
	SB426	11.5	11.5	2.0	11.0	ND	ND	--	NA	11.0					
														AREA 5 sub total	**13,842**
AREA 6															
A7	SB428	8.0	8.0	2.1	2.0	0.0	4.0	--	4.0	4.0	4.0	4.0	TPH, Lead	2,000	296
A8	TP3	15.0	10.0	2.0	2.0	7.0	NA	--	2.0	2.0	-3.4	12.4	Lead	8,775	4,041
	B-13	8.9	8.9	2.5	2.9	NA	NA	--	NA	2.9					
	MW-102	8.3	8.3	2.1	2.3	0.3	0.3	0.3	0.3	0.3					
	TP-15	9.0	9.0	2.4	1.0	3.0	3.0	3.0	3.0	3.0					
	SB403	9.4	9.4	2.6	-0.6	1.4	1.4	1.4	1.4	1.4					
	SB429	8.6	8.6	2.0	2.6	0.6	0.6	-1.4	-3.4	-3.4					
A9	B-16	9.2	9.2	1.5	8.7	5.2	NA	--	NA	5.2	-4.9	14.0	Lead, Foundations Present.	5,675	2,943
	MW-2S	9.1	9.1	1.5	7.1	1.1	NA	--	-4.9	-4.9					
	MW-2D	9.2	9.2	1.5	7.2	NA	NS	--	-4.8	-4.8					
	SB404	8.9	8.9	1.2	-3.1	0.9	-3.1	-3.1	-3.1	-3.1					
A10	TP-14	10.0	10.0	1.8	9.5	NS	6.0	6.0	NA	6.0	6.0	4.0	TPH	1783	264
B10	SB413	10.6	10.6	2.9	7.6	ND	6.6	6.6	NA	6.6	-4.2	14.4	Lead	5,000	2,667
	B-3	10.1	10.1	2.0	9.6	2.1	NA	--	NA	2.1					
	MW-10S	10.4	10.4	2.6	8.4	ND	NA	--	NA	8.4					
	SB430	9.8	9.8	1.5	5.8	5.8	-0.2	-0.2	-4.2	-4.2					

TABLE 5-2

ESTIMATED VOLUME OF SOIL EXCEEDING REMOVAL ACTION GOALS
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND
PAGE 3 OF 3

					Exceeded Removal Action Goals										
Grid Cell	Boring Number	Ground Surface Elevation (1)	Base Grade Elevation (1)	Water Table Elevation (1, 3)	Fill	PAH	TPH	Indication of Free Product	Lead	Maximum Excavation	Deepest Grid Cell Exceedance		Target Contaminant	Cell Surface Area (sq ft)	Excavation Volume (CY)
					Elevation (1)					Elevation (1)	Elevation (1)	Depth			
B11	SB414	10.7	10.7	2.2	10.2	2.7	-1.3	-1.3	6.7	-1.3	-1.3	12.0	TPH	6,400	2,844
B12	SB431	11.1	11.1	1.5	3.1	ND	-0.9	-0.9	1.1	-0.9	-0.9	12.0	TPH	1,050	467
														Area 6 Subtotal	**13,522**
														Total	**66,026**

(1) elevations are presented as feet Navy Mean Low Water (MLW)
(2) Target depth from Table F-5
(3) Water table elevations for areas 1 and 2 are approximated using MW-4S

TABLE 5-3

PRELMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE SOIL EXCEEDING REMOVAL ACTION GOALS
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND
PAGE 1 OF 2

Grid Cell	Boring Number	Ground Surface Elevation (1)	Base Grade Elevation (1)	Water Table Elevation (1, 3)	Exceeded Removal Action Goals: Fill	PAH	TPH	Indication of Free Product	Lead	Maximum Excavation	Target Grid Cell Excavation		Driving Removal Action Goal	Cell Surface Area (sq ft)	Excavation Volume (CY)
					Elevation (1)					Elevation (1)	Elevation (1)	Depth			
AREA 1															
C1	SB415	13.3	8.0	1.5	7.3	ND	ND	--	1.3	1.3	1.3	6.7	Lead	3,675	912
C2	B-10	13.7	8.0	1.5	5.0	NS	NS	--	NS	5.0	2.4	6.1	Lead	9,350	2,112
	B-11	8.4	8.4	2.0	4.4	ND	NA	--	2.4	2.4					
	SB416	11.5	8.5	1.7	2.5	5.5	ND	--	NA	5.5					
C3	SB417	8.5	8.5	2.1	-0.5	ND	ND	2.5	NA	2.5	2.2	6.1	Free Product, Fill above the water table	7,675	1,720
	SB433	17.3	8.0	1.7	1.3	ND	ND	--	NA	2.2					
C4	B-9	17.7	8.0	1.7	3.0	NS	NS	--	NS	3.0	3.0	5.0	Lead, Fill above the water table	8,625	1,597
	SB418	10.0	8.0	1.7	3.0	ND	ND	--	4.0	4.0					
														AREA 1 sub total	**6,341**
AREA 2															
B2	SB405	7.0	7.0	1.2	-3.0	-1.0	ND	--	3.0	-1.0	-1.0	8.0	PAHs	3,525	1,044
B3	SB406	11.4	7.0	1.2	1.4	3.4	ND	--	NA	3.4	1.4	5.6	PAHs, Fill above the wt	4,650	964
B4	B-8	11.5	7.0	0.5	0.5	1.5	NA	--	1.5	1.5	-0.7	8.1	**PAHs, Indication of Free Product - Limited by Water Table**	7,500	2,241
	MW-4S(B-7)	8.1	8.1	0.9	0.1	0.1	NA	--	NA	0.1					
	SB407	12.9	7.0	0.5	6.9	-1.1	-1.1	-5.1	NA	-5.1					
														AREA 2 sub total	**4,250**
AREA 3															
B5	SB408	8.0	8.0	1.4	4.8	0.0	4.0	--	NA	0.0	4.0	4.0	TPH	10,000	1,481
B6	TP-12	9.0	9.0	2.6	4.0	ND	4.0	4.0	4.0	4.0	1.1	8.0	TPH	10,000	2,963
	SB409	9.1	9.1	2.3	5.0	ND	1.1	1.1	NA	1.1					
B7	MW-3S	9.8	9.8	3.5	5.8	NA	NA	1.8	NA	1.8	1.4	8.0	TPH	10,000	2,963
	TP-11	10.0	10.0	3.9	5.0	4.0	4.0	4.0	4.0	4.0					
	SB410	9.4	9.4	3.2	3.4	ND	1.4	1.4	NA	1.4					
C5	SB419	8.4	8.4	2.2	4.4	ND	0.4	--	NA	0.4	0.4	8.0	TPH	9,675	2,867
C6	TP-17	10.0	10.0	3.6	7.0	ND	ND	2.0	NA	2.0	0.5	9.3	**TPH, Limited by Water Table**	10,000	3,444
	MW-101	9.4	9.4	3.5	4.4	1.4	1.4	--	NA	1.4					
	SB420	10.0	10.0	3.7	6.0	6.0	-2.0	0.0	NA	-2.0					
	SB432	9.8	9.8	3.8	1.8	1.8	1.8	--	1.8	1.8					
C7	B-6	10.1	10.1	4.1	8.1	ND	NA	--	NA	8.1	2.8	8.0	TPH, PAHs, Foundations present	10,000	2,963
	MW-7S	10.9	10.9	4.8	10.4	6.9	NA	--	NA	6.9					
	TP1	10.5	10.5	4.3	5.5	6.5	NA	--	6.5	6.5					
	TP-10	10.5	10.5	4.3	7.7	NS	NS	--	NS	10					
	SB421	10.8	10.8	4.3	6.8	2.8	2.8	2.8	6.8	2.8					
C8	SB422	11.8	11.8	4.0	11.3	7.8	ND	--	NA	7.8	7.8	4.0	PAHs	3,475	515
														AREA 3 sub total	**17,196**
AREA 4															
A5	SB400	7.3	7.3	0.7	0.3	ND	ND	--	NA	0.3	2.6	4.7	Fill above the water table	5,175	901
A6	B-5	7.8	7.8	3.0	4.8	NA	NA	--	NA	4.8	2.3	5.8	Indication of Free Product	10,850	2,331
	B-12	7.9	7.9	3.2	7.4	ND	NA	--	NA	7.4					
	MW-11R	7.6	7.6	3.0	-2.4	NA	NA	--	3.6	3.6					
	MW-11S	7.9	7.9	3.0	-2.2	NA	NA	--	3.9	3.9					
	SB401	7.9	7.9	3.2	7.4	3.9	ND	--	NA	3.9					
	SB427	8.3	8.3	2.7	1.3	4.3	ND	2.3	NA	2.3					
A7	SB402	8.4	8.4	2.1	0.4	ND	ND	--	-1.6	-1.6	0.0	8.4	**Lead, Limited by Water Table**	7,575	2,357
														AREA 4 sub total	**5,588**

TABLE 5-3

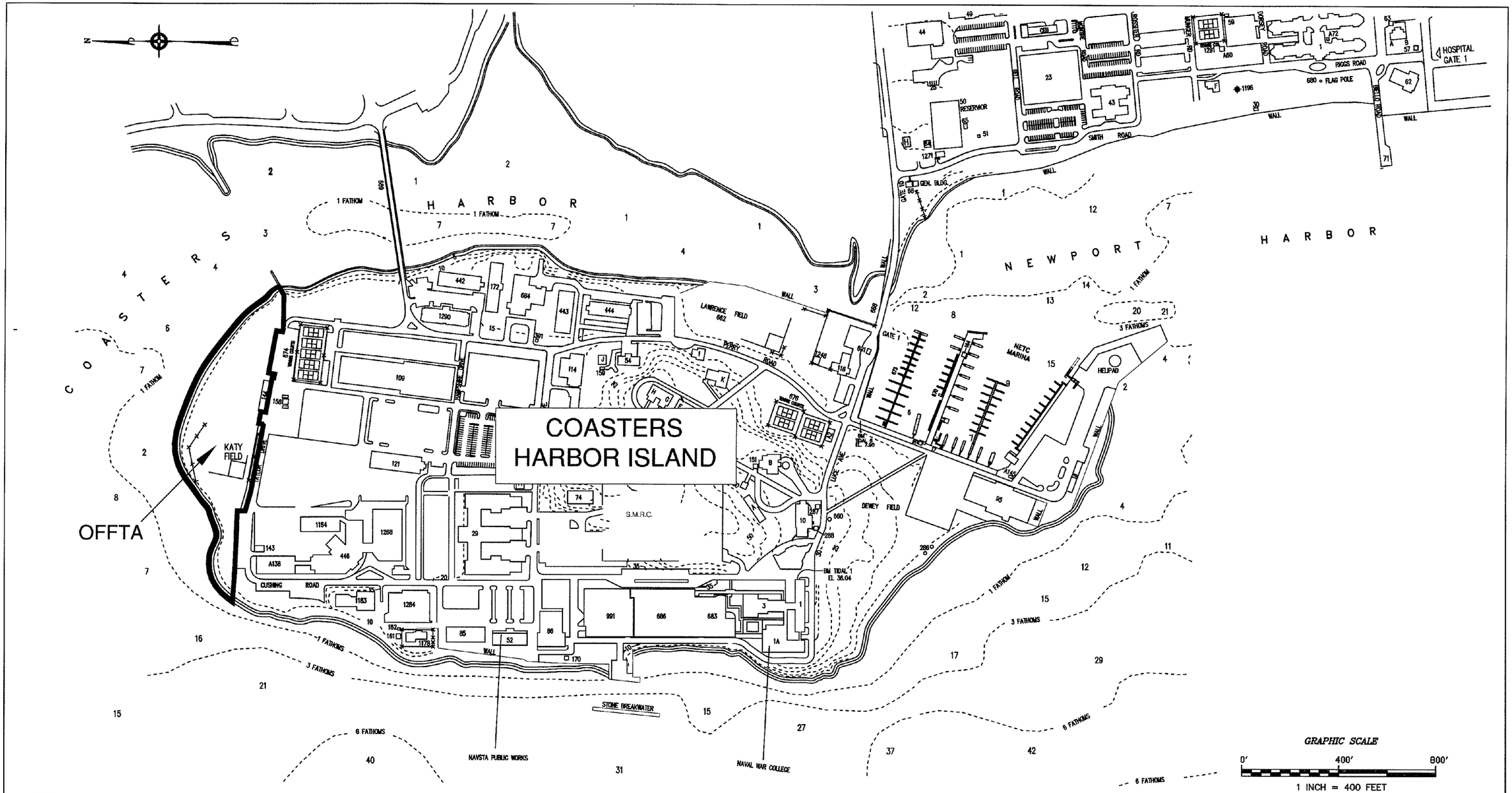
PRELMINARY EXCAVATION DEPTH AND VOLUME TO REMOVE SOIL EXCEEDING REMOVAL ACTION GOALS
OLD FIRE FIGHTING TRAINING AREA
NAVAL STATION NEWPORT, NEWPORT, RHODE ISLAND
PAGE 2 OF 2

Grid Cell	Boring Number	Ground Surface Elevation (1)	Base Grade Elevation (1)	Water Table Elevation (1, 3)	Exceeded Removal Action Goals: Fill	PAH	TPH	Indication of Free Product	Lead	Maximum Excavation	Target Grid Cell Excavation		Driving Removal Action Goal	Cell Surface Area (sq ft)	Excavation Volume (CY)
					Elevation (1)					Elevation (1)	Elevation (1)	Depth			
AREA 5															
B8	B-14	30.7	10.5	3.0	7.7	NS	NS	--	NS	10	5.0	5.5	Fill, Foundations present	10,000	2,037
	TP2	13.0	10.0	3.4	5.0	ND	NA	--	NA	9.5					
	SB411	31.0	10.5	3.4	10.0	ND	ND	--	NA	10					
B9	MW-9R	11.7	11.0	4.5	10.5	NS	NS	--	NS	10.5	3.0	7.5	TPH, Foundations present	10,000	2,778
	TP-16	14.0	10.0	2.0	3.0	ND	3.0	3.0	3.0	3.0					
	B-15	27.6	10.5	2.5	8.6	NS	NS	--	NA	8.6					
	SB412	24.5	10.5	3.3	10.0	ND	ND	--	NA	10					
	TP-13	13.0	10.0	2.0	3.0	ND	6.0	3.0	3.0	3.0					
B10	SB413	10.6	10.6	3.4	7.6	ND	6.6	6.6	NA	6.6	6.6	4.0	TPH	5,000	741
C8	TP-08	11.5	11.5	3.8	9.0	ND	ND	--	NA	9	8.5	3.2	Fill	4145	486
	TP-09	12.0	12.0	3.5	11.5	NS	NS	--	NA	11.5					
	B-4	11.5	11.5	4.0	8.5	NA	NA	--	NA	8.5					
C9	B-2	12.9	12.9	3.8	10.9	NA	NA	--	NA	10.9	5.9	6.1	Fill	6,150	1,378
	B-17	11.5	11.5	3.6	11.0	NA	NA	--	NA	11.0					
	SB423	11.9	11.9	3.8	5.9	ND	ND	--	NA	5.9					
	SB434	11.5	11.5	3.4	11.0	ND	ND	--	NA	11.0					
C10	MW-8R	12.7	12.7	4.0	12.2	NS	NS	--	NS	12.2	5.5	6.9	PAHs	9,450	2,424
	TP-06	12.5	12.5	4.2	5.5	5.5	ND	--	NA	5.5					
	TP-07	12.5	12.5	4.2	4.5	NA	ND	--	NA	4.5					
	SB424	12.0	12.0	3.5	11.5	ND	ND	--	NA	11.5					
C11	MW-1R	11.3	11.3	2.4	10.8	NS	NS	--	NS	10.8	10.0	2.0	Fill	10,000	731
	TP-02	12.0	12.0	3.8	11.5	NA	ND	--	NA	11.5					
	TP-03	12.5	12.5	3.3	10.0	NS	NS	--	--	10					
	SB425	12.1	12.1	3.2	11.6	ND	ND	--	NA	11.6					
C12	B-1	12.5	12.5	2.0	12.0	NA	NA	--	4.5	4.5	3.0	8.9	PAHs, Lead	8,875	2,917
	TP-04	12.5	12.5	3.0	9.5	NS	NS	--	--	9.5					
	TP-05	11.0	11.0	2.0	3.0	3.0	ND	--	3.0	3.0					
	SB426	11.5	11.5	2.0	11.0	ND	ND	--	NA	11.0					
														AREA 5 sub total	**13,492**
AREA 6															
A7	SB428	8.0	8.0	2.1	2.0	0.0	4.0	--	4.0	4.0	4.0	4.0	TPH, Lead	2,000	296
A8	TP3	15.0	10.0	2.0	2.0	7.0	NA	--	2.0	2.0	-1.0	10.0	**Lead, Limited by Water Table**	8,775	3,261
	B-13	8.9	8.9	2.5	2.9	NA	NA	--	NA	2.9					
	MW-102	8.3	8.3	2.1	2.3	0.3	0.3	0.3	0.3	0.3					
	TP-15	9.0	9.0	2.4	1.0	3.0	3.0	3.0	3.0	3.0					
	SB403	9.4	9.4	2.6	-0.6	1.4	1.4	1.4	1.4	1.4					
	SB429	8.6	8.6	2.0	2.6	0.6	0.6	-1.4	-3.4	-3.4					
A9	B-16	9.2	9.2	1.5	8.7	5.2	NA	--	NA	5.2	-1.5	10.6	**Lead, Limited by Water Table. Foundations Present.**	5,675	2,228
	MW-2S	9.1	9.1	1.5	7.1	1.1	NA	--	-4.9	-4.9					
	MW-2D	9.2	9.2	1.5	7.2	NA	NS	--	-4.8	-4.8					
	SB404	8.9	8.9	1.2	-3.1	0.9	-3.1	-3.1	-3.1	-3.1					
A10	TP-14	10.0	10.0	1.8	9.5	NS	6.0	6.0	NA	6.0	6.0	4.0	TPH	1783	264
B10	SB413	10.6	10.6	2.9	7.6	ND	6.6	6.6	NA	6.6	-1.5	11.7	**Lead, Limited by Water Table**	5,000	2,167
	B-3	10.1	10.1	2.0	9.6	2.1	NA	--	NA	2.1					
	MW-10S	10.4	10.4	2.6	8.4	ND	NA	--	NA	8.4					
	SB430	9.8	9.8	1.5	5.8	5.8	-0.2	-0.2	-4.2	-4.2					
B11	SB414	10.7	10.7	2.2	10.2	2.7	-1.3	-1.3	6.7	-1.3	-0.8	11.5	**TPH, Limited by Water Table**	6,400	2,726
B12	SB431	11.1	11.1	1.5	3.1	ND	-0.9	-0.9	1.1	-0.9	-0.9	12.0	**TPH, Limited by Water Table**	1,050	467
														Area 6 Subtotal	**11,409**
														Total	**58,276**

Yellow cells indicate removal action goal exceeded
Blue Shaded cells indicate excavation below the water table
Green shaded cells indicate excavation will likely be halted at max 3' below water table prior to removal of all contaminants exceeding Removal Action goals

(1) elevations are presented as feet Navy Mean Low Water (MLW)
(2) Target depth from Table F-5
(3) Water table elevations for areas 1 and 2 are approximated using MW-4S

FIGURES



GRAPHIC SCALE

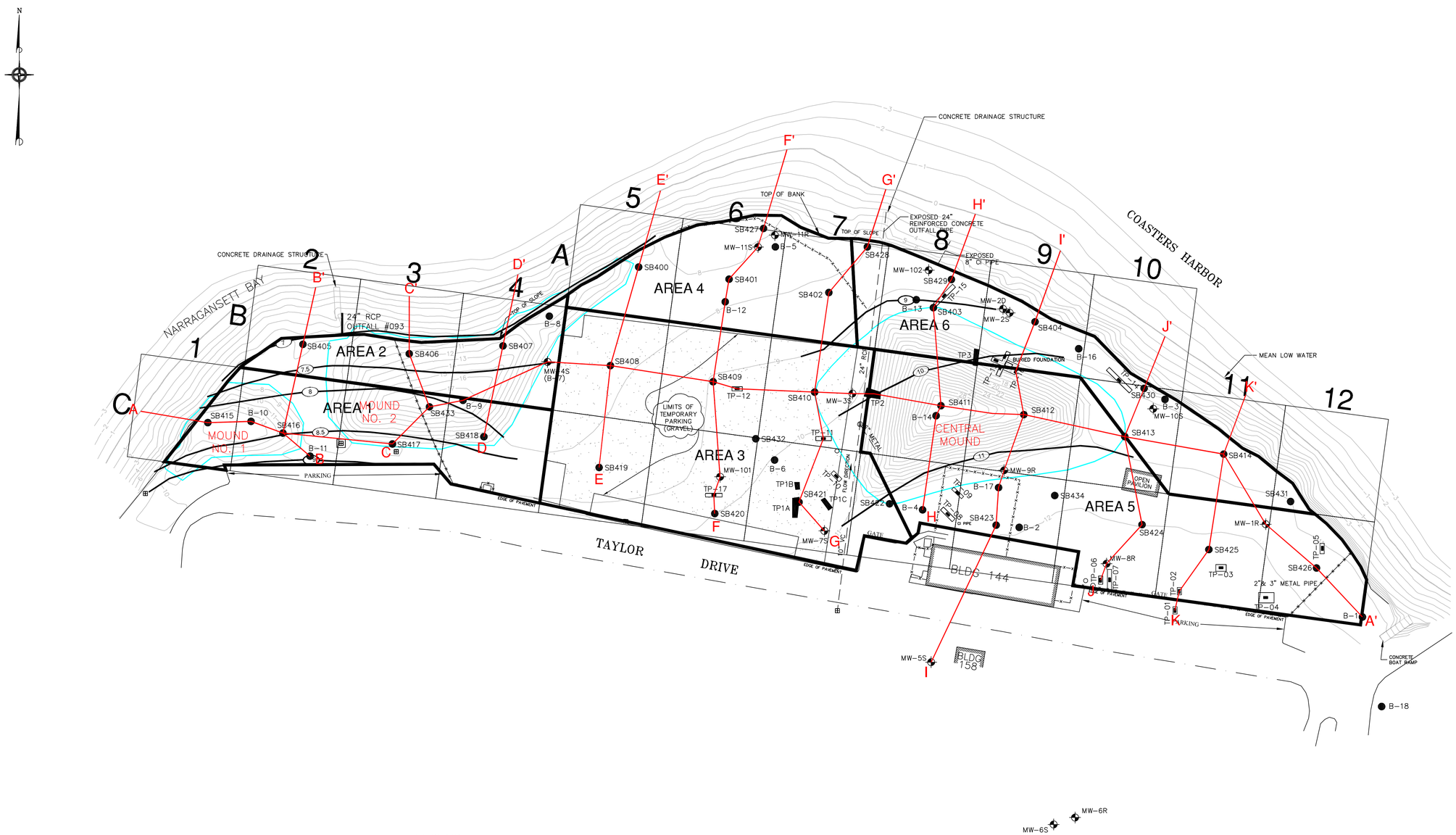
0′ 400′ 800′

1 INCH = 400 FEET

NOTES:

BASE MAP FROM PLAN BY DEPT. OF NAVY, "COASTERS HARBOR ISLAND AND NAVAL HOSPITAL EXISTING CONDITIONS MAP", DATED: 9/98, NETC DWG NO.: 31058-307, CODE ID NO.: 80091, SCALE: 1"=200'.

OFFTA LOCATION MAP			FIGURE 2-1
OLD FIRE FIGHTING TRAINING AREA			TETRA TECH NUS, INC.
NAVSTA NEWPORT – NEWPORT, RHODE ISLAND			55 Jonspin Road Wilmington, MA 01887 (978)658-7899
DRAWN BY:	D.W. MACDOUGALL	REV.:	0
CHECKED BY:	S. PARKER	DATE:	MARCH 25, 2004
SCALE:	AS NOTED	FILE NO.:	DWG\4152\3553\FIG_2-1.DWG



LEGEND

- CATCH BASIN
- FENCE
- EXISTING CONTOUR
- B-16 SOIL BORING LOCATION
- MW-6S MONITORING WELL LOCATION
- STORM SEWER
- TP-10 TEST PIT LOCATION (B&RE, 6/97)
- TP1C TEST PIT LOCATION (TRC, 1/94)
- ROAD CHANGED FROM LAST SURVEY DUE TO CONSTRUCTION ON TAYLOR DRIVE
- 8 EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- SITE AREA BOUNDARY

GRAPHIC SCALE

50' 0' 50' 100'

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA, NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01.

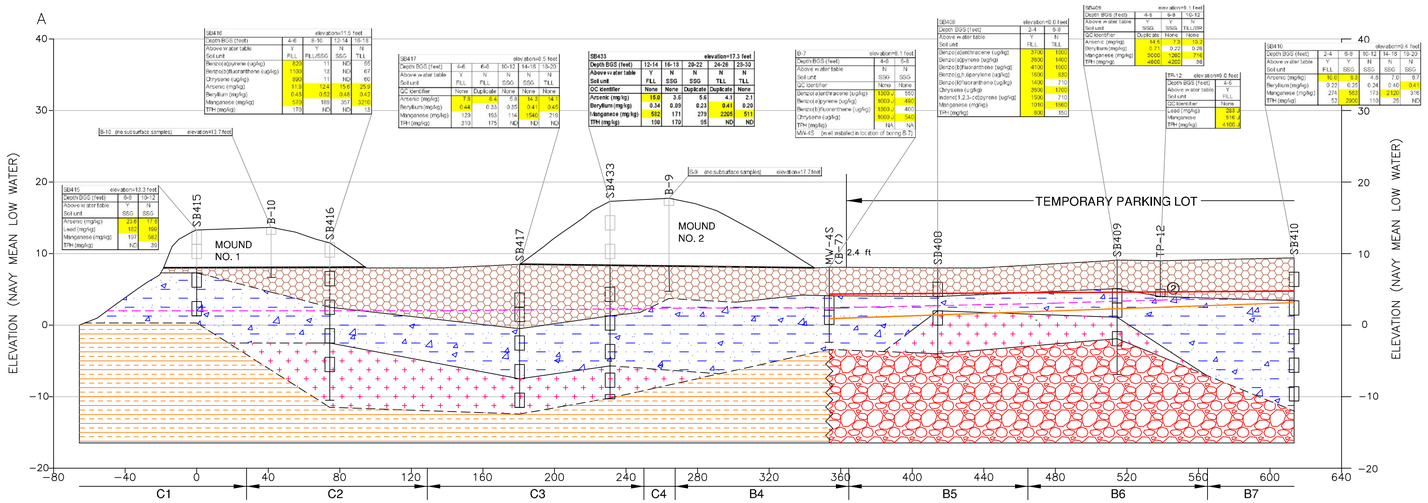
2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

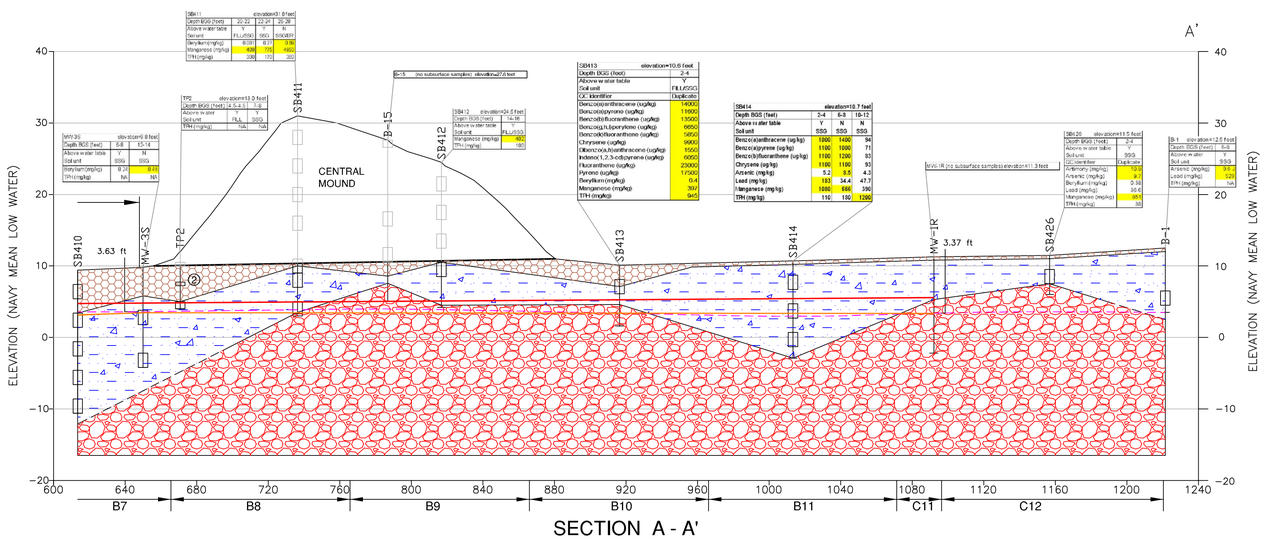
3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

4. PLAN NOT TO BE USED FOR DESIGN.

DRAWN BY: D.W. MACDOUGALL	TITLE: SOIL BORING AND CROSS SECTION LOCATIONS SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: D. HARTIGAN	
CHECKED BY: S. PARKER	
	SOURCE: BASE PLAN BY SEE NOTES.
	SCALE: AS NOTED / DATE: APRIL 14, 2005 / PROJ. NO: 4152
PROJECT MANAGER: S. PARKER	DRAWING NO: FIGURE 4-1 / ACFILE NAME: DWG\4152\3551\FIG_4-1A.DWG / REV: 0
PROGRAM MANAGER: J. TREPANOWSKI	

TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
(978)658-7899





SECTION A - A'

NOTES:

1. THE DEPTHS AND THICKNESSES DETERMINED FOR THE SUBSURFACE STRATA WERE GENERALIZED FROM AND INTERPOLATED BETWEEN TEST BORINGS. THE STRATIFICATION LINES REPRESENT AN APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; THE TRANSITION MAY BE GRADUAL. INFORMATION ON SUBSURFACE CONDITIONS EXIST ONLY AT THE LOCATION OF THE TEST BORINGS; THEREFORE, IT IS POSSIBLE THAT THE SUBSURFACE CONDITIONS MAY VARY FROM THOSE INDICATED.

2. HORIZONTAL DATUM IS BASED ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM IS BASED ON NAVAL BASE MEAN LOW WATER.

3. BASE PLAN BY GUERRIERE AND HALNON, INC., JULY 1997, DATED NOVEMBER 10, 1997, PROJ. NO. 7578 CTO 288, BY BROWN AND ROOT ENVIRONMENTAL.

4. ELEVATIONS ON SUBSURFACE CONTACTS WERE GENERALIZED FROM BORING LOGS BY TRC AND TtNUS.

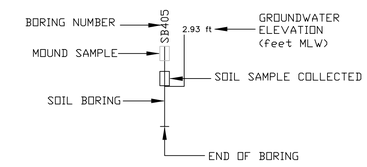
5. BEDROCK ELEVATIONS ARE BASED ON THE DEPTH TO BEDROCK OBSERVED IN TEST PITS AND BORING. IF A REFUSAL WAS NOTED IN A BORING, THE TOP OF BEDROCK WAS GENERALLY ASSUMED TO BE WITHIN ONE FOOT OF THE REFUSAL DEPTH. THE BEDROCK CONTOURS ARE INTERPRETATIONS OF THESE DATA AND THE ACTUAL BEDROCK ELEVATION MAY BE DIFFERENT FROM THE ELEVATION INDICATED.

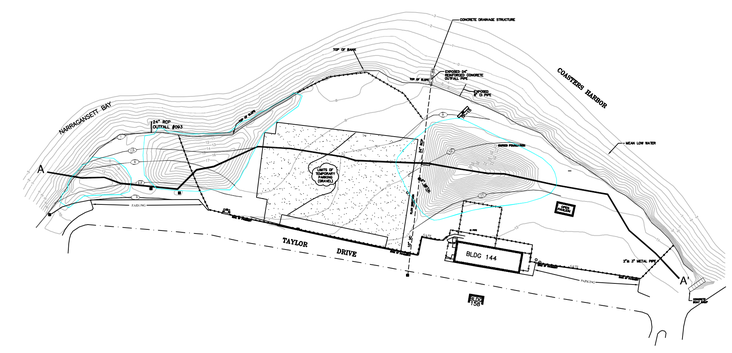
6. DASHED LINES INDICATE UNCERTAINTY.

7. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.

8. PLAN NOT TO BE USED FOR DESIGN.

9. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS.
NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.





MOUND MATERIAL – CONSISTS OF FILL AND WILL BE REMOVED PRIOR TO SUBSURFACE EXCAVATION

FILL – FINE TO MEDIUM SAND, SILT, GRAVEL, AND ROCK FRAGMENTS MIXED WITH VARYING AMOUNTS OF CONSTRUCTION–TYPE DEBRIS INCLUDING: ASPHALT, CONCRETE, METAL, BRICK, WOOD AND GLASS

SILTY SAND AND GRAVEL – FINE TO MEDIUM SAND, SILT AND GRAVEL, WITH VARYING AMOUNTS OF COBBLES, ROCK FRAGMENTS AND SEASHELL FRAGMENTS

TILL – DENSE SILT WITH FINE TO MEDIUM SAND, GRAVEL AND ROCK FRAGMENTS

BEDROCK – CONGLOMERATE WITH QUARTZITE COBBLES

BEDROCK – PHYLLITE

GROUNDWATER ELEVATION MEASURED ON 7/7/1997

BASE GRADE ELEVATION

ADJUSTED MAXIMUM GROUNDWATER ELEVATION

ADJUSTED MINIMUM GROUNDWATER ELEVATION

627 CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1–1 FOR PRGs.

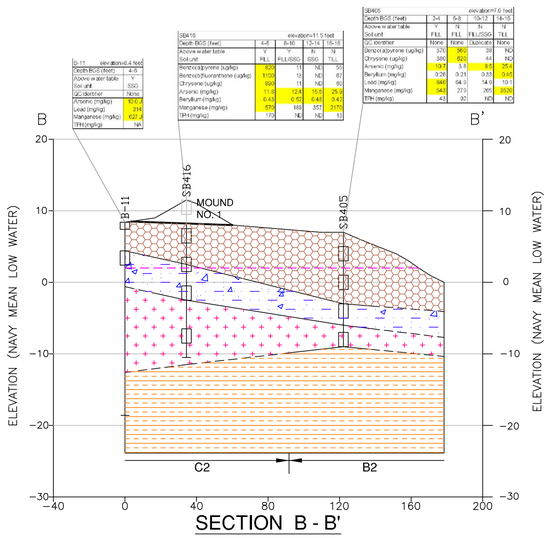
② PIPE ENCOUNTERED IN SUBSURFACE

GRAPHIC SCALE

0′ 10′ VERTICAL

0′ 40′ HORIZONTAL

DRAWN BY: D.W. MACDOUGALL	TITLE: CROSS–SECTION A–A′ SUBSURFACE PRE–DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND		TETRA TECH NUS, INC.
PREPARED BY: D. HARTIGAN			55 JONSPIN ROAD WILMINGTON, MASSACHUSETTS 01887 (978)658–7899
CHECKED BY: J. FORRELLI			
	SOURCE: REFER TO FIGURE 4–1 FOR TOPOGRAPHIC SOURCE		
	SCALE: AS NOTED	DATE: MARCH 17, 2005	PROJ. NO: 4152
PROJECT MANAGER: S. PARKER	DRAWING NO: 4–2	ACFILE NAME: DWG\4152\3551\FIG_4–2.DWG	REV: 0
PROGRAM MANAGER: J. TREPANOWSKI			

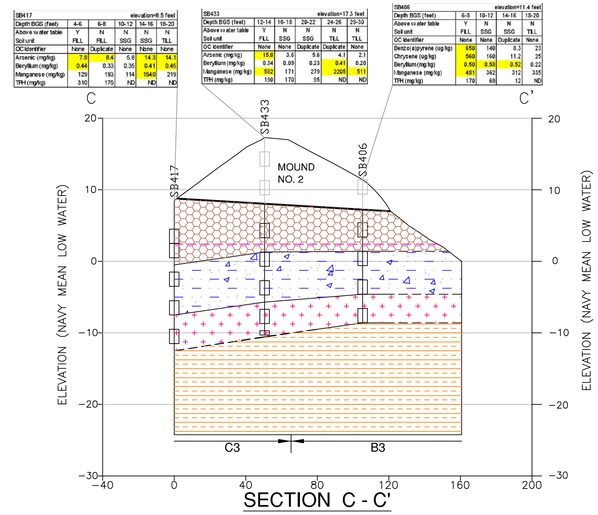


SECTION B - B'

B-11	elevation=4.4 feet
Depth BGS (feet)	4-6
Above water table	Y
Soil unit	SSG
QC identifier	None
Arsenic (mg/kg)	10.0
Lead (mg/kg)	314
Manganese (mg/kg)	627.4
TPH (mg/kg)	NA

SB416	elevation=11.5 feet			
Depth BGS (feet)	4-6	8-10	13-14	15-16
Above water table	Y	Y	N	N
Soil unit	FILL	FILL/SSG	SSG	TLL
Benzo(a)pyrene (ug/kg)	820	19	ND	55
Benzo(b)fluoranthene (ug/kg)	1100	13	ND	67
Chrysene (ug/kg)	990	11	ND	60
Arsenic (mg/kg)	11.8	12.4	15.5	25.9
Beryllium (mg/kg)	0.43	0.63	0.45	0.43
Manganese (mg/kg)	670	169	357	2170
TPH (mg/kg)	170	ND	ND	13

SB405	elevation=7.0 feet			
Depth BGS (feet)	3-4	6-8	13-13'	14-15
Above water table	Y	N	N	N
Soil unit	FILL	FILL	FILL/SSG	TLL
QC identifier	None	None	Duplicate	None
Benzo(a)pyrene (ug/kg)	370	560	39	ND
Chrysene (ug/kg)	380	520	44	ND
Arsenic (mg/kg)	19.7	3.3	8.5	25.4
Beryllium (mg/kg)	0.26	0.21	0.33	0.65
Lead (mg/kg)	346	64.3	14.0	10.1
Manganese (mg/kg)	543	273	265	3526
TPH (mg/kg)	43	30	ND	ND



SECTION C - C'

SB417	elevation=8.5 feet				
Depth BGS (feet)	4-6	6-8	10-12	14-16	19-20
Above water table	Y	N	N	N	N
Soil unit	FILL	FILL	SSG	SSG	TLL
QC identifier	None	Duplicate	None	None	None
Arsenic (mg/kg)	7.6	8.4	5.9	14.3	14.1
Beryllium (mg/kg)	0.44	0.33	0.36	0.41	0.46
Manganese (mg/kg)	129	190	194	1540	219
TPH (mg/kg)	310	170	ND	ND	ND

SB433	elevation=17.3 feet				
Depth BGS (feet)	12-14	16-18	20-22	24-26	29-32
Above water table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG	TLL	TLL
QC identifier	None	None	Duplicate	Duplicate	None
Arsenic (mg/kg)	15.6	3.6	5.6	4.3	2.1
Beryllium (mg/kg)	0.34	0.09	0.23	0.41	0.20
Manganese (mg/kg)	892	171	279	2205	511
TPH (mg/kg)	130	170	55	ND	ND

SB406	elevation=11.4 feet			
Depth BGS (feet)	6-8	10-12	14-16	18-20
Above water table	Y	N	N	N
Soil unit	FILL	SSG	SSG	TLL
QC identifier	None	None	Duplicate	None
Benzo(a)pyrene (ug/kg)	950	140	8.3	23
Chrysene (ug/kg)	560	160	11.2	25
Beryllium (mg/kg)	0.50	0.56	0.52	0.22
Manganese (mg/kg)	491	362	312	335
TPH (mg/kg)	170	65	12	ND

NOTES:

1. THE DEPTHS AND THICKNESSES DETERMINED FOR THE SUBSURFACE STRATA WERE GENERALIZED FROM AND INTERPOLATED BETWEEN TEST BORINGS. THE STRATIFICATION LINES REPRESENT AN APPROXIMATE BOUNDARY BETWEEN SOIL TYPES; THE TRANSITION MAY BE GRADUAL. INFORMATION ON SUBSURFACE CONDITIONS EXIST ONLY AT THE LOCATION OF THE TEST BORINGS; THEREFORE, IT IS POSSIBLE THAT THE SUBSURFACE CONDITIONS MAY VARY FROM THOSE INDICATED.

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3. BASE PLAN BY GUERRIERE AND HALNON, INC., JULY 1997, DATED NOVEMBER 10, 1997, PROJ. NO. 7578 CTO 288, BY BROWN AND ROOT ENVIRONMENTAL.

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6. DASHED LINES INDICATE UNCERTAINTY.

7. ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.

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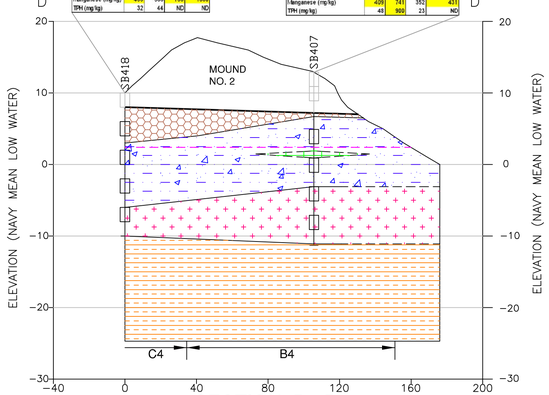
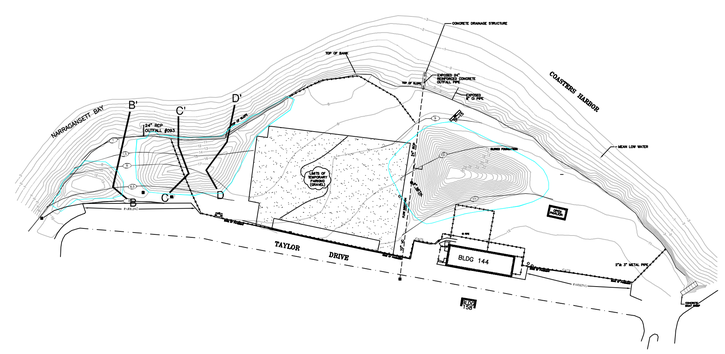
9. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS.
NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.

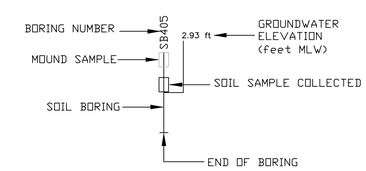


SECTION D - D'

SB418	elevation=10.0 feet			
Depth BGS (feet)	4-6	8-10	12-14	15-13
Above water table	Y	N	N	N
Soil unit	FILL	SSG	SSG	TLL
QC identifier	None	None	None	Duplicate
Beryllium (mg/kg)	2.56	0.40	0.44	0.38
Lead (mg/kg)	321	14.5	12.7	10.3
Manganese (mg/kg)	496	335	758	1360
TPH (mg/kg)	32	44	ND	ND

SB407	elevation=12.9 feet			
Depth BGS (feet)	8-10	12-14	16-18	20-22
Above water table	Y	Y	N	N
Soil unit	SSG	SSG	TLL	TLL
QC identifier	None	None	None	Duplicate
Benzo(a)anthracene (ug/kg)	690	1400	90	9.3
Benzo(a)pyrene (ug/kg)	810	1100	64	7.8
Benzo(b)fluoranthene (ug/kg)	740	1200	72	9.4
Chrysene (ug/kg)	820	1100	70	7.8
Arsenic (mg/kg)	7.3	2.5	4.8	3.4
Manganese (mg/kg)	409	741	352	431
TPH (mg/kg)	45	900	23	ND





GRAPHIC SCALE

0' 10' — VERTICAL

0' 40' — HORIZONTAL

MOUND MATERIAL – CONSISTS OF FILL AND WILL BE REMOVED PRIOR TO SUBSURFACE EXCAVATION

FILL – FINE TO MEDIUM SAND, SILT, GRAVEL, AND ROCK FRAGMENTS MIXED WITH VARYING AMOUNTS OF CONSTRUCTION–TYPE DEBRIS INCLUDING: ASPHALT, CONCRETE, METAL, BRICK, WOOD AND GLASS

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TILL – DENSE SILT WITH FINE TO MEDIUM SAND, GRAVEL AND ROCK FRAGMENTS

BEDROCK – PHYLLITE

GROUNDWATER ELEVATION BASED ON MW–4S (2.4 MLW ON 7/7/1997)

BASE GRADE ELEVATION

627.4 CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1–1 FOR PRGs.

DRAWN BY: D.W. MACDOUGALL	TITLE: CROSS–SECTIONS B–B', C–C', AND D–D' SUBSURFACE PRE–DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: D. HARTIGAN	
CHECKED BY: J. FORRELLI	
	SOURCE: REFER TO FIGURE 4–1 FOR TOPOGRAPHIC SOURCE
	SCALE: AS NOTED / DATE: MARCH 16, 2005 / PROJ. NO: 4152
PROJECT MANAGER: S. PARKER	DRAWING NO: 4–3 / ACFILE NAME: DWG\4152\3551\FIG_4–3.DWG / REV: 0
PROGRAM MANAGER: J. TREPANOWSKI	

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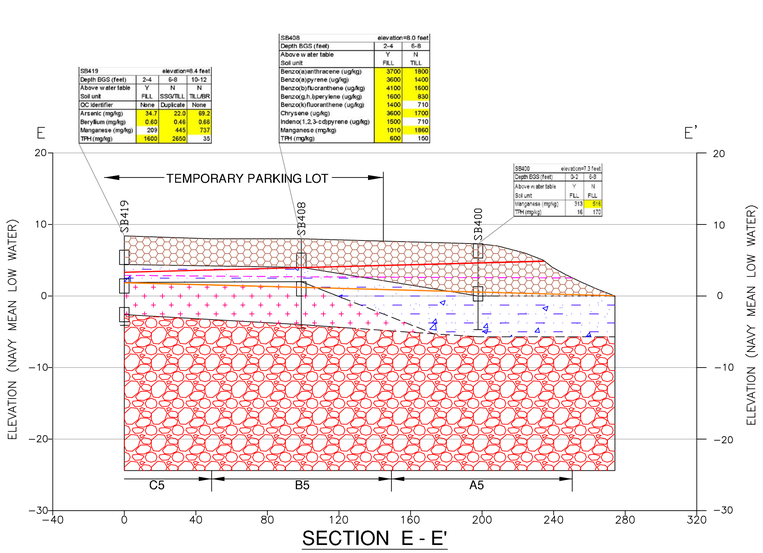
(978)658–7899

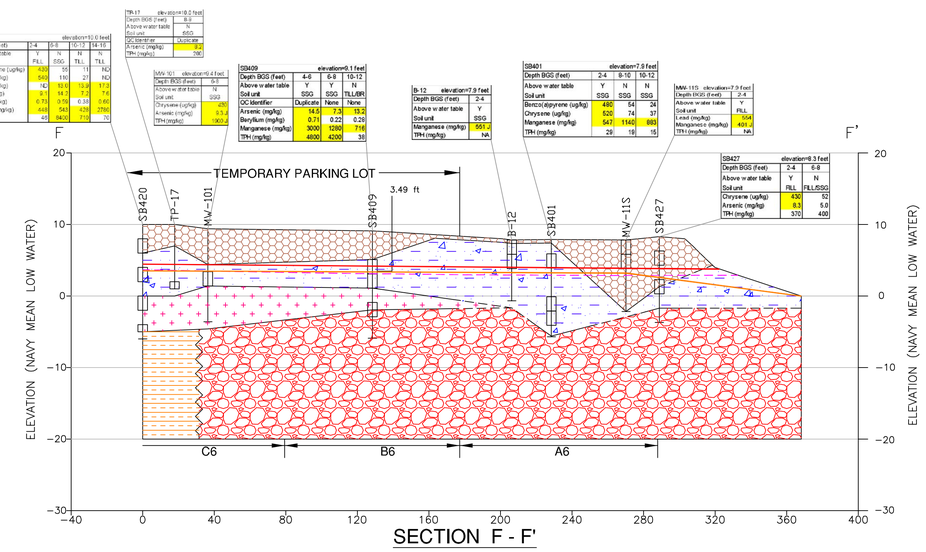


SECTION E - E'

SB419	elevation=8.4 feet		
Depth BGS (feet)	2-4	6-8	10-12
Above water table	Y	N	N
Soil unit	FILL	SSG/TILL	TILL/BR
QC identifier	None	Duplicate	None
Arsenic (mg/kg)	34.7	22.0	69.2
Beryllium (mg/kg)	0.60	0.46	0.66
Manganese (mg/kg)	209	445	737
TPH (mg/kg)	1600	2600	35

SB408	elevation=8.0 feet	
Depth BGS (feet)	2-4	6-8
Above water table	Y	N
Soil unit	FILL	TILL
Benzo(a)anthracene (ug/kg)	3700	1800
Benzo(a)pyrene (ug/kg)	3600	1400
Benzo(b)fluoranthene (ug/kg)	4100	1600
Benzo(g,h,i)perylene (ug/kg)	1600	830
Benzo(k)fluoranthene (ug/kg)	1400	710
Chrysene (ug/kg)	3600	1700
Indeno(1,2,3-cd)pyrene (ug/kg)	1500	710
Manganese (mg/kg)	1010	1860
TPH (mg/kg)	600	150

SB400	elevation=7.3 feet	
Depth BGS (feet)	2-3	6-8
Above water table	Y	N
Soil unit	FILL	FILL
Manganese (mg/kg)	319	656
TPH (mg/kg)	16	170



SECTION F - F'

SB420	elevation=10.6 feet			
Depth BGS (feet)	2-4	6-8	10-12	14-16
Above water table	Y	N	N	N
Soil unit	FILL	SSG	TILL	TILL
Benzo(a)pyrene (ug/kg)	420	55	11	ND
Chrysene (ug/kg)	540	110	21	ND
Antimony (mg/kg)	ND	13.0	13.9	17.3
Arsenic (mg/kg)	9.7	14.3	7.7	7.6
Beryllium (mg/kg)	0.73	0.59	0.38	0.60
Manganese (mg/kg)	448	543	439	2700
TPH (mg/kg)	45	8400	710	70

TP-17	elevation=10.2 feet	
Depth BGS (feet)	6-8	
Above water table	N	
Soil unit	SSG	
QC identifier	Duplicate	
Arsenic (mg/kg)	8.4	
TPH (mg/kg)	78	

MW-101	elevation=9.4 feet	
Depth BGS (feet)	8-9	
Above water table	N	
Soil unit	SSG	
Chrysene (ug/kg)	250	
Arsenic (mg/kg)	9.3	
TPH (mg/kg)	300 J	

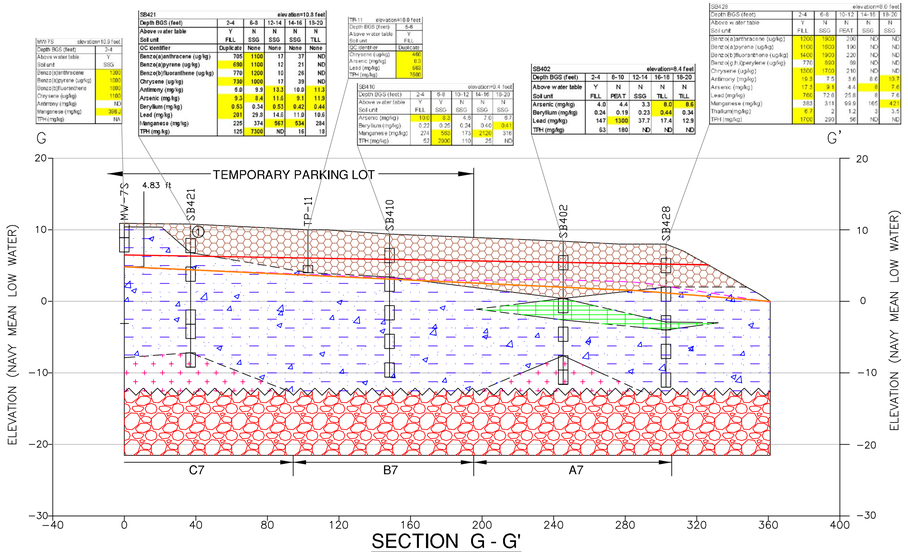
SB409	elevation=9.1 feet		
Depth BGS (feet)	4-6	6-8	10-12
Above w ater table	Y	Y	N
Soil unit	SSG	SSG	TILL/BR
QC identifier	Duplicate	None	None
Arsenic (mg/kg)	14.5	7.3	15.3
Beryllium (mg/kg)	0.71	0.22	0.29
Manganese (mg/kg)	3000	1280	718
TPH (mg/kg)	4000	4200	38

B-12	elevation=7.9 feet	
Depth BGS (feet)	2-4	
Above w ater table	Y	
Soil unit	SSG	
Manganese (mg/kg)	551 J	
TPH (mg/kg)	NA	

SB401	elevation=7.5 feet		
Depth BGS (feet)	2-4	8-10	10-12
Above w ater table	Y	N	N
Soil unit	SSG	SSG	SSG
Benzo(a)pyrene (ug/kg)	480	54	24
Chrysene (ug/kg)	520	74	37
Manganese (mg/kg)	547	1140	693
TPH (mg/kg)	29	19	15

MW-11S	elevation=7.9 feet	
Depth BGS (feet)	2-4	
Above w ater table	Y	
Soil unit	FILL	
Lead (mg/kg)	1104	
Manganese (mg/kg)	429 J	
TPH (mg/kg)	NA	

SB427	elevation=8.3 feet	
Depth BGS (feet)	2-4	6-8
Above w ater table	Y	N
Soil unit	FILL	FILL/SSG
Chrysene (ug/kg)	430	52
Arsenic (mg/kg)	6.3	5.0
TPH (mg/kg)	370	400



SECTION G - G'

MW-7S	elevation=10.9 feet
Depth BGS (feet)	3-4
Above w ater table	Y
Soil unit	SSG
Benzo(a)anthracene	1300
Benzo(a)pyrene (ug/kg)	1100
Benzo(b)fluoranthene	1600
Chrysene (ug/kg)	1100
Antimony (mg/kg)	ND
Manganese (mg/kg)	308 J
TPH (mg/kg)	NA

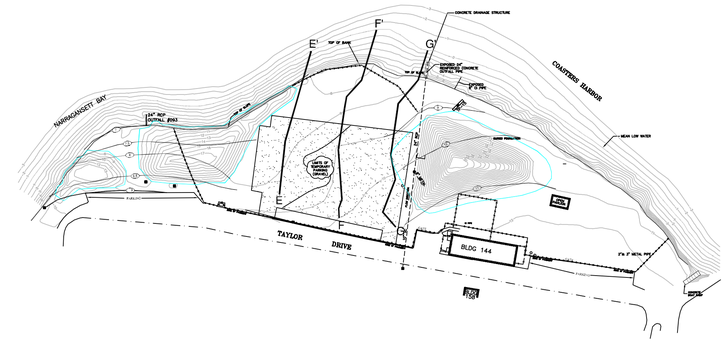
SB421	elevation=10.8 feet				
Depth BGS (feet)	3-4	6-8	12-14	14-16	18-20
Above w ater table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG	SSG	TILL
QC identifier	Duplicate	None	None	None	None
Benzo(a)anthracene (ug/kg)	705	1100	17	37	ND
Benzo(a)pyrene (ug/kg)	696	1100	12	21	ND
Benzo(b)fluoranthene (ug/kg)	779	1200	10	29	ND
Chrysene (ug/kg)	736	1000	17	39	ND
Antimony (mg/kg)	8.8	9.5	13.3	18.0	13.8
Arsenic (mg/kg)	9.2	8.4	11.6	9.1	11.9
Beryllium (mg/kg)	0.53	0.34	0.53	0.42	0.44
Lead (mg/kg)	201	29.8	14.8	11.9	18.9
Manganese (mg/kg)	225	374	567	534	204
TPH (mg/kg)	125	7300	ND	16	18

TP-11	elevation=8.8 feet
Depth BGS (feet)	6-8
Above w ater table	Y
Soil unit	FILL
QC identifier	Duplicate
Chrysene (ug/kg)	440
Arsenic (mg/kg)	8.3
Lead (mg/kg)	949
TPH (mg/kg)	1100

SB410	elevation=9.4 feet			
Depth BGS (feet)	2-4	8-8	10-12	14-16	19-20
Above w ater table	Y	Y	N	N	N
Soil unit	FILL	SSG	SSG	SSG	SSG
Arsenic (mg/kg)	13.0	8.0	4.8	7.6	6.7
Beryllium (mg/kg)	0.32	0.25	0.34	0.40	0.41
Manganese (mg/kg)	273	180	170	2120	316
TPH (mg/kg)	63	2000	110	25	ND

SB402	elevation=8.4 feet				
Depth BGS (feet)	2-4	6-10	12-14	16-18	19-20
Above w ater table	Y	N	N	N	N
Soil unit	FILL	PEAT	SSG	TILL	TILL
Arsenic (mg/kg)	4.0	4.4	3.3	8.0	8.6
Beryllium (mg/kg)	0.24	0.19	0.23	0.44	0.34
Lead (mg/kg)	147	1300	37.7	17.4	12.9
TPH (mg/kg)	63	180	ND	ND	ND

SB428	elevation=8.6 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above w ater table	Y	N	N	N	N
Soil unit	FILL	SSG	PEAT	SSG	SSG
Benzo(a)anthracene (ug/kg)	1100	1800	200	ND	ND
Benzo(a)pyrene (ug/kg)	1100	1600	190	ND	ND
Benzo(b)fluoranthene (ug/kg)	1400	1900	220	ND	ND
Benzo(g,h,i)perylene (ug/kg)	770	880	98	ND	ND
Chrysene (ug/kg)	1000	1700	210	ND	ND
Antimony (mg/kg)	10.5	7.5	3.6	8.6	13.7
Arsenic (mg/kg)	12.3	9.5	4.4	9	7.6
Lead (mg/kg)	399	72.6	25.6	8	7.6
Manganese (mg/kg)	283	311	99.5	165	431
Thallium(mg/kg)	6.7	2	1.2	3	3.5
TPH (mg/kg)	1100	290	56	ND	ND



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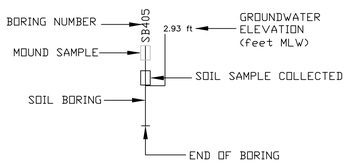

MOUND MATERIAL – CONSISTS OF FILL AND WILL BE REMOVED PRIOR TO SUBSURFACE EXCAVATION

FILL – FINE TO MEDIUM SAND, SILT, GRAVEL, AND ROCK FRAGMENTS MIXED WITH VARYING AMOUNTS OF CONSTRUCTION–TYPE DEBRIS INCLUDING: ASPHALT, CONCRETE, METAL, BRICK, WOOD AND GLASS

SILTY SAND AND GRAVEL – FINE TO MEDIUM SAND, SILT AND GRAVEL, WITH VARYING AMOUNTS OF COBBLES, ROCK FRAGMENTS AND SEASHELL FRAGMENTS

PEAT – PEAT AND ORGANIC MUCK WITH VARYING AMOUNTS OF SAND AND SILT

TILL – DENSE SILT WITH FINE TO MEDIUM SAND, GRAVEL AND ROCK FRAGMENTS

BEDROCK – CONGLOMERATE WITH QUARTZITE COBBLES

BEDROCK – PHYLLITE

GROUNDWATER ELEVATIONS MEASURED ON 7/7/1997; MW–4S GROUNDWATER ELEVATION OF 2.75' USED FOR E–E'

BASE GRADE ELEVATION

ADJUSTED MAXIMUM GROUNDWATER ELEVATION

ADJUSTED MINIMUM GROUNDWATER ELEVATION

627 J — CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1–1 FOR PRGs.

① FOUNDATION ENCOUNTERED IN SUBSURFACE

GRAPHIC SCALE

0′ 10′ VERTICAL

0′ 40′ HORIZONTAL

DRAWN BY: D.W. MACDOUGALL	TITLE: CROSS–SECTIONS E–E', F–F', AND G–G' SUBSURFACE PRE–DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: D. HARTIGAN	
CHECKED BY: J. FORRELLI	
	SOURCE: REFER TO FIGURE 4–1 FOR TOPOGRAPHIC SOURCE
	SCALE: AS NOTED / DATE: MARCH 22, 2005 / PROJ. NO: 4152
PROJECT MANAGER: S. PARKER	DRAWING NO: 4–4 / ACFILE NAME: DWG\4152\3551\FIG_4–4.DWG / REV: 0
PROGRAM MANAGER: J. TREPANOWSKI	

TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
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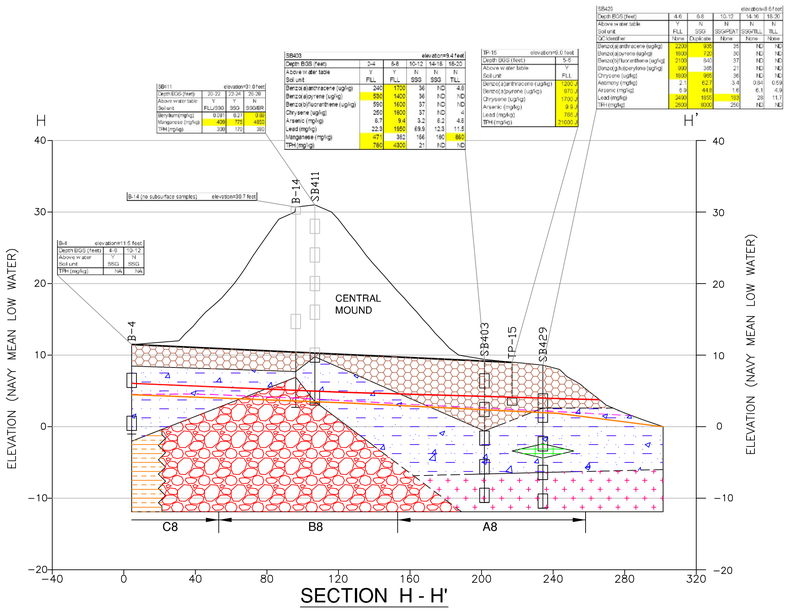
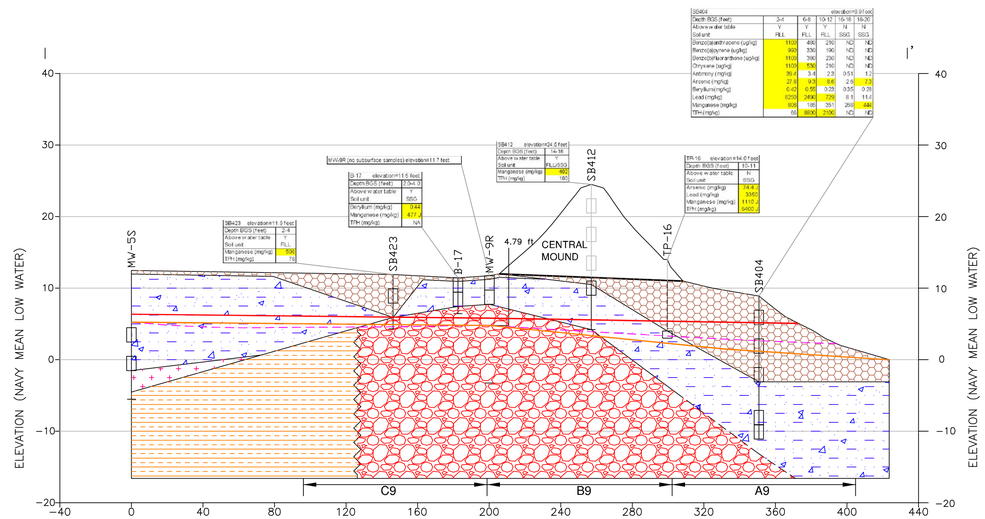
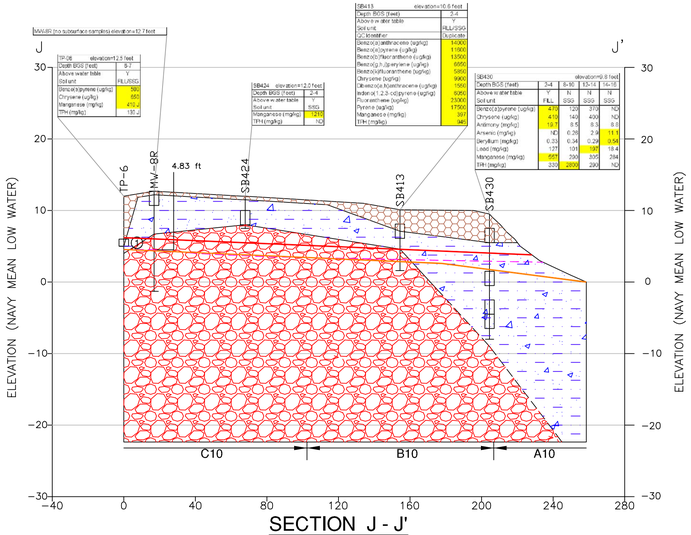


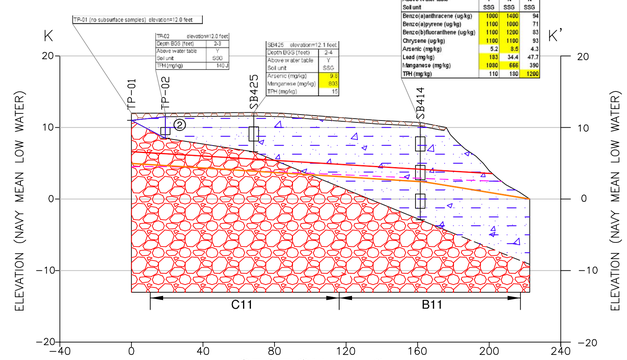
SECTION H - H'



SECTION I - I'



SECTION J - J'



SECTION K - K'

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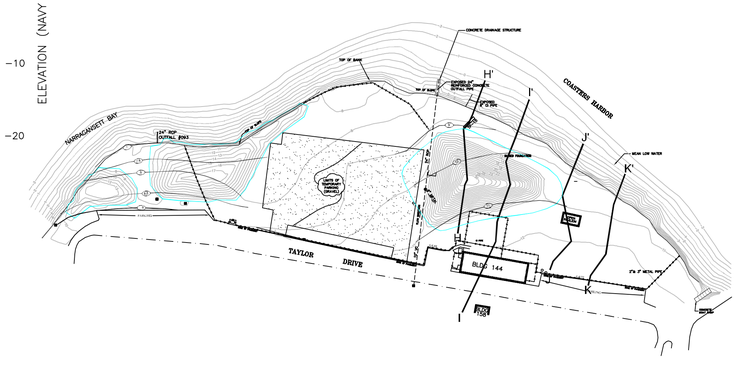
9. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS.
NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.



MOUND MATERIAL – CONSISTS OF FILL AND WILL BE REMOVED PRIOR TO SUBSURFACE EXCAVATION

FILL – FINE TO MEDIUM SAND, SILT, GRAVEL, AND ROCK FRAGMENTS MIXED WITH VARYING AMOUNTS OF CONSTRUCTION–TYPE DEBRIS INCLUDING: ASPHALT, CONCRETE, METAL, BRICK, WOOD AND GLASS

SILTY SAND AND GRAVEL – FINE TO MEDIUM SAND, SILT AND GRAVEL, WITH VARYING AMOUNTS OF COBBLES, ROCK FRAGMENTS AND SEASHELL FRAGMENTS

PEAT – PEAT AND ORGANIC MUCK WITH VARYING AMOUNTS OF SAND AND SILT

TILL – DENSE SILT WITH FINE TO MEDIUM SAND, GRAVEL AND ROCK FRAGMENTS

BEDROCK – CONGLOMERATE WITH QUARTZITE COBBLES

BEDROCK – PHYLLITE

GROUNDWATER ELEVATIONS MEASURED ON 7/7/1997'

BASE GRADE ELEVATION

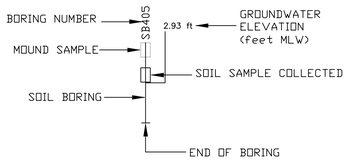
ADJUSTED MAXIMUM GROUNDWATER ELEVATION

ADJUSTED MINIMUM GROUNDWATER ELEVATION

627 J CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1–1 FOR PRGs.

① FOUNDATION ENCOUNTERED IN SUBSURFACE

② PIPE ENCOUNTERED IN SUBSURFACE



GRAPHIC SCALE

0' 10' VERTICAL

0' 40' HORIZONTAL

DRAWN BY: D.W. MACDOUGALL	TITLE: CROSS–SECTIONS H–H', I–I', J–J', AND K–K' SUBSURFACE PRE–DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: D. HARTIGAN	
CHECKED BY: J. FORRELLI	
	SOURCE: REFER TO FIGURE 4–1 FOR TOPOGRAPHIC SOURCE
	SCALE: AS NOTED / DATE: MARCH 22, 2005 / PROJ. NO: 4152
PROJECT MANAGER: S. PARKER	DRAWING NO: 4–5 / ACFILE NAME: DWG\4152\3551\FIG_4–5.DWG / REV: 0
PROGRAM MANAGER: J. TREPANOWSKI	

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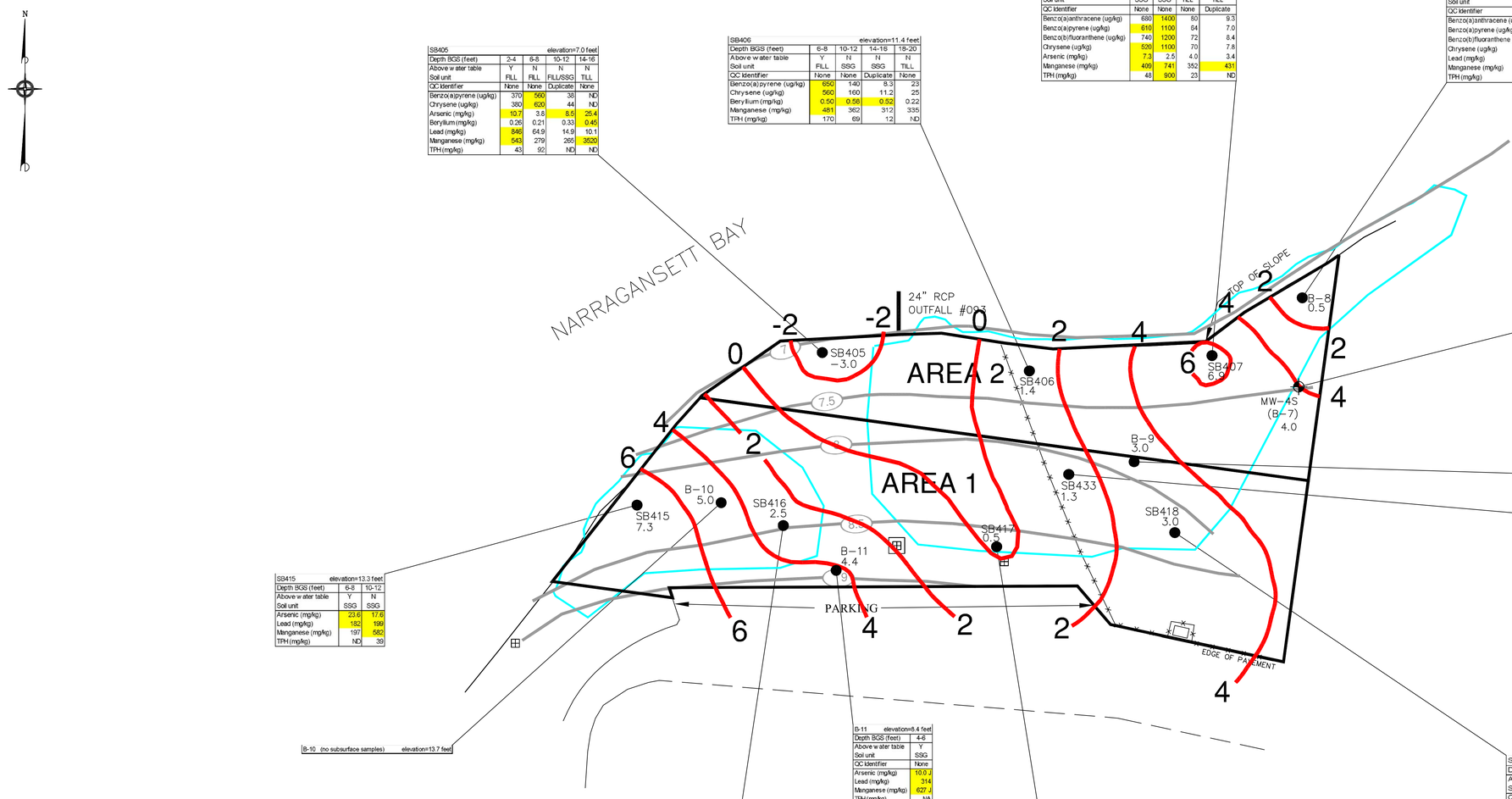

SB405			elevation=7.0 feet	
Depth BGS (feet)	2-4	6-8	10-12	14-16
Above water table	Y	N	N	N
Soil unit	FILL	FILL	FILL/SSG	TILL
QC Identifier	None	None	Duplicate	None
Benzo(a)pyrene (ug/kg)	370	560	38	ND
Chrysene (ug/kg)	380	620	44	ND
Arsenic (mg/kg)	10.7	3.8	8.5	25.4
Beryllium (mg/kg)	0.26	0.21	0.33	0.45
Lead (mg/kg)	846	64.9	14.9	10.1
Manganese (mg/kg)	543	279	265	3520
TPH (mg/kg)	43	92	ND	ND

SB406			elevation=11.4 feet	
Depth BGS (feet)	6-8	10-12	14-16	18-20
Above water table	Y	N	N	N
Soil unit	FILL	SSG	SSG	TILL
QC Identifier	None	None	Duplicate	None
Benzo(a)pyrene (ug/kg)	650	140	8.3	23
Chrysene (ug/kg)	560	160	11.2	25
Beryllium (mg/kg)	0.50	0.58	0.52	0.22
Manganese (mg/kg)	481	362	312	335
TPH (mg/kg)	170	69	12	ND

SB407			elevation=12.9 feet	
Depth BGS (feet)	8-10	12-14	16-18	20-22
Above water table	Y	Y	N	N
Soil unit	SSG	SSG	TILL	TILL
QC Identifier	None	None	None	Duplicate
Benzo(a)anthracene (ug/kg)	680	1400	80	9.3
Benzo(a)pyrene (ug/kg)	610	1100	64	7.0
Benzo(b)fluoranthene (ug/kg)	740	1200	72	8.4
Chrysene (ug/kg)	520	1100	70	7.8
Arsenic (mg/kg)	7.3	2.5	4.0	3.4
Manganese (mg/kg)	409	741	352	431
TPH (mg/kg)	48	900	23	ND

B-8	elevation=11.5 feet
Depth BGS (feet)	8-10
Above water table	N
Soil unit	FILL
QC Identifier	None
Benzo(a)anthracene (ug/kg)	2200
Benzo(a)pyrene (ug/kg)	1700
Benzo(b)fluoranthene (ug/kg)	2800
Chrysene (ug/kg)	2100
Lead (mg/kg)	189
Manganese (mg/kg)	540 J
TPH (mg/kg)	NA

B-7	elevation=8.1 feet	
Depth BGS (feet)	4-6	6-8
Above water table	N	N
Soil unit	SSG	SSG
QC Identifier	None	None
Benzo(a)anthracene (ug/kg)	1300 J	550
Benzo(a)pyrene (ug/kg)	1000 J	490
Benzo(b)fluoranthene (ug/kg)	1300 J	400
Chrysene (ug/kg)	1000 J	540
TPH (mg/kg)	NA	NA

MW-4S (well installed in location of boring B-7)

B-9 (no subsurface samples) elevation=17.7 feet

SB433				elevation=17.3 feet	
Depth BGS (feet)	12-14	16-18	20-22	24-26	28-30
Above water table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG	TILL	TILL
QC Identifier	None	None	Duplicate	Duplicate	None
Arsenic (mg/kg)	15.0	3.6	5.6	4.1	2.1
Beryllium (mg/kg)	0.34	0.09	0.23	0.41	0.20
Manganese (mg/kg)	582	171	279	2205	511
TPH (mg/kg)	190	170	95	ND	ND

SB415	elevation=13.3 feet	
Depth BGS (feet)	6-8	10-12
Above water table	Y	N
Soil unit	SSG	SSG
Arsenic (mg/kg)	23.6	17.6
Lead (mg/kg)	182	199
Manganese (mg/kg)	197	582
TPH (mg/kg)	ND	39

B-10 (no subsurface samples) elevation=13.7 feet

B-11	elevation=8.4 feet
Depth BGS (feet)	4-6
Above water table	Y
Soil unit	SSG
QC Identifier	None
Arsenic (mg/kg)	10.0 J
Lead (mg/kg)	314
Manganese (mg/kg)	627 J
TPH (mg/kg)	NA

SB416			elevation=11.5 feet	
Depth BGS (feet)	4-6	8-10	12-14	16-18
Above water table	Y	Y	N	N
Soil unit	FILL	FILL/SSG	SSG	TILL
Benzo(a)pyrene (ug/kg)	820	11	ND	55
Benzo(b)fluoranthene (ug/kg)	1100	13	ND	67
Chrysene (ug/kg)	890	11	ND	60
Arsenic (mg/kg)	11.8	12.4	15.8	25.9
Beryllium (mg/kg)	0.43	0.52	0.48	0.42
Manganese (mg/kg)	570	189	357	3210
TPH (mg/kg)	170	ND	ND	13

SB417			elevation=8.5 feet		
Depth BGS (feet)	4-6	6-8	10-12	14-16	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	FILL	SSG	SSG	TILL
QC Identifier	None	Duplicate	None	None	None
Arsenic (mg/kg)	7.8	8.4	5.8	14.3	14.1
Beryllium (mg/kg)	0.44	0.33	0.35	0.41	0.45
Manganese (mg/kg)	129	193	114	1540	219
TPH (mg/kg)	310	175	ND	ND	ND

SB418				elevation=10.0 feet
Depth BGS (feet)	4-6	8-10	12-14	16-18
Above water table	Y	N	N	N
Soil unit	FILL	SSG	SSG	TILL
QC Identifier	None	None	None	Duplicate
Beryllium (mg/kg)	0.56	0.48	0.44	0.39
Lead (mg/kg)	321	14.5	12.7	10.3
Manganese (mg/kg)	496	333	759	1350
TPH (mg/kg)	32	44	ND	ND

LEGEND

- ⊞ CATCH BASIN
- —x—x—x—x FENCE
- xx EXISTING CONTOUR (DECEMBER 2003)
- ● B-16 SOIL BORING LOCATIONS: TRC 1992, 1993: B-# TtNUS, 2003: SB4##
- MW-6S MONITORING WELL LOCATION
- STORM SEWER
- 627 J CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1-1 FOR PRGs.
- SITE AREA BOUNDARY
- TP-10 TEST PIT LOCATION (B&RE, 6/97)
- TP1C TEST PIT LOCATION (TRC, 1/94)
- 8 EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- SSG SILTY SAND AND GRAVEL
- ELEVATION OF BOTTOM OF FILL

GRAPHIC SCALE

30' 0' 30' 60'

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA", NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA", NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01 AND "TOPOGRAPHIC SURVEY AND SOIL BORING LOCATION", LOUIS FEDERICI AND ASSOCIATES, DATED: 1/16/04, DWG NO.: 19990205-02.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

4. PLAN NOT TO BE USED FOR DESIGN.

5. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS. NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.

6. SEE APPENDIX E-3 TABLE 1 FOR FILL ELEVATIONS AND NOTES.

DRAWN BY: D.W. MACDOUGALL	TITLE: WESTERN SECTION EXCEEDENCES AND FILL BOTTOM ELEVATION SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: L. SEYDEWITZ	
CHECKED BY: J. FORRELLI	
	SOURCE: BASE PLAN BY SEE NOTES.
	SCALE: AS NOTED / DATE: MARCH 25, 2005 / PROJ. NO: 1611
PROJECT MANAGER: S. PARKER	DRAWING NO: FIGURE 4-6 / ACFILE NAME: DWG\1611\3553\FIG_4-6.DWG / REV: 0
PROGRAM MANAGER: J. TREPANOWSKI	

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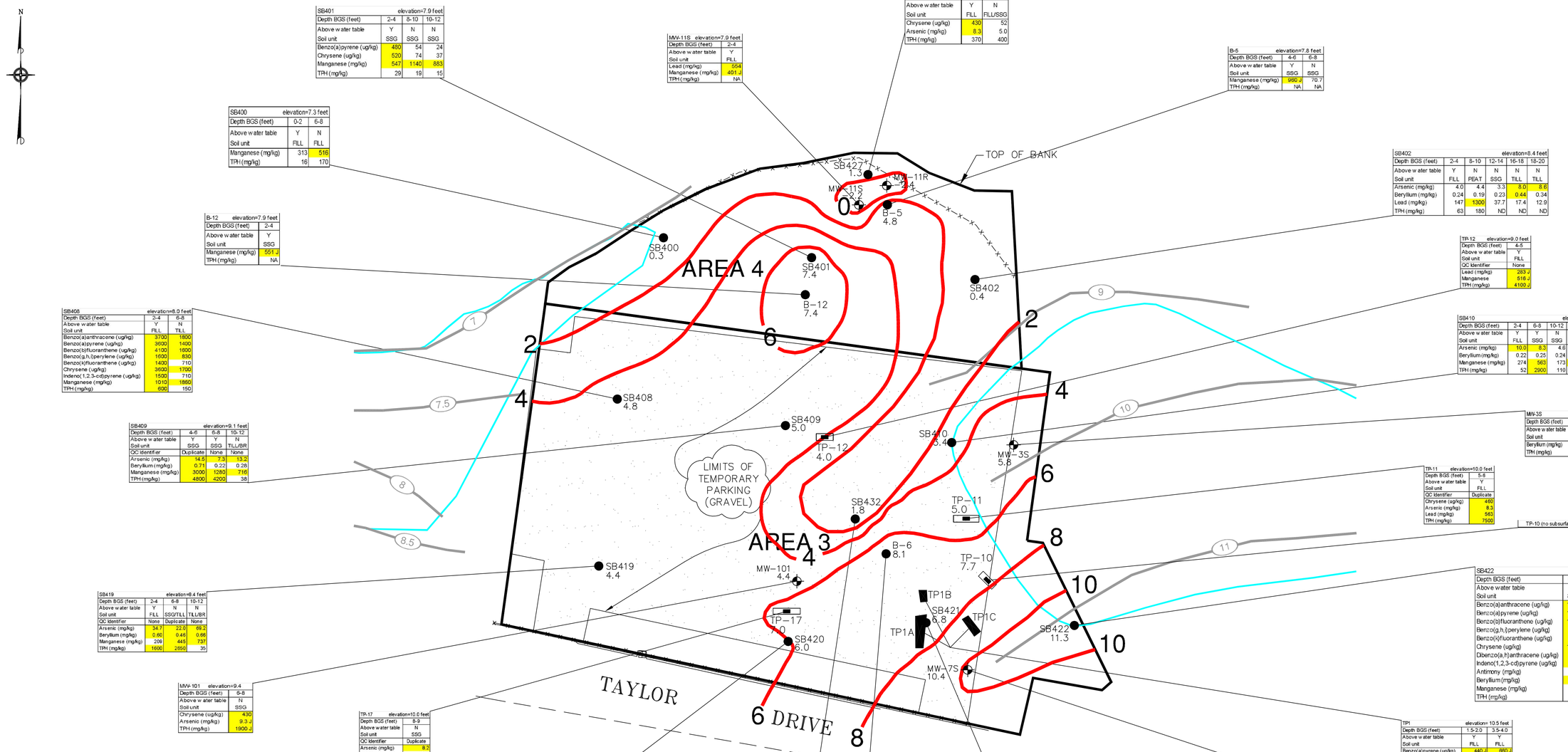


SB401	elevation=7.9 feet		
Depth BGS (feet)	2-4	8-10	10-12
Above water table	Y	N	N
Soil unit	SSG	SSG	SSG
Benzo(a)pyrene (ug/kg)	480	54	24
Chrysene (ug/kg)	520	74	37
Manganese (mg/kg)	547	1140	883
TPH (mg/kg)	29	19	15

MW-11S	elevation=7.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	FILL
Lead (mg/kg)	554
Manganese (mg/kg)	401 J
TPH (mg/kg)	NA

SB427	elevation=8.3 feet	
Depth BGS (feet)	2-4	6-8
Above water table	Y	N
Soil unit	FILL	FILL/SSG
Chrysene (ug/kg)	430	52
Arsenic (mg/kg)	8.3	5.0
TPH (mg/kg)	370	400

B-5	elevation=7.8 feet	
Depth BGS (feet)	4-6	6-8
Above water table	Y	N
Soil unit	SSG	SSG
Manganese (mg/kg)	950 J	70.7
TPH (mg/kg)	NA	NA

SB400	elevation=7.3 feet	
Depth BGS (feet)	0-2	6-8
Above water table	Y	N
Soil unit	FILL	FILL
Manganese (mg/kg)	313	516
TPH (mg/kg)	16	170

B-12	elevation=7.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Manganese (mg/kg)	551 J
TPH (mg/kg)	NA

SB402	elevation=8.4 feet				
Depth BGS (feet)	2-4	8-10	12-14	16-18	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	PEAT	SSG	TILL	TILL
Arsenic (mg/kg)	4.0	4.4	3.3	8.0	8.6
Beryllium (mg/kg)	0.24	0.19	0.23	0.44	0.34
Lead (mg/kg)	147	1300	37.7	17.4	12.9
TPH (mg/kg)	63	180	ND	ND	ND

TP-12	elevation=9.0 feet
Depth BGS (feet)	4-5
Above water table	Y
Soil unit	FILL
QC Identifier	None
Lead (mg/kg)	283 J
Manganese	516 J
TPH (mg/kg)	4100 J

SB408	elevation=8.0 feet	
Depth BGS (feet)	2-4	6-8
Above water table	Y	N
Soil unit	FILL	TILL
Benzo(a)anthracene (ug/kg)	3700	1800
Benzo(a)pyrene (ug/kg)	3600	1400
Benzo(b)fluoranthene (ug/kg)	4100	1600
Benzo(g,h,i)perylene (ug/kg)	1600	830
Benzo(k)fluoranthene (ug/kg)	1400	710
Chrysene (ug/kg)	3600	1700
Indeno(1,2,3-cd)pyrene (ug/kg)	1500	710
Manganese (mg/kg)	1010	1860
TPH (mg/kg)	606	150

SB410	elevation=9.4 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	FILL	SSG	SSG	SSG	SSG
Arsenic (mg/kg)	10.0	8.3	4.6	7.0	6.7
Beryllium (mg/kg)	0.22	0.25	0.24	0.40	0.41
Manganese (mg/kg)	274	563	173	2120	316
TPH (mg/kg)	52	2900	110	25	ND

MW-3S	elevation=9.8 feet	
Depth BGS (feet)	6-8	12-14
Above water table	Y	N
Soil unit	SSG	SSG
Beryllium (mg/kg)	0.24	0.48
TPH (mg/kg)	NA	NA

SB409	elevation=9.1 feet		
Depth BGS (feet)	4-6	6-8	10-12
Above water table	Y	Y	N
Soil unit	SSG	SSG	TILL/BR
QC identifier	Duplicate	None	None
Arsenic (mg/kg)	14.5	7.3	13.2
Beryllium (mg/kg)	0.71	0.22	0.28
Manganese (mg/kg)	3000	1280	716
TPH (mg/kg)	4800	4200	38

TP-11	elevation=10.0 feet
Depth BGS (feet)	5-5
Above water table	Y
Soil unit	FILL
QC Identifier	Duplicate
Chrysene (ug/kg)	460
Arsenic (mg/kg)	8.3
Lead (mg/kg)	563
TPH (mg/kg)	7500

TP-10 (no subsurface samples) elevation=10.5 feet

SB422	elevation=11.8 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	SSG	SSG	SSG	SSG/TILL	TILL
Benzo(a)anthracene (ug/kg)	18000	79	ND	ND	ND
Benzo(a)pyrene (ug/kg)	15000	84	ND	ND	ND
Benzo(b)fluoranthene (ug/kg)	17000	110	ND	ND	ND
Benzo(g,h,i)perylene (ug/kg)	9000	55	ND	ND	ND
Benzo(k)fluoranthene (ug/kg)	7600	36	ND	ND	ND
Chrysene (ug/kg)	15000	79	ND	ND	ND
Dibenzo(a,h)anthracene (ug/kg)	1900	17	ND	ND	ND
Indeno(1,2,3-cd)pyrene (ug/kg)	7500	50	ND	ND	ND
Antimony (mg/kg)	6.4	5.0	8.0	9.0	10.5
Beryllium (mg/kg)	0.44	0.22	0.62	0.64	0.40
Manganese (mg/kg)	334	160	526	917	514
TPH (mg/kg)	360	37	ND	ND	ND

SB419	elevation=8.4 feet		
Depth BGS (feet)	2-4	6-8	10-12
Above water table	Y	N	N
Soil unit	FILL	SSG/TILL	TILL/BR
QC identifier	None	Duplicate	None
Arsenic (mg/kg)	34.7	22.9	69.3
Beryllium (mg/kg)	0.60	0.49	0.66
Manganese (mg/kg)	209	445	737
TPH (mg/kg)	1600	2650	35

MW-101	elevation=9.4
Depth BGS (feet)	6-8
Above water table	N
Soil unit	SSG
Chrysene (ug/kg)	430
Arsenic (mg/kg)	9.3 J
TPH (mg/kg)	1900 J

TP-17	elevation=10.0 feet
Depth BGS (feet)	8-9
Above water table	N
Soil unit	SSG
QC Identifier	Duplicate
Arsenic (mg/kg)	9.3
TPH (mg/kg)	200

TP1	elevation= 10.5 feet	
Depth BGS (feet)	1.5-2.0	3.5-4.0
Above water table	Y	Y
Soil unit	FILL	FILL
Benzo(a)pyrene (ug/kg)	440 J	660 J
Chrysene (ug/kg)	410 J	730 J
Lead (mg/kg)	40.1 J	475 J
TPH (mg/kg)	NA	NA

SB421	elevation=10.8 feet				
Depth BGS (feet)	2-4	6-8	12-14	14-16	18-20
Above water table	Y	N	N	N	N
Soil unit	FILL	SSG	SSG	SSG	TILL
QC Identifier	Duplicate	None	None	None	None
Benzo(a)anthracene (ug/kg)	705	1100	17	37	ND
Benzo(a)pyrene (ug/kg)	690	1100	12	21	ND
Benzo(b)fluoranthene (ug/kg)	770	1200	10	26	ND
Chrysene (ug/kg)	730	1000	17	39	ND
Antimony (mg/kg)	5.0	9.9	13.3	10.0	11.3
Arsenic (mg/kg)	9.3	8.4	11.6	9.1	11.9
Beryllium (mg/kg)	0.53	0.34	0.53	0.42	0.44
Lead (mg/kg)	201	29.8	14.6	11.0	10.6
Manganese (mg/kg)	225	374	567	534	284
TPH (mg/kg)	125	7300	ND	16	18

B-8	elevation=10.1 feet	
Depth BGS (feet)	4-6	10-12
Above water table	N	N
Soil unit	SSG	SSG
Manganese (mg/kg)	NA	760 J
TPH (mg/kg)	NA	NA

MW-7S	elevation=10.9 feet
Depth BGS (feet)	2-4
Above water table	Y
Soil unit	SSG
Benzo(a)anthracene	1300
Benzo(a)pyrene (ug/kg)	1000
Benzo(b)fluoranthene	1800
Chrysene (ug/kg)	1100
Antimony (mg/kg)	ND
Manganese (mg/kg)	396 J
TPH (mg/kg)	NA

SB420	elevation=10.0 feet			
Depth BGS (feet)	2-4	6-8	10-12	14-16
Above water table	Y	N	N	N
Soil unit	FILL	SSG	TILL	TILL
Benzo(a)pyrene (ug/kg)	430	55	11	ND
Chrysene (ug/kg)	540	110	27	ND
Antimony (mg/kg)	ND	13.0	13.9	17.3
Arsenic (mg/kg)	9.1	14.2	7.2	7.8
Beryllium (mg/kg)	0.73	0.59	0.38	0.60
Manganese (mg/kg)	448	543	428	2780
TPH (mg/kg)	46	8400	710	70

SB432	elevation=9.8 feet				
Depth BGS (feet)	2-4	6-8	10-12	14-16	18-20
Above water table	Y	Y	N	N	N
Soil unit	FILL	FILL	SSG	SSG	SSG
Benzo(a)anthracene (ug/kg)	1400	910	54	ND	4.7
Benzo(a)pyrene (ug/kg)	1200	720	40	ND	ND
Benzo(b)fluoranthene (ug/kg)	1600	870	45	ND	ND
Chrysene (ug/kg)	1400	920	54	ND	4.4
Arsenic (mg/kg)	6.2	7.2	7.3	8.8	4.5
Beryllium (mg/kg)	0.35	0.42	0.37	0.39	0.15
Lead (mg/kg)	158	168	26.0	15.8	8.8
Manganese (mg/kg)	314	344	280	1000	181
TPH (mg/kg)	1100	910	93	ND	ND

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA", NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA", NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01 AND "TOPOGRAPHIC SURVEY AND SOIL BORING LOCATION", LOUIS FEDERICI AND ASSOCIATES, DATED: 1/16/04, DWG NO.: 19990205-02.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

4. PLAN NOT TO BE USED FOR DESIGN.

5. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS. NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.

6. SEE APPENDIX E-3 TABLE 1 FOR FILL ELEVATIONS AND NOTES.

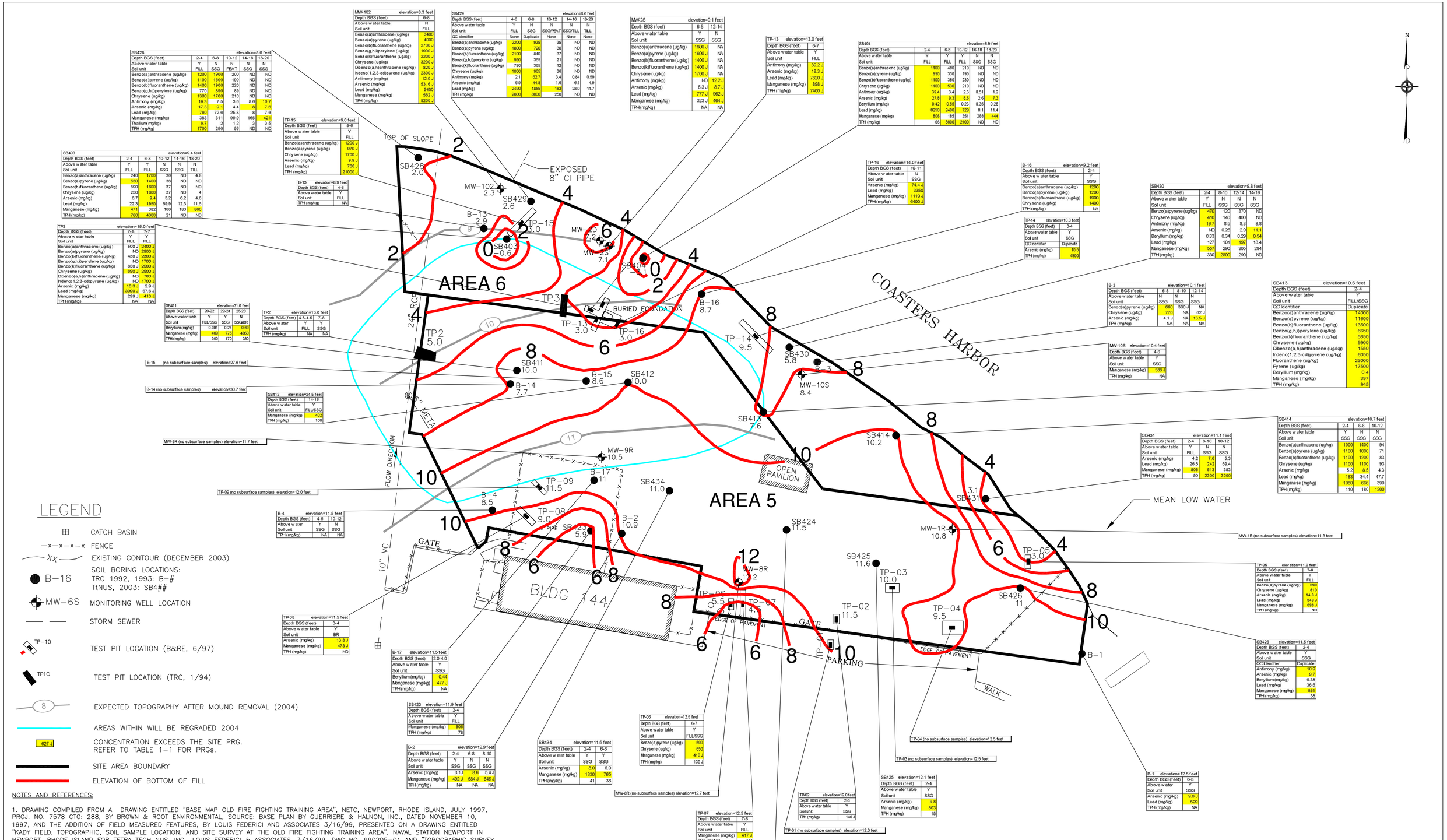
LEGEND

- ⊞ CATCH BASIN
- —x—x—x—x FENCE
- xx EXISTING CONTOUR (DECEMBER 2003)
- ● B-16 SOIL BORING LOCATIONS: TRC 1992, 1993: B-# TtNUS, 2003: SB4##
- MW-6S MONITORING WELL LOCATION
- —— —— STORM SEWER
- 627 J CONCENTRATION EXCEEDS THE SITE PRG. REFER TO TABLE 1-1 FOR PRGs.
- SSG SILTY SAND AND GRAVEL
- TP-10 TEST PIT LOCATION (B&RE, 6/97)
- TP1C TEST PIT LOCATION (TRC, 1/94)
- 8 EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- SITE AREA BOUNDARY
- ELEVATION OF BOTTOM OF FILL
- BR BEDROCK

GRAPHIC SCALE

30' 0' 30' 60'

DRAWN BY: D.W. MACDOUGALL	TITLE: CENTRAL SECTION EXCEEDENCES AND FILL BOTTOM ELEVATION SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND	TETRA TECH NUS, INC.
PREPARED BY: L. SEYDEWITZ		55 JONSPIN ROAD WILMINGTON, MASSACHUSETTS 01887 (978)658-7899
CHECKED BY: J. FORRELLI		
	SOURCE: BASE PLAN BY SEE NOTES.	
	SCALE: AS NOTED / DATE: MARCH 25, 2005 / PROJ. NO: 1611	
PROJECT MANAGER: S. PARKER		
PROGRAM MANAGER: J. TREPANOWSKI	DRAWING NO: FIGURE 4-7 / ACFILE NAME: DWG\1611\3553\FIG_4-7.DWG / REV: 0	



NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA", NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA", NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01 AND "TOPOGRAPHIC SURVEY AND SOIL BORING LOCATION", LOUIS FEDERICI AND ASSOCIATES, DATED: 1/16/04, DWG NO.: 19990205-02.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

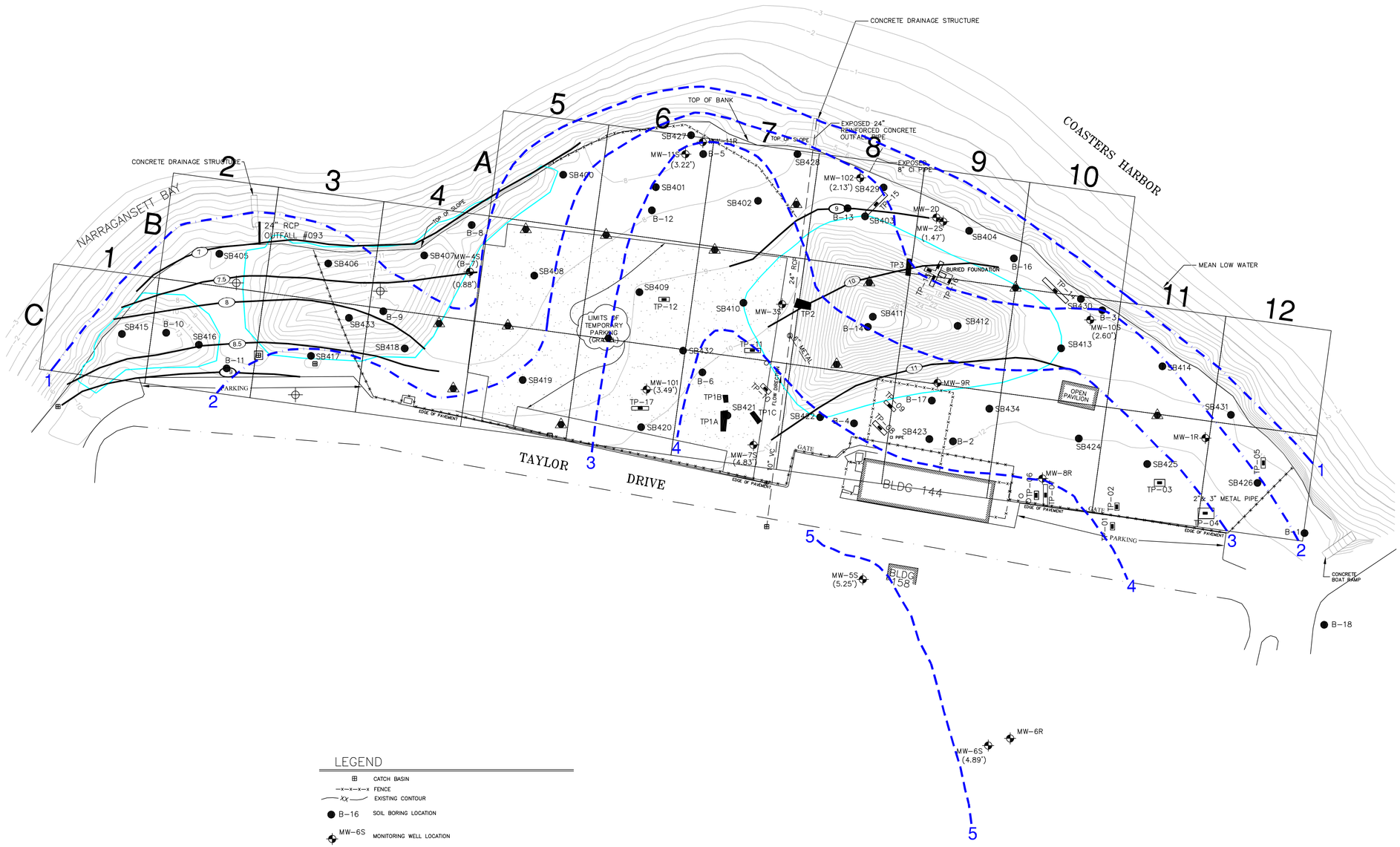
4. PLAN NOT TO BE USED FOR DESIGN.

5. CONCENTRATIONS ARE PROVIDED AS NUMERIC AVERAGES FOR DUPLICATE PAIRS. NA – CONTAMINANT NOT ANALYZED. ND – NOT DETECTED.

6. SEE APPENDIX E-3 TABLE 1 FOR FILL ELEVATIONS AND NOTES.

DRAWN BY: D.W. MACDOUGALL	TITLE: EASTERN SECTION EXCEEDENCES AND FILL BOTTOM ELEVATION SUBSURFACE PRE-DESIGN INVESTIGATION OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND
PREPARED BY: L. SEYDEWITZ	SOURCE: BASE PLAN BY SEE NOTES.
CHECKED BY: J. FORRELLI	SCALE: AS NOTED; DATE: MARCH 25, 2005; PROJ. NO: 1611
PROJECT MANAGER: S. PARKER	DRAWING NO: FIGURE 4-8; ACFILE NAME: DWG\1611\3553\FIG_4-8.DWG; REV: 0
PROGRAM MANAGER: J. TREPANOWSKI	

TETRA TECH NUS, INC.
55 JONSPIN ROAD
WILMINGTON, MASSACHUSETTS 01887
(978)658-7899



LEGEND

- CATCH BASIN
- FENCE
- EXISTING CONTOUR
- B-16 — SOIL BORING LOCATION
- MW-6S — MONITORING WELL LOCATION
- STORM SEWER
- TP-10 — TEST PIT LOCATION (B&RE, 6/97)
- TP1C — TEST PIT LOCATION (TRC, 1/94)
- ROAD CHANGED FROM LAST SURVEY DUE TO CONSTRUCTION ON TAYLOR DRIVE
- 8 — EXPECTED TOPOGRAPHY AFTER MOUND REMOVAL (2004)
- AREAS WITHIN WILL BE REGRADED 2004
- LOW OBSERVED GROUNDWATER LEVEL (ADJUSTED FOR TIDAL VARIATION)
- LOW ESTIMATED GROUNDWATER LEVEL (ESTIMATED TO FOLLOW HISTORIC SHORELINE)
- PROPOSED PIEZOMETER
- PROPOSED ADDITIONAL BORING

GRAPHIC SCALE

50' 0' 50' 100'

NOTES AND REFERENCES:

1. DRAWING COMPILED FROM A DRAWING ENTITLED "BASE MAP OLD FIRE FIGHTING TRAINING AREA NETC, NEWPORT, RHODE ISLAND, JULY 1997, PROJ. NO. 7578 CTO: 288, BY BROWN & ROOT ENVIRONMENTAL, SOURCE: BASE PLAN BY GUERRIERE & HALNON, INC., DATED NOVEMBER 10, 1997, AND THE ADDITION OF FIELD MEASURED FEATURES, BY LOUIS FEDERICI AND ASSOCIATES 3/16/99, PRESENTED ON A DRAWING ENTITLED "KADY FIELD, TOPOGRAPHIC, SOIL SAMPLE LOCATION, AND SITE SURVEY AT THE OLD FIRE FIGHTING TRAINING AREA, NAVAL STATION NEWPORT IN NEWPORT, RHODE ISLAND FOR TETRA TECH NUS, INC., LOUIS FEDERICI & ASSOCIATES, 3/16/99, DWG NO. 990205-01.

2. HORIZONTAL DATUM BASE ON THE RI STATE PLANE COORDINATE SYSTEM NAD 1927. VERTICAL DATUM BASED ON NAVAL BASE MEAN LOW WATER.

3. ALL LOCATIONS ARE TO BE CONSIDERED APPROXIMATE.

4. PLAN NOT TO BE USED FOR DESIGN.

DRAWN BY: D.W. MACDOUGALL	TITLE: ESTIMATED LOW WATER TABLE OLD FIRE FIGHTING TRAINING AREA NAVAL STATION NEWPORT, RHODE ISLAND		TETRA TECH NUS, INC.
PREPARED BY: S. PARKER			55 JONSPIN ROAD WILMINGTON, MASSACHUSETTS 01887 (978)658-7899
CHECKED BY: J. FORRELLI			
	SOURCE: BASE PLAN BY SEE NOTES.		
	SCALE: AS NOTED	DATE: APRIL 14, 2005	PROJ. NO: 1611
PROJECT MANAGER: S. PARKER	DRAWING NO: FIGURE 4-9	ACFILE NAME: DWG\4152\3550\FIG_4-9.DWG	REV: 1
PROGRAM MANAGER: J. TREPANOWSKI			

APPENDIX A

SITE PHOTOGRAPHS
(COMPACT DISK)

4x4
OFF ROAD

MERCHANTS

SP 403

SB408

SBH07

SB407

MERC
RENT
800-

SB406

SB405

SB-405,
12-14 BGS

SB412

MERCHANTS

SB-411 Total Depth
27' 8"

SB410

SB409

SB418

SB417

SB416

SB415

SP 414

SI 416

SI 425

SITE 1
SF 424

SP 423

B422

SB421

SB-421
6-8

SB-421
6-8

SB420

SB419

SB432

SP 431

SP429

SI 428

SI 427

SP 426

SB403

SC 434

APPENDIX B

FIELD LOGS

- RI Test Pit Logs
- RI Soil Boring Logs
- PDI Soil Boring Logs

RI Test Pit Logs

TP1

TP2

TP3

TP-01

TP-02

TP-03

TP-04

TP-05

TP-06

TP-07

TP-08

TP-09

TP-10

TP-11

TP-12

TP-13

TP-14

TP-15

TP-16

TP-17

NETC - Newport
Site 09 - Old Fire Fighting Training Area
Test Pit Log FF-TP1
January 11, 1994

Rationale: To investigate the geophysical anomaly encountered in the central portion of the site during the Phase I investigation.

Date: January 11, 1994

Dimensions: FF-TP1A = 14' X 3.5' X 4.5' (L X W X D).
FF-TP1B = 3.5' X 3.5' X 4" (L X W X D).
FF-TP1C = 7' X 3.5' X 4.5' (L X W X D).

TRC Inspector: Tom McMorrow & John Coykendall

Excavation Subcontractor: Clean Harbors

Sample ID: FF-TP11 collected from the oily sludge within a pipe.
FF-TP12 collected from approximately 3.5 to 4 feet below grade.
FF-TP13 collected from approximately 1.5 to 2 feet below grade.

DEPTH (FT)	DESCRIPTION
0 - 3'	FILL, brown M to F SAND, some cobbles, and rock fragments, little brick and concrete fragments, trace asphalt.
3 - 5'	FILL, dk brown M to F SAND, some cobbles and rock fragments, trace brick and concrete.
	A concrete slab was encountered in test pits TP-1A, TP-1B, and TP-1C at a depth of approximately 4". The extent of the slab was determined at test pits TP-1A and TP-1C and was determined to be approx. 2' thick. Only contamination noted was in broken pipe.

CONCLUSIONS

Concrete slab encountered in test pit would account for the high geophysical anomaly detected during the Phase I investigation.

NETC - Newport
Site 09 - Old Fire Fighting Training Area
Test Pit Log FF-TP2
January 11, 1994

Rationale: To characterize the fill material in the western portion of the soil mound.

Date: January 11, 1994

Dimensions: 15' X 4' X 8.5' (L X W X D).

TRC Inspector: Tom McMorrow & John Coykendall

Excavation Subcontractor: Clean Harbors

Sample ID: FF-TP21 collected from oily soils encountered 7 to 8 feet below grade.
FF-TP22 collected from 4.5 feet below grade.
FF-TP23 collected from 2 feet below grade.

DEPTH (FT)	DESCRIPTION
0 - 3'	FILL, brown F-M SAND, some cobbles, little concrete and asphalt, trace wire.
3 - 6'	FILL, brown/grey F SAND and SILT, little rock fragments and cobbles, trace brick.
6 - 7'	FILL, brown C sand and brick, damp.
7 - 8'	Grey/black F-M SAND, some cobbles and rock fragments, black staining with a strong petroleum odor.
	Strong petroleum odor with PID readings of 1200 ppm were noted in soils from the 7 to 8 foot layer.

CONCLUSIONS

Construction debris encountered from surface to a depth of 7 feet. Strong Petroleum odor and staining encountered in soils at the ground water table (approx. 8 feet).

NETC - Newport
Site 09 - Old Fire Fighting Training Area
Test Pit Log FF-TP3
January 11, 1994

Rationale: To characterize the fill material in the northern portion of the soil mound in the central portion of the site.

Date: January 11, 1994

Dimensions: 15' X 4' X 8.5' (L X W X D).

TRC Inspector: Tom McMorrow & John Coykendall

Excavation Subcontractor: Clean Harbors

Sample ID: FF-TP31 collected from oily soils encountered at a depth of 7 to 8 feet.
FF-TP32 collected from approx. 7 feet below grade.
FF-TP33 collected from approx. 3 feet below grade.

DEPTH (FT)	DESCRIPTION
0 - 4'	FILL, brown F to M SAND and rock fragments, little brick, concrete, and wood, dry, no odor.
4 - 4.5'	FILL, asphalt layer.
4.5 - 7'	FILL, dark brown F-M SAND and rock fragments, brick and metal.
7 - 8'	Light brown sand with rusted metal pieces. Black staining and petroleum odor noted in soils at ground water table (approx 8 feet).

CONCLUSIONS

Construction debris encountered from surface to depth of 7 feet. Petroleum odor and stained soils noted in soils at ground water table.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-01

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for oil, buried piping, etc.)identified on 1953 Y&D drawing No. 637871.

Date: June 30, 1997

Dimensions: 7' x 4' x 1.5' (L x W x D)

B&RE Geologist: T. Dorgan

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: NA

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0'-0.5'	ASPHALT Steel Pipe-1.5" diameter X 12" long. Pipe was removed.		Asphalt varies from 4-6" thick.	
8" - 1'	GRAVELLY SAND. Brown, loose, well graded sand	SW	Fill.	0-1
1'	Conglomerate. Gray with slightly stretched pebbles and cobbles.		Bedrock	

General remarks: No samples collected. No visable contamination or odors, no FID readings above background. CAT 311 Excavator used.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-02

Rationale: Confirm/identify presence or absence of buried subsurface features based on a strong subsurface signal recorded during the metal and buried piping survey.

Date: June 30, 1997

Dimensions: 7' x 4' x 3.75' (L x W x D)

B&RE Geologist: T. Dorgan

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TPO2-0203

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-4"	LOAM. Brown, dry, and loose. Grass at surface.		Hollow pipe with 90° elbow and fitting.	1.7
4"-3.5'	SANDY GRAVEL. TRACE SILT. Dry, loose, lt. brown.	GM	FID from inside pipe on S-SE side.	30
3.5'	CONGLOMERATE. Slightly stretched cobbles or imbricated cobbles.		Bedrock.	

General remarks: No staining or odors noted outside of pipe. FID background = approximately 1-1.5 ppm around pipe. Inside pipe on south side is petroleum contamination (wet sediment with a petroleum odor). FID = 30 ppm in this area. Sampled 2-3" BGS area from exterior of pipe on S-SE side of excavation.

Photo Log: Video and 2-3 stills.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-03

Rationale: Confirm presence or absence of buried piping that may have led to various surface training structures (i.e. christmas trees, open fire tanks) identified on Y&D drawing No. 637871.

Date: June 30, 1997

Dimensions: 10' x 6.5' x 2.75' (L x W x D)

B&RE Geologist: T. Dorgan

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: NA

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	TOPSOIL OR LOAM. Brown, dry, and loose. Grass at surface.		No petroleum contamination noted.	0.0
6"-2.5'	SANDY GRAVEL. TRACE SILT. Trace brick and concrete.	GM	Fill. No piping or metallic objects found.	0.0
2.5'	CONGLOMERATE. Slightly stretched cobbles or imbricated cobbles.		Bedrock. Poss. metals in bedrock? Iron staining noted.	0.0

General remarks: No sample collected. No evidence of any subsurface features or contamination.

Photo Log: Video and still photo.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-04

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for oil, buried piping, etc.)identified on 1953 Y&D drawing No. 637871. Define presence/absence of buried piping detected in TP-03.

Date: July 1, 1997

Dimensions: 15' x 10' x 3' (L x W x D)

B&RE Geologist: T. Dorgan

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-04-0102

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	SILTY SAND. Topsoil or loam. Dry, loose, and brown. Grass at surface.			
6"-3'	SAND and GRAVEL. Misc. brick, glass, wood, shingles, metal debris. 2 pipes found as described in remarks.		Fill. Ist Pipe (3" steel). Open ended @ 1.75'. 2nd Pipe (4" steel). Open ended @ 1.75'.	
3'	Stopped excavation due to Potentially Asbestos-Containing Material (PACM).			

General remarks: Both pipes are dipping at low angle to the east. PACM on both sides on bottoms and lower exposed portions. The 4" pipe has a hanger still on it indicating it was not intended for underground use.
Samples taken as a composite from in and around bottom of pipes.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-05

Rationale: Confirm/identify presence or absence of buried subsurface features based on a strong signal recorded during the metal and buried piping survey.

Date: July 1, 1997

Dimensions: 15' x 4' x 8' (L x W x D)

B&RE Geologist: T. Dorgan

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-05-0708

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	SILTY SAND with grass at surface. Topsoil or loam. Dry, loose and brown.			0.0
6"-5'	SANDY GRAVEL. Mostly fine to coarse gravel and cobbles up to 1.5' diam. Rounded. Trace amounts of brown wood debris at 2' depth. China fragments noted. Dry.		Fill.	
5'-8'	SANDY GRAVEL. Similar to above. Orange/brown color. Damp. Steel cable or wire at approximately 7' BGS on E-SE side of excavation.		Fill.	

General remarks: Water table at approximately 8' BGS.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-06

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for oil, buried piping, etc.) identified on 1953 Y&D drawing No. 637871.

Date: July 1, 1997

Dimensions: 8' x 4' x 7' (L x W x D)

B&RE Geologist: T. Dorgan

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-06-0607

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	SILTY SAND beneath grassy surface. Topsoil. Root mat. Dry, loose, brown.			0.0
6"-2'	SANDY GRAVEL. Mostly fine and coarse gravel up to 2 inches, rounded. Some cobbles > 4 inches in length, rounded. Fine and medium sand, brown. Metal debris (strapping, rack scaffolding?)			
2'-7'	SANDY GRAVEL. Similar to above with concrete rubble, rebar, metal (sheet) debris, concrete footings, duct work, wood, metal strapping visible.			
7'	CONCRETE slab at base. Sounds solid. Possible foundation for former UST?			

General remarks: No groundwater visible in test pit.

Photo Log: Video and still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-07

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for oil, buried piping, etc) based on finding of a potential concrete foundation or pad in TP-06. TP-07 excavation added at the request of RIDEM.

Date: July 2, 1997

Dimensions: 20' x 4' x 8' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-07-0708

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	SILTY SAND with grass at surface. Topsoil or loam. Dry, loose, brown.	SM		0.0
6"-8'	SANDY GRAVEL. With cobbles, metal strapping, and concrete rubble with rebar.	GM	Fill.	
4'	CONGLOMERATE.		Bedrock.	

General remarks: Potential water table at 8 ft. BGS.

Photo Log: Video and 2 still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-08

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for oil, buried piping, etc.) identified on 1953 Y&D drawing No. 637871.

Date: July 2, 1997

Dimensions: 16' x 4' x 4' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-08-0304

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	TOPSOIL or LOAM with grass at surface.	SM		0.0
6"-2.5'	SAND AND GRAVEL with cobbles. Brown. Pipe running NW-SE. Pipe is black iron pipe (6" sewer pipe?).	GM		
2.5'	SHALE.		Bedrock.	

General remarks: No groundwater encountered.

Photo Log: Video.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-09

Rationale: Confirm/identify presence or absence of buried subsurface features based on a strong signal recorded during the metal and buried piping survey, the presence of surface scars on the ground in this location, and on the absence of a UST in TP-08.

Date: July 2, 1997

Dimensions: 13' x 4' x 3' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: NA

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-1'	TOPSOIL with grass at surface.	SM		0.0
1'-3'	SANDY GRAVEL with cobbles.	GW		
3'	CONGLOMERATE.		Bedrock.	

General remarks: No subsurface features, stained soil, or groundwater encountered.

Photo Log: Video and still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-10

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for gasoline, buried piping, etc.) identified on 1953 Y&D drawing No. 637871.

Date: July 2, 1997

Dimensions: 11' x 4' x 9" (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: NA

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-9"	TOPSOIL with grass at surface.	SM		0.0
9"	CONCRETE slab with exposed rebar.			

General remarks: NA

Photo Log: Video and still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-11

Rationale: Reconfirm presence or absence of buried subsurface features adjacent to former Building 134, based on refusal in TP-10 (i.e. foundation).

Date: July 2, 1997

Dimensions: 15' x 4' x 6' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-11-0506

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-6"	TOPSOIL with grass at surface.	SM		0.0
6"-5'	GRAVELLY SAND. Pieces of brick and concrete.	GM	Fill.	
5'-6'	GRAVELLY SAND. Similar to above but stained black, saturated with petroleum. Metal frame and cable.			35

General remarks: Water table at 6 ft. BGS. Strong petroleum odor.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-12

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected UST for gasoline, buried piping, etc.) identified on 1953 Y&D drawing No. 637871

Date: July 2, 1997

Dimensions: 10' x 4' x 5' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-12-0405

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-8"	TOPSOIL with grass at surface.	SM		0.0
8"-5'	SANDY GRAVEL. Pieces of clay tile pipe and brick. A pipe containing petroleum was encountered at 5'.	GM	Fill.	

General remarks: NA

Photo log: Video and still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-13

Rationale: Confirm/identify presence or absence of buried subsurface features (i.e. suspected oil/water separator) and further evaluate the nature of the buried/interior materials of the central mound.

Date: July 3, 1997

Dimensions: 24' x 4' x 7' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-13-0607

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-9"	TOPSOIL with grass at surface.	SM		0.0
9"-7'	SAND AND GRAVEL. SOME SILT. Concrete pieces 4-6" in length. Top of concrete foundation at 4' BGS.	GM	Fill.	0.0
7'	SAND AND GRAVEL. Similar to above but oil-stained. Water seeps in from sidewalls at 7'.			3.2

General remarks: Test pit did not locate the bottom of the foundation. Sample taken from area in which the MicroFID reading of 3.2 ppm was obtained.

Photo log: Video and still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-14

Rationale: Confirm/identify presence or absence of buried piping associated with the former location of Building 132.

Date: July 3, 1997

Dimensions: 31' x 4' x 4.5' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-14-0304

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-9"	TOPSOIL with grass at surface.	SM		0.0
9"-4'	SAND AND GRAVEL. SOME SILT. Cobbles.	GM		
4'-4.5'	SAND AND GRAVEL. Similar to above but potentially petroleum impacted. Brown stained soils. Water table at 4.5' BGS.			2-10

General remarks: Test pit did not locate subsurface features or fill debris. Sample taken from approximately 4 feet in depth in area of soils with petroleum odor.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-15

Rationale: Confirm/identify presence or absence of buried piping associated with the former location of Building 132.

Date: July 3, 1997

Dimensions: 26' x 4' x 5' (L x W x D)

B&RE Geologist: R. Bastow

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-15-0506

Depth	Description	USCS	Remarks	MicroFID Reading (ppm)
0-1'	TOPSOIL with grass at surface.	SM		0.0
1'-4.5'	SAND AND GRAVEL. SOME SILT. Construction debris including bricks, small pieces of concrete, and steel debris.	GM	Fill.	
4.5'-5'	SAND AND GRAVEL. Similar to above but potentially petroleum impacted. Black soil. Water table at 5' BGS.			2-10

General remarks: Fill material consists largely of brick and metal debris.

Photo log: Video and still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-16

Rationale: Further evaluate the nature of a suspected foundation for the oil/water separator. Widened excavation at the request of RIDEM.

Date: July 7, 1997

Dimensions: 12.6' x 4' x 10' (L x W x D)

B&RE Geologist: K. Jalkut

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-16-1011

Depth	Description	USCS	Remarks	PID Reading (ppm)
0-7"	SILTY SAND. Topsoil, root mat, grass. Light brown. Fine to medium sand.	SM	Fill.	0.0
7"-3'3"	SAND AND GRAVEL. Bricks, metal, rounded cobbles up to 5" in length. Fine to coarse sand.	GM		
3'3"-5'	SAND AND GRAVEL. Similar to above but color has darkened to black. Asphalt-like.			
5'-10'	SAND AND GRAVEL. Similar to above with increased corroded metal debris, bricks, and wood. Potentially oil laden soil at bottom of excavation.		Fill. PID reading taken at approximately 10 feet.	4

General remarks: NA

Photo log: Video and 3 still photos.

TEST PIT LOG
OLD FIRE FIGHTING TRAINING AREA
NETC
NEWPORT, RI

Location: TP-17

Rationale: Confirm presence/absence of buried subsurface features (i.e. piping) in proximity to approximate former location of Building 135. Confirm presence or absence of soil contaminants based on the previous discovery of petroleum-like substances in a utility trench excavated parallel to the fence line.

Date: July 7, 1997

Dimensions: 16' x 3.5' x 9' (L x W x D)

B&RE Geologist: K. Jalkut

Excavation Subcontractor: Franklin Environmental Services, Inc.

Sample ID: OFF-S-TP-17-0809

Depth	Description	USCS	Remarks	PID Reading (ppm)
0-1'	SILTY SAND. Topsoil, root mat, grass. Light brown. Dry.	SM	Fill.	0.0
1'-3'	SAND AND GRAVEL. SOME SILT. Fine to coarse sand. Coarse rounded gravel. Light brown. Cobbles > 5 inches.	GM		
3'-9'	SAND AND GRAVEL. SOME SILT. Fine to coarse sand. Dark brown, dry. Fewer cobbles than above.		Water with light brown oil on top enters side of excavation at approximately 8'.	9

General remarks: Petroleum odors encountered at water table, approximately 8 ft.

Photo log: Video and still photos.

RI Soil Boring Logs

B-1

B-2

B-3

B-4

B-5

B-6

B-7

B-8

B-9

B-10

B-11

B-12

B-13

B-14

B-15

B-16

B-17

B-18

MW-1

MW-2

MW-2D

MW-3S

MW-4

MW-5

MW-6S

MW-6R

MW-7S

MW-8R

MW-9R

MW-10S

MW-11S

MW-11R

MW-101

MW-102

BORING NO.:	B-1	BORING DEPTH:	9 FT	DATE STARTED:	4/18/90
PROJECT NO.:	6760-N81	CONTRACTOR:	CDS	DATE COMPLETED:	4/18/90
PROJECT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	12.51
LOCATION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,077
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,963

DEPTH (FT)	BLOWS	OVA (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	2 12 34 32	0.3	FINE SAND AND SILT, TRACE ORGANICS, BROWN (12") ROCK FRAGMENTS (6")	0.0
2 - 4	12 14 7 5	0.8	F - M SAND, SOME GRAVEL, SOME ROCK FRAGMENTS (6")	
4 - 6	3 3 2 4	0.5	FINE SAND AND SILT, SOME GRAVEL, BROWN, MOIST (6")	
6 - 8	5 7 75/2"	4	FINE SAND AND SILT, SOME GRAVEL, LITTLE COBBLES, BROWN, WET	
8 - 10	23 100/1	1.2	FINE SAND AND SILT, SOME GRAVEL, BROWN, WET (4") ROCK FRAGMENTS (3")	9.0

END OF BORING - 9 FT.

NO ODORS ENCOUNTERED

ENCOUNTERED REFUSAL AT 9 FT.

SAMPLE FF-B011-418 TAKEN FROM 6-8 FT.

BORING NO.:	B-2	BORING DEPTH:	11 FT	DATE STARTED:	4/18/90
PROJECT NO.:	6760-N01	CONTRACTOR:	CDS	DATE COMPLETED:	4/18/90
PROJECT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	12.89
LOCATION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,250
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,667

DEPTH (FT)	BLOWS	OVA (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	3 15	3.4	FINE SAND AND SILT, TRACE ORGANICS, BROWN (6")	0.0
	28 23		FILL, F - M SAND, SOME GRAVEL, CONCRETE PIECES, BROWN (18")	
2 - 4	25 50	3.7	FINE SAND AND SILT, LITTLE GRAVEL, BROWN (8")	2.0
	41 33		ROCK FRAGMENTS (6")	
4 - 6	31 37	3.8	F - M SAND AND ROCK FRAGMENTS, GRAY (6")	
	75/1"			
6 - 8	7 15	6	F - M SAND AND ROCK FRAGMENTS, BROWN (8")	
	22 55		SAME AS ABOVE, BLACK, VISIBLE CONTAMINATION, WET (8")	
8 - 10	16 42	5.6	F - M SAND AND GRAVEL, GRAY, SLIGHT PETROL ODOR (24")	
	91 58			
10 - 12	4 10		SAME AS ABOVE, BROWN (4")	
	10 56			11.0

END OF BORING - ~~11~~ 12 FT.

PETROLEUM ODOR FROM 6-10 FT.
VISIBLE OILY STAINING FROM 6-8 FT.

SAMPLE FF-B021-418 TAKEN FROM 2-4 FT.
SAMPLE FF-B022-418 TAKEN FROM 6-8 FT.
SAMPLE FF-B023-418 TAKEN FROM 8-10 FT.

BORING NO.:	B-3	BORING DEPTH:	14 FT	DATE STARTED:	4/18/90
PROJECT NO.:	6760-N81	CONTRACTOR:	CDS	DATE COMPLETED:	4/18/90
PROJECT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	10.09
LOCATION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,331
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,836

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	5 15 11 7	1.5	FINE SAND AND SILT, TRACE CLAY, TRACE ORGANICS, BROWN (6") F - M SAND AND ROCK FRAGMENTS, BROWN (6")	0.0
2 - 4	14 9 7 7	1.5	FINE SAND , SOME SILT, SOME GRAVEL, BROWN (8")	
4 - 6	5 14 35 18	5	FINE SAND AND SILT, SOME GRAVEL, TRACE COBBLES, BROWN, MOIST (5")	
6 - 8	7 10 7 3	40	FINE SAND AND SILT SOME GRAVEL, BROWN (6") FINE SAND AND SILT, SOME ORGANICS, BLACK, SLIGHT PETROL ODOR, WET	
8 - 10	2 7 12 11	12	FINE SAND AND SILT, SOME GRAVEL, TRACE COBBLES, BLACK, WET, SOME PETROLEUM ODOR, VISIBLE STAINING	
10 - 12	11 35 71 75/2"	9	SILT AND GRAVEL, SOME COBBLES, TRACE ORGANICS, BLACK, WET (15")	
12 - 14	56 100/2	17	FINE SAND AND GRAVEL, SOME ROCK FRAGMENTS, BLACK, PETROL ODOR (8")	
				14.0

END OF BORING - 14 FT.

PETROLEUM ODOR FROM 6-14 FT.
VISIBLE OILY STAINING FROM 8-10 FT.

SAMPLE FF-B031-418 TAKEN FROM 6-8 FT.
SAMPLE FF-B032-418 TAKEN FROM 8-10 FT.
SAMPLE FF-B033-418 TAKEN FROM 12-14 FT.

BORING NO.:	B-4	BORING DEPTH:	12.5 FT	DATE STARTED:	4/20/90
PROJECT NO.:	6760-N81	CONTRACTOR:	CDS	DATE COMPLETED:	4/20/90
PROJECT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	11.49
LOCATION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,291
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,592

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	3 17	0.3	FINE SAND AND SILT, TRACE ORGANICS, BROWN (6")	0.0
	14 18		FILL, FINE SAND, SOME SILT, SOME CONCRETE, BROWN (12")	
2 - 4	5 5		NO RECOVERY	
	5 48			3.0
4 - 6	27 16	1.2	SILT, SOME GRAVEL, SOME COBBLES, DK. GRAY, SLIGHT ODOR (14")	
	19 18			
6 - 8	77 76	1.2	SILT AND GRAVEL, SOME FINE SAND, DK. GRAY, SLIGHT ODOR (12")	
	100/2"			
8 - 10	100/3"	0.8	FINE SAND AND GRAVEL, SOME SILT, GRAY, WET, SLIGHT ODOR (3")	
10 - 12	100/4"	0.9	SAME AS ABOVE (3")	
			SILT AND CLAY, SOME WEATHERED ROCK, BLACK (2")	
12 - 14	100/3"		FINE SAND AND GRAVEL, GRAY (3")	
				12.5

END OF BORING - 12.5 FT

LIGHT HYDROCARBONS ODOR (i.e. DIESEL) FROM 4-12 FT.

SAMPLE FF-B041-420 TAKEN FROM 4-6 FT.
SAMPLE FF-B042-420 TAKEN FROM 10-12 FT.

BORING NO.:	B-5	BORING DEPTH:	12 FT	DATE STARTED:	4/17/90
PROJECT NO.:	6760-N81	CONTRACTOR:	CDS	DATE COMPLETED:	4/18/90
CT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	7.79
ION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,574
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,514

DEPTH (FT)	BLOWS	OVA (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	5 21	21	FINE SAND AND SILT, TRACE ORGANICS, BROWN (4")	0.0
	18 19		FINE SAND AND ROCK FRAGMENTS, BROWN (6")	
2 - 4	4 11	75	FINE SAND AND SILT, TRACE GRAVEL, BROWN (8")	
	34 38		WEATHERED SHALE FRAGMENTS, GRAY (6")	
4 - 6	10 7	100	FINE SAND, SOME GRAVEL, BROWN/BLACK, STRONG PETROL ODOR, VISIBLE	
	6 2		CONTAMINATION (8")	
6 - 8	1 2	>1000	SILT AND ORGANIC MUCK, BROWN, SWAMP ODOR (12")	6.0
	1 2		SAME AS ABOVE GRAY (12")	
8 - 10	6 8	10	SILT AND ORGANIC MUCK, GRAY, SWAMP ODOR (24")	
	7 11			
10 - 12	2 2	200	SILT AND FINE SAND, GRAY, ORGANIC ODOR (24")	
	8 20			
				12.0

END OF BORING - 12 FT.

VISIBLE OILY STAINING AND ODOR FROM 4-6 FT.
SWAMPY MATERIAL AND METHANE ODOR FROM 6-12 FT.

SAMPLE FF-B051-417 TAKEN FROM 4-6 FT.
SAMPLE FF-B052-417 TAKEN FROM 6-8 FT.

BORING NO.:	B-6	BORING DEPTH:	14 FT	DATE STARTED:	4/19/90
PROJECT NO.:	6760-N81	CONTRACTOR:	CDS	DATE COMPLETED:	4/19/90
PROJECT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	10.05
LOCATION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,376
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,458

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	12 21 21 27	2.8	FINE SAND AND SILT, TRACE ORGANICS, BROWN (3") FILL, F - M SAND, BRICK & ASPHALT PIECES, BLACK (15")	0.0
2 - 4	19 33 40 3	4.3	F - M SAND, LITTLE GRAVEL, BROWN, WET AT TIP (3")	2.0
4 - 6	4 13 6 8	11.2	F - M SAND AND COBBLES, BROWN, WET, PETROL ODOR (4")	
6 - 8	34 100/3"		NO RECOVERY	
8 - 10	17 43 55 88	19.2	FINE SAND AND GRAVEL, TRACE COBBLES, BLACK, SLIGHT ODOR (9")	
10 - 12	15 10 19 20	3.4	SILT, SOME CLAY, TRACE GRAVEL, DARK GRAY, MOIST, SLIGHT ODOR (24")	
12 - 14	21 20 15 16	3.6	SAME AS ABOVE, NO ODOR (24")	
				14.0

END OF BORING - 14 FT

LIGHT HYDROCARBONS ODOR FROM 4-12 FT.

SAMPLE FF-B061-419 TAKEN FROM 4-6 FT.
SAMPLE FF-B062-419 TAKEN FROM 10-12 FT.

BORING NO.:	B-7	BORING DEPTH:	10.5 FT	DATE STARTED:	4/19/90
PROJECT NO.:	6760-N81	CONTRACTOR:	CDS	DATE COMPLETED:	4/19/90
PROJECT:	U.S. NAVY-NETC	DRILLERS:	GAYLORD/QUINN	GROUND ELEVATION:	8.09
LOCATION:	NEWPORT, RI	TRC INSPECTOR:	GLEZEN/MCMORROW	LOCATION:	N 10,524
SITE:	09-FIREFIGHTER	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS		E 4,271

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)	LITHOLOGY
0 - 2	2 17	2.6	FINE SAND AND SILT, BROWN (12")	0.0
	24 22		FILL, ASPHALT AND RED BRICK FRAGMENTS (6")	
2 - 4	19 28	3.8	FILL, FINE SAND, (BRICK AND ASPHALT), LITTLE SILT, BROWN (24")	
	23 24			
4 - 6	13 13	23	F - M SAND, SOME COARSE SAND, BROWN (4")	4.0
	18 37		F - M SAND, TRACE GRAVEL, BLACK, WET, PETROL ODOR (8")	
6 - 8	9 45	37	FINE SAND AND SILT, SOME ROCK FRAGMENTS, BLACK,	
	100/6"		STRONG PETROL ODOR (14")	
8 - 10	100/3"		NO RECOVERY	
10 - 12	100/3"	6	SILT AND GRAVEL, GRAY, NO ODOR (3")	
				10.5

END OF BORING - 11.5 FT

PETROLEUM ODOR FROM 5-10 FT.

SAMPLE FF-B071-419 TAKEN FROM 4-6 FT.
SAMPLE FF-B072-419 TAKEN FROM 6-8 FT.

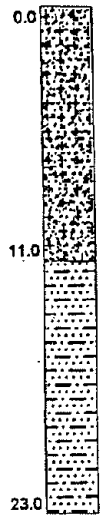
Test Boring: B-8
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 23 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: K. Callendar & P. Hendrick
TRC Inspector: J. Coykendall & K. Prochorena
Test Boring Coordinates:
N 156989.51
E 546998.41

Date Started: November 22, 1993
Date Completed: November 22, 1993
Approximate Depth to Water: 11 feet
Test Boring Elevation: 11.52 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	Field Measurements HNu (ppm)	Soil Description
0-2	3 20	24 21	ND	ND	0-7" FILL, brown F sand & organics, trace gravel & silt. 7-18" FILL, grey F sand, some rock fragments, little gravel & brick fragments, trace asphalt, dry, no odor.
2-4	17 50/4"	50	ND	ND	0-8" FILL, brown/grey F sand, some silt & rock fragments, little gravel, trace glass. 8-10" FILL, brick. 10-12" FILL, brown F sand & silt, some gravel, dry, no odor.
4-6	50/2.5"		NR	NR	FILL, grey shale fragments, dry. Recovery = 1".
6-8	33 11	12 42	ND	6	FILL, brown/grey F sand & rock fragments, some silt & gravel. Piece of brick in tip, moist, no odor. Recovery = 12".
8-10	22 42	28 45	ND	7	FILL, brown/grey F-M sand & rock fragments, some gravel, little silt, asphalt, & brick fragments, moist, no odor. Recovery = 16".
10-12	39	50/5"	NR	NR	FILL, Brick & rock fragments.
12-14	22 50	33 50/4"	28	20	Grey M-F SAND, some gravel & rock fragments, trace shale fragments, strong petroleum odor & staining in bottom 4" of spoon, wet. Recovery = 12".
14-16	20 50/5"	34	ND	6	Grey/black ROCK fragments, some M-F sand & gravel, little silt, wet, petroleum odor. Recovery = 6".
16-18	50/3"		NR	NR	ROCK fragments, wet, slight odor. Recovery = 1".
18-20	33	50/2"	1	8	Brown/grey F SAND & ROCK fragments, some silt, wet, slight odor. Recovery = 6".
20-22	48	50/3"	1	2	Brown F SAND & SILT, some rock fragments & gravel, wet, slight odor. Recovery = 6".
22-23	50/5"		ND	4	Grey ROCK fragments, some F sand & silt, wet, no odor. Recovery = 5". Auger refusal at 23'

Lithology



Sample FF-B81-112293 collected from 0-1'.
Sample FF-B82-112293 collected from 8-10'.

Notes: NR = No Reading
ND = Not Detected

Test Boring: B-9
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 13 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: K. Callendar & P. Hendrick
TRC Inspector: J. Coykendall & K. Prochorena
Test Boring Coordinates:
N 156908.45
E 546915.05

Date Started: November 23, 1993
Date Completed: November 23, 1993
Approximate Depth to Water: Unknown
Test Boring Elevation: 17.71 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology
0-2	4	37	ND	ND	0-6" FILL, brown F sand & organics, little rock fragments. 6-12" FILL, brown F sand, some rock fragments. 12-14" FILL, rock fragments, some F sand, dry, no odor.	0.0
	40	28				
2-4	47	50/5"	NR	NR	No Recovery	
4-6	50/5"		NR	NR	No Recovery	
6-7	100/5"		NR	NR	No Recovery	
7-9	13	11	ND	ND	0-2" FILL, rock fragments. 2-10" FILL, brown F sand & silt, some rock fragments & gravel. 10-12" FILL, asphalt chunks, dry, no odor.	
	9	50/5"				
9-11	67	35	ND	ND	0-2" FILL, brown F-M sand, some rock fragments, trace brick. 2-6" FILL, asphalt fragments, little brown F-M sand. 6-12" FILL, concrete fragments, dry, no odor.	
	29	48				
11-12	100/3"		NR	NR	FILL, concrete fragments, dry, no odor. Recovery.= 1"	
12-14	89	100/3"	ND	ND	FILL, concrete fragments, dry, no odor. Recovery = 4".	
					Auger refusal at 13'	13.0

Sample FF-B91-112393 collected from 0-1'.

Notes: NR = No Reading
ND = Not Detected

Test Boring: B-10
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 7 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: K. Callendar & P. Hendrick
TRC Inspector: J. Coykendall & K. Prochorena
Test Boring Coordinates:
N 156888.50
E 545710.54

Date Started: November 23, 1993
Date Completed: November 23, 1993
Approximate Depth to Water: unknown
Test Boring Elevation: 13.66 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology
0-2	4 17	16 15	ND	ND	0-8" FILL, brown F sand & organics, some rock fragments. 8-22" FILL, brown F sand, some gravel, little asphalt & concrete, dry, no odor.	0.0
2-4	21 46	17 20	ND	ND	FILL, brown F sand, some rock fragments & gravel, little concrete fragments, dry, no odor. Recovery = 14".	
4-6	3 5	4 8	NR	NR	No Recovery	
6-8	33 50/1"	42	ND	ND	0-3" FILL, brown F sand, some rock fragments & gravel. 3-5" FILL, asphalt pieces, little brown F sand. 5-7" FILL, brick pieces, dry, no odor.	7.0

Auger refusal at 7 feet.

Sample FF-B101-112393 collected from 0-1'.

Notes: NR = No Reading
ND = Not Detected

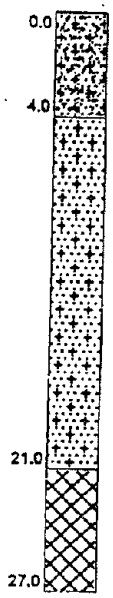
Test Boring: B-11
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 27 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: K. Callendar & P. Hendrick
TRC Inspector: J. Coykendall & K. Prochorena
Test Boring Coordinates:
N 156854.90
E 546767.50

Date Started: November 24, 1993
Date Completed: November 24, 1993
Approximate Depth to Water: 6 Feet
Test Boring Elevation: 8.39 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	Field Measurements HNu (ppm)	Soil Description
0-2	3 26	10 28	ND	ND	0-8" FILL, brown F sand & organics, little rock fragments & silt. 8-24" FILL, dk brown F sand, some rock fragments & gravel, dry, no odor.
2-4	16 40	23 28	ND	ND	0-8" FILL, brown F sand, some silt, trace rock fragments & brick. 8-22" FILL, brown F sand, some silt & rock fragments, little gravel, trace wood, dry, no odor.
4-6	12 8	11 15	ND	ND	Brown F-M SAND, some gravel & rock fragments, moist, no odor. Recovery = 18". Tip of spoon appears wet.
6-8	13 4	27 13	1	ND	0-5" Brown F-M SAND, some gravel & rock fragments. 5-8" Grey/black F-M SAND, some shell fragments. 8-20" Brown F SAND, some silt, trace shells, wet, no odor.
8-10	4 21	8 19	.1	ND	0-11" Brown F SAND, some rock fragments, little silt, trace shells. 11-17" Black/grey TILL, F sand & silt, little rock fragments & gravel, wet, no odor.
10-12	5 13	11 15	ND	ND	Black/grey TILL, silt, some F sand & rock fragments, little gravel, wet, no odor. Recovery = 15".
12-14	7 100/5"	15	ND	ND	0-10" Black/grey TILL, silt, some rock fragments & gravel, little F sand. 10-12" Brown/grey M-F SAND, some silt & rock fragments, wet, no odor.
14-16	6 12	30 16	ND	ND	Black/grey TILL, silt, some rock fragments & gravel, trace F sand, wet, no odor. Recovery = 14".
16-18	9 33	16 37	ND	ND	Black/grey TILL, silt, some rock fragments & gravel, trace F sand, wet, no odor. Recovery = 12".
18-20	7 19	9 25	ND	ND	Black/grey TILL, silt, some rock fragments & gravel, trace F sand, wet, no odor. Recovery = 8".
20-22	7 19	12 23	ND	ND	0-6" Black/grey TILL, silt, some rock fragments & gravel, trace F sand. 6-12" Highly weathered BEDROCK, wet, no odor.
22-24	12 12	13 25	ND	ND	Brown/grey weathered BEDROCK, wet, no odor. Recovery = 12".
25-27	35 50/4"	40	ND	ND	Brown/grey weathered BEDROCK, wet, no odor. Recovery = 8".

Lithology



Sample FF-B111-112493 collected from 0-1'.
Sample FF-B112-112493 collected from 4-6'.

Note: ND = Not Detected

Test Boring: B-12
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 8.5 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: A. Mercugliano & B. Reilly
Test Boring Coordinates:
N 157003.14
E 547168.02

Date Started: November 24, 1993
Date Completed: November 24, 1993
Approximate Depth to Water: 4 Feet
Test Boring Elevation: 7.86 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNU (ppm)	Soil Description	Lithology
0-2	43	38	ND	ND	0-6" Brown F SAND & SILT.	0.0
	40	37			6-20" Brown F-C SAND & GRAVEL, little cobbles, dry, no odor.	
2-4	23	20	ND	ND	Brown F-C SAND & GRAVEL, little cobbles, dry, no odor.	
	21	16			Recovery = 18".	
4-6	23	40	1	ND	Brown F-C SAND & GRAVEL, little cobbles, wet, petroleum odor.	
	50/3"				Recovery = 10".	
6-8	50/5"		ND	ND	Brown F-C SAND & GRAVEL, wet, no odor. Recovery = 4".	
					Augered to refusal at 8.5'	8.5

Sample MP-B121-112493 collected from 0-2'.
Sample MP-B122-112493 collected from 2-4'.

Note: ND = Not Detected

Test Boring: B-13
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 30 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: B. Reilly & A. Mercugliano
Test Boring Coordinates:
N 157004.87
E 547352.24

Date Started: November 23, 1993
Date Completed: November 23, 1993
Approximate Depth to Water: 6 feet
Test Boring Elevation: 8.93 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology
0-2	18	23	ND	3	FILL, brown F sand & brick, trace gravel, dry, no odor.	0.0
	45	33			Recovery = 18".	
2-4	18	27	ND	3	FILL, brown F sand, little rock fragments, trace silt & bricks, dry, no odor.	
	50/1"				Recovery = 12".	
4-6	4	7	35	25	FILL, brown F sand, trace silt, brick & glass, moist, petroleum odor.	
	10	14			Recovery = 22". Spoon appears wet at tip.	
6-8	5	3	700	55	Dk grey/black F SAND, little cobbles, trace silt, petroleum odor, wet.	6.0
	3	7			Recovery = 12".	
8-10	3	6	NR	55	Dark grey/black F SAND, little cobbles, trace silt, petroleum odor, wet.	
	16	7			Recovery = 14".	
10-12	7	8	ND	3	Dark grey/black F SAND, little cobbles, trace silt, petroleum odor, wet.	
	10	5			Recovery = 6".	
12-14	1	1	>1000	28	Brown PEAT, little silt, wet, petroleum odor.	12.0
	2	6			Recovery = 16".	
14-16	16	10	200	20	Brown PEAT, little silt, wet, petroleum odor.	
	11	13			Recovery = 12".	
16-18	6	10	250	15	0-8" Brown PEAT, little silt, wet, petroleum odor.	
	10	11	ND	ND	8-17" Grey SILT, wet, no odor.	
18-20	10	10	ND	ND	Grey weathered BEDROCK, some silt, wet, no odor.	18.0
	12	12			Recovery = 15".	
20-22	3	27	ND	ND	0-7" Grey weathered BEDROCK, some silt, wet, no odor.	
	25	31			7-14" Grey/orange weathered BEDROCK, trace F sand, wet, no odor.	
22-24	9	21	ND	ND	Grey weathered BEDROCK, little silt, wet, no odor. Recovery = 16".	
	23	33				
24-26	14	14	ND	ND	Grey weathered BEDROCK, trace silt, wet, no odor.	
	21	41			Recovery = 14".	
26-28	27	41	ND	ND	Grey weathered BEDROCK, trace silt, wet, no odor.	
	50/3"				Recovery = 10".	
28-30	21	20	ND	ND	Grey weathered BEDROCK, wet, no odor.	
	40	50/3"				
					Augered to refusal at 30'	30.0

Sample FF-B131-112393 collected from 0-2'.
Sample FF-B132-112393 collected from 4-6'.

Notes: NR = No Reading
ND = Not Detected

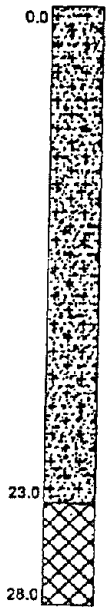
Test Boring: B-14
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 28 Feet

Drilling Company: Soil Explorations
Drillers: G. Juinta & G. Caquette
TRC Inspector: J. Coykendall
Test Boring Coordinates:
N 156893.04
E 547371.18

Date Started: December 13, 1993
Date Completed: December 13, 1993
Approximate Depth to Water: 27 Feet
Test Boring Elevation: 30.71Feet (mlw)

Depth (feet)	Blow Counts	Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	5 5 10 30	ND	ND	0-12" FILL, brown F sand & organics, trace rock fragments. 12-16" FILL, dk brown F-M sand, little rock fragments, trace brick, dry, no odor.
5-7	7 9 16 30	ND	ND	FILL, brown F-M sand, some gravel & rock fragments, little concrete & asphalt, trace brick fragments, dry, no odor. Recovery = 18".
7-9	27 30 27 34	ND	ND	FILL, brown/grey F-M sand, some rock fragments & cobbles, little concrete & gravel, trace asphalt & brick fragments, dry, no odor. Recovery = 22".
9-11	61 120/4"	ND	ND	FILL, brown/grey F-M sand, some rock fragments & cobbles, little concrete & gravel, trace asphalt & brick fragments, dry, no odor. Recovery = 2".
15-17	9 7 6 6	ND	ND	FILL, grey/black silt, little F sand & rock fragments, trace gravel, moist, no odor. Recovery = 18".
17-19	9 13 25 10	ND	ND	0-8" FILL, grey/black silt, little F sand & rock fragments, trace gravel. 8-18" FILL, brown F sand, little cobbles, trace wood & brick, moist, no odor.
20-22	120/4"	NR	NR	FILL, concrete fragments. Recovery = 1".
25-27	50/1"	NR	NR	No Recovery

Lithology



Auger to 28 feet and hit auger refusal.
Bedrock estimated to be approximately 23 feet below grade.
Water in borehole at approximately 27 feet below grade.

Sample FF-B141-121393 collected from 0-1'.
Sample FF-B142-121393 collected from 15-17'.

Notes: NR = No Reading
ND = Not Detected

Test Boring: B-15
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 22.5 Feet

Drilling Company: Soil Explorations
Drillers: G. Juinta & G. Caquette
TRC Inspector: J. Coykendall
Test Boring Coordinates:
N 156895.02
E 547425.72

Date Started: December 13, 1993
Date Completed: December 13, 1993
Approximate Depth to Water: Unknown
Test Boring Elevation: 27.58 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology
0-2	14 7	14 6	ND	ND	0-4" FILL, brown F sand & organics, little rock fragments. 4-12" FILL, brown F-M sand, some rock fragments, trace brick fragments, dry, no odor.	0.0
2-4	11 9	9 11	ND	ND	FILL, brown F-M sand, some rock fragments & cobbles, little gravel, trace concrete, asphalt & brick, dry, no odor. Recovery = 18".	
4-6	11 100/3"	9	ND	ND	FILL, brown F-M sand & rock fragments, some cobbles & gravel, trace brick & concrete, dry, no odor. Recovery = 12".	
8-10	20 67	65 62	ND	ND	FILL, brown/grey M-F sand & gravel, some rock fragments & cobbles, little concrete & asphalt, trace brick & glass, dry, no odor. Recovery = 14".	
10-12	13 34	19 100/4"	ND	ND	FILL, grey F-M sand, some rock fragments & cobbles, little concrete & asphalt, trace brick, dry, slight petroleum odor. Recovery = 18".	
15-17	9 18	12 26	ND	ND	FILL, brown F sand & silt, some gravel & cobbles, little rock fragments & concrete, trace brick, moist, no odor. Recovery = 12".	
17-19	100/4"		NR	NR	No recovery - piece of wood & chunk of asphalt in tip of spoon	
20-21	25	100/1"	NR	NR	No Recovery	20.0
					Augered to refusal at 22.5 feet - did not reach water table. Bedrock estimated to be approximately 20 feet below grade.	22.5
					Sample FF-B151-121393 collected from 0-1'. Sample FF-B152-121393 collected from 10-12'. Sample FF-B153-121393 collected from 15-17'.	

Notes: NR = No Reading
ND = Not Detected

Test Boring: B-16
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 22.5 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: A. Mercugliano & B. Reilly
Test Boring Coordinates:
N 156957.39
E 547508.80

Date Started: November 23, 1993
Date Completed: November 23, 1993
Approximate Depth to Water: 6 Feet
Test Boring Elevation: 9.24 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology
0-2	8	18	ND	ND	0-3" Brown TOPSOIL, F sand & silt. 3-11" Brown F-M SAND & GRAVEL, some silt. 11-20" Brown F-C SAND & GRAVEL, dry, no odor.	0.0
	27	17				
2-4	12	25	0.5	ND	Brown F-M SAND & GRAVEL, some silt, dry, no odor. Recovery = 10".	
	15	13				
4-6	50/3"		ND	ND	Brown F-M SAND & GRAVEL, some silt, dry, no odor. Recovery = 3".	
6-8	5	6	5	1	Brown F-C SAND & GRAVEL, little silt, wet with petroleum odor at bottom of spoon. Recovery = 7".	
	6	5				
8-10	18	15	ND	ND	Brown/black F SAND & GRAVEL, some silt and cobbles, wet, petroleum odor. Recovery = 10".	
	17	20				
10-12	17	12	ND	ND	Brown/black F SAND & GRAVEL, some silt, wet, petroleum odor. Recovery = 2".	
	15	10				
12-14	7	7	ND	ND	Brown F-M SAND & SILT, some gravel, wet, petroleum odor. Recovery = 10".	
	7	5				
14-16	5	12	ND	ND	Brown PEAT, wet, no odor. Recovery = 9".	14.0
	6	2				
16-18	2	2	ND	5	0-6" Brown M-C SAND & PEAT 6-12" Tan SILT, wet, no odor..	
	3	6				
18-20	6	18	ND	5	Grey SILT, some F sand, little gravel, wet, no odor. Recovery = 12".	16.5
	47	50/3"				
20-22	27	50/2"	ND	2	Grey F SAND & GRAVEL, some silt, wet, no odor. Recovery = 10".	
22-22.5	50/2"		0	0	Weathered ROCK, wet, no odor. Auger refusal at 22.5'.	21.0
						22.5

Sample FF-B161-112393 collected from 0-2'.
Duplicate Sample FF-B164-112393 collected from 0-2'.
Sample FF-B162-112393 collected from 2-4'.
Sample FF-B163-112393 collected from 6-7'.

Note: ND = Not Detected

Test Boring: B-17
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 30 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: B. Reilly & A. Mercugliano
Test Boring Coordinates:
N 156823.64
E 547431.34

Date Started: November 24, 1993
Date Completed: November 24, 1993
Approximate Depth to Water: 6 feet
Test Boring Elevation: 11.45 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNU (ppm)	Soil Description	Lithology
0-2	3	20	ND	ND	0-6" Brown F SAND & SILT, trace cobbles.	0.0
	12	8			6-12" Brown F-C SAND & GRAVEL, dry, no odor.	
2-4	13	9	ND	ND	0-6" Brown F-C SAND & GRAVEL.	
	6	6			6-9" Brown F SAND, dry, no odor.	
4-6	45	50/0"	NR	NR	No Recovery	4.0
					Augered to refusal at 5.0 feet below grade.	5.0

Sample FF-B131-112393 collected from 0-2'.
Sample FF-B132-112393 collected from 2-4'.

Notes: NR = No Recovery
ND = Not Detected

Test Boring: B-18
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Boring Depth: 5.5 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: B. Reilly & A. Mercugliano
Test Boring Coordinates:
N 156611.81
E 547794.62

Date Started: November 23, 1993
Date Completed: November 23, 1993
Approximate Depth to Water: unknown
Test Boring Elevation: 12.52 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology
0-2	8 50/1"	23	ND	ND	Brown F SAND, trace silt, dry, no odor. Recovery = 16".	0.0
2-4	50/2"		NR	NR	No recovery. Very hard drilling, cobbles in drill cuttings. Bedrock estimated at 2 feet below grade.	2.0
4-6	50/2"		NR	NR	No Recovery. Augered to refusal at 5.5' below grade.	5.5

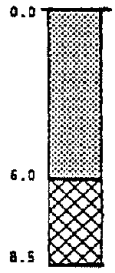
Sample FF-B181-112393 collected from 0-2'.

Notes: NR = No Reading
ND = Not Detected

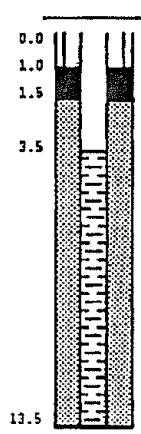
BORING NO.:	MW-1	CONTRACTOR:	CDS	DATE STARTED:	4/23/90
PROJECT NO.:	6760-N81	DRILLERS:	GAYLORD/QUINN	DATE COMPLETED:	4/26/90
[illegible]:	U.S. NAVY-NETC	TRC INSPECTOR:	GLEZEN/MCMORROW	WATER TABLE LEVEL:	7.5 FT.
[illegible] ION:	NEWPORT, RI	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS	LOCATION:	N 10,191
SITE:	09-FIRE FIGHTER	GROUND ELEVATION:	11.34		E 4,897
BORING DEPTH:	13.5 FT	CASING ELEVATION:	11.14		

DEPTH (FT)	BLOWS	SOIL DESCRIPTION (RECOVERY)
0 - 2	9 29 16 14	F - M SAND, SOME GRAVEL, BROWN (5")
2 - 4	10 13 13 21	ROCK FRAGMENTS, SOME FINE - MEDIUM SAND, BROWN (6")
4 - 6	75/5"	F - M SAND, SOME GRAVEL, BROWN (5")
6 - 8	75/1"	NO RECOVERY, FEW SANDSTONE CHIPS IN SPOON.
8 - 10	75/0"	NO RECOVERY, FEW SANDSTONE CHIPS IN SPOON.
		CHIPS OF BEDROCK (SANDSTONE) COMING UP WITH DRILLING FLUID.
		END OF BORING - 13.5 FT.
		WATER ROTARY DRILLING USED TO ADVANCE THROUGH ROCKS.
		NO SAMPLES COLLECTED

LITHOLOGY



WELL CONSTRUCTION



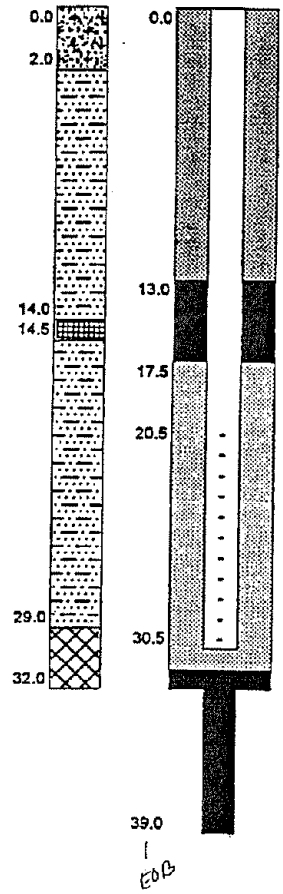
Monitoring Well: MW-2D
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 30.5 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: K. Callendar & P. Hendrick
TRC Inspector: J. Coykendall
Monitoring Well Coordinates:
N 156995.86
E 547435.37

Date Started: November 29, 1993
Date Completed: December 1, 1993
Depth to Water: 4.36 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 8.56 Feet (mlw)
Ground Elevation = 9.16 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	Field Measurements HNu (ppm)	Soil Description
0-2					See well log for MW-2S from Phase I for soil information from 0 to 14 feet below grade.
2-4					
4-6					
6-8					
8-10					
10-12					
12-14					
14-16	3	2	650	80	0-6" Brown PEAT, some F sand, trace silt. 6-18" Grey F
	1	2			SAND, some M sand, trace silt, wet, slight petroleum odor.
16-18	2	1	7	3	Grey F SAND, some M sand, trace silt, gravel, wet, no odor.
	2	5			Recovery = 6".
18-20	6	9	8.5	ND	0-6" Grey F SAND, some M sand, trace silt. 6-14" Orange/
	9	10			grey F SAND, some M sand, trace rocks, wet, no odor.
20-22	3	6	15	1	Grey F SAND, trace rock fragments & silt, wet, no odor.
	9	11			Recovery = 14".
22-24	5	6	ND	ND	0-4" Grey F SAND & SILT, trace shell fragments. 4-14"
	10	14			Brown F-M SAND, trace gravel, silt, wet, no odor.
24-26	3	13	8	ND	Brown F-M SAND, some gravel, trace silt & rock fragments,
	42	37			wet, no odor. Recovery = 10".
26-28	9	16	ND	ND	Brown/grey F SAND, some silt & gravel, trace rock
	18	21			fragments, wet, no odor. Recovery = 12".
28-30	17	20	ND	ND	0-10" Brown/grey F-M SAND, some silt & gravel. 10-12"
	28	34			Grey weathered BEDROCK, wet, no odor.
30-32	8	16	NR	NR	No Recovery
	27	32			
32-34	63/0"		NR	NR	No Recovery

Attempted to core to 40 feet to set bedrock well, but hole kept collapsing, so installed deep well instead.

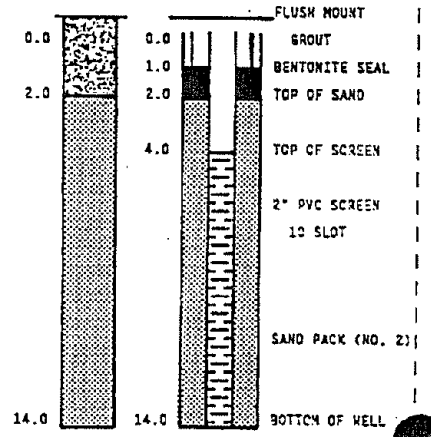


Notes: NR = No Reading
ND = Not Detected
Depth to Water Measured From Top of PVC.

BORING NO.:	MW-2	CONTRACTOR:	CDS	DATE STARTED:	4/23/90
PROJECT NO.:	6760-N81	DRILLERS:	GAYLORD/QUINN	DATE COMPLETED:	4/23/90
PROJECT:	U.S. NAVY-NETC	TRC INSPECTOR:	GLEZEN/MCMORROW	WATER TABLE LEVEL:	6 FT.
LOCATION:	NEWPORT, RI	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS	LOCATION:	N 10,453
SITE:	09-FIREFIGHTER	GROUND ELEVATION:	9.07		E 4,713
BORING DEPTH:	14 FT.	CASING ELEVATION:	8.76		

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)
0 - 2	11 21	3.6	FINE SAND AND SILT, TRACE ORGANICS, BROWN (3")
	21 14		FILL, F - M SAND, LITTLE BRICK FRAGMENTS, TRACE GRAVEL, BLACK (15")
2 - 4	13 12	15.1	F - M SAND, SOME GRAVEL, BROWN (4")
	5 4		
4 - 6	4 5	68	F - M SAND, SOME GRAVEL, BLACK, VISIBLE PETROL CONTAMINATION (6")
	5 9		
6 - 8	4 3	75	SAME AS ABOVE, STRONG ODOR, WET (7")
	2 1		
8 - 10	1 2	80	FINE SAND AND SILT, LITTLE GRAVEL, BLACK, STRONG ODOR, WET (6")
	8 12		
10 - 12	11 8	67	F - M SAND AND FRACTURED ROCK, BLACK, STRONG ODOR, WET (12")
	5 4		
12 - 14	7 5	82	SAME AS ABOVE (14")
	3 3		

LITHOLOGY / WELL CONSTRUCTION



END OF BORING - 14 FT.

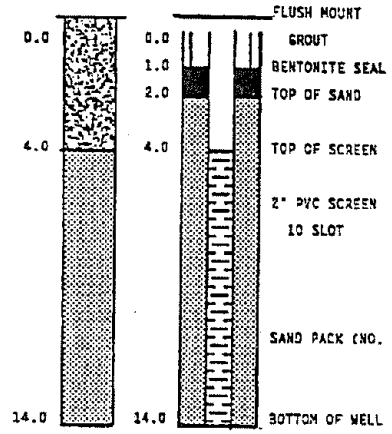
STRONG PETROLEUM ODOR FROM 4-14 FT.
VISIBLE OILY STAINING FROM 4-8 FT.

SAMPLE FF-MW21-423 TAKEN FROM 6-8 FT.
SAMPLE FF-MW22-423 TAKEN FROM 12-14 FT.

BORING NO.:	MW-3	CONTRACTOR:	CDS	DATE STARTED:	4/24/90
PROJECT NO.:	6760-NB1	DRILLERS:	GAYLORD/QUINN	DATE COMPLETED:	4/24/90
ECT:	U.S. NAVY-NETC	TRC INSPECTOR:	GLEZEN/MCMORROW	WATER TABLE LEVEL:	6 FT.
TION:	NEWPORT, RI	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS	LOCATION:	N 10,418
SITE:	09-FIREFIGHTER	GROUND ELEVATION:	9.83		E 4,546
BORING DEPTH:	14 FT.	CASING ELEVATION:	9.61		

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)
0 - 2	3 10	13.8	FILL, FINE SAND, SOME SILT, BROWN (14")
	30 80		FILL, F-M SAND, LITTLE GRAVEL, ROCK FRAGMENTS, BROWN (8")
2 - 4	41 25	14.2	FILL, FINE SAND AND ROCK FRAGMENTS, LT. BROWN (8")
	17 13		FILL, FINE SAND AND SILT, TRACE BRICK FRAGMENTS, BROWN (12")
4 - 6	28 25	10	SILT AND FINE SAND, TRACE GRAVEL, BROWN. BLACK PETROL STAINING
	29 13		FROM 12" - 15", STRONG ODOR, MOIST (24")
6 - 8	9 11	144	FINE SAND AND SILT, SOME GRAVEL, BROWN/BLACK, VISIBLE CONTAMINATION,
	6 7		STRONG ODOR, WET (20")
8 - 10	2 2	59	F - M SAND AND GRAVEL, BLACK, STRONG ODOR, WET (8")
	5 4		
10 - 12	2 6	24	SILT AND FINE SAND, BROWN (4")
	19 30		FINE SAND, BROWN, SLIGHT ODOR (16")
12 - 14	12 13	18.2	FINE SAND, GRAY, SLIGHT PETROL ODOR (24")
	13 13		

LITHOLOGY WELL CONSTRUCTION



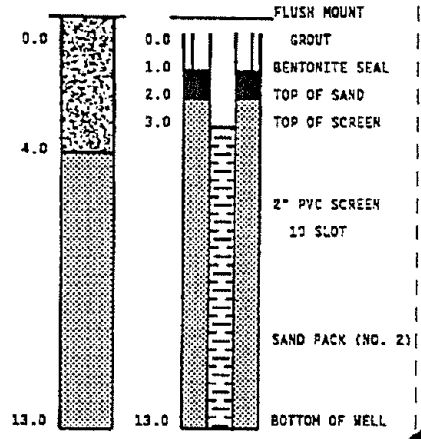
END OF BORING - 14 FT.

STRONG PETROLEUM ODOR FROM 4-12 FT.
VISIBLE OILY STAINING FROM 4-8 FT.

SAMPLE FF-MW31-424 TAKEN FROM 6-8 FT.
SAMPLE FF-MW32-424 TAKEN FROM 12-14 FT.

BORING NO.:	MW-4	CONTRACTOR:	CDS	DATE STARTED:	4/24/90
PROJECT NO.:	6760-N81	DRILLERS:	GAYLORD/QUINN	DATE COMPLETED:	4/24/90
PROJECT:	U.S. NAVY-NETC	TRC INSPECTOR:	GLEZEN/MCMORROW	WATER TABLE LEVEL:	6 FT.
LOCATION:	NEWPORT, RI	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS	LOCATION:	N 10.524
SITE:	09-FIREFIGHTER	GROUND ELEVATION:	7.73		E 4.271
BORING DEPTH:	14 FT.	CASING ELEVATION:	7.53		

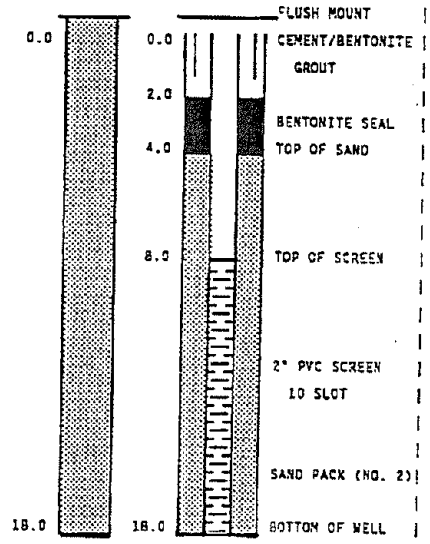
DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION	LITHOLOGY	WELL CONSTRUCTION
			WELL INSTALLED IN LOCATION OF BORING B-7		
			SEE LOG OF B-7 FOR SOIL DESCRIPTION		
			END OF BORING - 13 FT.		



BORING NO.:	MW-5	CONTRACTOR:	CDS	DATE STARTED:	4/25/90
PROJECT NO.:	6760-NB1	DRILLERS:	GAYLORD/QUINN	DATE COMPLETED:	4/25/90
JECT:	U.S. NAVY-NETC	TRC INSPECTOR:	GLEZEN/MCMORROW	WATER TABLE LEVEL:	12 FT.
ATION:	NEWPORT, RI	DRILLING METHOD:	4 1/4" HOLLOW STEM AUGERS	LOCATION:	N 10,148
SITE:	09-FIREFIGHTER	GROUND ELEVATION:	12.47		E 4,551
BORING DEPTH:	18 FT.	CASING ELEVATION:	12.30		

DEPTH (FT)	BLOWS	HNU (PPM)	SOIL DESCRIPTION (RECOVERY)
0 - 0.5			ASPHALT
0.5- 2.5	13 11 15 6	0.6	FINE SAND AND SILT, SOME GRAVEL, BROWN (24")
2.5- 4	4 14 5	0.4	F - M SAND, SOME GRAVEL, BLACK (6")
4 - 6	3 2 2 9	0.4	SILT AND FINE SAND, LITTLE CLAY, BROWN, MOIST (8")
6 - 8	8 14 14 15	0.4	SILT, SOME FINE SAND, LITTLE GRAVEL, GRAY, MOIST (18")
8 - 10	15 13 20 32	0.4	SILT, SOME FINE SAND, LITTLE CLAY, GRAY, MOIST (18")
10 - 12	1 6 10 18	0.4	SAME AS ABOVE (14")
12 - 14	13 16 16 10	0.4	SILT AND FINE SAND, TRACE M. SAND, BLACK, PETROL ODOR, WET (3") SILT AND FINE SAND, BROWN, SLIGHT ODOR, WET (15")
14 - 16	28 73 100/6"	0.5	SILT AND FINE SAND, TRACE GRAVEL, BROWN, DENSE (14")
16 - 18	31 91 100/4"	0.4	SILT AND FINE SAND, SOME ROCK FRAGMENTS, BROWN (6") WEATHERED SHALE, GRAY (4")

LITHOLOGY WELL CONSTRUCTION



END OF BORING - 18 FT

VERY SLIGHT PETROLEUM ODOR AT 12 FT

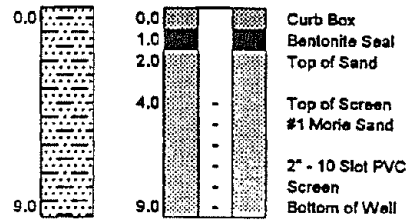
SAMPLE FF-HWS1-425 TAKEN FROM 8-10 FT.
SAMPLE FF-HWS2-425 TAKEN FROM 12-14 FT.

Monitoring Well: MW-6S
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 9 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: J. Breen & B. Reilly
Monitoring Well Coordinates:
N 156498.17
E 547483.71

Date Started: November 30, 1993
Date Completed: November 30, 1993
Depth to Water: 7.07 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 13.39 Feet (mlw)
Ground Elevation = 13.59 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	4	6	ND	ND	0-6" TOPSOIL. 6-18" Brown F SAND, some silt, little gravel, trace asphalt, dry, no odor.
	9	6			
2-4	8	12	ND	ND	0-4" Brown F SAND, some silt, little gravel. 4-16" Grey F SAND & SILT, some rock fragments, moist, no odor.
	8	10			
4-6	10	14	ND	ND	Grey F SAND & SILT, some rock fragments, moist, no odor. Recovery = 10".
	50/4"				
6-8	50/1"		NR	NR	No Recovery.
8-10	50/0"		NR	NR	No Recovery. Auger refusal at 9 feet.



Sample FF-M61-113093 collected from 0-2'.
Sample FF-M62-113093 collected from 4-6'.

Notes: ND = Not Detected
NR = No Recovery
Depth to Water Measured From Top of PVC.

Monitoring Well: MW-6R
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 26 Feet

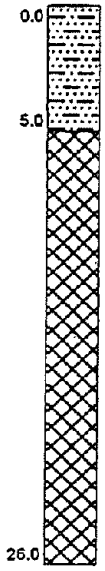
Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: B. Reilly
Monitoring Well Coordinates:
N 156505.80
E 547504.73

Date Started: December 1, 1993
Date Completed: December 1, 1993
Depth to Water: 7.23 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 13.49 Feet (mlw)
Ground Elevation = 13.81 Feet (mlw)

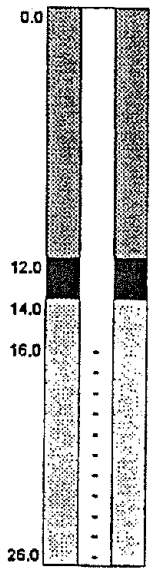
Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	4	6	ND	ND	0-6" TOPSOIL. 6-18" Brown F SAND, some silt, little gravel, trace asphalt, dry, no odor.
	9	6			
2-4	8	12	ND	ND	0-4" Brown F SAND, some silt, little gravel. 4-16" Grey F SAND & SILT, some rock fragments, moist, no odor.
	8	10			
4-6	15	40	ND	ND	0-3" Brown F SAND, little gravel & silt. 3-18" Brown/grey weathered BEDROCK, moist, no odor.
	46	50/2"			

Augered to 26 feet through weathered bedrock to set well.

Lithology



Monitoring Well Construction



Curb Box
Cement/Bentonite Grout
Bentonite Seal
Top of Sand
Top of Screen
#1 Morie Sand
2" - 10 Slot PVC Screen
Bottom of Well

Notes: ND = Not Detected
Depth to Water Measured From Top of PVC.

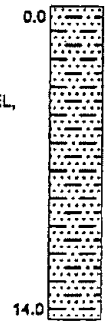
Monitoring Well: MW-7S
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 13 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: B. Reilly & J. Breen
Monitoring Well Coordinates:
N 156781.40
E 547262.98

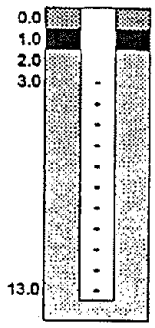
Date Started: November 29, 1993
Date Completed: November 29, 1993
Depth to Water: 3.86 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 10.34 Feet (mlw)
Ground Elevation = 10.91 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	3	22	ND	ND	0-12" Brown F SAND, little cobbles, trace silt. 12-16" COBBLES. 16-20" Brown F SAND, trace gravel, dry, no odor.
	44	35			
2-4	9	9	ND	ND	0-3" ROCK fragments. 3-15" Grey F SAND & SILT, trace gravel, dry, no odor.
	9	10			
4-6	8	12	7	6	0-8" Brown F SAND, some silt. 8-11" Black F SAND & GRAVEL, petroleum odor. 11-17" Brown F SAND, little silt, wet.
	8	13			
6-8	3	3	ND	ND	Gray F SAND, some silt, wet, slight petroleum odor. Recovery = 6".
	3	6			
8-10	6	8	700	ND	Grey F SAND, some silt, wet, slight petroleum odor. Recovery = 20".
	10	22			
10-12	28	15	ND	ND	Grey F SAND, some silt, trace gravel, wet, no odor. Recovery = 22".
	14	8			
12-14	4	6	ND	ND	Grey F SAND, some silt, trace gravel, wet, no odor. Recovery = 20".
	7	8			

Lithology



Monitoring Well Construction



Curb Box
Bentonite Seal
Top of Sand
Top of Screen
#1 Morie Sand
2" - 10 Slot PVC Screen
Bottom of Well

Sample FF-M71-112993 collected from 0-2'.
Sample FF-M72-112993 collected from 2-4'.

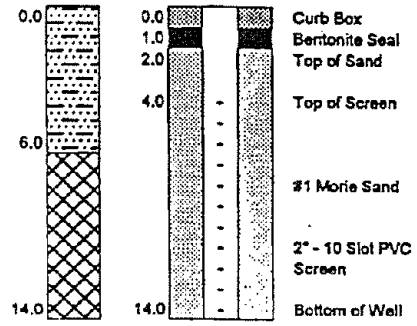
Notes: ND = Not Detected
Depth to Water Measured From Top of PVC.

Monitoring Well: MW-8R
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 14 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: T. McMorrow
Monitoring Well Coordinates:
N 156750.14
E 547535.02

Date Started: December 13, 1993
Date Completed: December 13, 1993
Depth to Water: 6.35 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 11.90 Feet (mlw)
Ground Elevation = 12.70 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	3	6	ND	ND	0-3" TOPSOIL. 3-18" Brown F SAND, little cobbles,
	14	32			trace silt, dry, no odor.
2-4	2	4	ND	ND	ROCK cobbles, dry, no odor. Recovery = 3".
	32	50/1"			
					Unable to continue drilling and sampling with augers.
					Continue well with air rotary drill rig.
					Estimated depth to bedrock = 6 feet.



Sample FF-M81-113093 collected from 0-2".

Notes: ND = Not Detected
Depth to Water Measured From Top of PVC.
Split spoon sampling conducted on 11/30/93.
Monitoring well installed on 12/13/93.

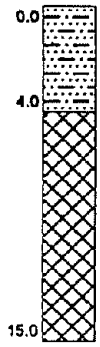
Monitoring Well: MW-9R
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 15 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: T. McMorrow
Monitoring Well Coordinates:
N 156840.31
E 547435.91

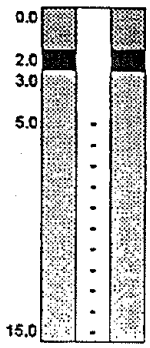
Date Started: December 13, 1993
Date Completed: December 14, 1993
Depth to Water: 5.37 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 11.18 Feet (msl)
Ground Elevation = 11.73 Feet (msl)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	12	15	ND	ND	0-6" TOPSOIL. 6-16" Brown SILT & ROCK fragments, little F sand, dry, no odor.
	47	50/2"			
2-4	50/4"		ND	ND	Brown F SAND, little gravel & silt, dry, no odor. Recovery = 2".
4-6	50/2"		NR	NR	No Recovery Unable to continue drilling and sampling with augers. Continue drilling with air rotary drill rig. Bedrock estimated to be 4 feet below grade.

Lithology



Monitoring Well Construction



Sample FF-M91-120193 collected from 0-2'.
Duplicate sample FF-M93-120193 collected from 0-2'.
Sample FF-M92-120193 collected from 2-4'.

Notes:
NR = No Reading
ND = Not Detected
Depth to Water Measured From Top of PVC.
Split spoon sampling conducted on 12/01/93.
Monitoring well installed on 12/13/93 - 12/14/93.

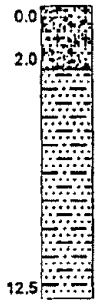
Monitoring Well: MW-10S
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 12.5 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: J. Breen & B. Reilly
Monitoring Well Coordinates:
N 156899.69
E 547579.96

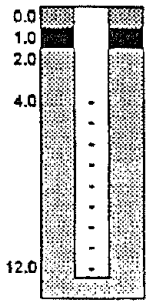
Date Started: November 29, 1993
Date Completed: November 29, 1993
Depth to Water: 6.30 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 10.20 Feet (mlw)
Ground Elevation = 10.35 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description
0-2	6	20	ND	ND	0-6" FILL, topsoil. 6-18" FILL, brown F sand & silt, little brick
	20	21			& gravel, trace seashells, dry, no odor.
2-4	10	10	NR	NR	ROCK fragments, dry, no odor. Recovery = 2".
	11	11			
4-6	5	9	ND	ND	Brown F SAND, some rock fragments, little gravel, trace silt,
	15	16			dry, no odor. Recovery = 8".
6-8	7	7	ND	ND	Brown F SAND, some rock fragments, little gravel, trace silt,
	22	34			wet, petroleum odor, visual staining. Recovery = 12".
8-10	50/5"		ND	ND	Brown F SAND, some rock fragments, little gravel, trace silt,
					wet, petroleum odor. Recovery = 5".
10-12	50/5"		ND	ND	Brown F SAND, some rock fragments, little gravel, trace silt,
					wet, petroleum odor. Recovery = 5".
12-14	50/5"		ND	ND	Grey F-C SAND, little silt & gravel, wet,
					slight petroleum odor.. Recovery = 2".

Lithology



Monitoring Well Construction



Curb Box
Bentonite Seal
Top of Sand
Top of Screen
#1 Morie Sand
2" - 10 Slot PVC Screen
Bottom of Well

Auger refusal at 12.5 feet.

Sample FF-M101-112993 collected from 0-2'.
Sample FF-M102-112993 collected from 4-6'.
Sample FF-M103-112993 collected from 10-12'.

Notes: ND = Not Detected
NR = No Recovery
Depth to Water Measured From Top of PVC.

Monitoring Well: MW-11S
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 9 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: B. Reilly & J. Breen
Monitoring Well Coordinates:
N 157055.66
E 547198.71

Date Started: December 1, 1993
Date Completed: December 1, 1993
Depth to Water: 3.92 Feet (01/04/94)
Monitoring Well Elevations:
Top of PVC = 7.70 Feet (mlw)
Ground Elevation = 7.85 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements OVA (ppm)	HNu (ppm)	Soil Description	Lithology	Monitoring Well Construction
0-2	8	5	ND	ND	0-3" FILL, brown F sand, plastic. 3-22" FILL, black charred	0.0	0.0 Curb Box
	7	14			wood fragments, little asphalt & concrete, dry, no odor.		1.0 Bentonite Seal
2-4	6	23	15	5	0-8" FILL, black/grey F sand, some gravel & wood. 8-12" FILL,		2.0 Top of Sand
	15	19			concrete & rock. 12-18" FILL, brown F-M sand, dry, no odor.		
4-6	24	26	1	ND	0-2" FILL, concrete fragments. 2-12" FILL, brown F-M sand,		4.0 Top of Screen
	29	35			some brick & concrete. 12-15" FILL, rock fragments, wet, no odor.		#1 Morie Sand
6-8	50/3"		ND	ND	FILL, rock fragments, wet, no odor. Recovery = 1".		
							2" - 10 Slot PVC
8-10	48	50/1"	2	ND	FILL, brown F-C gravel, some F-C sand & rock fragments, little		Screen
					brick fragments, slight petroleum odor, wet. Recovery = 8".		9.0 Bottom of Well
10-12	50/3"		NR	NR	No Recovery.	10.0	

Sample FF-M111-112993 collected from 0-2'.
Sample FF-M112-112993 collected from 2-4'.

Notes:
ND = Not Detected
NR = No Recovery
Depth to Water Measured From Top of PVC.
Split spoon sampling conducted on 11/29/93.
Monitoring well installed on 12/01/93.

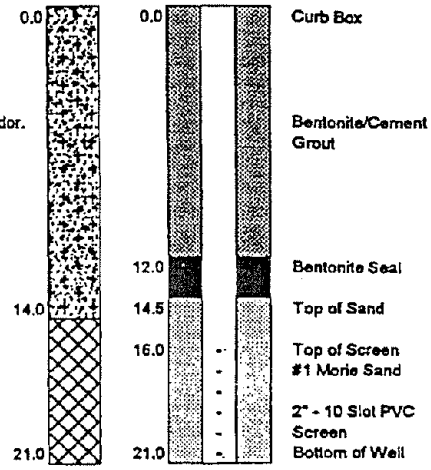
Monitoring Well: MW-11R
Site 09 - Old Fire Fighting Training Area
NETC - Newport
Well Depth: 21 Feet

Drilling Company: Hardin-Huber, Inc.
Drillers: M. Stawas
TRC Inspector: J. Coykendall & T. McMorrow
Monitoring Well Coordinates:
N 157066.93
E 547215.37

Date Started: December 15, 1993
Date Completed: December 16, 1993
Depth to Water: 3.55 Feet (01/04/93)
Monitoring Well Elevations:
Top of PVC = 7.40 Feet (mlw)
Ground Elevation = 7.64 Feet (mlw)

Depth (feet)	Blow Counts		Field Measurements CVA (ppm)	HNu (ppm)	Soil Description
0-2	8	5	ND	ND	0-3" FILL, brown F sand, plastic. 3-22" FILL, black charred wood fragments, little asphalt & concrete, dry, no odor.
	7	14			
2-4	6	23	15	5	0-8" FILL, black/grey F sand, some gravel & wood. 8-12" FILL, concrete & rock. 12-18" FILL, brown F-M sand, dry, no odor.
	15	19			
4-6	24	26	1	ND	0-2" FILL, concrete fragments. 2-12" FILL, brown F-M sand, some brick & concrete. 12-15" FILL, rock fragments, wet, no odor.
	29	35			
6-8	50/3"		ND	ND	FILL, rock fragments, wet, no odor. Recovery = 1".
8-10	48	50/1"	2	ND	FILL, brown F-C gravel, some F-C sand & rock fragments, little brick fragments, slight odor, wet. Recovery = 8".
10-12	50/3"		NR	NR	No Recovery.

Unable to continue drilling and sampling with augers.
Continue drilling with air rotary drill rig.
Bedrock estimated to be 14 feet below grade.



Notes: NR = No Reading
ND = Not Detected
Depth to Water Measured From Top of PVC.

BORING LOG FOR: NEK Newport, OFFTA
PROJECT NO: 7578
LOGGED BY: M. Healey
DRILLED BY (Company/Driller): EDE / Scott
GRD. SURFACE ELEVATION:
ELEVATION FROM:

BORING NO.: MW-101
START DATE: 070997
COMPLETION DATE: 070997
MON. WELL NO.: MW-101
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID Head Trace]
	15 43	18/24	S-1	1.0		Brown	Silty SAND; fine sand with silt +	SM	dry	
2	50 27		0730				roots, Brick (Loam) Fill			
	32 28	18/24	S-2			Gray	Silty sand; medium to fine sand	SM		0.0 ppm
4	17 26		0800				with some silt and trace			
	11 14	14/24	S-3	5.0			gravel (Fill)			
6	9 9		0830							
	4 3	20/24	S-4 (Lab Sample)			Gray	Silty gravelly Sand; fine to	SM/GM	S-3 odor +	
8	3 3		0845				coarse sand with some sl		sheen	
	38 42	16/24	S-5				plastic fines (till) angular		S-4 sl odor +	
10	60 58		0912		Dense	Gray/Black	gravel to 1.5 in.		sheen (Sample for lab)	
	43 26	24/24	S-6							
12	38 66		0940				S-5 Silty gravelly sand, fine-coarse sand with sl plastic		S-5 oil sheen + odor	
	38 65	13/24	S-7				fines gravel to 1 1/4 in. (angular)		S-6 no sheen no odor.	
	120/1		1010				till			

TYPE OF DRILLING RIG:
METHOD OF ADVANCING BORING: FID Broke @ 0800 hrs.
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

Brown & Root Environmental

BORING NO.: 101
PAGE: 1 of 1

BORING LOG FOR: NETC Newport RI / OFFTA
PROJECT NO: 7578
LOGGED BY: M. Healy
DRILLED BY (Company/Driller): EDI / Scott
GRD. SURFACE ELEVATION:
TRANSCRIBED BY:
ELEVATION FROM:

BORING NO.: MW-102
START DATE: 07-07-97
COMPLETION DATE: 07-08-97
MON. WELL NO.: MW-102
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID/Hnu]
	12 9	14/24	1405 hrs. S-1	0.5		Brown	Silty Sand; fine sand & silt	SM		-0-
2	15 16						some roots Loam			
	18 22	14/24	1413 hrs S-2			Brown/Black	Silty Sand; fine to medium sand	SM	moist	S-2 8ppm
4	29 36						some silt trace gravel to 1.5'bg			
	31 24	9/24	1448 hrs S-3				(fill)			S-3 120ppm
6	41 58			Fill			S-3 oil in nose			
	6 3	14/24	1502 S-4				S-4 oily sand			
8	3 7						S-5 oily sand.			S-4 2,700ppm
	32 28	9/24	1530 S-5							
10	16 17								last sample 7-7-97	S-5 29ppm.
	6 8	0/24	S-6							
12	9 9								Water @ 4.5'BGS	
	9 9	6/24	S-7						0740 7-8-97	S-7 10ppm
14	12 9									
	30 28	29/24	S-8							
16	31 29						S-8			S-8 400ppm

TYPE OF DRILLING RIG:
METHOD OF ADVANCING BORING: Driven Wash (4 in)
METHOD OF SOIL SAMPLING: 3 in split spoon (140 lbs)
METHOD OF ROCK CORING:

Background FID in Breathing Zone. 1400 hrs. 1500 hrs 1530 hrs, 2ppm @ Casing Zero ppm Breathing Zone.

GROUNDWATER LEVELS: Water @ 4.5' BGS @ 0740 7-8-97
OTHER OBSERVATIONS:

Brown & Root Environmental

BORING NO.: 102
PAGE: 1 of 2

BORING LOG FOR: NETC Newport RE / OFFTA
PROJECT NO: 7578
LOGGED BY: M Healey
TRANSCRIBED BY:
DRILLED BY (Company/Driller): EDI / Scott
GRD. SURFACE ELEVATION:
ELEVATION FROM:

BORING NO.: MW-102
START DATE: 07-07-97
COMPLETION DATE: 07-08-97
MON. WELL NO.: MW-102
CHECKED BY:

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA METHOD = [FID/Hnu/PID]
	13									
	14	22/24	S-9 9:50	-17-			Silty sand, mostly fine sand	SM		S-9 50ppm
18	19				Dense	gray	with some fine gravel to occasional			
	23						gravel to 1in. (till)			
	20									
	28	14/24	S-10 10:30				S-10 similar to S-9			S-10 20ppm
20	38									
	50									
	21									
	27	16/24	S-11 10:52			gray	S-11 silty sand fine-med sand	SM		S-11 8ppm
22	36						with some silt and sl plastic fines			
	34									
	10									
	18	20/24	S-12 11:07				fine gravel sub rounded to 1in.			S-12 5ppm
24	41						oxidized layer (till)			
	50									
	42									
	57	13/24	S-13 11:48				S-12 similar to S-11			S-13 5ppm.
26	70									
	49						S-13 similar to S-11			
	26									
	32	16/24	S-14 11:58							S-14 5ppm
28	43									
	49						S-14 similar to S-11			
	63									
	124	10/24	S-15 12:15				S-15 similar to S-11			S-15 5.0ppm
	60/2"			-29'2"-						

TYPE OF DRILLING RIG:
METHOD OF ADVANCING BORING:
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

Brown & Root Environmental

BORING NO.: MW2
PAGE: 2 of 2

PDI Soil Boring Logs

SB400

SB401

SB402

SB403

SB404

SB405

SB406

SB407

SB408

SB409

SB410

SB411

SB412

SB413B

SB414

SB415

SB416

SB417

SB418

SB419

SB420

SB421

SB422

SB423

SB424

SB425

SB426

SB427

SB428

SB429

SB430

SB431

SB432

SB433

SB434

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-400
PROJECT NO.:	4152-0552			START DATE:	12/01/03
LOGGED BY:	J.DANIELI / J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/01/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BIERHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	7.3' (MLW)	ELEVATION FROM:		CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
	3	0.6 / 2.0'	1300 OFF-SB-400-0002	Fill	Medium Dense	Gray-Brown	0.0-0.4' = fine to coarse sand, some silt, trace gravel	SW	Dry	PID = 0.0
	5									
2	6					Light Brown	0.4-1.6' = Silty fine to coarse SAND, some gravel (rounded)	SM		FID = 0.0
	9									
	15	0.4' / 0.5'	No sample		Very Dense		Silty fine to coarse SAND, trace gravel		Dry Note: caught on a piece of riprap – will move over	PID = 0.0
	100/2"									
4										FID = 0.0
			No sample				Auger from 0-4' - no samples collected			
0										
			No sample							
2										
			No sample							
4										
	17	1.2' / 2.0'	No sample		Very Dense	Tan	0.0-0.3' = Fine sand 0.3-0.9' = Fine to coarse SAND, some silt, some gravel	SP SW	Moist Brick fragments, trace coal, slag fragments	PID = 6.8
	19									
6	33						0.9-1.2' = Cobble	--		FID = 9.4
	120/3"									
	50	1.1' / 1.5'	No sample				0.0-0.4' = Cobble 0.4-1.1' = Fine to coarse sand, some silt, some gravel bottom	-- SW	Piece of plastic at 6' bgs Trace brick - no manmade materials after 7'	
	44									
8	60/3"						very dense			
	60/2"	0.0' / 2.0'	1340 OFF-SB-400-0810							
10							No recovery			

TYPE OF DRILLING RIG:	CME – Track mounted		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven by 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:	FIRST ATTEMPT = 4' refusal, second attempt = 12' refusal, third attempt = 12' refusal	BORING NO.: SB-400	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-400
PROJECT NO.:	4152-0552			START DATE:	12/01/03
LOGGED BY:	J.DANIELI / J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/01/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BIERHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	7.3' (MLW)	ELEVATION FROM:		CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
10										
	65/0"		No sample		Very Dense		No recovery - slough only (natural materials in slough)		Augers have been moving well, last 4' driller believes we are pushing a cobble	
12					↓					
			No sample							
0										
			No sample				Auger to 2' - no samples collected from 0-2'			
2										
	70/2"	0.2' / 0.2'	No sample		Very Dense		Silty fine to coarse sand, some gravel will keep 0-2' sample from first attempt	SM	Dry	
4								↓		
6										
		1.0'	No sample				No sample collected - see attempt 2			
8										
	4 / 70/2"	0.5' / 1.0'	No sample		Very Dense	Light Brown	Silty fine to coarse sand, some gravel	SM	Wet - driller believes this is on a slab/block, boulder due to reverberations from spoon	
10					↓					
	70/1"						No recovery, material all slough, angular fragments, no manmade material		Spoon and auger refusal - borehole complete	
12				EOB (refusal)	↓					

TYPE OF DRILLING RIG:	Track mounted		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven by 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-400	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-401A
PROJECT NO.:	4152-0552			START DATE:	11/19/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION:	11/20/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	7.9'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
							No sample collected - auger to 2'			
2										
	13		MS/MSD			Dark	0-0.3' = Sandy silt		Moist	
	33	1.8' / 2.0'	1600			Brown				PID = 54.3
	66		OFF-SB-401-0204				0.3-0.6' = Fine to coarse sand, trace gravel, trace silt			
4	120/0"					Brown	0.6-0.8' = Fine to coarse sand, some gravel			FID = 4.5
	120/5"						Fine to coarse sand, some gravel		Moist	
		0.8' / 2.0'				Brown	PID = 8-10 in sample		Petroleum odor	PID = 0.7
6				EOB					Auger grinding - cuttings	FID = 0.0
				6'			Auger refusal at 6' – will move over		Possible solvent odor from cuttings when pulling augers	
									15 ppm near borehole, no sustained readings in breathing zone	
							Second attempt: moved 10' north of original location and began augering - refusal at 5'			
							11/20: Third attempt - moved 8' south of original location - refusal at 2" (rock - non native in cuttings from augers - will			
							and return later with another rig set up for drive and wash			

TYPE OF DRILLING RIG:	CME 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with a 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-401A	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-401 (RE-DRILL)
PROJECT NO.:	4152-0552	START DATE:	12/04/03
LOGGED BY:	J.DANIELI	TRANSCRIBED BY: MES	COMPLETION: DATE: 12/04/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM	MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	7.9'	ELEVATION FROM: NGVD 1929 (MLW)	CHECKED BY: DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
			No sample				Auger down to 2' bgs – no sample			
2										
	7		No sample		Dense	Brown	Topsoil – Silty SAND – roots 0-0.2'		Dry	
	10	1.3' / 2.0'			Loose	Dark	0.2-0.7' = Fine to medium silty SAND, trace gravels	SM		FID = 0.0
	24						0.7-1.3' = Cobble, weathered, orange			
4	31					Gray			Staining	PID = 0.0
	30		No sample						Dry	
	60/3"	0.8' / 0.8'				Gray				FID = 32.4
6										PID = 5.3
	60/1"	No Recovery / 0.1'	No sample			Gray Green	No recovery – 1 piece of rock - rounded, boulder (try to auger through obstruction to 8' bgs)			FID = NA
8										PID = NA
	10						Pulverized rock - boulder		Dry	
	60/5.5"	0.5' / 1.0'	0900 OFF-SB-401-0810		Loose	Gray				FID = 17.4
10										PID = 0.0
	16		MS/MSD						Dry	
	60/6"	0.9' / 1.0'	0905 OFF-SB-401-1012						(Note: pull augers Believe boulder at shoe - removed, send back down hole)	FID = 5.7
12										PID = 0.0
			No sample				Fine to coarse SAND with gravel, compact layers of SILT, 3.5' weathered rock – till? Auger refusal		Dry	
	80/4"	0.7' / 1.0'			Loose	Gray		SW		FID = 15.4
14										PID = 0.0
	60/1"	No Recovery / 0.1'	No sample				No recovery - slough in spoon			FID = NA
16							EOB @ 13'7"			PID = NA

TYPE OF DRILLING RIG:	Track mounted – CME	*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger	
METHOD OF SOIL SAMPLING:	3" split spoon, 2' long, 300 lb. hammer, 18" drop	
METHOD OF ROCK CORING:	N/A	
GROUNDWATER LEVELS:	Not evident	
OTHER OBSERVATIONS:	BORING NO.: SB-401	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-402
PROJECT NO.:	4152-0552			START DATE:	11/18/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/18/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.4'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' bgs, soils not logged from 0-2'			
2										
	4				Slightly		0-0.8' = Crumbly fine to coarse SAND		Dry	
	7	1.4' / 2.0'	0955		Loose	Brown		SW	Piece of tile in spoon	PID = 84.2
4	7		OFF-SB-402-0204				0.8-1.4' = SILT and SAND, fine to coarse sand	SM		FID = 15.0
	4				Medium		Fine to coarse SAND, trace silt, some gravel		Moist - wet	
	8	0.4' / 2.0'	No sample		Dense	Black		SW	Faint sweet (non-petroleum) odor	PID = 81.0
6	11									
	13									FID = 23.6
	7						Angular GRAVEL, trace fine to coarse sand *		White ceramic fragments (`fine gravel sized)	
	7	0.9' / 2.0'	No sample					GP		PID = 72.8
8	7									
	11									FID = 28.3
	9					Red	Compressed peat - organic fibers visible, very difficult to pull apart		Organic odor	
	10	0.8' / 2.0'	1015			Brown		PT		PID = 7.5
10	7		OFF-SB-402-0810				0-0.5' = Compressed peat, some organic silt mixed			
	4									FID = 417.2
	2								0.6' slough	
	3	0.8' / 2.0'	No sample		Loose			PT		PID = 23.9
	3					Dark	0.5-0.8' = Organic silty SAND (fine to medium sand)			
12	6					Gray		SM		FID = 157.0
	8				Medium		Silty SAND (fine sand)		Moist - wet	
	14	0.9' / 2.0'	1030		Dense					PID = 6.1
14	7		OFF-SB-402-1214						Slight odor	
	8									FID = 452.3
	7						0-0.4' = Similar to above		Moist	
	9	1.2' / 2.0'	No sample				0.4-0.6' = SAND (fine to coarse sand) and GRAVEL	SW		PID = 11.3
16	8						0.6-1.2' = SILT, some fine sand, trace clay			
	9							ML		FID = 17.0

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 6'		
OTHER OBSERVATIONS:	* = Predominant material from 6-8' was grave; > 1" in diameter, so sample was collected from the next instead.	BORING NO.: SB-402	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-402
PROJECT NO.:	4152-0552			START DATE:	11/18/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/18/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.4'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	8				Very		Sandy SILT (fine sand, some gravel, oxidized, very dense -		Moist	
	10	0.9' / 2.0'	1100		Dense	Dark	possible till	ML		PID = 1.6
	35		OFF-SB-402-1618			Brown			Till	
18	30									FID = 179
	11						0.0-0.4' = Sandy SILT (fine sand) some oxidation spots		Moist	
	19	0.6' / 2.0'	1120			Black	0.4-0.6' = Silty fine to coarse SAND, some gravel			PID = 0.0
	17		OFF-SB-402-1820							
20	17			EOB						FID = 0.0
				20'			Boring stopped as per work plan - bedrock not encountered			

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-402	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-403
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	9.4' (MLW)	ELEVATION FROM:		CHECKED BY:	JL

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF' L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' bgs – no sample collected			
2										
	5	1.5 / 2	1600 (11/24/03) OFF-SB-403-0204		Medium Dense	Brown	0-0.6' = SILT, some fine sand, trace angular gravel	ML	Moist (Angular gravel)	PID = 188
4	8 10					Dark brown Orange brown	0.6-0.9 = similar to above, some black staining 0.9-1.5 = SILT, some fine sand, some gravel			FID = 0.0
	6	1.2 / 2	No sample			Gray-orange Red-black	0-0.4' = SILT, some angular gravel 0.4-0.7' = Friable fill material – SLAG?	Fill	Wet (Mottled)	PID = 101
6	14 16					-- Red-black	0.7-0.8 = GLASS layer 0.8-1.2' = SLAG (gravel - fine sand (?))			FID = 79.1
	6 7	0.8 / 2	1615 (11/24/03) OFF-SB-403-0608			Black	Fine to coarse SAND, some silt, some gravel, trace glass → oil - saturated soils, ceramic	SW	Wet Petroleum odor Sheen on water in split spoon	PID = 215
8	8 9						Similar to above			FID = 540.0
	4 7	0.6 / 2	No sample						Wet	PID = 34.3
10	5 2									FID = 170.1
	7 8	1.0 / 2	1630 (11/24/03) OFF-SB-403-1012			Dark Gray	Fine SAND, trace shell fragments	SP	Wet	
12	4 3									
	2 1	0.0 / 2	No sample		Very Loose	--	No recovery (slough)	--		PID = 35.6
14	2 9									FID = 158
	4 8	0.6 / 2	1645 (11/24/03) OFF-SB-403-1416		Medium Dense	Dark Gray	0-0.4' = Fine SAND, trace shell fragments	SP		PID = 14.0
16	8 8						0.4-0.6' = Sandy (fine sand) SILT	ML		FID = 24.3

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven by 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-403	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-403
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	9.4' (MLW)	ELEVATION FROM:		CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	8		No sample		Dense	Gray	Fine sandy SILT, some angular gravel, possible till	SM	Wet	PID = 1.8
	9									
	10									
18	9									FID = 0.0
	7		0735 (11/25/03) OFF-SB-403-1820				Fine sandy SILT, some gravel, trace coarse sand, possible till		Wet	
	12									PID = 0.0
	14									
20	14			EOB 20'						FID = 7.3

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven by 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-403	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-404
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.9'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
				Fill			Auger from 0-2' bgs, soils not logged			
2										
	6				Medium		Fine to coarse SAND, some silt, trace rounded gravel,		Moist	
	11	0.6' / 2.0'	1135		Dense	Brown	mixed glass, brick and charcoal fragments	SW		PID = 0.0
	4		OFF-SB-404-0204						Cobble in nose of spoon	
4	23									FID = 13.5
	45						Cobble fragments, angular pieces		Wet	
	13	0.5' / 2.0'	No sample					COBBLE		PID = 9.8
	10									
6	6									FID = 22.4
	2						Silty fine to coarse SAND, some gravel, some glass →		Petroleum odor	
	4	0.8' / 2.0'	1155		Loose	Black	petroleum saturated	SW		PID = 77.0
	4		OFF-SB-404-0608						(Wet)	
8	10									FID = 187.1
	4				Medium		Fine to coarse SAND, some gravel, some silt, petroleum		Oil sheen on water in	
	9	1.0' / 2.0'	No sample		Dense		saturated soils		spoon	PID = 19.8
	5									
10	6									FID = 21.3
	4						Fine to coarse SAND, some gravel, some silt, some glass -		Wet	
	6	0.6' / 2.0'	1220				petroleum saturated			
	6		OFF-SB-404-1012						Odor (petroleum)	
12	4									
	13									
	7	0.4' / 2.0'	No sample					SM		PID = 50.0
	7						Fine to medium sandy SILT, trace angular gravel			
14	11									FID = 258.4
	7		* Not enough volume				GRAVEL, some silty fine sand			
	7	0.3' / 2.0'	sample will collect					GP		PID = 14.1
	7		interval							
16	24									FID = 60.2

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with a 300 lb. hammer (18")		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-404	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-404
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	8.9'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	13		MS/MSD		Medium		Fine to medium SAND, trace gravel, trace silt		Wet	
	15	1.1' / 2.0'	1305		Dense	Dark		SP		PID = 7.3
	14		OFF-SB-404-1618			Gray				
18	8		GRAIN SIZE							FID = 15.3
	3					Dark	0-0.7' = SILT, some fine to medium sand, trace gravel		Wet	
	6	1.2' / 2.0'	1320			Gray		SM		PID = 1.7
	11		OFF-SB-404-1820			Light	0.7-1.2' = Similar material to above, color change only			
20	8			20'		Brown				FID = 15.3
				EOB						

TYPE OF DRILLING RIG:	CME 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven 18" with 300 lb. hammer		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-404	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-405
PROJECT NO.:	4152-0552			START DATE:	11/18/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/18/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	7.0' (MLW)	ELEVATION FROM:		CHECKED BY:	JL

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' – no samples collected from 0-2'			
2										
	19	1.0' / 2'	1320 OFF-SB-405-0204		Medium Dense	Light Brown	Fine to coarse SAND and GRAVEL	SW	Dry Brick fragments at 4'	PID = 0.0
4	15 17									FID = 0.0
	20 21	0.1' / 2'	No sample		Dense		Spoon blocked by cobble			PID = 0.0
6	20 10									FID = 0.0
	3 10	1.0' / 2'	1340 MS/MSD OFF-SB-405-0608		Medium Dense	Brown	Fine to coarse SAND, some gravel mixed with brick fragments throughout	SW	Moist Piece of copper wire in sample	PID = 0.0
8	6 5									FID = 0.0
	6 6	0.5' / 2'	No sample				Gravelly SILT, angular brick fragments throughout	ML	Moist	PID = 0.0
10	5 6									FID = 0.0
	10 7	1.0' / 2'	1410 = OFF-SB-405-1012 1415 = OFF-SB-Dup02				0-0.4' = Similar to above 0.4-1.0' = Fine to coarse SAND and SILT, some gravel (very	SM	Saturated	PID = 0.0
12	5 11						Dense-potential till)			FID = 0.0
	19 24	0.9' / 1.5'	No sample		Very Dense		0-0.5' = Gravelly fine to coarse SAND, gravel = angular → subangular	SW		PID = 0.0
14	120/4"					Red-Brown	0.5-0.9' = Similar to above but more consolidated - saprolite or till			FID = 0.0
	17 53	1.0' / 1.5'	1430 OFF-SB-405-1416				Silty gravelly SAND (fine to coarse sand), angular gravel - (till)		Auger refusal at 16' very hard at 15', will try a split spoon	PID = 0.0
16	120/5"									FID = 0.0

TYPE OF DRILLING RIG:	CME – Track mounted		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem augers		
METHOD OF SOIL SAMPLING:	3" Split spoons driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 10' bgs		
OTHER OBSERVATIONS:		BORING NO.: SB-405	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-405
PROJECT NO.:	4152-0552			START DATE:	11/18/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/18/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	7.0' (MLW)	ELEVATION FROM:		CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16'										
	120/4"	0.0 / 2.0	No sample		Very Dense		Split spoon refusal; steady grind on augers (auger refusal) – believed to be at or close to bedrock			
18				18'						
				EOB						

TYPE OF DRILLING RIG:	CME – 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" Split spoons driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 10' bgs		
OTHER OBSERVATIONS:		BORING NO.: SB-405	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-406
PROJECT NO.:	4152-0552			START DATE:	12/03/03
LOGGED BY:	J.DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/03/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	11.4' (MLW)	ELEVATION FROM:		CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
	4	0.8 / 2.0'	1455 OFF-SB-406-0002	Fill	Dense	Brown	Fine silty SAND with roots, topsoil 1.0-0.2'		Dry	
	5				Loose		0.2-0.6' = fine to coarse SAND, trace silt	SM		FID = 20.6
2	5						0.6-0.8' = piece of boulder, some rounded gravels			PID = 0.0
	6									
	13	1.0 / 1.2'	No sample		Loose	White	0.0-0.2' = pieces of cobble, concrete?		Dry	
	25				Dense	Olive	0.2-1.2' = SILT with trace sand and sub-angular gravel, pieces	ML		FID = 0.0
4	60/2"				(Compact)	Gray	Brick and asphalt			PID = 0.9
	20	1.1 / 2.0'	No sample						Dry	
	12									FID = 0.0
6	12									PID = 1.8
	8									
	60/4"	0.3 / 0.3'	1530 OFF-SB-406-0608		Loose	Dark Gray	Silty SAND with some gravel, pieces of cobble / concrete?	SM	Dry	FID = 0.0
8										PID = 3.8
	20	1.0 / 2.0'	No sample		Loose	Dark Gray	Piece of concrete (0.3-0.5')		Dry Wet ~ 9' bgs	FID = 1.3
	12									
10	17					Dark Brown	Piece of brick (0.9-1.0')			PID = 3.7
	13									
	6	0.7 / 2.0'	1550 (& grain size) OFF-SB-406-1012				Gravelly SILT, trace sand	ML	Wet Soupy	
	7									FID = 5.2
12	7									PID = 2.7
	9									
	7	1.0 / 2.0'	No sample		Dense	Dark	0.0-0.8' = fine to medium SAND, well sorted	SP	Wet	FID = 0.0
	8									
14	6					Brown	0.8-1.0' = SILT with sand	ML		PID = 1.6
	12									
	6	1.4 / 2.0'	1610 (Dup 1615) OFF-SB-406-1416		Dense	Dark Gray	SILT, trace rounded gravels and sand	ML	Wet	FID = 0.8
	8									
16	7									PID = 3.5
	5									

TYPE OF DRILLING RIG:	Track mounted – CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon – 2' long - 300 lb. hammer -- 18" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	~ 9' bgs
OTHER OBSERVATIONS:	

BORING NO.: SB-406

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-406
PROJECT NO.:	4152-0552			START DATE:	12/03/03
LOGGED BY:	J.DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/03/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	11.4' (MLW)	ELEVATION FROM:		CHECKED BY:	DH

DEPTH (FEET) 16	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
	9									
	22	1.3 / 2.0'	No sample		Dense	Dark Gray	0.0-0.7' = silty GRAVEL with sand, till	GM	Wet	FID = 0.0
	56									
18	51				Dense	Brown	0.7-1.3' = silty GRAVEL, trace sand, till	GM	Soupy	PID = 3.7
	21									
	20	0.9 / 1.0'	1625 OFF-SB-406-1820		Dense	Brown	Silty sandy GRAVEL, till	GM	Wet	FID = 0.0
	60/1"									
20							19.5' auger refusal Pieces of rock (phyllite) in nose?			PID = 2.6
		No Recovery / No' Penetration	No sample				EOB @ 19.5' bgs			
	60/0"									
22										
24										

TYPE OF DRILLING RIG:	Track mounted – CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon – 2' long - 300 lb. hammer – 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 9' bgs		
OTHER OBSERVATIONS:		BORING NO.: SB-406	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-407
PROJECT NO.:	4152-0552	START DATE:	12/01/03
LOGGED BY:	J. DANIELI	COMPLETION: DATE:	12/01/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	12.9' (MLW)	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:			

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
	29	1.6' / 2.0'	1020 Dup 1030 OFF-SB-407-0002	Fill	Topsoil Dense	Brown	Topsoil with roots 0-6'		Dry	FID = 0.0
2	42				Loose		SAND and GRAVEL with pieces of brick, fill	SW/ GW		PID = 0.0
	6	1.3' / 2.0'	1040 MS/MSD OFF-SB-407-0204						Dry	FID = 0.0
4	10 / 10 / 12				Dense	Dark Brown	Sandy and gravelly SILT	ML		PID = 0.0
	16 / 17	1.5' / 2.0'	No sample				Large pieces of concrete 0.5' long, pieces of brick and asphalt		Dry	FID = 0.0
6	13 / 16									PID = 0.0
	5 / 6	0.6' / 2.0'	No sample	Natural Materials		Light Brown	Pieces of cobble at nose of spoon Sandy SILT – trace gravel	ML	Dry	FID = 0.0
8	9 / 13									PID = 0.0
	10 / 16	1.0' / 2.0'	1103 OFF-SB-407-0810		Loose	White/ Pink	Broken up cobble – 0.5' long		Dry	FID = 0.0
10	16 / 19					Dark Brown	Silty SAND and GRAVEL	SW/ GM		PID = 0.0
	5 / 5	0.9' / 2.0'	No sample		Loose	Brown	Fine to medium SAND, trace silt and gravel	SM	Wet	FID = 0.0
12	11 / 17				Dense	Dark Brown	Sandy silt with layers of brown peat and roots	ML		PID = 0.0
	20 / 11	0.9' / 2.0'	1120 OFF-SB-407-1214		Loose	Olive Gray	Silty SAND with gravel, soupy, saturated with oil	SM	Wet Sheen noted	FID = 29.2
14	17 / 9									PID = 19.1
	13 / 11	2.0' / 2.0'	No sample		Dense	Olive Gray	Soupy, saturated with oil, SILT with sand and gravel	ML	Wet Sheen noted	FID = 1.1
16	7 / 8					Brown	0.5' – fine silty SAND	SM		PID = 0.1

TYPE OF DRILLING RIG:	Track mounted CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon – 2' length, 18" drop with 300 lb. hammer
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	~ 10' bgs (from top of mound)
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-407
PROJECT NO.:	4152-0552			START DATE:	12/01/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/01/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	12.9' (MLW)	ELEVATION FROM:		CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	38	1.0' / 2.0'	1140 (grain size Collected) OFF-SB-407-1618		Loose	Dark Gray	Soupy, broken rock, weathered, phyllite?		Wet - sheen saturated with oil, weathered rock	PID = 4.1
	23									
	33				Dense	Olive Gray	0.5' long - mixture, SILT with sand and gravel - till?	ML		FID = 4.7
18	20									
	4	0.9' / 2.0'	No sample		Dense	Olive Gray	SILT with sand and gravel - till?	ML	Orange staining Wet	PID = 3.8
	5									
	5					Gray	Pieces of weathered rx - orange staining			FID = 6.9
20	6									
	11	1.4' / 2.0'	1215 Dup			Gray	Piece of wire-copper SILT with gravel and trace sand		Wet	PID = 2.1
	5									
	5		1220 OFF-SB-407-2022				Orange staining - rx- phyllite?			FID = 4.8
22	9									
	47	0.7' / 1.5'	No sample						Wet	PID = 0.0
	120/2"									
							Soupy			FID = 0.0
24										
		0.2' / 1.0'	No sample Weathered rx Low recovery			Gray	Weathered broken rx – phyllite?	Broken rock	Wet	PID = 0.0
	120/2"									
							EOB @ 24' 2"			FID = 0.6
26										

TYPE OF DRILLING RIG:	Track mounted rig – CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon – 2' length, 18" drop with 300 lb. hammer		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 10' bgs (from top of mound)		
OTHER OBSERVATIONS:		BORING NO.: SB-407	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-408
PROJECT NO.:	4152-0552	START DATE:	11/17/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	11/17/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN	MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	8.0'	CHECKED BY:	JL
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
				Fill			Hollow stem auger to 2' bgs – no samples collected			
2										
	46	1.4' / 1.5'	1510 OFF-SB-408-0204		Very Dense	Dark	0.0-0.7' = Silty fine SAND, some gravel, piece of geosynthetic liner at 2'		Moist	PID = 0.0
4	30 / 150/5"					Brown	0.7-1.4' = Silty fine SAND			FID = 0.0
	90/5"	0.2' / 2.0'	No sample				Little recovery - mostly slough		Spoon bouncing, possible wood	PID = 0.0
6										FID = 0.0
	150/4"	0.4' / 0.4'	1540 OFF-SB-408-0608			Dark	Silty fine to coarse SAND, trace angular gravel		Moist - wet	PID = 1.8
8						Brown				FID = 0.0
	150/4"	0.1' / 0.4'	No sample				No recovery - slough = fine to coare sand		Wet	
10										
	150/4"	0.0' / 0.4'	No sample						Wet, spoon bouncing again, having difficulty penetrating moist	
12										
	120/4"	0.0' / 0.4'	No sample			Dark	Weathered pieces of rock, possible bedrock, for 12-14' sample, tried using 2" spoon for better recovery - did not help		Auger refusal at 12'	
14						Gray				
				EOB						

TYPE OF DRILLING RIG:	CME 75 – Track mounted
METHOD OF ADVANCING BORING:	4.25" ID Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer and dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-409
PROJECT NO.:	4152-0552	START DATE:	11/20/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	11/20/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	9.1'	CHECKED BY:	JL
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
							Auger to 2' – no sample collected from 0-2'			
2										
	19	0.1' / 2.0'	No sample		Very Dense		Cobble in nose - almost no recovery - will collect next sample interval		Moist	PID = 0.0
4	29, 34, 74								PID/FID readings (from slough and fragments)	FID = 1.5
	17, 13	1.3' / 2.0'	1330 OFF-SB-409-0406		Medium Dense	Light Black	0-0.6' = sandy SILT, trace gravel 0.6-1.3' = sandy SILT, some gravel, heavy petroleum staining,	ML	Moist Sampled only petroleum stained soils (0.6-1.3')	PID = 130
6	14, 11		1340 OFF-SB-DUP05				Trace free oil at top of this layer			FID = 70.0
	14, 26	1.4' / 2.0'	1345 OFF-SB-409-0608		Dense	Light Brown	0-0.4' = similar to above 0.4-1.0' = sandy, gravelly SILT	ML	Wet	PID = 193
8	24, 38						(angular gravel) 1.0-1.4' = silty GRAVEL (angular)			FID = 240.7
	12, 22	1.2' / 2.0'	No sample				Silty angular gravel, some fine to coarse sand	GP	Wet Sheen on water in spoon	PID = 62.0
10	27, 34									FID = 23.2
	20, 41	1.3' / 2.0'	1400 OFF-SB-409-1012		Very Dense		0.0-0.3' = material similar to above		Wet Slight petroleum Odor	PID = 44.0
12	32, 120/3"			Native Material (Bedrock)			0.3-1.3' = silty gravel, trace medium to coarse sand, conglomerate fragments - possible bedrock			FID = 24.0
	120/5"	0.1' / 0.5'	No sample				Material = slough, sand and gravel (pulverized)		Sheen on water Slight petroleum Odor	PID = 69.0
14							Steady auger grind last 4' of drillings (12-16' bgs) based on slough, material is most likely a soft conglomerate or bedrock			FID = 26.5
	55, 120/3"	0.1' / 1.0'	No sample							PID = 37.0
16				16' EOB						FID = 8.9

TYPE OF DRILLING RIG:	CME 75
METHOD OF ADVANCING BORING:	Hollow stem auger – 4.25" ID
METHOD OF SOIL SAMPLING:	3" split spoons driven with a 300 lb. hammer dropped from 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	No manmade materials in column - depth bottom of fill estimated → must be above probable fill / Bedrock (12") stained soils to ~ 7' bgs

Tetra Tech NUS, Inc.

BORING NO.: SB-409

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-410
PROJECT NO.:	4152-0552			START DATE:	11/20/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/21/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	9.4'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
				Fill			Hollow stem auger to 2' - no sample collected		Dry	
2										
	10									
	20	1.0 / 2	1540 (11/20/03) OFF-SB-410-0204		Dense	Light Brown	Fine to coarse SAND, trace gravel (angular - rounded)	SW	Dry	PID = 0.0
	11						0.0-0.2' = Stained material, similar to above			
4	14						0.2-0.4' = Dry friable manmade material - no reaction to acid			FID = 1.5
	7									
	8	0.8 / 2	No sample		Medium Dense	Red Tan		Fill	Petroleum odor Moist	PID = 127
	10									
6	5			Oil - Impacte Soil		Black	0.4-0.8' = Stained, gravelly SILT, some sand	ML		FID = 122.5
	8									
	2	1.2 / 4	1600 (11/20/03) OFF-SB-410-0608		Loose		Similar to above - very strong petroleum odor, free product		Wet	PID = 52.0
	3									
8	3									FID = 1438
	2									
	2	0 / 4.2	No sample			Black	Slough material to above, sheen on water in spoon		Wet	PID = 88.7
	2									
10	2									FID = 107.6
	3		MS/MSD							
	6	1.1 / 4.2	1615 (11/20/03) OFF-SB-410-1012		Medium Dense		0.0-0.4' = same as above 0.4-1.0' = fine to coarse SAND, trace gravel (angular -	SW	Wet	PID = 60.0
	8						1.0-1.1' = coarse SAND			
12	10							SP		FID = 61.6
	9									
	13	1.7 / 4.2	No sample			Dark Gray	Fine to coarse SAND and SILT, trace fine gravel	SM	Very slight odor	PID = 5.3
	13									
14	18									FID = 0.0
	5									
	10	1.1 / 2.0	0725 (11/21/03) OFF-SB-410-1416						Petroleum odor slight sheen on wash water	
	11						Fine silty SAND, trace coarse sand, trace fine gravel (rounded)			
16	12									

TYPE OF DRILLING RIG:	CME – 75
METHOD OF ADVANCING BORING:	Hollow stem auger 4.25"
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-410
PROJECT NO.:	4152-0552			START DATE:	11/20/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/21/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	9.4'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	5				Medium		Silty fine SAND, trace coarse sand, trace fine gravel (rounded)		Wet	
	5	1.2 / 2	No sample		Dense	Dark		SM		PID = 4.5
	8					Gray				
18	8									FID = 4.0
	5						Similar to above			
	12	1.2 / 2	0750							PID = 0.0
	17		OFF-SB-410-1820							
20	31			20'						FID = 3.2
				EOB						

TYPE OF DRILLING RIG:	CME 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger 4.25" ID		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-410	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-411
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	31.0'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
			No sample							
2			No split spoon auger to 2' bgs							
	7			Fill			0-0.6' = Topsoil with grass and roots	GW/	2-4' used 140 lb	
	9	1.4 / 2.0'	1440			Brown	0.6-2.0' = SAND and GRAVEL	SW	Hammer	FID = 0.0
	8		OFF-SB-411-0204				- Fill -		Dry	
4	12					Brown				
	10					Dark	SAND and GRAVEL – some silt	GW/	Dry	
	16	1.5 / 2.0'	No sample			Brown	Pieces of asphalt	SW		FID = 0.0
	19						- Fill -			
6	35									
	18		1520		Dense	Gray	Silty sand with gravel	SM	Moist	
	130/5"	0.5 / 1.0'	OFF-SB-411-0608				Pieces of brick			FID = 72.8
							- Fill -			
8										
	8								Moist	
	12	0.4 / 2.0'	No sample							FID = 94.1
	22						Large piece of gravel 0.2'- diameter at base of split spoon			
10	45									
	30						SAND and GRAVEL with silt	GW/	Moist	
	15	1.1 / 2.0'	1535		Dense	Gray		SW		FID = 0.0
	10		OFF-SB-411-1012				0.2- Piece of gravel - boulder? Concrete?			
12	9						11.5-11.7 – Fill			
	13					Gray/	Silty SAND and GRAVEL – pieces of brick, pieces of asphalt	GW/		
	11	1.4 / 2.0'	No sample		Dense	Black		SW		FID = 574
	11						13.9-14.1 – Piece of asphalt, fill			
14	14									
	12					Gray/	Sandy SILT with pieces of asphalt, piece of green plate, rock		Moist	
	11	1.3 / 2.0'	1600		Dense	Black	phyllite? Compact, fill	ML		FID = 201
	10		OFF-SB-411-1416							
16	100									FID = 0.0

TYPE OF DRILLING RIG:	Track mounted CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger – 140 lb hammer		
METHOD OF SOIL SAMPLING:	3" split spoon S.S. – 2' long		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	Not clear		
OTHER OBSERVATIONS:	Uuse140 lb. hammer w/ 30" stroke – missing pin for 300 lb hammer, BZ = 0.0 ppm, in hole at ~ 16' stem from Reading 1500 ppm - down to 0.0 ppm	BORING NO.: SB-411	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-411
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	31.0'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16'										
	130	0.2 / 0.5'	NO SAMPLE		Dense	Gray	Sandy SILT, piece of boulder at base of split spoon	ML	Moist	FID = 489
18	FOR 6"						Fill			
	130	NO RECOVERY / 0.33'	NO SAMPLE				No recovery (18-20')			--
20	FOR 4"						↓			
	39	1.1 / 1.8'	1650			Gray	Sandy SILT with asphalt fill	ML	Moist	FID = 0.0 PPM
	42			Fill						
22	39		OFF-SB-411-2022	Natural Materials		Brown	21.5 – SAND and GRAVEL (rounded)	GW/ SP	Dry	
	130 /4"									
	130/5"	0.4 / 0.4'	0735		Loose	↓	Fine to medium SAND with gravel, pieces of boulder/cobble (rounded edges)	SP	Dry	FID = 0.0 PPM
24	27		OFF-SB-411-2224			Olive Gray	↓			
	130/4"	0.3 / 0.3'	NO SAMPLE		Loose	↓	↓	SP	Dry	FID = 0.0 PPM
26	120/2"									
		0.1 / 0.16'	0830		Dense/ Compact	Dark Gray	Silty SAND with gravel (rounded)	SM		
28	130/2"		OFF-SB-411-2628		Loose	Light Gray	Fine to medium SAND with gravel - rx? Concrete? Pulverized rx?			
		0.1 / 0.16'	NO SAMPLE			Light Gray	Wet mixture of powder with pieces of rock		Auger refusal @ 27.5' – send split spoon down	
							EOB @ 27'8" / top of rx ~ 27'6"?			
									Only drives down and then 2" and 0.1' recovered	

TYPE OF DRILLING RIG:	TRACK MOUNTED – CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	HOLLOW STEM AUGER – 140 LB. HAMMER		
METHOD OF SOIL SAMPLING:	3" SPLIT SPOON, 2' LONG		
METHOD OF ROCK CORING:	NA		
GROUNDWATER LEVELS:	NOT CLEAR		
OTHER OBSERVATIONS:	USE 140 LB. HAMMER W/ 30" STROKE – MISSING PIN FOR 300 LB. HAMMER	BORING NO.: SB-411	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-412
PROJECT NO.:	4152-0552	START DATE:	11/25/03
LOGGED BY:	J. DANIELI	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM	MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	24.5'	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
			No sample No split spoon Auger to 2' bgs							
2										
	10 56	0.55 / 2.0	1050 OFF-SB-412-0204 1055	Topsoil	Dense	Brown	Silty SAND with roots Topsoil	SM	Moist	FID = 25 PID = 123
4	65 90									
	12 31	1.5 / 2.0	No sample	Fill	Loose	Dark Brown	Fill, SAND and GRAVEL with boulder piece (0.5' in length) Pieces of red brick	SW/ GW	Dry	FID = 7.2 PID = 0.0
6	36 48					Red Brick				
	31 130/5.5	1.5 / 1.5	1120 OFF-SB-412-0608							FID = 33 PID = 51.6
8							Smaller pieces of boulder	SW/ GW		
	13 13	1.3 / 2.0	No sample		Loose	Olive Gray	SAND with gravel - fill - pieces of brick	SW	Dry	FID = 8.3 PID = 0.0
10	16 6				Dense	Light gray Dark gray	Boulder (0.2' long) SILT with sand, shell, asphalt and brick	ML		
	5 7	1.2 / 2.0	1145 OFF-SB-412-1012				Silty SAND and gravel, fill	SW/ GW	Moist	FID = 8.8 PID = 19.7
12	7 8						Pieces of asphalt and brick, orange staining			
	4 7	1.2 / 2.0	No sample	Fill			Sandy SILT with gravel, pieces of boulders, brick, asphalt and wood chips	ML	Moist	FID = 103.3 PID =38.9
14	12 37									
	30 130/3"	0.2 / 0.25	1230 OFF-SB-412-1416	Natural Material	Loose	Olive Gray	Fine to medium SAND with gravel, trace silt, pieces of boulder - dark gray platey rock	SP	Dry	FID = 137.0 PID = 50.3
16										

TYPE OF DRILLING RIG:	Track rig CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon – 2' in length – 300 lb. hammer – 18" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	Not clear
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING NO.: SB-412

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-412
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	24.5'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	33	0.2 / 0.5	No sample		Loose	Gray	Pieces of boulder - rounded Traces of fine SAND	SW	Dry	PID = 63 FID = 132.6
	133/3"									
18										
	130/4"	No Recovery / 0.30	No sample				No recovery			
20										
	130/3"	No Recovery / 0.25	No sample				No recovery			
22										
							Auger refused at 20' bgs, stop augering - can't go any further - may come back with drive and wash			
							EOB @ 20.25' BGS			

TYPE OF DRILLING RIG:	Track mounted rig – CME		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 2' long, 300 lb hammer, 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	Not clear		
OTHER OBSERVATIONS:		BORING NO.: SB-412	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-413A
PROJECT NO.:	4152-0552			START DATE:	12/02/03
LOGGED BY:	J. DANIELI / J.LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/02/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	10.6'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
							Auger to 2' bgs, no samples collected			
2	3									
	5		1255			Light	0-0.4' – Fine to coarse SAND, some gravel, trace silt, some			
	60/3"	1.3' / 1.5'	OFF-SB-413-			Brown	brick	SW		FID = 0.8
4						Black	0.4-0.7 – Staining, possible burn zone, similar to above			
						Light	0.7-1.0' = fine to coarse SAND, some gravel and silt			PID = 0.0
	60/1"								Auger refusal @ 5' will try	
		No	No sample						re-spoon and get	FID = 0.2
6		Recovery					No recovery - slough		material in nose	
										PID = 0.0
	60/0"								EOB 1st attempt = 5' bgs	
		No	No sample							
8		Recovery					Pieces of rx? boulder? In nose - move 2' north for 2nd attempt			
	60/1"									
6										
							2nd attempt - refused @ ~ 5' with auger again take spoon		Dry	
		0.1' / 0.1'	No sample							FID = 1.5
8							SAND with gravel - pieces of boulder/rx?	SW		PID = 0.0
							EOB – 2nd attempt @ ~ 5' bgs			
			No sample							
6			↓				3rd attempt - moved additional 3' north Refused @ 4' – auger refusal - send spoon down hole, no			
	60/1"						Recovery, slough - piece of rx in nose? May be concrete, may			
		No					need to return with drive and wash			
8		Recovery					3rd attempt – EOB – 4' bgs			

TYPE OF DRILLING RIG:	Track mounted CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon – 2' length, 300 lb. hammer with 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	Not evident		
OTHER OBSERVATIONS:		BORING NO.: SB-413	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-413B
PROJECT NO.:	4152-0552			START DATE:	12/04/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/04/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	10.6'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
			No sample				Auger to 4' bgs, no sample			
2										
										FID = 7.1
4										PID = 0.0
	70/1"	0.1 / 0.1'	No sample						Moist	
6					Dense	Brown	In nose - SILT with sand (0-0.1')	ML		
	70/0"	No Recovery	No sample				Auger refusal 5.5' bgs No recovery - pieces of broken rock			
8		No Penetration					Switch over to drive and wash, will roller bit in 3' the take spoon			
8.5	65/1"	0.1 / 0.1'	No sample				Roller bit down 3' for total depth of 8.5' bgs Send spoon down → roller bit steady pieces of rx in wash			
9.5										
						Gray	Pulverized rx			
							EOB @ 8.5' BGS			

TYPE OF DRILLING RIG:	Track mounted CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger and drive and wash		
METHOD OF SOIL SAMPLING:	3" split spoon –300 lb. hammer with 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	Not evident		
OTHER OBSERVATIONS:		BORING NO.: SB-413B	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-414
PROJECT NO.:	4152-0552	START DATE:	12/02/03
LOGGED BY:	J. DANIELI	COMPLETION: DATE:	12/02/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL AND JIMMY	MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	10.7'	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
			No sample				Auger to 2' – no spoon			
2										
	5						Silty SAND with gravels		Dry	
	7	1.4' / 2.0'	0840 (& Grain size)		Dense	Brown		SM		PID = 0.0
4	5		OFF-SB-414-0204							
	8									FID = 0.0
	8						SAND with silt and gravels		Dry	
	6	0.7' / 2.0'	No sample		Loose	Brown		SW		PID = 0.0
6	8									
	7									FID = 0.0
	5								Dry	
	9	0.5' / 2.0'	0855							PID = 0.0
8	18		OFF-SB-414-0608							
	20									FID = 0.0
	14									
	40	0.7' / 2.0'	No sample		Loose	Gray	Soupy – SILT with broken rx? Boulder (large pieces)	ML	Wet	PID = 0.0
10	60/2"						Sheen noted			
										FID = 5.0
	15					Dark		ML	Wet	
	60/2"	0.5' / 0.7'	0910			Gray				PID = 0.0
12			OFF-SB-414-1012							
										FID = 2.0
	55						Orange staining		Wet	
	60/2"	0.5' / 0.16'	No sample							PID = 0.1
14							Weathered rx?	ML		
										FID = 3.5
	60/1"						13.5' = Refusal, auger, send spoon down hole		Wet	
		0.5' / 0.8'	No sample		Loose	Dark				PID = 0.0
16						Gray	Pulverized rx EOB @ 13.7'	Brkn Rock		FID = 1.0

TYPE OF DRILLING RIG:	Track mounted CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon, 300 lb. hammer, 18" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	~ 8' bgs
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING NO.: SB-414

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-415
PROJECT NO.:	4152-0552			START DATE:	11/18/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/19/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	13.3'	ELEVATION FROM:	NGVD 1929	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
	2	1.5 / 2.0'	1530 (11/18)	Fill	Medium	Dark	0-0.7' organic sandy SILT (fine sand)		Asphalt, brick, concrete fragments in sample	
	5		OFF-SB-415-0002		Dense	Brown		OL		PID = 0.0
	7		1535 (11/18)				0.7-1.5 – silty fine to coarse SAND			
2	14		OFF-SB-415-DUP03					SM		FID = 0.0
	4	0 / 2.0'	No sample				No recovery - will retrieve sample from 2ND borehole			
	6									
	8									
4	15									
	11	1.4 / 2.0'	No sample			Black	0-0.2' – Asphalt (prob. Reason for poor recovery)	--	Moist	
	13				Dense	Brown	0.2-0.6' – Fine to coarse SAND and GRAVEL	SW		PID = 0.0
	22					Red	0.6-0.8' – Brick	--		
6	20					Brown	0.8-1.4' – Fine to coarse SAND and GRAVEL	SW		FID = 0.0
	14	1.2 / 2.0'	1550 (11/18)				Silty fine to coarse SAND, some angular gravel, some orange molting from oxidation		Moist	
	15		OFF-SB-415-0608		Medium			SM		PID = 0.0
	10				Dense					
8	15									FID = 0.0
	19	0.2 / 2.0'	No sample				Minimal recovery - slough			
	13									
	8									
10	11									
	8	0.8 / 2.0'	1600 (11/18)		Very		Cobble at 10' (likely reason for 8-10' poor recovery) fine to coarse SAND and GRAVEL		Wet	
	20		OFF-SB-415-1012		Dense					PID = 0.0
	120/4"		Grain							
12								SW		FID = 0.0
				EOB			EOB @ 12' bgs – both auger and split spoon refusal, no indications of fill or contamination			
2										
	10	1.0 / 2.0'	0825 (11/19)			Light	0-0.5' concrete fragments		Concrete layer not sampled (only sampled soil)	
	26		OFF-SB-415-0204 *		Very	Gray		--		
	36				Dense	Dark	0.5-1.0' – fine to coarse SAND, some gravel, trace silt			
4	20					Brown		SW		

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem aguer		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:	* Second boring advanced for 2-4' recovery and sample only	BORING NO.: SB-415	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-416
PROJECT NO.:	4152-0552	START DATE:	11/19/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	11/19/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	11.5'	CHECKED BY:	DH

TRANSCRIBED BY: MES

ELEVATION FROM: NGVD 1929 (MLW)

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
	5	1.8 / 2.0'	MS/MSD 0850 OFF-SB-416-0002	Fill	Medium Dense	Dark Brown	0.0-0.4' = Grass and roots 0.4-1.8' = silty fine to coarse sand, some coarse rounded	SM	PID/FID = 0.0 on sample Damp	PID = 0.6
	10									
	15									
2	15									FID = 0.0
	6	1.1 / 2.0'	No sample		Very Dense	Brown Red	0-0.2 = silty fine to coarse sand, some gravel 0.2-0.6 = brick fragments	--	Damp	PID = 0.9
	9									
	70					White Brown	0.6-0.8 = concrete 0.8-1.1 = silty fine sand, trace gravel	--		
4	34									FID = 0.0
	7	0.8 / 2.0'	0910 OFF-SB-416-0406		Medium Dense	Light Brown	Fine to coarse sand, some gravel (angular to subrounded)	SW	Damp Small pieces of slag and concrete	PID = 0.0
	11									
	8									
6	6									FID = 0.0
	6	1.2 / 2.0'	No sample				0.0-0.7 = sandy silt (fine to medium sand)	ML	0.3' – non-native gravel	PID = 0.0
	8									
	9					Black	0.7-0.9' = Possible burn zone (slag and charcoal) 0.9-1.2' = Silty fine to coarse sand, some gravel	-- SM		
8	9									FID = 0.0
	10	1.1 / 2.0'	0925 OFF-SB-416-0810			Light Brown	0.0-0.2' = Fine to coarse sand, brick particles, slag, ash, some silt	SW	Wet PID = 72.7 at ~ 0.6' in the sample, saturated at bottom	PID = 1.3
	14									
	11					Olive / Red	0.2-1.1' = Densely packed fine SAND, generally olive colored, orange - red mottled oxidation	SP		
10	8									FID = 0.0
	4	1.5 / 2.0'	No sample			Light Brown	Silt, some rounded gravel, trace clay (gravel rounded - subrounded), mottled blue gray spots	ML	PID = 1.0 ppm at 10.5' in the sample	PID = 0.8
	9									
	17									
12	14									FID = 0.0
	14	1.7 / 2.0'	0940 OFF-SB-416-1214		Very Dense				Wet	PID = 1.8
	40									
	41						Gravelly silt, some fine to coarse sand, gravel is angular to subrounded			
14	42									FID = 0.5
	6	1.2 / 2.0'	No sample		Dense		0.0-0.8' = gravelly, sandy silt (sand - mediumto coarse sand, trace fine sand) - very dense		Wet	PID = 0.9
	12									
	27					Red	*			
16	32									FID = 0.0

TYPE OF DRILLING RIG:	CME 75
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon driven with a 300 lb. hammer dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	* - 0.8-1.2' = similar to above, less silt

Tetra Tech NUS, Inc.

BORING NO.: SB-416

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-416
PROJECT NO.:	4152-0552			START DATE:	11/19/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/19/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	11.5'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	37									
	120	1.3 / 2.0'	1020	Till	Very Dense	Light Brown	0-0.6' – light brown, gravelly silt, some medium to coarse sand	ML		PID = 1.5
	120/0"		OFF-SB-416-1618			Red Brown	0.6-1.3' – gravelly sandy silt, possible till (gravel = fine to coarse angular to subangular)			
18										FID = 3.0
	45						Partially consolidated gravelly silt, some medium to coarse sand (till)			
	45	1.0 / 1.3'	1042							PID = 0.6
	120/3"		OFF-SB-416-1820							
20										FID = 11.4
	120/2"						No recovery - cobble in the nose of the spoon - broken face			
		0.0 / 2.0'	No sample							
22										
				EOB Spoon Refusal						

TYPE OF DRILLING RIG:	CME 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer, dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-416	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-417
PROJECT NO.:	4152-0552			START DATE:	11/19/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/19/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.5'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' – no sample collected from 0-2'			
2										
	8	0.0 / 2.0'	No sample		Medium Dense		No recovery			
4	11 7 9									
	8	1.3 / 2.0'	1340 OFF-SB-417-0406		Loose	Brown	Silty sand (fine to coarse sand)	SM	Moist Wet – bottom 0.5'	PID = 122
6	4 4 5						Oxidized above 0.5', petroleum staining and odor			FID = 10.9
	7	1.0 / 2.0'	1400 OFF-SB-417-0608		Medium Dense	Black	Oil stained fine to coarse SAND 0.4' = white gray material surrounding a hard white center -	SW	PID = 10.3 ppm in sample	PID = 7.0
8	6 7 5		1410 OFF-SB-DUP04				Possibly grout, inorganic or tile, At 0.6' = Off-white material, possible grout			FID = 0.0
	8	0.9 / 2.0'	No sample			Black	0-0.5' – oil stained material, shell in spoon			PID = 11.0
10	8 8					Dark Gray	0.5-0.9' – fine sand, some olive green mottling	SP		FID = 0.0
	8	1.0 / 2.0'	1415 OFF-SB-417-1012				Similar to above, fine sand		Wet	PID = 1.0
12	7 7 8									FID = 0.0
	12	0.8 / 2.0'	No sample		Dense		0.0-0.4' = fine sand, trace silt in lower portions		Wet	PID = 0.3
14	11 23 21						0.0-0.8' = dropstone with varves bent around it			FID = 0.0
	18	1.2 / 2.0'	1430 OFF-SB-417-1416					SM	Wet Cobble at 16'	PID = 0.6
16	19 18 20						Silty fine sand, some gravel, pockets of heavily oxidized (dark red) material			FID = 0.0

TYPE OF DRILLING RIG:	CME 75 – track mounted
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb hammer dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-417
PROJECT NO.:	4152-0552			START DATE:	11/19/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/19/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.5'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	13					Dark	Gravelly silt, some sand, extremely dense	TillL		
	19	1.3 / 2.0'	No sample			Gray	Possibly weathered conglomerate or till, layers and nodules of			PID = 1.0
	22						heavily oxidized material, mottled (light brown, gray and red)			
18	22						0.0-0.4' = similar to above			FID = 0.0
	28									
	78	1.0 / 2.0'	1455							PID = 2.2
	72		OFF-SB-417-1820			Light	0.4-1.0' = compacted gravelly sand, some silt - possible			
20	82					Brown	conglomerate			FID = 0.0
				EOB						

TYPE OF DRILLING RIG:	CME 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with a 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-417	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-418
PROJECT NO.:	4152-0552	START DATE:	12/03/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	12/03/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	10.0'	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
	7			Topsoil						
	12	1.7 / 2.0'	1120 OFF-SB-418-0002	Fill	Loose	Brown	0.0-0.5 = Fine to medium SAND with silt - topsoil		Dry	FID = 2.1
	18						Fine to medium SAND with gravel			
2	17						Intermittent pieces of dense/compact silt, trace brick	SW	Fill	PID = 3.2
	12				Loose	White	Piece of cobble 0-0.2'		Dry	
	24	1.1 / 2.0'	No sample		Dense	Brown	SILT with sand and gravel - large piece of asphalt (0.3') long	ML		FID = 0.0
	30			Fill	Compact		Piece of cobble = 0.1'longG			
4	46				Materials					PID = 4.1
	5			Native			Sandy SILT, trace gravel		Dry	
	5	1.2 / 2.0'	1140 OFF-SB-418-0406					ML		FID = 3.9
	6									
6	3									PID = 4.1
	5					Dark	Wood debris		Dry	
	7	1.1 / 2.0'	No sample			Brown				FID = 23.5
	6				Dense	Dark	Silty SAND with gravel layers of silt			
8	6				Compact	Gray	Orange staining &pieces of black goo, piece of cobble (0.1'	SM	Moist	PID = 151
	10						SILT with sand and gravel		Wet	
	10	1.1 / 2.0'	1205 OFF-SB-418-0810					ML		FID = 23.5
	12								Saturated with oil	
10	13								Strong oil odor	PID = 139
	5					Dark	SILT – trace sand and gravel		Wet	
	5	1.1 / 2.0'	No sample			Gray		ML		FID = 5.2
	7					Olive	Sandy silt with gravels - layers of fine silty sand (brown)		Strong petroleum odor	
12	9					Gray				PID = 38.5
	7						Silty with sand, trace gravel		Wet	
	9	1.1 / 2.0'	1220 OFF-SB-418-1214							FID = 1.8
	9						Orange staining		Saturated in oil	
14	8								Petroleum odor	PID = 25.0
	7				Dense	Olive	SILT with sand, trace gravel (rounded)		Wet	
	12	1.1 / 2.0'	No sample		Compact	Gray		ML		FID = 1.7
	12						Interbedded with fine sand brown		Petroleum odor	
16	15						Orange staining			PID = 20.8

TYPE OF DRILLING RIG:	Track mounted – CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon - 2' long – 300 lb. hammer, 18" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	~ OR = 8' bgs
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-418
PROJECT NO.:	4152-0552			START DATE:	12/03/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/03/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	10.0'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	17	1.1 / 2.0	1310 = Sample 1315 = Dup13 OFF-SB-418-1618		Loose	Dark Brown	Silty SAND with gravel - piece of weathered rx - orange staining - till?	SW/ SM	Wet	FID = 0.0
	21									
	34									
18	46									PID = 3.6
	18	0.9 / 1.1	No sample		Loose	Dark Brown	Sandy GRAVEL, trace silt - abundant pieces of weathered rx - phyllite? Orange staining	GW	Wet	FID = 2.1
	49									
	80/2"									
20										PID = 11.5
	60/0"	No Recovery No Penetration	No sample				No recovery - piece of rx in nose of spoon - phyllite?			FID = NR
22							EOB @ 20' bgs			PID = NR

TYPE OF DRILLING RIG:	Track mounted CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon – 2' length – 300 lb. hammer with 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ OR = 8' bgs		
OTHER OBSERVATIONS:		BORING NO.: SB-418	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-419
PROJECT NO.:	4152-0552	START DATE:	11/18/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	11/18/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.4'	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
				FILL			Auger to 2' – no samples taken from 0-2' BGS			
2										
	7				Medium	Gray/	0-1.0' = Oixidized silty fine to coarse SAND, some gravel		Moist	
	10	2.0' / 2.0'	0745		Dense	Orange		SW	Petroleum odor	PID = 59.9
	17		OFF-SB-419-0204			Dark	1.0' – Geotech fabric	--	Brick fragments	
4	15					Gray	1.0-2.0' – Similar to above, slightly stained	SW		FID = 44.6
	4						Silty fine to coarse SAND	SM	Moist	
	16	1.8' / 2.0'	No sample							PID = 277
	18						PID = 128 ppm in sample			
6	18									FID = 289
	26		0800		Very		Crumbly silty fine to coarse SAND in sample		Petroleum odor	
	46	1.5' / 2.0'	OFF-SB-419-0608		Dense		PID = 310 ppm in sample			PID = 294
	55		0810							
8	85		OFF-SB-DUP01					SW		FID = 174
	10						0-0.8' = Crumbly fine to coares SAND, some gravel		Wet	
	40	1.2' / 2.0'	No sample					SM	Sheen on water in spoon	PID = 23.3
	25						0.8-1.2' = Silty fine to coarse SAND			
10	20									FID = 34.9
	6					Red-	0-0.6' = Silty fine to coarse SAND, some clay, trace gravel		Spoon refusal at 11.5' -	
	10	1.0' / 2.0'	0820			Gray			light petroleum odor	PID = 27.7
	35		OFF-SB-419-1012				0.6-1.0' = Saprolitic rock (more dense)			
12	120/5"									FID = 20.9
	120/4"			EOB			Saprolitic rock - possible conglomerate with oxidized coarse sand sized pieces		Petroleum odor	
				12.5'						PID = 52.6
14				Spoon Refusal						FID = 40.0

TYPE OF DRILLING RIG:	CME 75
METHOD OF ADVANCING BORING:	4.25" ID hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer and dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	Augers started pulling up water and saturated soils @ 10'.

BORING NO.: SB-419

Tetra Tech NUS, Inc.

Only manmade material to 4' - the rest is most likely native

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-420
PROJECT NO.:	4152-0552	START DATE:	11/21/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	11/21/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / R. DEAN	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	10.0'	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929 (MLW)		

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
				Fill			Auger to 2' – soils not logged from 0-2' bgs			
2										
	20	1.1' / 2.0'	0915 OFF-SB-420-0204		Very Dense	Light Brown	Fine to coarse sand, trace gravel (feels loose) fill material, no manmade materials	SW	No odor	PID = 2.5
4	28, 48, 43								Dry	FID = 4.6
	20	0.3' / 2.0'	No sample	Oil - Stained Soils	Medium Dense	Black	Cobble in nose, fine to coarse sand, oil - stained		Geosynthetic liner ~ 2' bgs	PID = 560
6	3, 12, 22								Petroleum odor	FID = 684.3
	14	1.0' / 2.0'	0925 OFF-SB-420-0608				Silty fine sand, trace gravel (rounded) FID = 510 ppm in sample	SM	PID = 232 in nose, Oil squeezing out of pores	PID = 280
8	14, 15, 12									FID = 155
	7	0.1' / 2.0'	No sample				Almost no recovery - most likely pushing a cobble, material same as above			PID = 249
10	9, 10, 11									FID = 1298
	6	1.3' / 2.0'	0945 OFF-SB-420-1012			Light Blue / Gray	Gravelly silty, some fine to coarse sand, very dense, till (mottled gray, light orange)	Till	Moist, PID = 223 in nose FID = 59 in nose Cobble at 11'	PID = 158
12	7, 8, 12									FID = 490
	31	0.9' / 2.0'	No sample		Very Dense	Red/ Gray	Rock - weathered, saprolitic, possible shale			PID = 37.3
14	120, 60/1"						(Platy, lightly oxidized)			FID = 23.0
	60		1015 OFF-SB-420-1416			Red	Same as above – approaching competent in last 0.2'		Augering smoothly bringing up very few cuttings	PID = 63.4
16	98, 120/2"			EOB 16'				Rock		FID = 35.3

TYPE OF DRILLING RIG:	CME 75
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" spoon driven with 300 lb. hammer dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING NO.: SB-420

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-421
PROJECT NO.:	4152-0552			START DATE:	11/21/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/21/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	10.8'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
							0-2 Auger – No samples			
2/0							Refusal at 1' possible concrete with rebar - move NE 6'			
			2nd hole				Refusal 2nd attempt, at 2nd most likely building foundation			
2/0										
			3rd hole	Fill			Auger 0-2' 3rd attempt - no soils logged from 0-2' bgs			
2										
	17	1.2' / 2.0'	1135 OFF-SB-421-0204		Medium Dense	Dark Brown	0.0-0.6' = fine to coarse sand, some gravel (angular) cobble at 0.3'	SW	Moist	PID = 0.0
4	10 11		1145 OFF-SB-DUP06			Black	0.6-1.2' = burn layer, slag and charcoal	--		FID = 143
	15 21	1.0' / 2.0'	No sample		Dense	Dark Brown	0.0-0.7' = SAND and GRAVEL		Wet	PID = 270
6	13 9			Oil-Saturated		Black	0.7-1.0' = free product, similar material to above			FID = 832.7
	12 11	0.8' / 2.0'	1150 OFF-SB-421-0608		Medium		Free product, some fine to coarse sand and gravel, appears to be heavy oil (possibly # 4)		Wet	PID = 250
8	5 11				Dense					FID = 672.0
	5 9	0.0' / 2.0'	No sample		Dense		Cobble in nose – no recovery (sheen on water in spoon)			PID = 22.4
10	23 32									FID = 232.9
	28 70	0.2' / 2.0'	No sample		Very Dense	Black	Silt, some gravel, trace fine sand		Wet	
12	46 44						Will sample next interval due to poor recovery			

TYPE OF DRILLING RIG:	CME 75
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer dropped 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING NO.: SB-421

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-421
PROJECT NO.:	4152-0552			START DATE:	11/21/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/21/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	10.8'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	JL

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
12										
	8	0.9' / 2.0'	1235 OFF-SB-421-1214		Medium Dense	Dark Gray	Sandy (fine sand) silt, trace fine gravel (sub-rounded to rounded)	ML	Little petroleum odor	PID = 8.8
	10									
	15									
14	17									
	10	0.4' / 2.0'	1245 OFF-SB-421-1416				Sandy (fine) silt, trace gravel (rounded)		Not enough volume for headspace	
	15									
	15									
16	12									
	25	0.3' / 2.0'	No sample		Very Dense		Silt, some clay, some sand, trace angular gravel		Slight odor - possibly from water	PID = 3.9
	25									
	38									
18	21							SM		
	15	1.1' / 2.0'	1310 OFF-SB-421-1820		Dense	Gray	Very dense silt and fine sand, some gravel, trace medium to coarse sand - FILL			PID = 1.1
	17									
	28									
20	32			EOB						

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-421	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-422
PROJECT NO.:	4152-0552			START DATE:	12/03/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/03/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	11.8'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
							Auger to 2' bgs			
2							No sample			
	11	2.0' / 2.0'	0745 OFF-SB-422-0204		Loose	Brown	Fine to coarse SAND with gravel, some orange staining	SW	Dry	PID = 0.0
4	4 9									FID = 0.0
	9 7	1.4' / 2.0'	No sample		Loose	Brown Gray	0-0.3' 0.3-0.7 = Pieces of cobble	SP	Dry	PID = 18.0
6	11 9				Dense	Brown Dark brown	0.7-0.8 = Fine to medium SAND, well sorted 0.8-1.4 = Sandy SILT with pieces of boulder	ML		FID = 18.6
	4 4	1.3' / 2.0'	0805 OFF-SB-422-0406		Loose	Gray	0-0.7' = Fine to coarse SAND with gravel	SW	Dry	PID = 6.4
8	8 7				Dense	Dark gray Black	0.7-1.3' = SILT, trace clay, pieces of cobble	ML	Orange staining	FID = 334
	13 12	1.3' / 2.0'	No sample		Dense	Gray	0.1-0.5' = SILT with sand, trace gravels	ML	Wet	PID = 6.0
10	12 13						0.5-1.3' = Sandy SILT with orange staining			FID = 3.2
	6 8	2.0' / 2.0'	0820 OFF-SB-422-1012		Dense	Gray	0.0-0.7' = Slough 0.7-2.0' = SILT, trace clay	ML	Wet	PID = 1.3
12	7 8						Orange staining			FID = 1.1
	6 9	0.9' / 2.0'	No sample					ML	WET	PID = 1.0
14	9 15									FID = 3.7
	6 11	1.5' / 2.0'	MS/MSD 0840 OFF-SB-422-1416		Dense	Gray	Silty fine SAND (0-0.5')	SM	Wet	PID = 0.3
16	12 16				Very Dense	Dark gray/ Black	0.5-1.5' = SILT with trace clay and gravels – till?	ML		FID = 0.0

TYPE OF DRILLING RIG:	Track mounted CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" Split spoon, 2' long, 300 lb. hammer, 18" drop
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	~ 8' bgs
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-422
PROJECT NO.:	4152-0552			START DATE:	12/03/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/03/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	11.8'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	12				Very	Brown	0-0.2' = Slough		Wet	
	13	2.0' / 2.0'	No sample		Dense	Dark				FID = 0.0
	12					Gray	SILT with gravel, trace clay and intermittent layers fine sand – till?			
18	15							ML		PID = 1.7
	12					Dark	Sandy SILT with gravels		1 piece of weathered rock	
	14	1.7' / 2.0'	0910		Dense	Brown		ML		FID = 0.0
	17		OFF-SB-422-1820				Till?			
20	22									PID = 0.3
							EOB @ 20' bgs			

TYPE OF DRILLING RIG:	Track mounted CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 2' long, 300 lb. hammer, 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 8' bgs		
OTHER OBSERVATIONS:		BORING NO.: SB-422	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-423
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL AND CLAY			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	11.9'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
			No sample No split spoon				Auger to 2' bgs			
2										
	30 130/4"	0.3' / 0.3'	1145 OFF-SB-423-0204		Dense Loose	Brown Brown	Topsoil with roots, silty SAND SAND	SM/ SP	Moist	PID = 0.0
4							Large piece of boulder 0.7' long			FID = 0.0
	130/3"	0.25' / 0.25'	No sample			Gray	Ground up piece of concrete or boulder - powder with some large pieces		Dry	PID = 0.0
6										FID = 0.0
	130/1"	0.1' / 0.1'	No sample				Auger refusal at 6' bgs Send spoon down – recover		Dry	--
8/4							0.5' of broken / ground up rock? boulder? Move ahead 5' to west - to try again - 1st spoon at 6'			--
			(from 2nd hole) No sample						2nd attempt	
6							Auger refusal at 4.5' bgs - move ahead 5' to the west			
8/4										
			(from 3rd hole) No sample						3rd attempt	FID = 0.0
6	100				Dense	Dark	Sandy silty GRAVEL	GM	Moist	PID = 0.0
	For 1"	0.1 / 0.1'	No sample Recovery too low			Gray	Rounded and angular - till? Ground up piece of rock with some large pieces, angular		Dry	PID = NR
8	130/1"						Augers refused at 7.5' bgs EOB at 7.7'			FID = NR

Auger to 7.6' → spoon 1" = 7'7"

TYPE OF DRILLING RIG:	Track mount rig - CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoons, 2' in length - 300 lb. hammer with 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	Not clear?		
OTHER OBSERVATIONS:		BORING NO.: SB-423	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-424
PROJECT NO.:	4152-0552			START DATE:	11/26/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/26/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	12.0'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
							Auger to 2' bgs – no samples 0-2' bgs			
2										
	9		MS/MSD			Dark	0-0.2' = silty fine sand, some gravel, trace medium to coarse			
	34	1.1' / 2.0'	0955			Brown	sand	SM		PID = 0.0
4	44		OFF-SB-424-0204			Brown	0.2-1.1' = sand and gravel (fine to coarse sand), trace silt, cobbles at 3.5' and 4.0'	SW		FID = 0.0
	19						Cobble / rock fragment in nose – crystalline		Refusal at 4.5'	
	60/1"	0.1' / 2.0'	No sample							
6							Move over 5' for second attempt			
2							Auger to 2' bgs - soils not logged from 0-2'			
	19		Sample collected				Sand and gravel, crystalline		Auger refusal at 3'	
	60/3"	0.3' / 0.75'	For extra volume			Brown	Rock fragment (fractured) in nose of spoon	SW	Spoon refusal at ~ 3'	
4			Only							
							Move 10' north of original staked location for third attempt			
0										
1										
2			No sample				Fractured crystalline rock		Auger refusal at 3'	
3	60/1"	0.1' / 0.1'					(Similar to other attempts) in nose			

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem aguer		
METHOD OF SOIL SAMPLING:	3" split spoon driver with 300 lb hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:	No manmade materials noted in the borings	BORING NO.: SB-424	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-425
PROJECT NO.:	4152-0552			START DATE:	11/26/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/26/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	12.1'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
							Auger to 2' bgs - no samples 0-2' bgs			
2										
	19						Fine to coarse sand and gravel, some silt			
	28	0.8' / 2.0'	0800			Brown	Gravel = angular (mostly broken up cobble)			PID = 0.0
4	17		OFF-SB-425-0204							
	30									FID = 0.0
	38						Similar to above, cobble/ chunks of rock in nose		Auger refusal at 5.5' will attempt a spoon from here	
	60/3"	0.4' / 0.75'	No sample							PID = 0.0
6				EOB						FID = 0.0
	60/1"			6'			2nd spoon, no recovery, broke the spoon			
0							Move 5' north for 2nd attempt Will try to go to 6' then continue sampling			
							Refusal (auger) at 5', shallower than 1st refusal			
5				EOB						
				5'						
0							Move 10' west for 3RD ate,[t			
							Refusal at 5.5' – will try a split spoon			
5.5										
	60/3"	0.1' / 0.25'	No sample	EOB			Rock fragment in nose – Chrystaline, same material as 1st refusal		Spoon bouncing	
				5.5'						

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:	No evidence of manmade materials in any of the borings at this location	BORING NO.: SB-425	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-426
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:		TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	11.5'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
							Auger to 2' bgs – no sample collected			
2										
	15					Light Brown	Fine to coarse SAND and GRAVEL, trace SILT, boulder conglomerate in nose and spoon		Spoon bouncing (?) refusal @ 6'	
	45	1.0' / 1.25'	1430							PID = 0.0
4	60/3"		1435 = DUP OFF-SB-426-0204							FID = 0.0
	60/0"		Note: Move 10' west							
0										
							Auger from 0-4' - no sample collected			
2										
4							(?) Spoon picked up similar rock (?) May be that or (?) will move south away from the (?) and see if			
	60/0.5"						goes (?). Will consult with Steve Parker to either return with casing or conclude			
6							It is bedrock			
							Note: 100' away is conglomerate with cobble sized (?) – probably this refusal is same material			

TYPE OF DRILLING RIG:
METHOD OF ADVANCING BORING:
METHOD OF SOIL SAMPLING:
METHOD OF ROCK CORING:
GROUNDWATER LEVELS:
OTHER OBSERVATIONS:

BORING NO.: SB-426

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-427
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/24/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.3'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' bgs – no sample collected from 0-2'			
2										
	11				Medium	Light	Silty fine to coarse sand, brick at 3'		Dry	
	8	1.0' / 2.0'	1100		Dense	Brown	cobble at 4'	SM	Piece of plastic	PID = 0.0
4	7		OFF-SB-427-0204							
	9									FID = 0.0
	8						Oily silty fine to coarse SAND, some gravel		Wet	
	8	0.9' / 2.0'	No sample			Black			Petroleum odor	PID = 123
	7									
6	7									FID = 90.5
	3					Dark			Saturated	
	6	1.5' / 2.0'	1120		Loose	Brown			Sulfur odor	PID = 52.1
	7		OFF-SB-427-0204				0-1.0' = Fine sandy SILT		Plastic in spoon	
8	60/3"		(Grain size)				1.0-1.5' = Gravelly SILT, some fine sand, very loose			FID = 29.3
	60/2"				Very	Dark	Silty gravel, very little recovery			
		0.4' / 2.0'	No sample		Dense	Brown		GP		PID = 26.3
10										FID = 13.6
	60/1"						Slough only - will try and collect sample on next spoon (no		Augers grinding	
		0.0 / 2.0'	No sample				stacking spoons and center bit used with water)	--		
12										
	60/0"					Dark	Chunks of conglomerate (weathered) in nose - bedrock		Spoon bouncing	
		0.0 / 2.0'	No sample			Brown		Rock		
14				EOB						
				14'						

TYPE OF DRILLING RIG:	CME - 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoons driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-427	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-428
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/24/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.0'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' bgs – no split spoon collected			
2										
	13								Dry	
	16	1.2' / 2.0'	1245		Dense	Brown		SW		PID = 15.5
	20		OFF-SB-428-0204				0-0.7' = Crumbly fine to coarse SAND, trace brick			
4	10							Fill		FID = 0.0
	2						0.7-1.2' = Burn zone – charcoal pieces, cobble at 4'		Brick at 5.5'	
	5	0.8' / 2.0'	No sample		Loose	Brown		SM	Dry	PID = 0.5
	3						Sandy SILT, some angular to subangular gravel			
6	4									FID = 21.8
	5						Silty GRAVEL, trace fine to coarse sand		Moist	
	5	0.6' / 2.0'	1305		Medium	Dark		GP		PID = 1.3
	8		OFF-SB-428-0608		Dense	Gray				
8	6									FID = 0.0
	4						No recovery			
	4	0.0' / 2.0'	No sample		Loose					PID = 0.0
	3									
10	3									FID = 0.0
	1					Dark	0-0.2' = Silty fine SAND		Wet	
	WOH*	1.0' / 2.0'	1320		Very	Gray		SM	Organic odor	PID = 0.0
	1		Grain size		Loose		0.2-1.0' = PEAT, compressed			
12	WOH*		OFF-SB-428-1012			Red		PT		FID = 301.0
	5					Gray	0-0.6' = Silty fine SAND	SP	Wet	
	3	1.0' / 2.0'	No sample		Loose		0.6-0.8' = Dense fine SAND			PID = 0.0
	3						0.8-1.0' = Sandy (fine sand) SILT, trace subrounded gravel			
14	6							ML		FID = 26.0
	6				Medium		Sandy (fine sand) SILT, trace rounded gravel clasts (possible			
	11	1.1' / 2.0'	1340		Dense		dropstones), some mottling from oxidation			
	11		OFF-SB-428-1416							
16	11									

TYPE OF DRILLING RIG:	CME – 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" Split spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:			
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:	WOH* = Weight of hammer	BORING NO.: SB-428	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-428
PROJECT NO.:	4152-0552			START DATE:	11/24/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/24/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	8.0'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	7	0.9' / 2.0'	No sample		Dense	Gray	Sandy (fine sand) SILT, trace gravel, some oxidation mottling	ML	Wet	PID = 0.0
	8									
	9									FID = 0.0
18	13									
	8	0.6' / 2.0'	1400 OFF-SB-428-1820				Sandy SILT (fine sand), some gravel			PID = 0.0
	14									
	11									FID = 0.0
20	10			20'						
				EOB						

TYPE OF DRILLING RIG:	CME - 75		Tetra Tech NUS, Inc.
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 300 lb. hammer, 18" drop		
METHOD OF ROCK CORING:			
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-428	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-429
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	8.6'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger from 0-2' bgs – no samples collected			
2										
	6	0.2' / 2.0'	Not enough to Sample, will collect Next interval		Dense*		COBBLE in nose of spoon, minimal fine to coarse sand	--	Dry	PID = 6.0
4	18 10						* - high blowcounts caused by cobble - not representative of soil			FID = 23.9
	2 2	0.8' / 2.0'	0820 OFF-SB-429-0406		Loose	Light Brown	0.0-0.5' = Fine to coarse SAND, some silt	SM	Brick fragments noted	PID = 0.0
6	4 7					Black	0.5-0.8' = Silty fine to coarse SAND		Wet	FID = 7.1
	1 1	1.1' / 2.0'	0830 OFF-SB-429-0608				SILT, some fine sand, trace gravel → oil - saturated soil		Wet (Not enough volume for grain size)	PID = 51.8
8	7 20		0840 OFF-SB-Dup							FID = 28.7
	5 17	1.3' / 2.0'	No sample	Potential Oil Saturated Material	Dense		Similar to above		Wet	PID = 48.1
10	14 10									FID = 395
	3 5	0.8' / 2.0'	0850 OFF-SB-429-1012		Loose	Red	0-0.6' = Sandy (fine sand) SILT, some gravel		Wet	PID = 26.2
12	3 4					Red	0.6-0.8' = PEAT, compressed	PT		FID = 126
	2 2	1.0' / 2.0'	No sample		Very		0.0-0.5' = PEAT, compressed		Wet Organic odor	PID = 52.5
14	2 4				Loose	Gray	0.5-1.0' = fine SAND, trace silt	SP		FID = 433.1
	2 7	1.1' / 2.0'	0915 OF-SB-429-1416 Grain		Medium Dense		SILT, some fine sand, trace angular gravel	ML		PID = 6.4
16	14 16									FID = 10.9

TYPE OF DRILLING RIG:	CME – 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-429	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-429
PROJECT NO.:	4152-0552			START DATE:	11/25/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/25/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	8.6'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	5				Medium	Dark	SILT, some fine sand, trace coarse sand and subangular to		Wet	
	10	0.8' / 2.0'	No sample		Dense	Gray	subrounded gravel	ML		PID = 2.1
	14									
18	13									FID = 10.9
	2						SILT, some fine sand, trace coarse sand, trace gravel			
	10	0.6' / 2.0'	Not enough volume To sample							
	18									
20	20			EOB						
				20'						

TYPE OF DRILLING RIG:	CME - 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven by 300 lb. hammer, dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-429	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-430
PROJECT NO.:	4152-0552			START DATE:	12/02/03
LOGGED BY:	J.DANIELI / J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/02/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	9.8'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
			No sample				Auger to 2'			
2							No spoon			
	5						Silty SAND with gravels		Dry	
	8	1.5' / 2.0'	1425		Loose	Dark		SW		PID = 0.0
4	7		OFF-SB-430-0204			Brown	Pieces of brick - fill			
	9									FID = 0.4
	4						Silty fine to coarse sand, some gravel, some oxidation staining, no manmade materials visible			
	4	1.2' / 2.0'	No sample					SW		PID = 0.0
6	5									
	10									FID = 0.0
	7						No recovery		Wet	
	9	0.0' / 2.0'	No sample							PID = N/A
8	7						Will collect sample on next spoon			
	13									FID = N/A
	9						Silty fine to coarse sand and gravel		Petroleum odor	
	11	0.8' / 2.0'	1445			Black		SW		PID = 0.0
10	9		OFF-SB-430-0810						Wet	
	17									FID = 0.0
	5						Sand (fine to coarse) some silt		Wet	
	3	0.2' / 2.0'	No sample			Black		SW		FID = 0.0
12	7								Petroleum odor	
	9									PID = 0.0
	3						Fine to coarse sand, some silt, some gravel			
	4	0.3' / 2.0'	1500			Black		SW		FID = N/A
14	4		OFF-SB-430-1214							
	4									PID = N/A
	9						Silty fine to coarse sand and gravel		Wet	
	11	0.6' / 2.0'	1510			Brown				FID = 0.0
16	13									
	60/3"									PID = 0.0

TYPE OF DRILLING RIG:	Track mounted - CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 2' long – 300 lb. hammer, 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-430	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-430
PROJECT NO.:	4152-0552			START DATE:	12/02/03
LOGGED BY:	J.DANIELI / J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/02/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	9.8'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	13	0.4' / 2.0'	No sample			Brown	Fine to coarse sand and gravel, some silt		17.5' auger refusal	
	30									
	60/3"									
18										
	60/0"		No recovery				No recovery - refusal			
20										

TYPE OF DRILLING RIG:	CME (track mounted)		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 300 lb. hammer, 18" drop		
METHOD OF ROCK CORING:			
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-430	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-431
PROJECT NO.:	4152-0552			START DATE:	11/26/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/26/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	–
GRD. SURFACE ELEVATION:	11.1'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Possible fill			Auger 0-2' bgs, soils not logged			
2										
	9	1.0' / 2.0'	1135 OFF-SB-431-0204 (Grain size)			Brown	Silty fine to coarse SAND, trace gravel, cobbles at 3' and 3.5'	SM	Dry	PID = 4.0
4	8 7 9									FID = 2.0
	7 9	0.0' / 2.0'	No sample				No recovery			
6	7 6									
	5 5	0.0' / 2.0'	Will collect next Interval				No recovery		Wet	
8	4 5						(Slough = fine to coarse sand)			
	12 11	0.3' / 2.0'	1155 OFF-SB-431-0810	Oil - Impacte soils		BLACK	Fine SAND, some silt, cobble at 8' → oil-stained soils	SM	Wet Cobble in nose Petroleum odor	PID = 14.0
10	12 20									FID = 8.2
	17 11	0.4' / 2.0'	Not enough volume to Sample				Fine SAND, some silt (Oil stained soils		Slight petroleum odor	PID = 38.2
12	7 11									FID = 14.0
	42 60/3"	0.3' / 0.75'	Not enough volume to sample			LIGHT	Cobble/fractured rock in nose Some associated fine to coarse sand	Rock	Wet	PID = 26.1
14						BROWN				FID = 12.3
				EOB					Auger, spoon refusal at 13'	
							Note: almost no cuttings when hole complete, hole wide open to 11', soil is very loose and cobbly			

TYPE OF DRILLING RIG:	CME – 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" Split spoon driven with 300 lb. hammer dropped 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:	Note: no manmade material noted in borehole – possible fill to 8' bgs	BORING NO.: SB-431	PAGE: 1 OF 1

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09	BORING NO.:	SB-432
PROJECT NO.:	4152-0552	START DATE:	11/20/03
LOGGED BY:	J. LAMBERT	COMPLETION: DATE:	11/20/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN	MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	9.8'	CHECKED BY:	DH
TRANSCRIBED BY:	MES		
ELEVATION FROM:	NGVD 1929		

DEPTH (FEET) 0	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
				Fill			Auger to 2' – no samples collected from 0-2'			
2										
	15					Dark	Fine to coarse sand, some gravel, trace silt, brick fragments		Sweet, non-petroleum	
	120/6"	0.7' / 1.0'	0825			Brown	throughout, also asphalt, piece of geosynthetic liner, cobble in		odor,	PID = > 2,000
4			OFF-SB-432-0204				nose.		PID = 727 in sample	FID = 5,425
	5						Silty fine to coarse SAND (0-0.3')			
	13	0.6' / 2.0'	No sample							PID = > 2,000
	29					Red	0.3-0.5' = brick			
6	93					Gray	0.5-0.6' = cobble in nose of spoon			FID = 2,929
	10						Silty fine to coarse sand, brick and concrete fragments		Moist	
	18	0.5' / 2.0'	0840			Dark	throughout			PID = > 2,000
	24		OFF-SB-432-0608			Brown			PID = 188 ppm in sample	
8	13								*	FID = 5,677
	10						Fine sand, trace silt		Wet	
	14	1.6' / 2.0'	No sample			Dark	PID = 49 in sample, 15 = FID		Strong petroleum odor	PID = 153
	14			Petroleum		Gray				
10	14			Staining						FID = 241
	3						Fine sand, trace silt, petroleum staining and odor in top 0.4'		Saturated	
	6	1.1' / 2.0'	0905							PID = 485
	3		OFF-SB-432-1012							
12	4									FID = 365
	11						0-0.3' = Similar to above		Moist	
	13	1.6' / 2.0'	No sample							PID = 28.3
	17						0.3-1.0' = Silty fine sand, some coarse sand, some fine gravel,			
14	18					Reddish	very dense, possible till			FID = 12.6
	6						Sandy silt (fine to coarse sand)		Moist	
	12	1.3' / 2.0'	1030			Light				PID = 12.0
	17		OFF-SB-432-1416			Brown	Trace fine gravel			
16	18									FID = 1.9

TYPE OF DRILLING RIG:	CME 75
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoons driven with a 300 lb. hammer dropped from 18"
METHOD OF ROCK CORING:	N/A
GROUNDWATER LEVELS:	
OTHER OBSERVATIONS:	* 0850 readings in the breathing zone = ~ 5 for PID, 0 for FID, higher at the borehole, will keep an eye on it

BORING NO.: SB-432

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-432
PROJECT NO.:	4152-0552			START DATE:	11/20/03
LOGGED BY:	J. LAMBERT	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/20/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / RODNEY DEAN			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	9.8'	ELEVATION FROM:	NGVD 1929	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	120/5"	OU1 / 2.0	No sample		Very	Dark	0-0.6' = Very dense fine sand		Wet	PID = 7.7
18					Dense	Gray	0.6-1.1' = Wet, loose, silty coarse sand, some gravel			FID = 0.0
	43	0.8 / 1.0	1118			Mottled Dark	Silt, some coarse sand, some gravel, very dense		Wet	PID = 0.0
20	120/5		OFF-SB-432-1820	EOB		Gray				FID = 0.0
				20'						

TYPE OF DRILLING RIG:	CME 75		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon driven with 300 lb. hammer 18"		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:			
OTHER OBSERVATIONS:		BORING NO.: SB-432	PAGE: 2 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-433
PROJECT NO.:	4152-0552			START DATE:	11/26/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/26/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	17.3'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
			No sample				No split spoon – auger to 2' bgs			
2				Fill						
	9					Dark	Silty fine to medium SAND with gravel, roots – top 0.1', pieces		Dry	
	8	0.9' / 2.0'	0845		Dense	Brown	of brick throughout	SM		PID = 0.0
4	5		OFF-SB-433-0204							
	6									FID = 0.0
	8						Sandy SILT with gravel, pieces of brick		Moist	
	5	1.0' / 2.0'	No sample		Dense			ML		PID = 0.0
6	6								Wet	
	5								V ~ 5.5'	FID = 0.0
	5									
	3	1.0' / 2.0'	0900							PID = 20.0
8	3		OFF-SB-433-0608							
	2									FID = 38.0
	3			Native		Dark	SILT with sand, trace gravel, trace roots		Wet	
	6	1.0' / 2.0'	No sample	Materials		Brown				PID = 17.1
10	5							ML		
	6									FID = 34.0
	2								Wet	
	2	0.9' / 2.0'								PID = 0.0
12	2									
	3									FID = 0.0
	27						Pieces of boulder (0.8' long)		Wet	
	59	1.0' / 2.0'	0920		Loose					PID = 24.6
14	59		OFF-SB-433-1214				Silty SAND and GRAVEL, trace brick pieces	SW/ GW		
	24									FID = 47.0
	130/3"								Wet	
		0.8' / 2.0'	No sample (14.0'-14.25')							PID = 116.0
16							Auger refusal at 14.5'			FID = 326.0

TYPE OF DRILLING RIG:	Track mounted CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 2' long, 300 lb. hammer, 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	~ 5.5' BGS		
OTHER OBSERVATIONS:		BORING NO.: SB-433	PAGE: 1 OF 2

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-433
PROJECT NO.:	4152-0552			START DATE:	11/26/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	11/26/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	17.3'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
16										
	130/1"	0.15' / 0.16'	No sample Spoon only 14.5'-14.9'				0.15' in length Piece of concrete – move auger to 14.5' - try to send spoon		(Recover 0.15' – Concrete)	FID = --
18							Move south ~ 5' to auger to 16' & taken 16-18' spoon			PID = --
	14	0.9 / 2.0'	1050 OFF-SB-433-1618		Dense	Brown	Silty fine to medium SAND with gravel	SW	Wet (Second hole)	PID = 0.4 FID = 0.0
16	18									
	11								Wet	PID = 1.0
18	9									FID = 0.0
	11	1.5' / 2.0'	No sample		Dense	Dark Gray	SILT with trace sand and gravel	ML	Wet	
	14									FID = 8.0
	19									
20	17									PID = 5.4
	4	2.0' / 2.0'	1140 OFF-SB-433-2022						Wet Rock – brittle breaks apart easily	
	4									FID = 0.0
	8		1145 Dup09				SILT - less sand and gravel Sandy SILT with gravels (20 - 21.5')	ML		
22	17									PID = 0.0
	90	1.5' / 2.0'	No sample		Dense	Brown	SILT with trace sand and gravels (21.5 - 22.0')	ML	Wet	
	53									FID = 0.0
	79						SILT, weathered rock Orange staining, pieces of gravel, till - soupy	ML		
24	29									PID = 1.6
	24	1.5' / 2.0'	1215 OFF-SB-433-2426				Soupy - silty, sandy - GRAVEL with weathered rock, orange staining, till	GM	Wet	
	26									FID = 0.0
	31		1220 Dup10							
26	38									PID = 0.1
		0.9' / 2.0'	No sample				Trace clay Auger refusal @ 27.5' bgs	GC GM	Wet	
	130/4"									FID = 0.0
						Light Brown	Soupy, silty, sandy GRAVEL with weathered rock, orange staining - till	GM		
28										PID = 0.0
	130/1"	0.8' / 0.8'	1240 OFF-SB-433-2830		Loose	Brown	Sample from 27.5' plus 1" - 27.7'			
30							EOB @ 27.7' - did not reach competent bedrock but till overlies bedrock in area and just shy of 20' requirement stated in Work			

Plan - 20' from base of mound that is 8' high

TYPE OF DRILLING RIG:	Track mounted CME
METHOD OF ADVANCING BORING:	Hollow stem auger
METHOD OF SOIL SAMPLING:	3" split spoon, 2' long, 300 lb. hammer, 18" drop
METHOD OF ROCK CORING:	~ 5.5' bgs
GROUNDWATER LEVELS:	N/A
OTHER OBSERVATIONS:	

Tetra Tech NUS, Inc.

BORING LOG FOR:	CTO 833 – OFFTA – SITE 09			BORING NO.:	SB-434
PROJECT NO.:	4152-0552			START DATE:	12/02/03
LOGGED BY:	J. DANIELI	TRANSCRIBED BY:	MES	COMPLETION: DATE:	12/02/03
DRILLED BY (Company/Driller):	AMERICAN DRILLING / CARL BEIRHOLM			MON. WELL NO.:	--
GRD. SURFACE ELEVATION:	11.5'	ELEVATION FROM:	NGVD 1929 (MLW)	CHECKED BY:	DH

DEPTH (FEET)	BLOWS PER 6"	SAMP REC. / SAMP LENG.	SAMPLING TIME & SAMPLE NO. (QA/QC STATUS)	DEPTH MAT'L CHG./ WELL PROF'L	SOIL DENSITY/ CONSIS. or ROCK HARD.	CLR	MATERIAL CLASSIFICATION	USCS or ROCK BRKN	REMARKS (moisture condition; odors; geological classification; rock weathering; etc.)	FIELD SCREENING DATA *METHOD* = [FID, (PPM)]
0										
			No sample				Auger to 2' = no spoon			
2										
	37						Fine to medium SAND, trace silt and gravels		Dry	
	36	1.4' / 1.5'	1030		Loose	Brown		SW		PID = 0.0
	34		OFF-SB-434-0204			Light	Piece of boulder - fine to medium SAND			
4	60/5"					Gray				FID = 5.0
	10						Fine to medium SAND, pieces of boulder - interbedded with		Dry	
	15	0.7' / 1.5'	No sample				fine to medium SAND (brown)	SW		PID = 0.0
	60/4"									
6										FID = 2.0
	60/2"						Fine to medium SAND with gravel and trace silt intermittent		Dry	
		0.5' / 0.16'	1040			Brown	pieces of light gray boulder	SW		PID = 7.0
			OFF-SB-434-0608							
8										FID = 10.0
	60/2"					Light	8' Auger refusal - send down spoon		Dry	
			No sample			Gray	Fine to medium SAND with pieces of boulder	SW		PID = 0.0
		0.16'				Dark	Silty SAND – gravels and pieces of broken rock			
10					Dense	Gray	Till? At nose of spoon 2 large pieces of crystalline rock			FID = 24.0
							EOB = 8'2"			

TYPE OF DRILLING RIG:	Track mounted - CME		*Tetra Tech NUS, Inc.*
METHOD OF ADVANCING BORING:	Hollow stem auger		
METHOD OF SOIL SAMPLING:	3" split spoon, 2' length, 300 lb. hammer with 18" drop		
METHOD OF ROCK CORING:	N/A		
GROUNDWATER LEVELS:	Not evident		
OTHER OBSERVATIONS:		BORING NO.: SB-434	PAGE: 1 OF 1

APPENDIX C
SURVEY DATA

LOUIS FEDERICI and ASSOCIATES

365 Smith Street, Providence, RI 02908 Tele: 401-331-1570 Fax: 401-331-1593

land surveyors biologists planners

Tabulation of field located soil samples for Tetra Tech NUS, Inc.
at the Old Fire Fighting Training Area, Naval Station Newport, in Newport, RI

LFA PROJECT NUMBER = 990205

Date Surveyed: 1/2/2004

The values below are based on the following datums:

Horizontal = NAD 1927; Vertical = NGVD 1929 (MLW)

LFA PT. NO.	TETRA TECH I.D.	NORTHING	EASTING	ORIGINAL GRADE
2000	SB-421	156808.8	547238.1	10.8
2001	SB-420	156797.8	547156.9	10.0
2002	SB-419	156842.2	547045.4	8.4
2003	SB-408	156940.5	547056.3	8.0
2004	SB-409	156924.9	547155.3	9.1
2005	SB-410	156914.9	547253.2	9.4
2006	SB-402	157010.9	547266.9	8.4
2007	SB-432	156869.9	547196.4	9.8
2008	SB-401	157023.8	547170.7	7.9
2009	SB-400	157035.5	547083.5	7.3
2010	SB-428	157054.9	547304.0	8.0
2011	SB-403	156996.3	547367.7	9.4
2012	SB-429	157023.5	547385.1	8.6
2013	SB-404	156982.7	547465.7	8.9
2014	SB-430	156918.5	547570.9	9.8
2016	SB-427	157072.7	547203.9	8.3
2162	SB-415	156885.5	546668.1	13.3
2167	SB-416	156875.4	546740.5	11.5
2232	SB-426	156745.3	547737.1	11.5
2233	SB-425	156763.1	547633.3	12.1
2234	SB-424	156787.1	547568.9	12.0
2235	SB-413	156872.0	547552.2	10.6
2238	SB-412	156893.2	547454.9	24.5
2239	SB-411	156901.8	547375.0	31.0
2240	SB-434	156815.2	547484.7	11.5
2245	SB-423	156786.8	547428.2	11.9
2247	SB-422	156807.2	547325.4	11.8
2248	SB-414	156855.1	547647.6	10.7
2249	SB-431	156809.4	547712.1	11.1
2277	SB-433	156900.7	546881.8	17.3
2278	SB-406	156951.9	546862.3	11.4
2279	SB-407	156959.5	546952.7	12.9
2280	SB-418	156871.9	546934.3	10.0
2285	SB-417	156864.9	546846.1	8.5
2292	SB-405	156961.0	546759.8	7.0

RI Rge. Number 1646

APPENDIX D
ANALYTICAL RESULTS

- RI Soil Sample Analytical Results
- PDI Soil Sample Analytical Results

APPENDIX D1

CHEMICAL ANALYTICAL RESULTS

PDI SOIL SAMPLE ANALYTICAL RESULTS

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-400-0002		OFF-SB-400-0608		OFF-SB-401-0204		OFF-SB-401-0810		OFF-SB-401-1012		OFF-SB-402-0204		OFF-SB-402-0810		OFF-SB-402-1214		OFF-SB-402-1618		OFF-SB-402-1820		OFF-SB-403-0204		OFF-SB-403-0608		OFF-SB-403-1012	
Sample Location		400		400		401		401		401		402		402		402		402		402		403		403		403	
Date Sampled		12/1/2003		12/1/2003		11/19/2003		12/4/2003		12/4/2003		11/18/2003		11/18/2003		11/18/2003		11/18/2003		11/18/2003		11/24/2003		11/24/2003		11/24/2003	
Interval		0.0-2.0		6.0-8.0		2.0-4.0		8.0-10.0		10.0-12.0		2.0-4.0		8.0-10.0		12.0-14.0		16.0-18.0		18.0-20.0		2.0-4.0		6.0-8.0		10.0-12.0	
QC Identifier		None		None		None		None		None		None		None		None		None		None		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		3.7	U	12		8.7		27		13		15		11	U	3.7	U	3.7	U	3.5	U	36		9200	*	7.3	
Acenaphthene		4.8		18		28		26		12		12		56		3.7	U	3.7	U	3.5	U	27		1900		5.5	
Acenaphthylene		22		14		48		36		22		54		11	U	3.7	U	3.7	U	3.5	U	200		640		4.6	U
Anthracene		25		40		140		59		32		65		11	U	3.7	U	3.7	U	3.5	U	110		1600		14	
Benzo(a)anthracene	900	140		110		520	*	75		36		170		11	U	3.7	U	3.7	U	3.5	U	240		1700		36	
Benzo(a)pyrene	400	130		96		480	*	54		24		180		11	U	3.7	U	3.7	U	3.5	U	530	*	1400		36	
Benzo(b)fluoranthene	900	170		120		610	*	61		27		180		11	U	3.7	U	3.7	U	3.5	U	590	*	1600		37	
Benzo(g,h,i)perylene	900	84		87		240		29		13		77		11	U	3.7	U	3.7	U	3.5	U	430		580		24	
Benzo(k)fluoranthene	800	59		39		220		29		18		89		11	U	3.7	U	3.7	U	3.5	U	210		840		15	
Chrysene	400	130		110		520	*	74		37		170		11	U	3.7	U	3.7	U	3.5	U	250		1800		37	
Dibenzo(a,h)anthracene	400	24		15		69		8.7		3.4	U	22		11	U	3.7	U	3.7	U	3.5	U	77		200		5.4	
Fluoranthene		210		150		800	*	120		59		270		17		3.7	U	3.7	U	3.5	U	230		3300		64	
Fluorene		5.6		16		40		46		26		14		11	U	3.7	U	3.7	U	3.5	U	46		2400		4.6	U
Indeno(1,2,3-cd)pyrene	900	74		38		220		24		10		70		11	U	3.7	U	3.7	U	3.5	U	360		550		18	
Naphthalene		3.7	U	6.8		12		18		8.4		14		11	U	3.7	U	3.7	U	3.5	U	18		2200		4.6	U
Phenanthrene		87		140		460	*	250		140		93		11	U	3.7	U	3.7	U	3.8		54		6800	*	32	
Pyrene		230		240		870	*	160		84		370		23		3.7	U	3.7	U	4.1		600	*	3600		53	
TAL Metal Analysis (MG/KG)																											
Aluminum		11300	*	13100	*	10400	*	16900		13900		11600		5370		9680		10800		7860		14200	E	6040	E	9470	E
Antimony	10	0.98	BN*	0.38	BN*	0.22	UN	9.3	N	8.2	N	0.79	BN	1.7	UN	0.70	BN	1.0	BN	0.89	BN	1.0	BN	3.9	N	0.77	BN
Arsenic	7.0	0.49	B*	4.3	*	6.5		5.4		2.2		4.0	B	4.4	B	3.3	B	8.0		8.6		6.7	*	9.4	*	3.2	*
Barium		133	*	18.2	*	20.8	B	18.9		22.3		23.2	B	11.3	B	21.9	B	31.3	B	11.2	B	22.8	*	306	*	31.1	*
Beryllium	0.4	0.011	U*	0.20	B*	0.27	B	0.27		0.25		0.24	B	0.19	B	0.23	B	0.44	B	0.34	B	0.22	B	0.30		0.16	B
Cadmium		0.16	B*	0.41	*	0.022	U	0.072	U	0.029	U	0.045	U	0.17	U	0.056	U	0.047	U	0.048	U	0.15	B	3.4		0.013	U
Calcium		2440	*	3080	*	1190	*	1910		1680		4330	*	7920	*	780	*	1300	*	1170	*	1160	E	13400	E	5320	E
Chromium		35.7	*	16.4	*	9.3	*	131		100		13.0	*	7.2	B*	15.8	*	17.9	*	13.3	*	16.0	E*	10.0	E*	11.8	E*
Cobalt		12.2	*	9.5	*	8.9		11.2	E	9.4	E	8.4	B	3.0	B	3.3	B	21.6		13.5		13.0	E	6.5	E	4.0	E
Copper		21.4	N*	43.0	N*	27.8		29.3		19.8		16.0	*	217	*	12.7	*	28.5	*	24.9	*	17.8	*	400	*	31.2	*
Iron		22600	*	40400	*	20100	*	42700		32800		26000	*	7360	*	11800	*	47100	*	35500	*	42500		39900		26000	
Lead	150	8.9	*	33.2	*	56.1		20.2	E	15.1	E	147	N*	1300	N*	37.7	N*	17.4	N*	12.9	N*	22.3	NE*	1950	NE*	69.9	NE*
Magnesium		10000	*	5430	*	3590	*	7110		5780		3220		6280		2400		3950		3230		3690	E*	1710	E*	4140	E*
Manganese	390	313	*	516	*	547		1140	E	883	E	220	*	152	*	92.5	*	297	*	311	*	471	E	382	E	166	E
Mercury		0.020	B	0.017	U	0.067		0.015	U	0.017	U	0.29		0.055	U	0.018	U	0.016	U	0.016	U	0.034	B*	1.2	*	0.036	B*
Nickel		19.5	*	20.0	*	15.2		34.1	E	23.0	E	17.5		28.5	B	10.0	B	47.5		32.4		23.1	E	22.4	E	15.3	E
Potassium		5120	*	685	*	283		540		650		253	*	723	*	610	*	640	*	444	*	441	*	825	*	353	*
Selenium		0.16	UN	0.15	UN	3.5		3.0		3.1		4.0	B	2.6	B	2.1	B	6.9	B	5.7	B	0.17	U	0.17	U	0.19	U
Silver		1.5	B	3.0		1.9	B	0.033	U	0.033	U	3.5	B	0.91	B	1.6	B	6.2	B	4.8	B	4.2	E	4.9	E	3.0	E
Sodium		109	*	628	*	39.1	B	176		175		57.2	E	8390	E	1190	E	697	E	196	E	165	*	606	*	129	*
Thallium		0.11	UN	0.10	UN	0.22	U	4.3		3.9		0.73	B	1.7	U	1.2	B	0.47	U	0.48	U	0.12	U	0.11	U	0.13	U
Vanadium		39.9	*	20.5	*	15.0		13.4		13.5		18.6		24.6	B	20.8		23.1		17.1		25.6	E	19.5	E	17.1	E
Zinc		50.1	*	75.1	*	63.2		74.9		64.9		85.1	*	44.9	*	24.4	*	115	*	84.9	*	62.3	E	2110	E	93.9	E
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		2700	U	5300		3400	U	3200	U	2900	U	16000		44000		4700		3300	U	3500	U	51000		430000		4300	U
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	16		170		29		19		15		63		180		13	U	13	U	12	U	780		4300		21	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-403-1416		OFF-SB-403-1820		OFF-SB-404-0204		OFF-SB-404-0608		OFF-SB-404-1012		OFF-SB-404-1618		OFF-SB-404-1820		OFF-SB-405-0204		OFF-SB-405-0608		OFF-SB-405-1012		OFF-SB-DUP02		OFF-SB-405-1416		OFF-SB-406-0608	
Sample Location		403		403		404		404		404		404		404		405		405		405		405		405		406	
Date Sampled		11/24/2003		11/25/2003		11/25/2003		11/25/2003		11/25/2003		11/25/2003		11/25/2003		11/18/2003		11/18/2003		11/18/2003		11/18/2003		11/18/2003		12/3/2003	
Interval		14.0-16.0		18.0-20.0		2.0-4.0		6.0-8.0		10.0-12.0		16.0-18.0		18.0-20.0		2.0-4.0		6.0-8.0		10.0-12.0		10.0-12.0		14.0-16.0		6.0-8.0	
QC Identifier		None		None		None		None		None		None		None		None		None		Field Dup.		Field Dup.		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		4.1	U	3.9	U	38		760		160		3.8	U	4.7	U	17	U	13		3.6	U	3.5	U	3.5	U	75	
Acenaphthene		4.1	U	3.9	U	94		3700		710	*	4.1		4.7	U	42		120		3.6	U	3.5	U	3.5	U	69	
Acenaphthylene		4.1	U	3.9	U	81		1800		400	*	3.8	U	4.7	U	50		43		3.6	U	3.5	U	3.5	U	120	
Anthracene		4.1	U	3.9	U	320		2200		320		3.8	U	4.7	U	120		270		8.9		3.5	U	3.5	U	270	
Benzo(a)anthracene	900	4.1	U	4.8		1100		480		210		3.8	U	4.7	U	390		640	*	64		15		3.5	U	680	*
Benzo(a)pyrene	400	4.1	U	3.9	U	990		330		190		3.8	U	4.7	U	370		560	*	62		14		3.5	U	650	*
Benzo(b)fluoranthene	900	4.1	U	3.9	U	1100		380		230		3.8	U	4.7	U	460		690	*	78		18		3.5	U	770	*
Benzo(g,h,i)perylene	900	4.1	U	3.9	U	530		140		110		3.8	U	4.7	U	210		180		29		3.5	U	3.5	U	330	
Benzo(k)fluoranthene	800	4.1	U	3.9	U	570		170		78		3.8	U	4.7	U	150		260		26		8.1		3.5	U	280	
Chrysene	400	4.1	U	4.0		1100		530		210		3.8	U	4.7	U	380		620	*	71		17		3.5	U	560	*
Dibenzo(a,h)anthracene	400	4.1	U	3.9	U	140		64	U	29		3.8	U	4.7	U	52		58		9.7		3.5	U	3.5	U	92	
Fluoranthene		4.1	U	9.1		2000	*	1200		360		3.8	U	4.7	U	730		1200	*	78		21		6.6		1200	*
Fluorene		4.1	U	3.9	U	95		3600		740	*	3.8	U	4.7	U	37		120		3.6	U	3.5	U	3.5	U	110	
Indeno(1,2,3-cd)pyrene	900	4.1	U	3.9	U	470		130		92		3.8	U	4.7	U	180		180		25		3.5	U	3.5	U	300	
Naphthalene		4.1	U	3.9	U	57		570		110		3.8	U	4.7	U	17	U	15		3.6	U	3.5	U	3.5	U	55	
Phenanthrene		4.1	U	10		1000		8900	*	1800	*	8.8		4.7	U	420		930	*	30		12		3.5	U	890	*
Pyrene		4.1	U	8.7		2000	*	2300		700	*	3.8	U	4.7	U	750		1200	*	83		24		7.3		1100	*
TAL Metal Analysis (MG/KG)																											
Aluminum		7820	E	8760	E	9770		12600	E	9920	E	6600	E	10400	E	12100		7650		9800		11500		12700		15200	
Antimony	10	0.54	BN	0.71	BN	39.4	N	3.4	N	2.3	N	0.51	BN	1.2	BN	0.90	BN	0.84	BN	0.98	BN	1.1	BN	0.99	BN	8.7	N
Arsenic	7.0	6.2	*	4.6	*	27.8		9.3	*	8.6	*	2.6	*	7.3	*	10.7		3.8	B	7.7		9.3		25.4		2.9	
Barium		11.0	B*	18.4	*	680		124	*	388	*	5.8	B*	20.5	*	28.7	B	23.0	B	8.4	B	7.8	B	35.1	B	34.9	
Beryllium	0.4	0.22	B	0.30		0.42	B	0.55		0.23	B	0.35		0.28	B	0.26	B	0.21	B	0.32	B	0.34	B	0.45	B	0.50	
Cadmium		0.012	U	0.096	B	6.9		2.9		3.7		0.010	U	0.014	U	0.042	U	0.054	U	0.054	U	0.048	U	0.050	U	0.031	U
Calcium		311	E	437	E	9320		11700	E	8470	E	495	E	801	E	5390	*	1250	*	342	*	564	*	786	*	4680	
Chromium		11.2	E*	15.0	E*	35.7		18.6	E*	9.2	E*	9.6	E*	16.1	E*	11.8	*	8.4	*	12.2	*	16.2	*	0.15	U*	21.9	
Cobalt		13.4	E	15.0	E	1.9	B	4.3	E	6.1	E	6.1	E	13.8	E	9.7	B	7.2	B	11.5	B	16.9		196		11.9	E
Copper		19.6	*	24.7	*	1070		558	*	1330	*	15.9	*	27.3	*	22.7	*	25.4	*	34.5	*	32.1	*	17.5	*	35.3	
Iron		27200		37900		123000		40600		54400		25700		49600		26200	*	19400	*	28300	*	32300	*	31300	*	36200	
Lead	150	12.3	NE*	11.5	NE*	8250		2490	NE*	729	NE*	8.1	NE*	11.4	NE*	846	N*	64.9	N*	15.9	N*	13.8	N*	10.1	N*	107	E
Magnesium		2440	E*	3270	E*	4510		3110	E*	4740	E*	1770	E*	3690	E*	5130		4480		4080		4720		5600		4770	
Manganese	390	180	E	860	E	806		185	E	351	E	268	E	444	E	543	*	279	*	245	*	284	*	3520	*	481	E
Mercury		0.020	U*	0.019	U*	0.67		0.63	*	0.21	*	0.029	B*	0.024	U*	0.037		0.053		0.016	U	0.018	U	0.018	U	0.56	
Nickel		21.1	E	24.1	E	38.8		28.4	E	25.1	E	14.3	E	32.8	E	19.6		14.3		22.5		28.0		56.3		27.4	E
Potassium		548	*	775	*	485		1100	*	373	*	335	*	745	*	436	*	345	*	458	*	461	*	428	*	696	
Selenium		0.17	U	0.15	U	0.53	U	0.19	U	0.15	U	0.15	U	0.20	U	4.0	B	3.3	B	4.5	B	5.0	B	3.7	B	3.0	
Silver		3.2	E	3.6	E	0.074	U	5.1	E	5.3	E	2.3	E	4.5	E	3.4	B	2.5	B	3.8	B	4.3	B	4.3	B	0.036	U
Sodium		97.1	*	156	*	1500		4390	*	1190	*	186	*	297	*	280	E	1490	E	1140	E	1210	E	1860	E	90.9	
Thallium		0.12	U	0.10	U	15.4		0.13	U	0.10	U	0.10	U	0.14	U	0.42	U	0.54	U	0.54	U	0.48	U	0.50	U	3.9	
Vanadium		17.3	E	18.9	E	57.6		17.2	E	21.3	E	22.1	E	22.3	E	16.9		27.5		13.8		18.3		9.3	B	25.5	
Zinc		56.4	E	63.0	E	4100	E	2330	E	917	E	44.5	E	77.0	E	157	*	69.3	*	59.5	*	75.1	*	81.3	*	134	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		3100	U	25000		25000		180000		110000		3900		3600	U	3200	U	2900	U	2300	U	3100	U	4000	U	4600	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	14	U	14	U	66		8800		2100		13	U	17	U	43		92		13	U	13	U	13	U	170	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-406-1012		OFF-SB-406-1416		OFF-SB-DUP14		OFF-SB-406-1820		OFF-SB-407-0810		OFF-SB-407-1214		OFF-SB-407-1618		OFF-SB-407-2022		OFF-SB-DUP11		OFF-SB-408-0204		OFF-SB-408-0608		OFF-SB-409-0406		OFF-SB-DUP05	
Sample Location		406		406		406		406		407		407		407		407		407		408		408		409		409	
Date Sampled		12/3/2003		12/3/2003		12/3/2003		12/3/2003		12/1/2003		12/1/2003		12/1/2003		12/1/2003		12/1/2003		11/17/2003		11/17/2003		11/20/2003		11/20/2003	
Interval		10.0-12.0		14.0-16.0		14.0-16.0		18.0-20.0		8.0-10.0		12.0-14.0		16.0-18.0		20.0-22.0		20.0-22.0		2.0-4.0		6.0-8.0		4.0-6.0		4.0-6.0	
QC Identifier		None		Field Dup.		Field Dup.		None		None		None		None		Field Dup.		Field Dup.		None		None		Field Dup.		Field Dup.	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		4.8		3.8	U	3.7	U	3.8	U	21		62		3.8	U	3.7	U	3.8	U	44		120		94	U	450	
Acenaphthene		30		3.8	U	3.7	U	3.8	U	41		290		4.7		3.7	U	3.8	U	68		71		3300		3000	
Acenaphthylene		5.6		3.8	U	3.7	U	4.0		100		160		19		3.7	U	3.8	U	910		470		1300		1100	
Anthracene		52		3.8	U	9.2		13		200		550	*	33		5.4		5.2		850		520		1200		1000	
Benzo(a)anthracene	900	150		7.4		17		28		680	*	1400	*	80		6.5		12		3700	*	1800		120		110	
Benzo(a)pyrene	400	140		5.6		11		23		610	*	1100	*	64		4.7		9.3		3600	*	1400		94	U	94	U
Benzo(b)fluoranthene	900	170		7.2		14		28		740	*	1200	*	72		5.8		11		4100	*	1600		94	U	94	U
Benzo(g,h,i)perylene	900	96		3.8	U	4.0		13		350		490	*	33		3.7	U	4.7		1600		830		94	U	94	U
Benzo(k)fluoranthene	800	69		3.8	U	5.6		12		250		640	*	31		3.7	U	4.2		1400		710		94	U	94	U
Chrysene	400	160		7.4		15		25		520	*	1100	*	70		5.6		10		3600	*	1700		140		140	
Dibenzo(a,h)anthracene	400	24		3.8	U	3.7	U	3.8	U	93		120		8.9		3.7	U	3.8	U	120		230		94	U	94	U
Fluoranthene		270		14		39		54		1200	*	2300	*	170		12		19		5900	*	3200	*	470		400	
Fluorene		20		3.8	U	10		10		71		240		18		3.7	U	3.8	U	190		240		4200		3900	
Indeno(1,2,3-cd)pyrene	900	83		3.8	U	3.8		11		290		470	*	29		3.7	U	4.1		1500		710		94	U	94	U
Naphthalene		6.7		3.8	U	3.7	U	4.4		37		190		3.8	U	3.7	U	3.8	U	54		54		810		680	
Phenanthrene		180		8.5		41		48		760	*	1600	*	130		7.1		8.5		2700	*	2600	*	8700		8000	
Pyrene		280		13		35		49		1100	*	2700	*	170		15		24		6400	*	3500	*	1000		930	
TAL Metal Analysis (MG/KG)																											
Aluminum		12600		14000		12600		11000		12900	*	6290	*	12200	*	17400	*	16800	*	6820		10100		16400	*	15600	*
Antimony	10	7.7	N	9.3	N	9.0	N	6.6	N	0.76	BN*	0.11	UN*	0.56	BN*	0.99	BN*	1.2	N*	0.54	BN	0.77	BN	0.48	UN	0.47	UN
Arsenic	7.0	0.75	B	3.8		4.5		3.1		7.3	*	2.5	*	4.0	*	2.1	*	4.7	*	4.3	B	5.8		15.1		13.8	
Barium		24.8		14.4		20.2		4.4	B	13.5	*	18.4	*	13.5	*	8.3	B*	9.1	B*	31.9	B	25.3	B	27.3	B	24.1	B
Beryllium	0.4	0.58		0.51		0.52		0.22	B	0.17	B*	0.086	B*	0.30	*	0.34	*	0.38	*	0.20	B	0.35	B	0.73	B	0.69	B
Cadmium		0.035	U	0.078	U	0.070	U	0.033	U	0.29	*	6.6	*	0.45	*	0.69	*	0.74	*	0.045	U	0.053	U	0.048	U	0.047	U
Calcium		16100		715		666		827		1660	*	4350	*	423	*	1000	*	1160	*	7910	*	2400	*	1740	*	1620	*
Chromium		16.3		24.0		21.1		15.3		16.5	*	9.4	*	18.1	*	19.2	*	16.8	*	7.6	*	9.5	*	2.5	B*	4.8	*
Cobalt		7.2	E	12.1	E	11.8	E	5.6	E	10.8	*	7.2	*	14.5	*	34.4	*	30.8	*	7.2	B	15.4		38.8		30.2	
Copper		20.7		30.7		30.9		16.6		19.8	N*	86.3	N*	45.1	N*	31.0	N*	29.5	N*	23.9	*	21.9	*	48.0		45.7	
Iron		25600		39900		38700		24900		38200	*	219000	*	43100	*	53000	*	48200	*	15500	*	24800	*	40900	*	40200	*
Lead	150	36.1	E	12.1	E	10.8	E	10.9	E	57.5	*	79.4	*	13.1	*	6.9	*	12.7	*	71.2	N*	24.1	N*	30.6		26.6	
Magnesium		6490		5520		4660		4830		5030	*	3780	*	5230	*	6490	*	6170	*	2580		4320		5930	*	5790	*
Manganese	390	362	E	323	E	300	E	335	E	409	*	741	*	352	*	425	*	436	*	1010	*	1860	*	3200		2800	
Mercury		0.064		0.017	U	0.015	U	0.018	U	0.045		0.017	U	0.018	U	0.016	U	0.017	U	0.020	B	0.018	U	0.019	U	0.019	U
Nickel		19.7	E	31.4	E	31.5	E	17.6	E	19.7	*	14.2	*	20.7	*	43.0	*	38.9	*	10.7	B	14.1		29.4		26.6	*
Potassium		932		803		734		268		341	*	195	*	386	*	298	*	336	*	570	*	558	*	555		440	
Selenium		2.6		2.9		3.2		2.7		0.17	UN	0.16	UN	0.14	UN	0.15	UN	0.14	UN	2.1	B	3.6	B	7.2	B	7.4	
Silver		0.041	U	0.036	U	0.033	U	0.038	U	3.0		5.2		3.1		3.4		3.3		2.1	B	3.3	B	4.0	B	3.9	B
Sodium		2290		828		750		216		698	*	349	*	275	*	413	*	432	*	184	E	109	E	125		102	
Thallium		2.9		4.4		4.2		3.0		0.11	UN	0.11	UN	0.096	UN	0.099	UN	0.093	UN	0.45	U	0.53	U	0.48	U	0.47	U
Vanadium		18.8		22.7		21.2		12.4		27.1	*	23.9	*	19.3	*	18.4	*	19.8	*	24.6		11.7	B	16.5		16.0	
Zinc		53.8		71.2		73.4		43.9		99.7	*	118	*	132	*	85.6	*	88.5	*	79.8	*	72.2	*	101		98.3	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		3600	U	2600	U	2800	U	2700	U	2400	U	31000		2400	U	2200	U	2400	U	4300	U	4200	U	120000		120000	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	69		17		13	U	13	U	48		900		23		13	U	13	U	600		150		4400		5200	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-409-0608		OFF-SB-409-1012		OFF-SB-410-0204		OFF-SB-410-0608		OFF-SB-410-1012		OFF-SB-410-1416		OFF-SB-410-1820		OFF-SB-411-2022		OFF-SB-411-2224		OFF-SB-411-2628		OFF-SB-412-1416		OFF-SB-413-0204		OFF-SB-DUP12	
Sample Location		409		409		410		410		410		410		410		411		411		411		412		413		413	
Date Sampled		11/20/2003		11/20/2003		11/20/2003		11/20/2003		11/20/2003		11/21/2003		11/21/2003		11/24/2003		11/25/2003		11/25/2003		11/25/2003		12/2/2003		12/2/2003	
Interval		6.0-8.0		10.0-12.0		2.0-4.0		6.0-8.0		10.0-12.0		14.0-16.0		18.0-20.0		20.0-22.0		22.0-24.0		26.0-28.0		14.0-16.0		2.0-4.0		2.0-4.0	
QC Identifier		None		None		None		None		None		None		None		None		None		None		None		Field Dup.		Field Dup.	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		1900		8.6		7.2		3.6	U	58		3.6	U	3.7	U	24	U	34		7.5		3.8		840		1100	
Acenaphthene		1900		21		4.9		1200	*	32		3.6	U	3.7	U	24	U	47		14		4.0		2500		3600	
Acenaphthylene		920		9.4		22		340		26		3.6	U	3.7	U	24	U	19		20		7.2		190		250	
Anthracene		750		12		32		540	*	41		3.6	U	3.7	U	24	U	100		38		10		4500	*	7000	*
Benzo(a)anthracene	900	82		3.6	U	150		84		65		3.6	U	3.7	U	48		290		50		34		11000	*	17000	*
Benzo(a)pyrene	400	76	U	3.6	U	140		59		70		3.6	U	3.7	U	47		250		35		31		9200	*	14000	*
Benzo(b)fluoranthene	900	76	U	3.6	U	190		74		90		3.6	U	3.7	U	60		330		42		43		12000	*	15000	*
Benzo(g,h,i)perylene	900	76	U	3.6	U	71		32		52		3.6	U	3.7	U	30		120		24		21		5400	*	7900	*
Benzo(k)fluoranthene	800	76	U	3.6	U	68		25		36		3.6	U	3.7	U	25		110		21		13		3900	*	7800	*
Chrysene	400	110		3.6	U	150		98		75		3.6	U	3.7	U	72		270		42		35		7800	*	12000	*
Dibenzo(a,h)anthracene	400	76	U	3.6	U	20		7.9		13		3.6	U	3.7	U	24	U	33		6.3		6.1		1300		1800	
Fluoranthene		260		6.0		220		300	*	99		3.6	U	3.7	U	67		500	*	84		52		18000	*	28000	*
Fluorene		2200		27		7.0		1900	*	46		3.6	U	4.8		24	U	51		12		5.9		2300		3400	
Indeno(1,2,3-cd)pyrene	900	76	U	3.6	U	66		27		43		3.6	U	3.7	U	24	U	110		22		16		4900	*	7200	*
Naphthalene		810		3.6	U	4.6		3.6	U	16		3.6	U	3.7	U	24	U	22		5.0		10		2200		3000	
Phenanthrene		5100		67		81		3600	*	120		9.1		13		47		370		66		33		13000	*	21000	*
Pyrene		680		12		240		360		120		3.6	U	3.7	U	94		560	*	100		68		14000	*	21000	*
TAL Metal Analysis (MG/KG)																											
Aluminum		11900	*	16200	*	14800	*	14700	*	7660	*	9080	*	11700	*	7650	E	12500	E	12100	E	8570	E	8160		7410	
Antimony	10	0.47	UN	0.47	UN	0.54	UN	0.53	UN	0.20	UN	0.46	UN	0.52	UN	0.76	BN	0.82	BN	0.71	BN	0.67	BN	7.0	N	5.5	N
Arsenic	7.0	7.3		13.2		10.0		8.3		4.6		7.0		6.7		4.3	*	4.7	*	4.4	*	4.3	*	0.64	B	1.4	
Barium		13.4	B	15.6	B	23.0	B	26.6	B	22.7		37.1	B	23.9	B	20.3	*	27.5	*	20.0	*	14.4	*	26.0		19.6	
Beryllium	0.4	0.22	B	0.28	B	0.22	B	0.25	B	0.24	B	0.40	B	0.41	B	0.081	B	0.27	B	0.69		0.11	B	0.41		0.39	
Cadmium		0.047	U	0.047	U	0.054	U	0.053	U	0.020	U	0.046	U	0.052	U	0.013	U	0.13	B	0.086	B	0.0097	U	0.017	U	0.014	U
Calcium		679	*	1800	*	2190	*	1350	*	1350	*	1600	*	2090	*	1520	E	5650	E	1960	E	1330	E	17800		12500	
Chromium		6.8	*	18.2	*	17.5	*	13.7	*	9.4	*	8.1	*	16.6	*	7.5	E*	17.6	E*	28.7	E*	9.5	E*	11.8		10.2	
Cobalt		18.8		24.2		6.7	B	11.6	B	5.7		17.9		15.2		7.3	E	9.8	E	7.7	E	8.4	E	5.4	E	4.2	E
Copper		15.7		20.4		16.6		18.3		13.9		24.6		20.4		17.4	*	40.8	*	29.0	*	13.2	*	16.7		12.7	
Iron		25700	*	33600	*	31500	*	39100	*	17400	*	33600	*	35300	*	17000		43300		36100		19700		23100		18800	
Lead	150	14.2		32.2		42.4		19.6		113		12.0		13.3		16.2	NE*	71.7	NE*	22.1	NE*	15.5	NE*	11.2	E	10.3	E
Magnesium		5250	*	7630	*	6010	*	5050	*	2450	*	3510	*	4690	*	3380	E*	5190	E*	5280	E*	3820	E*	3520		3330	
Manganese	390	1280		716		274		563		173		2120		316		409	E	775	E	4850	E	402	E	407	E	386	E
Mercury		0.019	U	0.017	U	0.074		0.024	B	0.066		0.016	U	0.019	U	0.023	U*	0.051	*	0.018	U*	0.019	U*	0.017	U	0.018	U
Nickel		13.7		19.5		17.2		16.2		14.2		28.4		34.1		12.7	E	22.3	E	23.0	E	14.6	E	14.1		11.5	
Potassium		317		298		473		409		303		813		647		616	*	709	*	987	*	470	*	602		537	
Selenium		5.0	B	6.3	B	5.7	B	7.5	B	3.0	B	5.9	B	6.4	B	0.20	U	0.18	U	0.17	U	0.15	U	0.28	U	0.24	U
Silver		2.5	B	3.2	B	3.0	B	3.8	B	1.8	B	3.4	B	3.5	B	2.3	E	3.6	E	3.7	E	2.2	E	0.039	U	0.034	U
Sodium		97.1		107		70.0		80.8		203		113		52.9		317	*	464	*	551	*	83.9	*	90.1		69.9	
Thallium		0.47	U	0.47	U	0.54	U	0.53	U	0.36	B	0.46	U	0.52	U	0.13	U	0.12	U	0.12	U	0.097	U	1.4		2.2	
Vanadium		10.1	B	15.9		19.0		21.3		20.0		20.3		21.0		12.1	E	19.9	E	14.7	E	9.7	E	14.5		12.6	
Zinc		49.2		66.2		69.9		113		86.1		74.2		76.9		54.5	E	89.3	E	49.2	E	41.7	E	51.9		42.4	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		110000		2800	U	3500	U	110000		37000		2200	U	2100		2900	U	3200	U	22000		3000	U	4700		5800	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	4200		38		52		2900		110		25		13	U	300		170		380		100		890		1000	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-414-0204		OFF-SB-414-0608		OFF-SB-414-1012		OFF-SB-415-0608		OFF-SB-415-1012		OFF-SB-416-0406		OFF-SB-416-0810		OFF-SB-416-1214		OFF-SB-416-1618		OFF-SB-417-0406		OFF-SB-417-0608		OFF-SB-DUP04		OFF-SB-417-1012	
Sample Location		414		414		414		415		415		416		416		416		416		417		417		417		417	
Date Sampled		12/2/2003		12/2/2003		12/2/2003		11/18/2003		11/18/2003		11/19/2003		11/19/2003		11/19/2003		11/19/2003		11/19/2003		11/19/2003		11/19/2003		11/19/2003	
Interval		2.0-4.0		6.0-8.0		10.0-12.0		6.0-8.0		10.0-12.0		4.0-6.0		8.0-10.0		12.0-14.0		16.0-18.0		4.0-6.0		6.0-8.0		6.0-8.0		10.0-12.0	
QC Identifier		None		None		None		None		None		None		None		None		None		None		Field Dup.		Field Dup.		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		20		38		12		3.6	U	18	U	18	U	3.8	U	3.5	U	3.7	U	19		35		21		3.7	U
Acenaphthene		98		240		81		3.6	U	22		35		3.8	U	3.5	U	3.7	U	9.4		69		62		3.7	U
Acenaphthylene		51		24		66		3.6	U	18	U	40		3.8	U	3.5	U	16		18		17		16		3.7	U
Anthracene		230		430	*	220		3.6	U	54		110		3.8	U	3.5	U	24		39		130		110		7.6	
Benzo(a)anthracene	900	1000	*	1400	*	94		19		270		880		12		3.5	U	62		56		170		170		22	
Benzo(a)pyrene	400	1100	*	1000	*	71		18		280		820		11		3.5	U	55		56		130		150		21	
Benzo(b)fluoranthene	900	1100	*	1200	*	83		22		340		1100		13		3.5	U	67		68		140		180		24	
Benzo(g,h,i)perylene	900	550	*	440	*	46		11		180		450		3.8	U	3.5	U	32		36		58		80		12	
Benzo(k)fluoranthene	800	350		400	*	30		7.9		150		470		3.8	U	3.5	U	25		25		72		64		9.8	
Chrysene	400	1100	*	1100	*	93		21		340		890		11		3.5	U	60		55		160		150		20	
Dibenzo(a,h)anthracene	400	110		110		11		3.6	U	44		120		3.8	U	3.5	U	7.8		8.4		16		18		3.7	U
Fluoranthene		1300	*	1900	*	210		30		470		1000		19		3.5	U	120		110		360		350		39	
Fluorene		79		180		29		3.6	U	20		26		3.8	U	3.5	U	11		8.4		72		55		3.7	U
Indeno(1,2,3-cd)pyrene	900	350		390	*	36		8.8		140		370		3.8	U	3.5	U	28		31		56		72		9.8	
Naphthalene		16		51		10		3.6	U	18	U	18	U	3.8	U	3.5	U	8.4		3.8	U	34		35		3.7	U
Phenanthrene		950	*	1500	*	100		15		270		440		10		3.5	U	94		63		400	*	310		23	
Pyrene		2500	*	2300	*	370		36		510		1200		20		3.5	U	120		140		360		340		41	
TAL Metal Analysis (MG/KG)																											
Aluminum		9450	*	13000	*	9060	*	8070		12200		9630		10300		11100		12000		7840		5550		7250		5130	
Antimony	10	0.38	BN*	0.56	BN*	0.37	BN*	7.5	N	8.5	N	6.2	N	7.1	N	9.1	N	8.9	N	5.5	N	4.4	N	5.4	N	4.2	N
Arsenic	7.0	5.2	*	8.5	*	4.3	*	23.6		17.6		11.8		12.4		15.6		25.9		7.8		8.2		8.6		5.8	
Barium		35.6	*	17.0	*	8.5	B*	10.0	B	32.2		17.6		7.0	B	9.3	B	14.6		7.3	B	6.1	B	6.8	B	6.5	B
Beryllium	0.4	0.15	B*	0.23	B*	0.21	B*	0.35		0.35		0.43		0.52		0.48		0.42		0.44		0.31		0.35		0.35	
Cadmium		0.17	B*	0.40	*	0.074	B*	0.016	U	0.016	U	0.014	U	0.017	U	0.016	U	0.013	U	0.015	U	0.014	U	0.014	U	0.014	U
Calcium		997	*	1490	*	1270	*	948		2040		1840		837		1050		1240		649		20700		15400		923	
Chromium		9.9	*	12.3	*	8.2	*	7.7		16.1		12.6		15.9		16.9		12.0		11.6		9.0		11.0		7.8	
Cobalt		9.5	*	12.8	*	7.2	*	3.7		10.8		10.2		5.4		21.2		81.3		8.3		6.8		8.4		4.4	
Copper		31.6	N*	25.7	N*	25.6	N*	43.2		39.4		33.9		19.5		27.8		26.0		18.2		20.7		19.0		11.9	
Iron		26300	*	37200	*	24400	*	31600	*	34200	*	25100	*	27900	*	35600	*	39500	*	18100	*	13200	*	18900	*	12500	*
Lead	150	183	*	34.4	*	47.7	*	182		199		136		20.7		12.7		12.4		101		95.2		108		15.1	
Magnesium		2810	*	5220	*	4560	*	2370		4870		3070		3560		3820		3730		2390		5400		6320		1930	
Manganese	390	1080	*	666	*	390	*	197		582		570		189		357		3210		129		194		191		114	
Mercury		0.040		0.018	B	0.028	B	0.064		0.075		0.081		0.030	B	0.016	U	0.017	U	0.026	B	0.020	B	0.018	U	0.019	U
Nickel		15.4	*	24.3	*	14.0	*	13.1		22.9		18.8		16.7		28.4		31.9		17.9		11.5		15.8		12.0	
Potassium		466	*	570	*	424	*	215		399		389		430		538		481		392		286		329		400	
Selenium		0.15	UN	0.14	UN	0.17	UN	0.26	U	0.27	U	0.24	U	0.28	U	0.26	U	0.22	U	0.25	U	0.24	U	0.23	U	0.23	U
Silver		2.5		2.8		2.3		0.036	U	0.038	U	0.034	U	0.039	U	0.036	U	0.031	U	0.035	U	0.033	U	0.033	U	0.032	U
Sodium		45.7	B*	539	*	205	*	41.4	B	1010		71.5		822		856		1270		1210		1250		1220		1350	
Thallium		0.10	UN	0.094	UN	0.12	UN	2.9		3.7		2.6		2.5		3.6		5.6		2.0		1.3		1.9		1.5	
Vanadium		17.0	*	19.4	*	9.4	*	10.9		16.5		16.8		19.0		16.7		15.7		14.4		11.0		13.2		9.6	
Zinc		76.6	*	83.2	*	108	*	30.8		86.8		119		43.2		78.0		73.4		41.8		29.0		36.6		27.2	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		2500	U	2200	U	23000		2500	U	3300	U	3300	U	2000	U	2100	U	3500	U	34000		23000		3000	U	2600	U
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	110		180		1200		13	U	39		170		13	U	12	U	13		310		180		170		13	U

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-417-1416		OFF-SB-417-1820		OFF-SB-418-0406		OFF-SB-418-0810		OFF-SB-418-1214		OFF-SB-418-1618		OFF-SB-DUP13		OFF-SB-419-0204		OFF-SB-419-0608		OFF-SB-DUP01		OFF-SB-419-1012		OFF-SB-420-0204		OFF-SB-420-0608	
Sample Location		417		417		418		418		418		418		418		419		419		419		419		420		420	
Date Sampled		11/19/2003		11/19/2003		12/3/2003		12/3/2003		12/3/2003		12/3/2003		12/3/2003		11/18/2003		11/18/2003		11/18/2003		11/18/2003		11/21/2003		11/21/2003	
Interval		14.0-16.0		18.0-20.0		4.0-6.0		8.0-10.0		12.0-14.0		16.0-18.0		16.0-18.0		2.0-4.0		6.0-8.0		6.0-8.0		10.0-12.0		2.0-4.0		6.0-8.0	
QC Identifier		None		None		None		None		None		Field Dup.		Field Dup.		None		Field Dup.		Field Dup.		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		3.8	U	3.8	U	4.5		3.8	U	3.8	U	3.7	U	3.8	U	3.5	U	260		310		3.9		11		54000	*
Acenaphthene		3.8	U	3.8	U	27		7.7		3.8	U	3.7	U	3.8	U	440	*	1000	*	1300	*	3.7	U	23		3.9	U
Acenaphthylene		3.8	U	3.8	U	13		18		3.8	U	3.7	U	3.8	U	290		320		290		3.7	U	92		3.9	U
Anthracene		3.8	U	3.8	U	51		33		3.8	U	3.7	U	4.2		210		430	*	450	*	3.7	U	130		1700	*
Benzo(a)anthracene	900	3.8	U	3.8	U	150		15		3.8	U	3.7	U	4.9		71		33		32		3.7	U	510	*	96	
Benzo(a)pyrene	400	3.8	U	3.8	U	150		11		3.8	U	3.7	U	3.8	U	70		15		14		3.7	U	430	*	55	
Benzo(b)fluoranthene	900	3.8	U	3.8	U	200		13		3.8	U	3.7	U	4.2		70		18		17		3.7	U	530	*	65	
Benzo(g,h,i)perylene	900	3.8	U	3.8	U	95		4.4		3.8	U	3.7	U	3.8	U	44		7.7		7.4		3.7	U	200		23	
Benzo(k)fluoranthene	800	3.8	U	3.8	U	62		5.9		3.8	U	3.7	U	3.8	U	26		18		9.7		3.7	U	170		43	
Chrysene	400	3.8	U	3.8	U	150		16		3.8	U	3.7	U	4.0		93		39		42		3.7	U	540	*	110	
Dibenzo(a,h)anthracene	400	3.8	U	3.8	U	25		3.8	U	3.8	U	3.7	U	3.8	U	9.6		3.4	U	3.5	U	3.7	U	56		6.2	
Fluoranthene		5.8		7.6		270		29		3.8	U	3.7	U	7.6		210		98		43		3.7	U	770	*	700	E
Fluorene		3.8	U	3.8	U	18		3.8	U	3.8	U	3.7	U	3.8	U	820	*	1600	*	2000	*	17		48		4000	*
Indeno(1,2,3-cd)pyrene	900	3.8	U	3.8	U	81		4.2		3.8	U	3.7	U	3.8	U	34		6.0		6.0		3.7	U	180		22	
Naphthalene		3.8	U	3.8	U	11		3.8	U	3.8	U	3.7	U	3.8	U	200		320		470	*	3.7	U	10		10000	*
Phenanthrene		3.8	U	9.6		160		9.5		3.8	U	3.7	U	4.3		1200	*	2600	*	3000	*	33		590	*	7500	*
Pyrene		7.7		12		280		46		4.3		4.1		9.4		310		250		260		3.7	U	910	*	420	E
TAL Metal Analysis (MG/KG)																											
Aluminum		9680		12000		14400		17300		11600		8510		11500		11700		14300		17000		14700		10400	*	13700	
Antimony	10	9.7	N	8.7	N	8.2	N	9.5	N	9.7	N	5.7	N	8.0	N	1.3	BN	0.76	BN	0.85	BN	0.87	BN	0.20	UN	13.0	N
Arsenic	7.0	14.3		14.1		3.7		1.1		3.8		3.1		7.3		34.7		19.7		24.3		69.2		9.1		14.2	
Barium		25.5		5.9	B	29.5		13.6		17.7		10.5		18.4		18.6	B	10.8	B	13.2	B	20.2	B	21.1		15.7	B*
Beryllium	0.4	0.41		0.45		0.56		0.48		0.44		0.28		0.50		0.60	B	0.45	B	0.47	B	0.66	B	0.73		0.59	B
Cadmium		0.016	U	0.015	U	0.033	U	0.078	U	0.035	U	0.029	U	0.032	U	0.047	U	0.052	U	0.043	U	0.048	U	0.020	U	0.084	U
Calcium		1000		1900		1350		977		720		899		1290		1340	*	1830	*	1430	*	2290	*	1050	*	1510	
Chromium		15.5		19.5		19.1		25.4		19.6		8.1		12.1		8.1	*	3.4	B*	3.9	B*	6.1	*	9.9		18.2	
Cobalt		34.3		9.9		12.2	E	10.1	E	21.9	E	9.9	E	15.5	E	7.2	B	2.9	B	3.6	B	9.7	B	9.5		18.2	
Copper		21.5		11.7		53.0		30.5		27.9		16.3		20.9		13.7	*	20.1	*	22.3	*	27.8	*	25.6	*	25.9	N
Iron		43200	*	37000	*	30300		41000		34800		19800		28400		38900	*	35100	*	40300	*	39900	*	23600	*	36500	
Lead	150	14.8		12.2		321	E	14.5	E	12.7	E	8.4	E	12.2	E	14.3	N*	9.4	N*	11.5	N*	6.6	N*	77.7		14.3	*
Magnesium		3890		3870		4240		7140		4380		4180		5210		4230		5390		6240		5090		3510	*	5280	
Manganese	390	1540		219		496	E	333	E	759	E	1020	E	1700	E	209	*	451	*	439	*	737	*	448		543	
Mercury		0.018	U	0.019	U	0.049		0.017	U	0.018	U	0.018	U	0.019	U	0.017	U	0.017	U	0.016	U	0.018	U	0.037		0.020	U
Nickel		23.6		20.2		32.3	E	32.1	E	38.2	E	17.8	E	25.9	E	15.5		10.9	B	11.7		25.0		16.7		29.3	
Potassium		395		189		493		693		550		233		388		321	*	186	*	191	*	360	*	478		469	
Selenium		0.26	U	0.25	U	3.3		3.6		3.1		2.3		2.9		5.6	B	4.9	B	5.8	B	5.8	B	4.0		1.4	UN
Silver		0.037	U	0.035	U	0.039	U	0.036	U	0.041	U	0.034	U	0.038	U	5.0	B	4.6	B	5.2	B	5.2	B	2.2	B	0.20	UN
Sodium		982		344		252		1080		736		244		477		192	E	94.9	E	93.6	E	188	E	126		314	
Thallium		4.7		3.5		3.5		4.5		4.7		3.1		4.5		0.47	U	0.52	U	0.44	U	0.48	U	0.20	U	4.8	B
Vanadium		12.4		19.3		22.0		23.8		20.6		7.4		11.5		13.7		13.0		18.9		13.7		15.4		22.9	*
Zinc		54.3		53.2		68.2		72.5		71.8		45.2		74.5		53.4	*	53.9	*	65.2	*	73.2	*	82.9		75.8	N
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		2600	U	3000	U	2900	U	3600		2700	U	2700	U	2600	U	380000		680000		120000		33000		2900	U	210000	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	13	U	13	U	32		44		13	U	13	U	13	U	1600		2700		2600		35		46		8400	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-420-1012		OFF-SB-420-1416		OFF-SB-421-0204		DUP06-112103		OFF-SB-421-0608		OFF-SB-421-1214		OFF-SB-421-1416		OFF-SB-421-1820		OFF-SB-422-0204		OFF-SB-422-0608		OFF-SB-422-1012		OFF-SB-422-1416		OFF-SB-422-1820	
Sample Location		420		420		421		421		421		421		421		421		422		422		422		422		422	
Date Sampled		11/21/2003		11/21/2003		11/21/2003		11/21/2003		11/21/2003		11/21/2003		11/21/2003		11/21/2003		12/3/2003		12/3/2003		12/3/2003		12/3/2003		12/3/2003	
Interval		10.0-12.0		14.0-16.0		2.0-4.0		2.0-4.0		6.0-8.0		12.0-14.0		14.0-16.0		18.0-20.0		2.0-4.0		6.0-8.0		10.0-12.0		14.0-16.0		18.0-20.0	
QC Identifier		None		None		Field Dup.		Field Dup.		None		None		None		None		None		None		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		4400	*	420	*	45		19	U	4800	*	6.9		11		13		1100		7.4		3.6	U	3.8	U	3.6	U
Acenaphthene		340		50		110		48		1700		13		14		8.0		7600	*	4.3		3.6	U	3.8	U	3.6	U
Acenaphthylene		3.5	U	3.4	U	94		87		19	U	12		6.3		3.9	U	210		20		3.6	U	3.8	U	3.6	U
Anthracene		150		24		260		140		1100		18		17		3.9	U	14000	*	22		3.6	U	3.8	U	3.6	U
Benzo(a)anthracene	900	24		3.4	U	820		590		1100		17		37		3.9	U	18000	*	79		3.6	U	3.8	U	3.6	U
Benzo(a)pyrene	400	11		3.4	U	810		570		1100		12		21		3.9	U	15000	*	84		3.6	U	3.8	U	3.6	U
Benzo(b)fluoranthene	900	14		3.4	U	870		670		1200		10		26		3.9	U	17000	*	110		3.6	U	3.8	U	3.6	U
Benzo(g,h,i)perylene	900	4.2		3.4	U	440		340		650		4.5	U	3.8	U	3.9	U	9000	*	55		3.6	U	3.8	U	3.6	U
Benzo(k)fluoranthene	800	5.7		3.4	U	440		260		460		4.5	U	13		3.9	U	7800	*	36		3.6	U	3.8	U	3.6	U
Chrysene	400	27		3.4	U	880		580		1000		17		39		3.9	U	15000	*	79		3.6	U	3.8	U	3.6	U
Dibenzo(a,h)anthracene	400	3.5	U	3.4	U	130		98		140		4.5	U	3.8	U	3.9	U	1900		17		3.6	U	3.8	U	3.6	U
Fluoranthene		93		8.5		1200		720		2000	*	22		96		3.9	U	46000	*	89		3.6	U	3.8	U	3.6	U
Fluorene		660	*	58		140		65		3300	*	17		16		9.6		6400	*	7.3		3.6	U	3.8	U	3.6	U
Indeno(1,2,3-cd)pyrene	900	4.1		3.4	U	390		290		550		4.5	U	3.8	U	3.9	U	7500	*	50		3.6	U	3.8	U	3.6	U
Naphthalene		320		39		45		19	U	1400		4.5	U	3.8	U	3.9	U	510		6.7		3.6	U	3.8	U	3.6	U
Phenanthrene		1100	*	120		900		460		6100	*	60		99		18		48000	*	40		3.6	U	3.8	U	3.6	U
Pyrene		130		14		1500		970		2700	*	41		100		3.9	U	44000	*	100		3.6	U	3.8	U	3.6	U
TAL Metal Analysis (MG/KG)																											
Aluminum		20100		20800		8250		6560		11200		10500		7590		6630		10700		9940		8130		8460		7560	
Antimony	10	13.9	N	17.3	N	5.5	N	4.4	N	9.9	N	13.3	N	10.0	N	11.3	N	6.4	N	5.0	N	8.0	N	9.0	N	10.5	N
Arsenic	7.0	7.2		7.6		10.1		8.4		8.4		11.6		9.1		11.9		3.5		0.87	B	4.6		2.1		2.0	
Barium		12.5	B*	25.4	B*	74.5	*	59.9	*	25.4	B*	19.6	B*	20.6	B*	23.2	B*	34.3		10.9		16.8		24.2		18.0	
Beryllium	0.4	0.38	B	0.60	B	0.64		0.42		0.34	B	0.53	B	0.42	B	0.44	B	0.44		0.22	B	0.62		0.64		0.40	
Cadmium		0.065	U	0.072	U	0.017	U	0.015	U	0.073	U	0.089	U	0.071	U	0.080	U	0.18	B	0.015	U	0.016	U	0.014	U	0.30	
Calcium		3570		4230		3880		2890		2360		1580		1260		1560		20200		1520		980		808		898	
Chromium		23.5		23.3		11.6		10.2		13.9		20.7		13.5		16.3		12.8		10.0		12.5		15.5		16.9	
Cobalt		21.3		50.3		9.1		8.6		12.9		22.5		14.3		16.8		5.9	E	2.9	E	9.6	E	12.1	E	12.1	E
Copper		24.5	N	31.4	N	24.8	N	24.0	N	26.5	N	23.5	N	17.4	N	17.8	N	17.3		5.6		18.9		22.3		20.6	
Iron		42900		49900		18800		13700		28300		37300		28200		31800		22100		17900		25900		29300		35200	
Lead	150	8.5	*	16.1	*	215	*	186	*	29.8	*	14.6	*	11.0	*	10.6	*	39.3	E	27.5	E	9.8	E	10.0	E	10.7	E
Magnesium		7730		6600		1950		1680		3270		3960		2730		2470		3780		3350		2610		2650		2320	
Manganese	390	428		2780		237		212		374		567		534		284		334	E	160	E	528	E	917	E	514	E
Mercury		0.018	U	0.017	U	0.74		0.94		0.052		0.022	U	0.019	U	0.018	U	0.050		0.030	B	0.019	U	0.018	U	0.015	U
Nickel		41.4		52.8		19.8		17.1		19.6		34.7		24.4		33.2		13.0		10.7		14.3		27.8		32.7	
Potassium		357		327		481		349		360		903		667		677		462		399		569		591		455	
Selenium		1.1	UN	1.2	UN	0.28	UN	0.27	BN	1.2	UN	1.5	UN	1.2	UN	1.3	UN	0.24	U	0.24	U	0.27	U	0.24	U	0.22	U
Silver		0.15	UN	0.17	UN	0.039	UN	0.036	UN	0.17	UN	0.21	UN	0.17	UN	0.19	UN	0.034	U	0.034	U	0.037	U	0.034	U	0.031	U
Sodium		370		129		137		94.7		90.4		369		244		85.0		115		254		75.6		85.4		37.5	B
Thallium		5.2		8.7		1.9		1.5		3.6	B	4.7	B	3.6	B	4.0	B	2.1		0.67	B	2.9		4.1		4.7	
Vanadium		20.4	*	30.9	*	43.8	*	58.1	*	18.4	*	21.3	*	15.9	*	16.2	*	16.8		18.9		21.0		18.9		18.1	
Zinc		90.0	N	137	N	114	N	91.6	N	89.0	N	80.9	N	61.0	N	67.0	N	59.6		36.3		62.5		82.3		106	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		56000		2500		4200	U	3600	U	150000		27500		11000		25000		3200	U	3600	U	3000	U	2700	U	2900	U
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	710		70		110		140		7300		16	U	16		18		360		37		13	U	13	U	13	U

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-423-0204		OFF-SB-424-0204		OFF-SB-425-0204		OFF-SB-426-0204		OFF-SB-DUP08		OFF-SB-427-0204		OFF-SB-427-0608		OFF-SB-428-0204		OFF-SB-428-0608		OFF-SB-428-1012		OFF-SB-428-1416		OFF-SB-428-1820		OFF-SB-429-0406	
Sample Location		423		424		425		426		426		427		427		428		428		428		428		428		429	
Date Sampled		11/25/2003		11/26/2003		11/26/2003		11/25/2003		11/25/2003		11/24/2003		11/24/2003		11/24/2003		11/24/2003		11/24/2003		11/24/2003		11/24/2003		11/25/2003	
Interval		2.0-4.0		2.0-4.0		2.0-4.0		2.0-4.0		2.0-4.0		2.0-4.0		6.0-8.0		2.0-4.0		6.0-8.0		10.0-12.0		14.0-16.0		18.0-20.0		4.0-6.0	
QC Identifier		None		None		None		Field Dup.		Field Dup.		None		None		None		None		None		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		17	U	3.4	U	3.5	U	3.6	U	3.6	U	21	U	9.5		190		96		9.5		3.6	U	3.4	U	290	
Acenaphthene		55		3.4	U	3.5	U	7.7		8.6		110		3.8	U	280		150		26		3.6	U	3.4	U	500	*
Acenaphthylene		17	U	8.1		3.5	U	8.4		8.5		50		3.8	U	180		180		21		3.6	U	3.4	U	67	
Anthracene		93		8.7		7.3		18		20		130		160		660		710	*	62		3.6	U	3.4	U	1200	*
Benzo(a)anthracene	900	290		30		26		94		89		460		52		1200		1900	*	200		3.6	U	3.4	U	2200	*
Benzo(a)pyrene	400	290		32		22		93		92		400		42		1100		1600	*	190		3.6	U	3.4	U	1800	*
Benzo(b)fluoranthene	900	380		33		26		110		100		530		50		1400		1900	*	220		3.6	U	3.4	U	2100	*
Benzo(g,h,i)perylene	900	120		19		15		52		51		180		28		770		890	*	89		3.6	U	3.4	U	990	*
Benzo(k)fluoranthene	800	130		17		12		37		34		200		18		580		830	*	120		3.6	U	3.4	U	780	*
Chrysene	400	280		33		28		100		100		430		52		1300		1700	*	210		3.6	U	3.4	U	1800	*
Dibenzo(a,h)anthracene	400	37		5.3		3.7		14		13		58		5.3		160		190		26		3.6	U	3.4	U	190	
Fluoranthene		520		38		56		130		120		740		100		2400	*	3500	*	270		3.6	U	3.4	U	3400	*
Fluorene		40		3.4	U	3.5	U	7.7		7.8		25		3.8	U	200		450	*	30		3.6	U	3.4	U	360	
Indeno(1,2,3-cd)pyrene	900	110		16		12		43		42		160		22		610		770	*	87		3.6	U	3.4	U	850	*
Naphthalene		21		3.4	U	3.5	U	3.6	U	3.6	U	21	U	3.8	U	220		200		21		3.6	U	3.4	U	200	
Phenanthrene		310		12		31		79		95		420		68		1100		2200	*	160		3.6	U	3.4	U	2800	*
Pyrene		550		35		42		180		170		920		190		2500	*	3000	*	420	*	3.6	U	3.4	U	3700	*
TAL Metal Analysis (MG/KG)																											
Aluminum		9660		10500		11600		15300		11700		8970		6260		7260		8900		4240		7660		7100		8620	E
Antimony	10	6.2	N	0.92	BN	1.1	N	12.1	N	9.6	N	6.0	N	2.9	N	19.3	N	7.5	N	3.6	N	8.6	N	10.7	N	2.1	N
Arsenic	7.0	5.5		5.1		9.8		11.0		8.3		8.3		5.0		17.3		9.1		4.4		8.0		7.6		6.9	*
Barium		15.5		32.7		14.6		38.6		21.1		35.2	*	10.0	B*	72.3	*	19.6	B*	6.5	B*	23.7	B*	17.9	B*	148	*
Beryllium	0.4	0.26		0.35		0.27		0.42		0.34		0.39		0.35		0.32	B	0.38	B	0.18	B	0.38	B	0.34	B	0.29	
Cadmium		0.013	U	0.61		0.28		0.33		0.16	B	0.016	U	0.016	U	0.074	U	0.072	U	0.015	U	0.083	U	0.072	U	1.8	
Calcium		1510		4700	*	1480	*	4290		4270		8870		1160		2510		1970		1880		1270		2040		4880	E
Chromium		11.2		11.6	*	12.0	*	20.0		18.4		13.8		7.0		23.4		9.7		5.9		12.3		15.4		13.0	E*
Cobalt		6.2		18.0	E	14.1	E	13.6		9.7		7.1		2.5	B	10.3	B	9.4	B	3.2		11.1	B	14.5		5.8	E
Copper		10.7		22.6		24.1		26.4		18.9		17.6	N	5.8	N	66.1	N	21.2	N	7.5	N	14.7	N	19.0	N	174	*
Iron		20500		43200	E	37500	E	38000		30900		19600		9960		51100		20700		10000		23900		28500		49100	
Lead	150	14.3		16.1	E	36.7	E	42.0		31.2		47.1	*	13.4	*	760	*	72.6	*	25.8	*	8.0	*	7.6	*	2490	NE*
Magnesium		3500		4870		4340		5420		4440		3950		1780		2520		3320		2270		3300		3460		2970	E*
Manganese	390	506		1210	E	803	E	961		741		342		167		383		311		99.9		165		421		173	E
Mercury		0.063		0.034		0.098		0.042		0.055		0.029	B	0.022	B	0.074		0.064		0.019	B	0.019	U	0.017	U	0.28	*
Nickel		11.9		29.5	E	17.3	E	23.2		17.7		18.4		6.5		27.3		14.3		8.9		22.6		28.3		18.5	E
Potassium		356		1180		415		507		422		963		434		321		344		333		768		497		493	*
Selenium		0.22	U	0.15	UN	0.15	UN	0.23	U	0.24	U	0.27	UN	0.26	UN	1.2	UN	1.2	UN	0.24	UN	1.4	UN	1.2	UN	0.15	U
Silver		0.031	U	3.7	E	3.1	E	0.033	U	0.034	U	0.037	UN	0.036	UN	0.17	UN	0.17	UN	0.034	UN	0.19	UN	0.17	UN	4.5	E
Sodium		38.6	B	52.1		38.5	B	56.2		45.5	B	305		1300		211		697		2310		122		70.5		2400	*
Thallium		3.0		0.098	UN	0.099	UN	4.9		4.4		2.1		0.84	B	6.7		2.0	B	1.2		3.0	B	3.5	B	0.098	U
Vanadium		11.2		14.1		13.1		20.2		17.1		19.8	*	11.5	*	13.1	*	13.0	*	9.9	*	16.1	*	15.4	*	15.0	E
Zinc		42.0	E	53.7	E	61.8	E	87.3	E	66.0	E	77.9	N	26.8	N	159	N	78.7	N	32.8	N	51.8	N	65.5	N	743	E
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		23000		3600	U	3400	U	2600	U	3300	U	17000		63000		59000		100000		22000		12000		15000		92000	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	78		12	U	15		35		41		370		400		1700		290		56		13	U	12	U	2600	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-429-0608		DUP06-112503		OFF-SB-429-1012		OFF-SB-429-1416		OFF-SB-429-1820		OFF-SB-430-0204		OFF-SB-430-0810		OFF-SB-430-1214		OFF-SB-430-1416		OFF-SB-431-0204		OFF-SB-431-0810		OFF-SB-431-1012		OFF-SB-432-0204	
Sample Location		429		429		429		429		429		430		430		430		430		431		431		431		432	
Date Sampled		11/25/2003		11/25/2003		11/25/2003		11/25/2003		11/25/2003		12/2/2003		12/2/2003		12/2/2003		12/2/2003		11/26/2003		11/26/2003		11/26/2003		11/20/2003	
Interval		6.0-8.0		6.0-8.0		10.0-12.0		14.0-16.0		18.0-20.0		2.0-4.0		8.0-10.0		12.0-14.0		14.0-16.0		2.0-4.0		8.0-10.0		10.0-12.0		2.0-4.0	
QC Identifier		Field Dup.		Field Dup.		None		None		None		None		None		None		None		None		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		1200		990		26		4.2	U	4.2	U	43		3.8	U	40		3.8	U	3.6	U	9.3		28		1600	D
Acenaphthene		3000		2900		100		6.2		4.2	U	13		3.8	U	89		3.8	U	4.9		25		70		580	
Acenaphthylene		1400		1300		31		4.2	U	4.2	U	68		3.8	U	26		3.8	U	11		3.9	U	140		220	D
Anthracene		2200		2100		100		6.6		4.2	U	120		310		220		3.8	U	15		80		290		900	
Benzo(a)anthracene	900	1000		870		35		4.2	U	4.2	U	400	*	140		530	*	3.8	U	58		130		340		1400	
Benzo(a)pyrene	400	770		670		30		4.2	U	4.2	U	470	*	120		370	*	3.8	U	58		180		280		1200	
Benzo(b)fluoranthene	900	910		770		37		4.2	U	4.2	U	620	*	130		460	*	3.8	U	76		240		380		1600	
Benzo(g,h,i)perylene	900	400		330		21		4.2	U	4.2	U	640	*	84		220		3.8	U	36		120		190		430	
Benzo(k)fluoranthene	800	380		350		12		4.2	U	4.2	U	280		60		150		3.8	U	27		93		120		520	
Chrysene	400	1000		930		36		4.2	U	4.2	U	410	*	140		400	*	3.8	U	59		120		210		1400	
Dibenzo(a,h)anthracene	400	110		87		5.3		4.2	U	4.2	U	150		16		56		3.8	U	9.9		30		46		140	
Fluoranthene		2000		1800		64		6.2		4.2	U	510	*	380		770	*	3.8	U	76		160		670		2900	*
Fluorene		1200		1100		67		4.2	U	4.2	U	19		3.8	U	98		3.8	U	4.3		3.9	U	31		680	
Indeno(1,2,3-cd)pyrene	900	340		280		16		4.2	U	4.2	U	410	*	64		190		3.8	U	31		100		150		400	
Naphthalene		400		380		13		4.2	U	4.2	U	19		3.8	U	70		3.8	U	3.6	U	12		32		1100	D
Phenanthrene		2900		2600		200		12		4.2	U	160		170		600	*	3.8	U	42		98		380		3600	*
Pyrene		3000		2700		71		5.5		4.2	U	690	*	640	*	830	*	5.0		88		560	*	1000		3600	*
TAL Metal Analysis (MG/KG)																											
Aluminum		2370	E	2400	E	10900	E	9350	E	9100	E	1400		14300		9890		11600		6990		11800		8630		9980	*
Antimony	10	53.7	N	71.6	N	3.4	N	0.84	BN	0.59	BN	19.7	N	8.5	N	8.3	N	8.8	N	0.67	BN	1.1	N	0.57	BN	0.20	UN
Arsenic	7.0	36.3	*	53.3	*	1.6	*	6.1	*	4.9	*	0.16	U	0.26	B	2.9		11.1		4.2		7.6		5.3		6.2	
Barium		74.9	*	72.1	*	20.4	*	41.3	*	30.7	*	23.7		13.2		24.6		6.8	B	18.7		29.0		22.1		41.5	
Beryllium	0.4	0.094	B	0.075	B	0.16	B	0.24	B	0.25	B	0.33		0.34		0.29		0.54		0.14	B	0.20	B	0.24	B	0.35	B
Cadmium		5.9		12.4		0.61		0.011	U	0.012	U	1.9		0.047	B	0.069	B	0.014	U	0.12	B	0.49		0.24	B	0.020	U
Calcium		25400	E	21400	E	2590	E	475	E	716	E	21400		1800		5990		1140		780	*	3320	*	582	*	10200	*
Chromium		11.2	E*	22.4	E*	12.6	E*	14.8	E*	14.5	E*	36.9		15.7		13.4		11.6		9.3	*	13.1	*	13.3	*	11.4	*
Cobalt		17.9	E	30.0	E	5.0	E	17.2	E	14.5	E	3.1	E	7.6	E	7.2	E	8.4	E	7.7	E	10.8	E	9.0	E	7.5	
Copper		372	*	501	*	26.9	*	25.5	*	21.5	*	97.7		30.6		73.6		18.5		14.6		46.6		52.8		55.6	
Iron		129000		227000		37400		31300		37600		13900		30900		27800		31100		20900	E	31100	E	35400	E	19800	*
Lead	150	1890	NE*	1820	NE*	183	NE*	28.0	NE*	11.7	NE*	127	E	101	E	197	E	18.4	E	26.5	E	242	E	69.4	E	158	
Magnesium		3100	E*	3190	E*	5030	E*	3280	E*	3500	E*	2620		6660		4070		4730		2480		5200		3220		3640	*
Manganese	390	238	E	462	E	143	E	198	E	270	E	557	E	290	E	305	E	284	E	805	E	613	E	383	E	314	
Mercury		0.17	*	0.30	*	0.065	*	0.021	U*	0.021	U*	0.032	B	0.10		0.078		0.016	U	0.10		0.050		0.051		0.081	
Nickel		35.6	E	66.0	E	17.8	E	18.5	E	22.8	E	33.5		21.5		21.6		19.8		11.5	E	20.1	E	22.8	E	17.3	
Potassium		405	*	469	*	328	*	824	*	913	*	498		348		390		377		306		650		631		699	
Selenium		0.16	U	0.28	U	0.16	U	0.17	U	0.18	U	0.26	U	0.24	U	0.23	U	0.24	U	0.14	UN	0.16	UN	0.16	UN	3.0	
Silver		6.7	E	12.4	E	3.6	E	3.2	E	3.5	E	0.037	U	0.033	U	0.033	U	0.033	U	2.2	E	3.5	E	3.1	E	1.9	B
Sodium		3930	*	4660	*	581	*	392	*	221	*	152		966		1290		622		39.3	B	1390		1340		334	
Thallium		0.10	U	0.18	U	0.11	U	0.11	U	0.12	U	7.9		3.9		3.6		3.3		0.094	UN	0.11	UN	0.11	UN	0.37	B
Vanadium		10.8	E	18.4	E	17.8	E	19.5	E	21.4	E	24.0		14.3		15.8		15.0		10.4		17.5		18.3		20.3	
Zinc		1190	E	1680	E	179	E	59.5	E	63.4	E	2690		155		221		54.6		47.9	E	245	E	81.9	E	151	
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		130000		310000		3000	U	3700	U	3000	U	4300		27000		11000		2800	U	2300	U	67000		73000		2300000	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	8200		7800		250		15	U	15	U	330		2800		290		13	U	50		2300		3200		1100	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-SB-432-0608		OFF-SB-432-1012		OFF-SB-432-1416		OFF-SB-432-1820		OFF-SB-433-1214		OFF-SB-433-1618		OFF-SB-433-2022		OFF-SB-DUP09		OFF-SB-433-2426		OFF-SB-DUP10		OFF-SB-433-2830		OFF-SB-434-0204		OFF-SB-434-0608	
Sample Location		432		432		432		432		433		433		433		433		433		433		433		434		434	
Date Sampled		11/20/2003		11/20/2003		11/20/2003		11/20/2003		11/26/2003		11/26/2003		11/26/2003		11/26/2003		11/26/2003		11/26/2003		11/26/2003		12/2/2003		12/2/2003	
Interval		6.0-8.0		10.0-12.0		14.0-16.0		18.0-20.0		12.0-14.0		16.0-18.0		20.0-22.0		20.0-22.0		24.0-26.0		24.0-26.0		28.0-30.0		2.0-4.0		6.0-8.0	
QC Identifier		None		None		None		None		None		None		Field Dup.		Field Dup.		Field Dup.		Field Dup.		None		None		None	
Criteria	PRG																										
Low Concentration PAH (SIM) Analysis (UG/KG)																											
2-Methylnaphthalene		2600	*	260		3.6	U	4.6		18	U	14		8.0		14		3.7	U	3.6	U	3.7	U	13		3.6	
Acenaphthene		700		60		3.6	U	8.1		22		54		16		55		3.7	U	3.6	U	3.7	U	19		7.3	
Acenaphthylene		240		18		3.6	U	3.8	U	65		9.2		12		20		3.7	U	3.6	U	3.7	U	15		11	
Anthracene		740		53		3.6	U	6.0		110		68		38		93		3.7	U	3.6	U	3.7	U	74		22	
Benzo(a)anthracene	900	910		54		3.6	U	4.7		310		170		140		280		3.7	U	3.6	U	6.3		200		94	
Benzo(a)pyrene	400	720		40		3.6	U	3.8	U	270		150		130		250		3.7	U	3.6	U	4.7		180		91	
Benzo(b)fluoranthene	900	870		45		3.6	U	3.8	U	360		170		160		290		3.7	U	3.6	U	5.7		230		110	
Benzo(g,h,i)perylene	900	370		20		3.6	U	3.8	U	310		78		72		140		3.7	U	3.6	U	3.7	U	120		62	
Benzo(k)fluoranthene	800	370		17		3.6	U	3.8	U	110		85		73		140		3.7	U	3.6	U	3.7	U	74		49	
Chrysene	400	920		54		3.6	U	4.4		310		160		140		300		3.7	U	3.6	U	5.2		180		80	
Dibenzo(a,h)anthracene	400	91		3.7	U	3.6	U	3.8	U	52		21		17		33		3.7	U	3.6	U	3.7	U	32		15	
Fluoranthene		2000		120		3.6	U	8.9		460		290		240		520	*	3.7	U	3.6	U	12		290		120	
Fluorene		850		86		3.6	U	4.7		33		33		14		44		3.7	U	3.6	U	3.7	U	20		8.4	
Indeno(1,2,3-cd)pyrene	900	310		16		3.6	U	3.8	U	150		70		61		120		3.7	U	3.6	U	3.7	U	99		48	
Naphthalene		1300		41		3.6	U	6.5		18	U	33		11		36		3.7	U	3.6	U	3.7	U	19		3.3	U
Phenanthrene		3800	*	250		3.6	U	18		300		210		120		320		3.7	U	3.6	U	5.4		210		74	
Pyrene		2800	*	140		3.6	U	14		540		290		320		540	*	3.7	U	3.6	U	10		320		130	
TAL Metal Analysis (MG/KG)																											
Aluminum		11000	*	8410	*	10900	*	9920	*	10400		6270		8020		9810		16200		13900		9310		12200	*	11500	*
Antimony	10	0.21	UN	0.21	UN	0.54	UN	0.51	UN	1.5	N	0.55	BN	0.61	BN	0.67	BN	1.1	N	0.86	BN	0.78	BN	0.90	BN*	0.53	BN*
Arsenic	7.0	7.2		7.3		8.8		4.5	B	15.0		3.6		5.1		6.1		4.3		3.8		2.1		8.0	*	6.0	*
Barium		43.9		26.0		45.7	B	11.1	B	12.0		9.5	B	11.5		14.6		13.1		14.5		6.8	B	18.6	*	19.3	*
Beryllium	0.4	0.42	B	0.37	B	0.39	B	0.15	B	0.34		0.085	B	0.21	B	0.25	B	0.42		0.40		0.20	B	0.30	*	0.21	B*
Cadmium		0.021	U	0.021	U	0.054	U	0.051	U	0.74		0.084	B	0.19	B	0.39		0.32		0.24	B	0.043	B	0.38	*	0.28	*
Calcium		15100	*	2260	*	1650	*	2380	*	7540	*	887	*	631	*	548	*	685	*	688	*	754	*	4970	*	3920	*
Chromium		13.7	*	12.6	*	15.5	*	11.3	*	14.3	*	10.8	*	14.7	*	16.3	*	14.1	*	12.2	*	14.9	*	11.8	*	8.8	*
Cobalt		8.3		9.8		27.3		11.9	B	11.3	E	5.9	E	8.3	E	10.4	E	48.7	E	48.2	E	11.1	E	12.1	*	10.2	*
Copper		47.8		20.7		33.5		15.0		43.2		54.7		41.1		39.7		20.8		21.4		13.2		18.6	N*	22.0	N*
Iron		23900	*	23600	*	41900	*	28400	*	45200	E	25600	E	33900	E	37300	E	41000	E	37000	E	25600	E	35800	*	33800	*
Lead	150	188		26.0		15.8		8.8		55.0	E	101	E	71.8	E	55.0	E	13.5	E	16.0	E	8.4	E	24.4	*	21.5	*
Magnesium		3590	*	2940	*	3710	*	3180	*	4010		2720		2880		3550		6590		5470		3970		5660	*	5050	*
Manganese	390	344		260		1000		181		582	E	171	E	249	E	308	E	2120	E	2290	E	511	E	1330	*	765	*
Mercury		0.062		0.017	U	0.018	U	0.017	U	0.058		0.028	B	0.045		0.076		0.026	B	0.031	B	0.016	U	0.027	B	0.018	B
Nickel		16.8		18.0		41.1		21.1		21.1	E	19.5	E	21.8	E	24.7	E	22.2	E	21.7	E	15.9	E	18.8	*	17.2	*
Potassium		589		580		674		215		506		378		634		627		300		399		249		617	*	585	*
Selenium		3.2		4.2		7.8	B	5.3	B	0.15	UN	0.15	UN	0.16	UN	0.15	UN	0.17	UN	0.15	UN	0.16	UN	0.14	UN	0.13	UN
Silver		2.3	B	2.2	B	4.2	B	2.8	B	3.9	E	2.3	E	3.0	E	3.4	E	3.4	E	3.0	E	2.5	E	2.7		2.5	
Sodium		427		280		77.0		40.0	B	932		1600		1310		1290		143		163		226		57.7	*	62.7	*
Thallium		0.65	B	0.31	B	0.54	U	0.51	U	0.10	UN	0.098	UN	0.11	UN	0.10	UN	0.11	UN	0.10	UN	0.10	UN	0.091	UN	0.088	UN
Vanadium		18.5		17.3		23.8		14.7		27.5		12.5		18.1		21.0		24.5		19.1		12.0		13.4	*	14.3	*
Zinc		601		105		96.0		52.1		126	E	60.8	E	68.3	E	86.7	E	80.3	E	70.1	E	47.4	E	74.0	*	61.5	*
Gasoline Range Organic Analysis (UG/KG)																											
Gasoline Range Organics		890000		91000		2100	U	2100	U	2400	U	3100	U	3200	U	2500	U	2400	U	2300	U	2400	U	5200		3700	
Total Petroleum Hydrocarbon Analysis (MG/KG)																											
Total Petroleum Hydrocarbons	500	910		93		13	U	13	U	190		170		92		98		13	U	12	U	13	U	41		38	

Black Background = Criteria Exceeded; U - Not detected;
NA - Not Analyzed; * - From dilution analysis; E- estimated due to interference; N - spike %R outside limits; B - < CRDL but > IDL

RI SOIL SAMPLE ANALYTICAL RESULTS

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-B011-418		FF-B021-418		FF-B022-418		FF-B023-418		FF-B031-418		FF-B032-418		FF-B033-418	
Sample Location		B-1		B-2		B-2		B-2		B-3		B-3		B-3	
Date Sampled		4/18/1990		4/18/1990		4/18/1990		4/18/1990		4/18/1990		4/18/1990		4/20/1990	
Interval		6.0-8.0		2.0-4.0		6.0-8.0		8.0-10.0		6.0-8.0		8.0-10.0		12.0-14.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Semivolatile Organic Analysis (UG/KG)															
1,2,4-Trichlorobenzene			NA		NA		NA		NA		NA		NA		NA
1,2-Dichlorobenzene			NA		NA		NA		NA		NA		NA		NA
1,3-Dichlorobenzene			NA		NA		NA		NA		NA		NA		NA
1,4-Dichlorobenzene			NA		NA		NA		NA		NA		NA		NA
2,2'-oxybis(1-Chloropropane)			NA		NA		NA		NA		NA		NA		NA
2,4,5-Trichlorophenol			NA		NA		NA		NA		NA		NA		NA
2,4,6-Trichlorophenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dichlorophenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dimethylphenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dinitrophenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dinitrotoluene			NA		NA		NA		NA		NA		NA		NA
2,6-Dinitrotoluene			NA		NA		NA		NA		NA		NA		NA
2-Chloronaphthalene			NA		NA		NA		NA		NA		NA		NA
2-Chlorophenol			NA		NA		NA		NA		NA		NA		NA
2-Methylnaphthalene			NA		NA		NA		NA	240	J		NA		NA
2-Methylphenol			NA		NA		NA		NA		NA		NA		NA
2-Nitroaniline			NA		NA		NA		NA		NA		NA		NA
2-Nitrophenol			NA		NA		NA		NA		NA		NA		NA
3,3'-Dichlorobenzidine			NA		NA		NA		NA		NA		NA		NA
3-Nitroaniline			NA		NA		NA		NA		NA		NA		NA
4,6-Dinitro-2-methylphenol			NA		NA		NA		NA		NA		NA		NA
4-Bromophenyl-phenylether			NA		NA		NA		NA		NA		NA		NA
4-Chloro-3-methylphenol			NA		NA		NA		NA		NA		NA		NA
4-Chloroaniline			NA		NA		NA		NA		NA		NA		NA
4-Chlorophenyl-phenylether			NA		NA		NA		NA		NA		NA		NA
4-Methylphenol			NA		NA		NA		NA		NA		NA		NA
4-Nitroaniline			NA		NA		NA		NA		NA		NA		NA
4-Nitrophenol			NA		NA		NA		NA		NA		NA		NA
9H-CARBAZOLE			NA		NA		NA		NA		NA		NA		NA
Acenaphthene			NA		NA		NA		NA	240	J		NA		NA
Acenaphthylene			NA		NA		NA		NA		NA		NA		NA
Anthracene		97	J		NA		NA		NA	310	J	440	J	130	J
Benzo(a)anthracene	900	330	J	89	J		NA		NA	670			NA	73	J
Benzo(a)pyrene	400	300	J	84	J		NA		NA	660		330	J		NA
Benzo(b)fluoranthene	900	330	J	85	J		NA		NA	580		300	J		NA
Benzo(g,h,i)perylene	900	210	J	84	J		NA		NA	740		310	J		NA
Benzo(k)fluoranthene	800	240	J	62	J		NA		NA	510		210	J		NA
Benzoic acid			NA		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane			NA		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethyl)ether			NA		NA		NA		NA		NA		NA		NA
bis(2-Ethylhexyl)phthalate		400	U**	390	U**	400	U**	390	U**	930	U**		NA	480	U**
Butylbenzylphthalate			NA		NA		NA		NA		NA		NA		NA
Carbazole			NA		NA		NA		NA		NA		NA		NA
Chrysene	400	330	J	92	J		NA		NA	770			NA	62	J
Dibenzo(a,h)anthracene	400	60	J		NA		NA		NA	140	J	93	J		NA
Dibenzofuran			NA		NA		NA		NA	230	J		NA		NA
Diethylphthalate			NA		NA		NA		NA		NA		NA		NA
Dimethylphthalate			NA		NA		NA		NA		NA		NA		NA
Di-n-Butylphthalate		400	U**	390	U**		NA		NA		NA		NA	1400	*
Di-n-octylphthalate			NA		NA		NA		NA		NA		NA		NA
Fluoranthene		840		150	J		NA		NA	1600		800		170	J
Fluorene			NA		NA		NA		NA	300	J		NA		NA
Hexachlorobenzene			NA		NA		NA		NA		NA		NA		NA
Hexachlorobutadiene			NA		NA		NA		NA		NA		NA		NA
Hexachlorocyclopentadiene			NA		NA		NA		NA		NA		NA		NA
Hexachloroethane			NA		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-B011-418		FF-B021-418		FF-B022-418		FF-B023-418		FF-B031-418		FF-B032-418		FF-B033-418	
Sample Location		B-1		B-2		B-2		B-2		B-3		B-3		B-3	
Date Sampled		4/18/1990		4/18/1990		4/18/1990		4/18/1990		4/18/1990		4/18/1990		4/20/1990	
Interval		6.0-8.0		2.0-4.0		6.0-8.0		8.0-10.0		6.0-8.0		8.0-10.0		12.0-14.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Indeno(1,2,3-cd)pyrene	900	180	J	71	J		NA		NA	620		280	J		NA
Isophorone			NA		NA		NA		NA		NA		NA		NA
Naphthalene			NA		NA		NA		NA		NA		NA		NA
Nitrobenzene			NA		NA		NA		NA		NA		NA		NA
N-Nitroso-di-n-propylamine			NA		NA		NA		NA		NA		NA		NA
N-Nitroso-diphenylamine			NA		NA		NA		NA		NA		NA		NA
Pentachlorophenol			NA		NA		NA		NA		NA		NA		NA
Phenanthrene		490		61	J	57	J		NA	670		200	J	82	J
Phenol		2000	U**		NA		NA		NA		NA		NA		NA
Phenols			NA		NA		NA		NA		NA		NA		NA
Pyrene		850		110	J	72	J	82	J	990	J*	690	J*	230	J
Total PAH		4257		888		129		82		9040		3653		747	
TAL Metal Analysis (MG/KG)															
Aluminum		5030		8120		8120		5670		7820			NA	6180	
Antimony	10	9.5	U*		NA		NA		NA	9.5	U*		NA		NA
Arsenic	7.0	9.6	J*	3.1	J*	8.6		5.4	J*	4.1	J*		NA	13.5	J*
Barium		22.4		19.9		17.1		16.6		13.3			NA	6.3	
Beryllium	0.4		NA		NA		NA		NA		NA		NA		NA
Cadmium		0.90	J*		NA		NA		NA	0.56	J*		NA		NA
Calcium		91300		1430		7520		7100		1340			NA	1380	
Chromium		7.0	J*	15.1	J*	9.5	J*	7.5	J*	11.8	J*		NA	11.9	J*
Cobalt		6.4	J*	11.4		14.1		11.1		9.8	J*		NA	16.2	J*
Copper		108	J*	22.7	J*	18.4	J*	12.0	U*	26.4	J*		NA	25.3	J*
Cyanide			NA		NA		NA		NA		NA		NA		NA
Iron		19900		21400		19900		16300		17100			NA	17000	
Lead	150	529		61.0		66.0		5.2		118			NA	67.6	
Magnesium		1710		2920		4000		3580		2750			NA	2900	
Manganese	390	301	J*	492	J*	584	J*	646	J*	243	J*		NA	285	J*
Mercury		0.21			NA		NA		NA		NA		NA	0.18	
Nickel		9.0		16.2		27.0		18.0		15.3			NA	10.5	
Potassium		210		470		607		519		346			NA	184	
Selenium			NA		NA		NA		NA		NA		NA		NA
Silver			NA		NA		NA		NA		NA		NA		NA
Sodium		1310		57.6		58.9		56.6		374			NA	601	
Thallium			NA		NA		NA		NA		NA		NA		NA
Vanadium		22.0	J*	19.2	J*	18.3	J*	14.0	J*	16.2	U*		NA	13.0	J*
Zinc		222	J*	52.3	U*	69.6		39.4	U*	77.7	J*		NA	48.4	U*
Total Petroleum Hydrocarbon Analysis (MG/KG)															
Total Petroleum Hydrocarbons	500		NA		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-B041-420		FF-B042-420		FF-B051-417		FF-B052-417		FF-B061-419		FF-B062-419		FF-B071-419	
Sample Location		B-4		B-4		B-5		B-5		B-6		B-6		B-7	
Date Sampled		4/20/1990		4/20/1990		4/17/1990		4/17/1990		4/19/1990		4/19/1990		4/19/1990	
Interval		4.0-6.0		10.0-12.0		4.0-6.0		6.0-8.0		4.0-6.0		10.0-12.0		4.0-6.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Semivolatile Organic Analysis (UG/KG)															
1,2,4-Trichlorobenzene			NA		NA		NA		NA		NA		NA		NA
1,2-Dichlorobenzene			NA		NA		NA		NA		NA		NA		NA
1,3-Dichlorobenzene			NA		NA		NA		NA		NA		NA		NA
1,4-Dichlorobenzene			NA		NA		NA		NA		NA		NA		NA
2,2'-oxybis(1-Chloropropane)			NA		NA		NA		NA		NA		NA		NA
2,4,5-Trichlorophenol			NA		NA		NA		NA		NA		NA		NA
2,4,6-Trichlorophenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dichlorophenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dimethylphenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dinitrophenol			NA		NA		NA		NA		NA		NA		NA
2,4-Dinitrotoluene			NA		NA		NA		NA		NA		NA		NA
2,6-Dinitrotoluene			NA		NA		NA		NA		NA		NA		NA
2-Chloronaphthalene			NA		NA		NA		NA		NA		NA		NA
2-Chlorophenol			NA		NA		NA		NA		NA		NA		NA
2-Methylnaphthalene			NA		NA		NA		NA	670	J*		NA		NA
2-Methylphenol			NA		NA		NA		NA		NA		NA		NA
2-Nitroaniline			NA		NA		NA		NA		NA		NA		NA
2-Nitrophenol			NA		NA		NA		NA		NA		NA		NA
3,3'-Dichlorobenzidine			NA		NA		NA		NA		NA		NA		NA
3-Nitroaniline			NA		NA		NA		NA		NA		NA		NA
4,6-Dinitro-2-methylphenol			NA		NA		NA		NA		NA		NA		NA
4-Bromophenyl-phenylether			NA		NA		NA		NA		NA		NA		NA
4-Chloro-3-methylphenol			NA		NA		NA		NA		NA		NA		NA
4-Chloroaniline			NA		NA		NA		NA		NA		NA		NA
4-Chlorophenyl-phenylether			NA		NA		NA		NA		NA		NA		NA
4-Methylphenol			NA		NA		NA		NA		NA		NA		NA
4-Nitroaniline			NA		NA		NA		NA		NA		NA		NA
4-Nitrophenol			NA		NA		NA		NA		NA		NA		NA
9H-CARBAZOLE			NA		NA		NA		NA		NA		NA		NA
Acenaphthene			NA		NA		NA		NA	130	J		NA		NA
Acenaphthylene			NA		NA		NA		NA		NA		NA		NA
Anthracene		66	J		NA		NA		NA	84	J		NA	640	J
Benzo(a)anthracene	900	140	J		NA	110	J		NA		NA		NA	1300	J
Benzo(a)pyrene	400	100	J		NA	100	J		NA		NA		NA	1000	J
Benzo(b)fluoranthene	900	97	J		NA	83	J		NA		NA		NA	1300	J
Benzo(g,h,i)perylene	900		NA		NA		NA		NA	75	J		NA		NA
Benzo(k)fluoranthene	800	120	J		NA	89	J		NA	98	J		NA	520	J
Benzoic acid		1900	U**		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane			NA		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethyl)ether			NA		NA		NA		NA		NA		NA		NA
bis(2-Ethylhexyl)phthalate			NA		NA	480	U**	470	U**	460	U*		NA		NA
Butylbenzylphthalate			NA		NA		NA		NA		NA		NA		NA
Carbazole			NA		NA		NA		NA		NA		NA		NA
Chrysene	400	140	J		NA	76	J		NA		NA		NA	1000	J
Dibenzo(a,h)anthracene	400		NA		NA		NA		NA		NA		NA		NA
Dibenzofuran			NA		NA		NA		NA		NA		NA		NA
Diethylphthalate			NA		NA		NA		NA		NA		NA		NA
Dimethylphthalate			NA		NA		NA		NA		NA		NA		NA
Di-n-Butylphthalate		390	U**		NA		NA		NA		NA		NA		NA
Di-n-octylphthalate			NA		NA		NA		NA		NA		NA		NA
Fluoranthene		300	J		NA	300	J	88	J	130	J		NA	2300	
Fluorene			NA		NA		NA		NA	200	J		NA		NA
Hexachlorobenzene			NA		NA		NA		NA		NA		NA		NA
Hexachlorobutadiene			NA		NA		NA		NA		NA		NA		NA
Hexachlorocyclopentadiene			NA		NA		NA		NA		NA		NA		NA
Hexachloroethane			NA		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-B041-420		FF-B042-420		FF-B051-417		FF-B052-417		FF-B061-419		FF-B062-419		FF-B071-419	
Sample Location		B-4		B-4		B-5		B-5		B-6		B-6		B-7	
Date Sampled		4/20/1990		4/20/1990		4/17/1990		4/17/1990		4/19/1990		4/19/1990		4/19/1990	
Interval		4.0-6.0		10.0-12.0		4.0-6.0		6.0-8.0		4.0-6.0		10.0-12.0		4.0-6.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Indeno(1,2,3-cd)pyrene	900		NA		NA		NA		NA		NA		NA	420	J
Isophorone			NA		NA		NA		NA		NA		NA		NA
Naphthalene			NA		NA		NA		NA	120	J		NA		NA
Nitrobenzene			NA		NA		NA		NA		NA		NA		NA
N-Nitroso-di-n-propylamine			NA		NA		NA		NA		NA		NA		NA
N-Nitroso-diphenylamine			NA		NA		NA		NA		NA		NA		NA
Pentachlorophenol			NA		NA		NA		NA		NA		NA		NA
Phenanthrene		190	J		NA		NA	90	J	490	J*		NA	1700	J
Phenol		250	J		NA		NA		NA		NA		NA		NA
Phenols			NA		NA		NA		NA		NA		NA		NA
Pyrene		280	J		NA	480		110	J	180	J		NA	2200	
Total PAH		1433		0.00		1238		288		2177		0.00		12380	
TAL Metal Analysis (MG/KG)															
Aluminum		8720		3210		8580		6080			NA	7580		4570	
Antimony	10		NA		NA		NA		NA		NA	5.5		5.3	
Arsenic	7.0	3.4	J*	5.3	J*	2.4		1.4			NA	1.3	J*	1.9	J*
Barium		25.6		6.9		8.1		4.9			NA	24.4		6.8	
Beryllium	0.4	0.26		0.20			NA		NA		NA	0.31			NA
Cadmium			NA		NA	0.55			NA		NA		NA		NA
Calcium		749		705		3320		1170			NA	523		702	
Chromium		9.3	J*	6.3	J*	9.5	J*	5.4			NA	14.2	J*	9.9	
Cobalt		9.4	J*	10.1	J*	9.4	J*	2.8			NA	20.5	J*	8.5	
Copper		22.3	J*	18.1	J*	30.9	J*	6.1			NA	30.9	J*	33.8	J*
Cyanide			NA		NA		NA		NA		NA		NA		NA
Iron		15400		15600		20600		5230			NA	30200		15400	
Lead	150		NA	2.2	J*	104		7.0			NA	6.6	J*	52.0	J*
Magnesium		1780	J*	602	J*	3790		1710			NA	2870		1640	
Manganese	390	215		72.4		960	J*	70.7			NA	780	J*	138	
Mercury			NA		NA		NA		NA		NA		NA		NA
Nickel		13.6		8.0		19.6	J*	5.8			NA	28.8		14.5	
Potassium		304	J*	217	J*	214	J*	471	J*		NA	901	J*	332	J*
Selenium		0.55	U*		NA	0.34	U*	0.69	U*		NA		NA	0.54	U*
Silver			NA		NA		NA	2.4	U*		NA	0.66	U*		NA
Sodium		61.3		67.4	U*	551		3820			NA	475		44.4	U*
Thallium			NA		NA		NA		NA		NA		NA		NA
Vanadium		13.7	J*	8.3	J*	19.9	J*	12.5			NA	21.0	J*	10.5	
Zinc		45.5	J*	27.9	J*	76.7	J*	23.6	J*		NA	58.8	J*	46.7	J*
Total Petroleum Hydrocarbon Analysis (MG/KG)															
Total Petroleum Hydrocarbons	500		NA		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-B072-419		OFF-B82-112293		OFF-B112-112493		OFF-B122-112493		OFF-B132-112393		OFF-B153-121393		OFF-B162-112393	
Sample Location		B-7		B-8		B-11		B-12		B-13		B-15		B-16	
Date Sampled		4/19/1990		11/22/1993		11/24/1993		11/24/1993		11/23/1993		12/13/1993		11/23/1993	
Interval		6.0-8.0		8.0-10.0		4.0-6.0		2.0-4.0		4.0-6.0		17.0-19.0		2.0-4.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Semivolatile Organic Analysis (UG/KG)															
1,2,4-Trichlorobenzene			NA	360	U	360	U	370	U	420	U	370	U	730	U
1,2-Dichlorobenzene			NA	360	U	360	U	370	U	420	U	370	U	730	U
1,3-Dichlorobenzene			NA	360	U	360	U	370	U	420	U	370	U	730	U
1,4-Dichlorobenzene			NA	360	U	360	U	370	U	420	U	370	U	730	U
2,2'-oxybis(1-Chloropropane)			NA	360	U	360	U	370	U	420	U	370	U	730	U
2,4,5-Trichlorophenol			NA	870	U	880	U	900	U	1000	U	900	U	1800	R
2,4,6-Trichlorophenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
2,4-Dichlorophenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
2,4-Dimethylphenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
2,4-Dinitrophenol			NA	870	U	880	U	900	UJ	1000	U	900	U	1800	R
2,4-Dinitrotoluene			NA	360	U	360	U	370	U	420	U	370	U	730	U
2,6-Dinitrotoluene			NA	360	U	360	U	370	U	420	U	370	U	730	U
2-Chloronaphthalene			NA	360	U	360	U	370	U	420	U	370	U	730	U
2-Chlorophenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
2-Methylnaphthalene			NA	77	J	360	U	370	U	420	U	160	J	110	J
2-Methylphenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
2-Nitroaniline			NA	870	U	880	U	900	U	1000	U	900	U	1800	U
2-Nitrophenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
3,3'-Dichlorobenzidine			NA	360	U	360	U	370	U	420	U	370	U	730	U
3-Nitroaniline			NA	870	U	880	U	900	U	1000	U	900	U	1800	U
4,6-Dinitro-2-methylphenol			NA	870	U	880	U	900	U	1000	U	900	U	1800	R
4-Bromophenyl-phenylether			NA	360	U	360	U	370	U	420	U	370	U	730	R
4-Chloro-3-methylphenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
4-Chloroaniline			NA	360	U	360	U	370	U	420	U	370	U	730	U
4-Chlorophenyl-phenylether			NA	360	U	360	U	370	U	420	U	370	U	730	R
4-Methylphenol			NA	360	U	360	U	370	U	420	U	370	U	730	R
4-Nitroaniline			NA	870	U	880	U	900	U	1000	U	900	U	1800	U
4-Nitrophenol			NA	870	U	880	U	900	U	1000	U	900	U	1800	R
9H-CARBAZOLE			NA	200	J	360	U	370	U	420	U	220	J	120	J
Acenaphthene		1600		110	J	360	U	370	U	160	J	340	J	250	J
Acenaphthylene			NA	640		360	U	63	J	420	U	120	J	78	J
Anthracene		620		680		360	U	130	J	110	J	570		480	J
Benzo(a)anthracene	900	550		2200		120	J	320	J	360	J	1300		1200	
Benzo(a)pyrene	400	490		1700		110	J	280	J	280	J	760		1200	
Benzo(b)fluoranthene	900	400		2800		220	J	560		510		1400		1900	
Benzo(g,h,i)perylene	900	520		610		360	U	110	J	88	J	360	J	510	J
Benzo(k)fluoranthene	800	530		360	U	360	U	370	U	420	U	370	U	730	U
Benzoic acid			NA		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane			NA	360	U	360	U	370	U	420	U	370	U	730	R
Bis(2-Chloroethyl)ether			NA	360	U	360	U	370	U	420	U	370	U	730	R
bis(2-Ethylhexyl)phthalate			NA	360	U	44	J	370	U	420	U	370	U	730	U
Butylbenzylphthalate			NA	360	U	360	U	370	U	420	U	120	J	730	U
Carbazole			NA		NA		NA		NA		NA		NA		NA
Chrysene	400	540		2100		130	J	290	J	320	J	1100		1400	
Dibenzo(a,h)anthracene	400	140	J	370		360	U	64	J	66	J	200	J	170	J
Dibenzofuran			NA	240	J	360	U	370	U	86	J	200	J	730	U
Diethylphthalate			NA	360	U	360	U	370	U	420	U	370	U	730	U
Dimethylphthalate			NA	360	U	360	U	370	U	420	U	370	U	730	U
Di-n-Butylphthalate		400	U*	360	U	360	U	370	U	56	J	370	U	730	U
Di-n-octylphthalate			NA	360	U	360	U	370	U	420	U	370	U	730	U
Fluoranthene		1200		4300	D	230	J	560		830		2200		2100	
Fluorene			NA	310	J	360	U	370	U	140	J	370		260	J
Hexachlorobenzene			NA	360	U	360	U	370	U	420	U	370	U	730	U
Hexachlorobutadiene			NA	360	U	360	U	370	U	420	U	370	U	730	U
Hexachlorocyclopentadiene			NA	360	U	360	U	370	U	420	U	370	U	730	U
Hexachloroethane			NA	360	U	360	U	370	U	420	U	370	U	730	U

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-B072-419		OFF-B82-112293		OFF-B112-112493		OFF-B122-112493		OFF-B132-112393		OFF-B153-121393		OFF-B162-112393	
Sample Location		B-7		B-8		B-11		B-12		B-13		B-15		B-16	
Date Sampled		4/19/1990		11/22/1993		11/24/1993		11/24/1993		11/23/1993		12/13/1993		11/23/1993	
Interval		6.0-8.0		8.0-10.0		4.0-6.0		2.0-4.0		4.0-6.0		17.0-19.0		2.0-4.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Indeno(1,2,3-cd)pyrene	900	380	J	860		48	J	160	J	120	J	380		500	J
Isophorone			NA	360	U	360	U	370	U	420	U	370	U	730	U
Naphthalene			NA	140	J	360	U	370	U	420	U	79	J	730	U
Nitrobenzene			NA	360	U	360	U	370	U	420	U	370	U	730	U
N-Nitroso-di-n-propylamine			NA	360	U	360	U	370	U	420	U	370	U	730	R
N-Nitroso-diphenylamine			NA	360	U	360	U	370	U	420	U	370	U	730	R
Pentachlorophenol			NA	870	U	880	U	900	U	1000	U	900	U	1800	R
Phenanthrene		4600		2600		150	J	310	J	480		1800		2200	
Phenol		490		360	U	360	U	370	U	420	U	370	U	730	R
Phenols			NA		NA		NA		NA		NA		NA		NA
Pyrene		1300		4100	D	260	J	600		660		1800		3000	
Total PAH		12870			NA		NA		NA		NA		NA		NA
TAL Metal Analysis (MG/KG)															
Aluminum		4950		11300		11800		13500		8640		8620		9020	
Antimony	10		NA	5.2	UJ	5.4	UJ	5.3	UJ	5.9	UJ	5.7	J	6.8	J
Arsenic	7.0	3.0	J*	6.4	J	10.0	J	5.1	J	6.3	J	5.5		5.8	J
Barium		5.9		45.6		24.4	B	20.0	B	24.1	B	28.9	B	23.1	B
Beryllium	0.4		NA	0.33	B	0.36	B	0.29	B	0.25	B	0.36	B	0.22	U
Cadmium			NA	0.65	U	0.67	U	0.66	U	0.74	U	0.77	B	0.66	U
Calcium		957		3760		4790		1580		2060		11400		2250	
Chromium		8.2		14.9		10.8		16.6		10.5		17.2		24.0	
Cobalt		5.8		11.8		13.5		13.0		8.0	B	8.1	B	9.7	B
Copper		31.8	J*	37.1		76.8		30.4		16.9		48.2		83.4	
Cyanide			NA	0.54	UJ	0.56	UJ	0.55	UJ	0.62	UJ	0.56	U	0.55	UJ
Iron		14700		24700		28100		28000		19000		24700		39700	
Lead	150	67.0	J*	189		314		71.4		68.6		292		92.9	
Magnesium		2150		4430		4230		5020		2390		3940		3380	
Manganese	390	167		540	J	627	J	551	J	309		419	J	303	J
Mercury			NA	0.050	U	0.070	B	0.38		0.14	J	0.17		0.10	B
Nickel		11.2		18.0		33.0		21.1		14.0		19.2		32.9	
Potassium		216	J*	580	B	494	B	411	B	372	B	1030	B	588	B
Selenium			NA	0.43	U	0.48	U	0.44	U	0.49	U	0.45	U	0.44	U
Silver			NA	1.1	U	1.1	U	1.1	U	1.2	U	1.1	U	1.1	U
Sodium		55.8	U*	716	B	473	B	370	U	712	B	571	B	373	U
Thallium			NA	0.43	UJ	0.45	UJ	0.44	UJ	0.49	UJ	0.45	UJ	0.44	UJ
Vanadium		9.2		24.8		14.7		20.4		14.5		19.3		19.8	
Zinc		36.2	J*	158	J	69.5	J	110	J	58.2	J	156	J	123	J
Total Petroleum Hydrocarbon Analysis (MG/KG)															
Total Petroleum Hydrocarbons	500		NA		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-B163-112393		OFF-B172-112493		FF-M21-423		FF-M22-423		FF-M31-424		FF-M32-424		FF-M51-425	
Sample Location		B-16		B-17		MW-2		MW-2		MW-3		MW-3		MW-5	
Date Sampled		11/23/1993		11/24/1993		4/23/1990		4/23/1990		4/24/1990		4/24/1990		4/25/1990	
Interval		6.0-8.0		2.0-4.0		6.0-8.0		12.0-14.0		6.0-8.0		12.0-14.0		8.0-10.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Semivolatile Organic Analysis (UG/KG)															
1,2,4-Trichlorobenzene			NA	360	U		NA		NA		NA		NA		NA
1,2-Dichlorobenzene			NA	360	U		NA		NA		NA		NA		NA
1,3-Dichlorobenzene			NA	360	U		NA		NA		NA		NA		NA
1,4-Dichlorobenzene			NA	360	U		NA		NA		NA		NA		NA
2,2'-oxybis(1-Chloropropane)			NA	360	U		NA		NA		NA		NA		NA
2,4,5-Trichlorophenol			NA	880	U		NA		NA		NA		NA		NA
2,4,6-Trichlorophenol			NA	360	U		NA		NA		NA		NA		NA
2,4-Dichlorophenol			NA	360	U		NA		NA		NA		NA		NA
2,4-Dimethylphenol			NA	360	U		NA		NA		NA		NA		NA
2,4-Dinitrophenol			NA	880	U		NA		NA		NA		NA		NA
2,4-Dinitrotoluene			NA	360	U		NA		NA		NA		NA		NA
2,6-Dinitrotoluene			NA	360	U		NA		NA		NA		NA		NA
2-Chloronaphthalene			NA	360	U		NA		NA		NA		NA		NA
2-Chlorophenol			NA	360	U		NA		NA		NA		NA		NA
2-Methylnaphthalene			NA	360	U		NA		NA		NA		NA	88	J
2-Methylphenol			NA	360	U		NA		NA		NA		NA		NA
2-Nitroaniline			NA	880	U		NA		NA		NA		NA		NA
2-Nitrophenol			NA	360	U		NA		NA		NA		NA		NA
3,3'-Dichlorobenzidine			NA	360	U		NA		NA		NA		NA		NA
3-Nitroaniline			NA	880	U		NA		NA		NA		NA		NA
4,6-Dinitro-2-methylphenol			NA	880	U		NA		NA		NA		NA		NA
4-Bromophenyl-phenylether			NA	360	U		NA		NA		NA		NA		NA
4-Chloro-3-methylphenol			NA	360	U		NA		NA		NA		NA		NA
4-Chloroaniline			NA	360	U		NA		NA		NA		NA		NA
4-Chlorophenyl-phenylether			NA	360	U		NA		NA		NA		NA		NA
4-Methylphenol			NA	360	U		NA		NA		NA		NA		NA
4-Nitroaniline			NA	880	U		NA		NA		NA		NA		NA
4-Nitrophenol			NA	880	U		NA		NA		NA		NA		NA
9H-CARBAZOLE			NA	360	U		NA		NA		NA		NA		NA
Acenaphthene			NA	360	U		NA		NA	500			NA	190	J
Acenaphthylene			NA	360	U		NA		NA		NA		NA	54	J
Anthracene			NA	360	U	1100	J		NA	160	J		NA	620	
Benzo(a)anthracene	900		NA	360	U	1800	J		NA	52	J		NA	880	
Benzo(a)pyrene	400		NA	360	U	1600	J		NA		NA		NA	700	
Benzo(b)fluoranthene	900		NA	47	J	1400	J		NA		NA		NA	680	
Benzo(g,h,i)perylene	900		NA	360	U		NA		NA		NA		NA	500	
Benzo(k)fluoranthene	800		NA	360	U	1400	J		NA		NA		NA	500	
Benzoic acid			NA		NA		NA		NA		NA	48	J	200	J
Bis(2-Chloroethoxy)methane			NA	360	U		NA		NA		NA		NA		NA
Bis(2-Chloroethyl)ether			NA	360	U		NA		NA		NA		NA		NA
bis(2-Ethylhexyl)phthalate			NA	56	J		NA		NA	220	U*	340	U*	200	U*
Butylbenzylphthalate			NA	360	U		NA		NA		NA		NA		NA
Carbazole			NA		NA		NA		NA		NA		NA		NA
Chrysene	400		NA	360	U	1700	J		NA	51	J		NA	950	
Dibenzo(a,h)anthracene	400		NA	360	U		NA		NA		NA		NA		NA
Dibenzofuran			NA	360	U		NA		NA		NA		NA	170	J
Diethylphthalate			NA	360	U		NA		NA		NA		NA		NA
Dimethylphthalate			NA	360	U		NA		NA		NA		NA		NA
Di-n-Butylphthalate			NA	360	U		NA		NA	63	U*	44	U*	100	U*
Di-n-octylphthalate			NA	360	U		NA		NA		NA		NA		NA
Fluoranthene			NA	39	J	3700	J	2200	J	120	J		NA	2400	
Fluorene			NA	360	U		NA		NA	730			NA	280	J
Hexachlorobenzene			NA	360	U		NA		NA		NA		NA		NA
Hexachlorobutadiene			NA	360	U		NA		NA		NA		NA		NA
Hexachlorocyclopentadiene			NA	360	U		NA		NA		NA		NA		NA
Hexachloroethane			NA	360	U		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-B163-112393		OFF-B172-112493		FF-M21-423		FF-M22-423		FF-M31-424		FF-M32-424		FF-M51-425	
Sample Location		B-16		B-17		MW-2		MW-2		MW-3		MW-3		MW-5	
Date Sampled		11/23/1993		11/24/1993		4/23/1990		4/23/1990		4/24/1990		4/24/1990		4/25/1990	
Interval		6.0-8.0		2.0-4.0		6.0-8.0		12.0-14.0		6.0-8.0		12.0-14.0		8.0-10.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Indeno(1,2,3-cd)pyrene	900		NA	360	U		NA		NA		NA		NA	440	
Isophorone			NA	360	U		NA		NA		NA		NA		NA
Naphthalene			NA	360	U		NA		NA		NA		NA	78	J
Nitrobenzene			NA	360	U		NA		NA		NA		NA		NA
N-Nitroso-di-n-propylamine			NA	360	U		NA		NA		NA		NA		NA
N-Nitroso-diphenylamine			NA	360	U		NA		NA		NA		NA		NA
Pentachlorophenol			NA	880	U		NA		NA		NA		NA		NA
Phenanthrene			NA	38	J	3500	J	14000		1600			NA	2300	
Phenol			NA	360	U		NA	490			NA		NA	45	J
Phenols			NA		NA		NA		NA		NA		NA		NA
Pyrene			NA	70	J	4900	J	4200	J	240	J		NA	1800	
Total PAH			NA		NA	21100		20400		3453		0.00		12460	
TAL Metal Analysis (MG/KG)															
Aluminum			NA	8180		7160	J*	6600	J*	11900	J*	8120	J*	9280	J*
Antimony	10		NA	5.3	UJ	4.7	U*	12.2	J*		NA		NA		NA
Arsenic	7.0		NA	3.2	J	6.3	J*	8.7	J*	4.4	J*	3.1	J*	4.0	J*
Barium			NA	23.6	B	57.5		112		19.9	B1	23.8	B1	22.1	B1
Beryllium	0.4		NA	0.44	B	0.28	B1		NA	0.24	B1	0.48	B1	0.35	B1
Cadmium			NA	0.66	U	8.1		4.8			NA		NA	0.93	J*
Calcium			NA	1060	B	5810		10300		819	B1	755	B1	1080	B1
Chromium			NA	11.4		13.7	J*	20.6	J*	12.5	J*	13.0	J*	15.2	J*
Cobalt			NA	6.9	B	9.7	J*	16.6	J*	9.8	J*	13.0	J*	19.4	J*
Copper			NA	14.1		312	J*	277	J*	40.2	J*	30.3	J*	26.3	J*
Cyanide			NA	0.55	UJ		NA		NA		NA		NA		NA
Iron			NA	14100		36200	J*	112000	J*	31300	J*	32600	J*	29000	J*
Lead	150		NA	14.6		777	J*	962	J*	24.0	J*	7.8	J*	12.0	J*
Magnesium			NA	3070		2830	J*	3720	J*	4010	J*	3030	J*	2940	J*
Manganese	390		NA	477	J	323	J*	464	J*	311	J*	292	J*	476	J*
Mercury			NA	0.060	U	0.16		0.18			NA		NA		NA
Nickel			NA	11.8		15.9	J*	15.7	J*	15.3	J*	23.8	J*	26.1	J*
Potassium			NA	973	B	403	B1	302	B1	354	J*	749	J*	661	J*
Selenium			NA	0.44	U	0.58	J*	0.39	J*	1.7	B1		NA		NA
Silver			NA	1.1	U		NA		NA		NA		NA		NA
Sodium			NA	378	B	605	B1	746	B1	166	B1	275	B1	62.3	B1
Thallium			NA	0.44	UJ		NA		NA		NA		NA		NA
Vanadium			NA	13.4		20.4	J*	30.3	J*	19.1	J*	24.3	J*	24.3	J*
Zinc			NA	33.3	J	2580	J*	2810	J*	70.1	J*	69.0	J*	69.0	J*
Total Petroleum Hydrocarbon Analysis (MG/KG)															
Total Petroleum Hydrocarbons	500		NA		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-M52-425		OFF-M62-113093		OFF-M72-112993		OFF-M92-120193		OFF-M102-112993		OFF-M112-112993		OFF-S-MW101-0608	
Sample Location		MW-5		MW-6		MW-7		MW-9		MW-10		MW-11		MW-	
Date Sampled		4/25/1990		11/30/1993		11/29/1993		12/1/1993		11/29/1993		11/29/1993		7/9/1997	
Interval		12.0-14.0		4.0-6.0		2.0-4.0		2.0-4.0		4.0-6.0		2.0-4.0		6.0-8.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Semivolatile Organic Analysis (UG/KG)															
1,2,4-Trichlorobenzene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
1,2-Dichlorobenzene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
1,3-Dichlorobenzene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
1,4-Dichlorobenzene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
2,2'-oxybis(1-Chloropropane)			NA	380	U	380	U		NA	370	U	440	U	360	UJ
2,4,5-Trichlorophenol			NA	920	U	920	U		NA	890	U	1100	U	910	U
2,4,6-Trichlorophenol			NA	380	U	380	U		NA	370	U	440	U	360	U
2,4-Dichlorophenol			NA	380	U	380	U		NA	370	U	440	U	360	U
2,4-Dimethylphenol			NA	380	U	380	U		NA	370	U	440	U	360	U
2,4-Dinitrophenol			NA	920	U	920	U		NA	890	U	1100	U	910	U
2,4-Dinitrotoluene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
2,6-Dinitrotoluene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
2-Chloronaphthalene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
2-Chlorophenol			NA	380	U	380	U		NA	370	U	440	U	360	U
2-Methylnaphthalene			NA	380	U	79	J		NA	370	U	810		11000	
2-Methylphenol			NA	380	U	380	U		NA	370	U	440	U	360	U
2-Nitroaniline			NA	920	U	920	U		NA	890	U	1100	U	910	UJ
2-Nitrophenol			NA	380	U	380	U		NA	370	U	440	U	360	U
3,3'-Dichlorobenzidine			NA	380	U	380	U		NA	370	U	440	U	360	UJ
3-Nitroaniline			NA	920	U	920	U		NA	890	U	1100	U	910	UJ
4,6-Dinitro-2-methylphenol			NA	920	U	920	U		NA	890	U	1100	U	910	UJ
4-Bromophenyl-phenylether			NA	380	U	380	U		NA	370	U	440	U	360	UJ
4-Chloro-3-methylphenol			NA	380	U	380	U		NA	370	U	440	U	360	U
4-Chloroaniline			NA	380	U	380	U		NA	370	U	440	U	360	UJ
4-Chlorophenyl-phenylether			NA	380	U	380	U		NA	370	U	440	U	360	UJ
4-Methylphenol			NA	380	U	380	U		NA	370	U	440	U	360	U
4-Nitroaniline			NA	920	U	920	U		NA	890	U	1100	U	910	UJ
4-Nitrophenol			NA	920	U	920	U		NA	890	U	1100	U	910	U
9H-CARBAZOLE			NA	380	U	180	J		NA	370	U	69	J		NA
Acenaphthene			NA	380	U	220	J		NA	370	U	100	J	360	UJ
Acenaphthylene			NA	380	U	180	J		NA	47	J	440	U	360	UJ
Anthracene			NA	380	U	690			NA	41	J	100	J	890	J
Benzo(a)anthracene	900		NA	380	U	1300			NA	240	J	140	J	470	
Benzo(a)pyrene	400		NA	380	U	1000			NA	220	J	77	J	380	
Benzo(b)fluoranthene	900		NA	380	U	1800			NA	400		180	J	260	J
Benzo(g,h,i)perylene	900		NA	380	U	420			NA	89	J	57	J	180	J
Benzo(k)fluoranthene	800		NA	380	U	380	U		NA	370	U	440	U	310	J
Benzoic acid		43	J		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Bis(2-Chloroethyl)ether			NA	380	U	380	U		NA	370	U	440	U	360	UJ
bis(2-Ethylhexyl)phthalate		170	U*	380	U	380	U		NA	370	U	110	J	360	UJ
Butylbenzylphthalate			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Carbazole			NA		NA		NA		NA		NA		NA	360	UJ
Chrysene	400		NA	380	U	1100			NA	230	J	130	J	430	
Dibenzo(a,h)anthracene	400		NA	380	U	220	J		NA	370	U	440	U	360	UJ
Dibenzofuran			NA	380	U	260	J		NA	370	U	95	J	830	
Diethylphthalate			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Dimethylphthalate			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Di-n-Butylphthalate			NA	65	J	380	U		NA	370	U	440	U	360	UJ
Di-n-octylphthalate			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Fluoranthene			NA	380	U	3800	D		NA	250	J	400	J	2500	J
Fluorene			NA	380	U	460			NA	370	U	120	J	1200	J
Hexachlorobenzene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Hexachlorobutadiene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Hexachlorocyclopentadiene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Hexachloroethane			NA	380	U	380	U		NA	370	U	440	U	360	UJ

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		FF-M52-425		OFF-M62-113093		OFF-M72-112993		OFF-M92-120193		OFF-M102-112993		OFF-M112-112993		OFF-S-MW101-0608	
Sample Location		MW-5		MW-6		MW-7		MW-9		MW-10		MW-11		MW-	
Date Sampled		4/25/1990		11/30/1993		11/29/1993		12/1/1993		11/29/1993		11/29/1993		7/9/1997	
Interval		12.0-14.0		4.0-6.0		2.0-4.0		2.0-4.0		4.0-6.0		2.0-4.0		6.0-8.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Indeno(1,2,3-cd)pyrene	900		NA	380	U	550			NA	100	J	48	J	210	J
Isophorone			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Naphthalene			NA	380	U	41	J		NA	370	U	170	J	3700	J
Nitrobenzene			NA	380	U	380	U		NA	370	U	440	U	360	UJ
N-Nitroso-di-n-propylamine			NA	380	U	380	U		NA	370	U	440	U	360	UJ
N-Nitroso-diphenylamine			NA	380	U	380	U		NA	370	U	440	U	360	UJ
Pentachlorophenol			NA	920	U	920	U		NA	890	U	1100	U	910	UJ
Phenanthrene			NA	380	U	3600	D		NA	56	J	660		3800	
Phenol			NA	40	J	380	U		NA	370	U	440	U		NA
Phenols			NA		NA		NA		NA		NA		NA	360	U
Pyrene			NA	380	U	2600			NA	290	J	390	J	970	J
Total PAH		0.00			NA		NA		NA		NA		NA		NA
TAL Metal Analysis (MG/KG)															
Aluminum		7380	J*	13900		20700			NA	9060		9910		15300	
Antimony	10		NA	5.2	UJ	5.5	UJ		NA	5.3	UJ	5.4	UJ	0.35	UR
Arsenic	7.0	3.7	J*	4.1		6.2	S		NA	7.0		3.9		9.3	J
Barium		21.9	B1	13.3	B	11.9	B		NA	15.4	B	92.0		13.4	
Beryllium	0.4	0.24	B1	0.26	B	0.33	B		NA	0.32	B	0.34	B	0.24	U
Cadmium			NA	0.65	U	0.68	U		NA	0.66	U	0.68	U	0.030	U
Calcium		1290		1310		1740			NA	980	B	6170		764	J
Chromium		13.9	J*	16.0		23.1			NA	9.6		17.0		14.8	
Cobalt		15.6	J*	12.2		19.9			NA	10.8	B	10.3	B	9.2	
Copper		24.0	J*	14.3		16.0			NA	16.4		321		10.4	
Cyanide			NA	0.55	U	0.57	U		NA	0.55	U	0.56	U		NA
Iron		25900	J*	31500		48300			NA	20300		26800		42000	
Lead	150	16.0	J*	18.2		19.5			NA	42.3		554		12.7	
Magnesium		2790	J*	4140		6000			NA	3140		4040		4260	
Manganese	390	1020	J*	385	J	396	J		NA	588	J	401	J	144	J
Mercury			NA	0.050	U	0.060	U		NA	0.060	U	0.070	B	0.010	UJ
Nickel		26.2	B1	18.9		27.0			NA	17.8		58.1		22.5	
Potassium		628	J*	407	B	258	B		NA	361	B	468	B	268	U
Selenium			NA	0.44	U	0.46	U		NA	0.44	UW	0.45	U	0.50	J
Silver			NA	1.1	U	1.1	U		NA	1.1	U	1.1	U	0.13	U
Sodium		48.1	B1	369	U	385	U		NA	372	U	843	B	98.3	U
Thallium			NA	0.44	UJ	0.46	UJ		NA	0.44	UJ	0.45	UJ	0.64	UJ
Vanadium		20.7	J*	23.0		57.0			NA	11.7		16.3		25.7	
Zinc		93.1	J*	56.4	J	74.2	J		NA	56.9	J	453	J	45.0	
Total Petroleum Hydrocarbon Analysis (MG/KG)															
Total Petroleum Hydrocarbons	500		NA		NA		NA		NA		NA		NA	1900	J

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-S-MW102-0608		OFF-TP12-011194		OFF-TP13-011194		OFF-TP21-011194		OFF-TP22-011194		OFF-TP31-011194		OFF-TP32-011194	
Sample Location		MW-		TP1		TP1		TP2		TP2		TP3		TP3	
Date Sampled		7/7/1997		1/11/1994		1/11/1994		1/11/1994		1/11/1994		1/11/1994		1/11/1994	
Interval		6.0-8.0		3.5-4.0		1.5-2.0		7.0-8.0		4.5-4.5		7.0-8.0		7.0-7.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Semivolatile Organic Analysis (UG/KG)															
1,2,4-Trichlorobenzene		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
1,2-Dichlorobenzene		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
1,3-Dichlorobenzene		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
1,4-Dichlorobenzene		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2,2'-oxybis(1-Chloropropane)		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2,4,5-Trichlorophenol		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
2,4,6-Trichlorophenol		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2,4-Dichlorophenol		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2,4-Dimethylphenol		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2,4-Dinitrophenol		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
2,4-Dinitrotoluene		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2,6-Dinitrotoluene		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2-Chloronaphthalene		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2-Chlorophenol		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2-Methylnaphthalene		4300	J	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2-Methylphenol		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
2-Nitroaniline		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
2-Nitrophenol		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
3,3'-Dichlorobenzidine		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
3-Nitroaniline		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
4,6-Dinitro-2-methylphenol		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
4-Bromophenyl-phenylether		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
4-Chloro-3-methylphenol		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
4-Chloroaniline		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
4-Chlorophenyl-phenylether		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
4-Methylphenol		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
4-Nitroaniline		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
4-Nitrophenol		1100	U	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
9H-CARBAZOLE			NA		NA		NA		NA		NA		NA		NA
Acenaphthene		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Acenaphthylene		430	UR	65	J	370	UJ	7700	U	380	UJ	6700	UJ	380	J
Anthracene		4800		200	J	94	J	440	J	380	UJ	480	J	520	J
Benzo(a)anthracene	900	3400		660	J	370	J	7700	U	380	UJ	500	J	2400	J
Benzo(a)pyrene	400	4000		660	J	440	J	7700	U	380	UJ	6700	UJ	2900	J
Benzo(b)fluoranthene	900	2700	J	500	J	320	J	7700	U	380	UJ	430	J	2300	J
Benzo(g,h,i)perylene	900	1900	J	440	J	230	J	7700	U	380	UJ	6700	UJ	1700	J
Benzo(k)fluoranthene	800	2200	J	600	J	380	J	7700	U	380	UJ	850	J	2500	J
Benzoic acid			NA		NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Bis(2-Chloroethyl)ether		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
bis(2-Ethylhexyl)phthalate		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Butylbenzylphthalate		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Carbazole		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Chrysene	400	3200	J	730	J	410	J	7700	U	380	UJ	690	J	2500	J
Dibenzo(a,h)anthracene	400	820	J	170	J	110	J	7700	U	380	UJ	6700	UJ	780	J
Dibenzofuran		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Diethylphthalate		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Dimethylphthalate		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Di-n-Butylphthalate		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Di-n-octylphthalate		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Fluoranthene		16000		1300	J	500	J	460	J	380	UJ	6700	UJ	3000	J
Fluorene		430	UR	390	UJ	370	UJ	1500	J	380	UJ	6700	UJ	700	UJ
Hexachlorobenzene		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Hexachlorobutadiene		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Hexachlorocyclopentadiene		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Hexachloroethane		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-S-MW102-0608		OFF-TP12-011194		OFF-TP13-011194		OFF-TP21-011194		OFF-TP22-011194		OFF-TP31-011194		OFF-TP32-011194	
Sample Location		MW-		TP1		TP1		TP2		TP2		TP3		TP3	
Date Sampled		7/7/1997		1/11/1994		1/11/1994		1/11/1994		1/11/1994		1/11/1994		1/11/1994	
Interval		6.0-8.0		3.5-4.0		1.5-2.0		7.0-8.0		4.5-4.5		7.0-8.0		7.0-7.0	
QC Identifier		None		None		None		None		None		None		None	
Criteria	PRG														
Indeno(1,2,3-cd)pyrene	900	2300	J	390	J	230	J	7700	U	380	UJ	6700	UJ	1700	J
Isophorone		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Naphthalene		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Nitrobenzene		430	UJ	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
N-Nitroso-di-n-propylamine		430	U	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
N-Nitroso-diphenylamine		430	UR	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Pentachlorophenol		1100	UR	970	UJ	940	UJ	19000	U	940	UJ	17000	UJ	1800	UJ
Phenanthrene		12000		680	J	330	J	850	J	380	UJ	6300	J	1300	J
Phenol			NA	390	UJ	370	UJ	7700	U	380	UJ	6700	UJ	700	UJ
Phenols		430	U		NA		NA		NA		NA		NA		NA
Pyrene		5300		1100	J	490	J	1000	J	380	UJ	6700	UJ	3100	J
Total PAH			NA		NA		NA		NA		NA		NA		NA
TAL Metal Analysis (MG/KG)															
Aluminum		4570		8710		7970		5650		12000		3030		10300	
Antimony	10	12.0	J	6.3	U	5.8	U	6.3	U	5.8	U	6.7		6.0	U
Arsenic	7.0	53.6	J	4.1	J	2.6	J	3.7	J	4.3	J	16.3	J	2.9	J
Barium		220		46.2	B	23.6	B	9.6	B	18.2	B	200		22.1	B
Beryllium	0.4	0.15	U	0.28	B	0.37	B	0.23	U	0.37	B	0.24	U	0.29	B
Cadmium		2.0	U	0.25	J	0.089	UJ	0.092	UJ	0.092	UJ	3.6		0.089	UJ
Calcium		28800		4330		795	B	760	B	884	B	32300		1090	B
Chromium		44.3		8.6	J	11.8	J	5.8	J	12.5	J	6.1	J	12.3	J
Cobalt		18.0	J	8.3	B	12.2		8.0	B	10.4	B	2.9	B	11.8	
Copper		2310		23.3		16.1		16.9		10.6		52.4		27.4	
Cyanide			NA	1.2	U	1.2	U	1.2	U	1.2	U	1.2	U	1.1	U
Iron		204000		17200		23000		16900		22100		12300		24400	
Lead	150	5400		475	J	40.1	J	10.8	J	6.9	J	3090	J	67.6	J
Magnesium		7770		1840		2180		2040		2570		4630		3150	
Manganese	390	562	J	255	J	186	J	243	J	139	J	299	J	413	J
Mercury		0.65	J	0.25		0.056	U	0.045	U	0.049	U	0.16		0.076	B
Nickel		64.1		13.7		28.1		16.3		17.7		4.3	B	18.7	
Potassium		590		329	B	538	B	320	B	336	B	822	B	809	B
Selenium		1.3	J	0.59	J	0.45	UJ	0.46	UJ	0.46	UJ	0.48	UJ	0.45	UJ
Silver		0.91	U	0.091	UJ	0.089	UJ	0.092	UJ	0.092	UJ	0.095	UJ	0.089	UJ
Sodium		3240		89.2	B	97.9	B	87.3	B	60.1	U	324	B	76.0	B
Thallium		0.73	UJ	4.5	UJ	0.45	UJ	0.46	UJ	0.46	UJ	4.8	UJ	0.45	UJ
Vanadium		18.8		16.5		7.1	B	11.1	B	7.4	B	6.9	U	7.7	B
Zinc		3410		169		57.8		210		42.7		1580		76.3	
Total Petroleum Hydrocarbon Analysis (MG/KG)															
Total Petroleum Hydrocarbons	500	8200	J		NA		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-S-TP-02-0203		OFF-S-TP-05-0708		OFF-S-TP-06-0607		OFF-S-TP-07-0708		OFF-S-TP-08-0304		OFF-S-TP-11-0506-MAX	
Sample Location		TP-02		TP-05		TP-06		TP-07		TP-08		TP-11	
Date Sampled		6/30/1997		7/1/1997		7/1/1997		7/2/1997		7/2/1997		7/2/1997	
Interval		2.0-3.0		7.0-8.0		6.0-7.0		7.0-8.0		3.0-4.0		5.0-6.0	
QC Identifier		None		None		None		None		None		Field Dup. OFF-S-TP-11-0506	
Criteria	PRG												
Semivolatile Organic Analysis (UG/KG)													
1,2,4-Trichlorobenzene		360	U	360	U	400	U	400	U	400	U	430	U
1,2-Dichlorobenzene		360	U	360	U	400	U	400	U	400	U	430	U
1,3-Dichlorobenzene		360	U	360	U	400	U	400	U	400	U	430	U
1,4-Dichlorobenzene		360	U	360	U	400	U	400	U	400	U	430	U
2,2'-oxybis(1-Chloropropane)		360	U	360	U	400	U	400	U	400	U	430	U
2,4,5-Trichlorophenol		910	U	910	U	1000	U	1000	U	1000	U	1100	U
2,4,6-Trichlorophenol		360	U	360	U	400	U	400	U	400	U	430	U
2,4-Dichlorophenol		360	U	360	U	400	U	400	U	400	U	430	U
2,4-Dimethylphenol		360	U	360	U	400	U	400	U	400	U	430	U
2,4-Dinitrophenol		910	U	910	U	1000	U	1000	U	1000	U	1100	U
2,4-Dinitrotoluene		360	U	360	U	400	U	400	U	400	U	430	U
2,6-Dinitrotoluene		360	U	360	U	400	U	400	U	400	U	430	U
2-Chloronaphthalene		360	U	360	U	400	U	400	U	400	U	430	U
2-Chlorophenol		360	U	360	U	400	U	400	U	400	U	430	U
2-Methylnaphthalene		360	U	360	U	400	U	400	U	400	U	3700	
2-Methylphenol		360	U	360	U	400	U	400	U	400	U	430	U
2-Nitroaniline		910	U	910	U	1000	U	1000	U	1000	U	1100	U
2-Nitrophenol		360	U	360	U	400	U	400	U	400	U	430	U
3,3'-Dichlorobenzidine		360	U	360	U	400	U	400	U	400	U	430	U
3-Nitroaniline		910	U	910	U	1000	U	1000	U	1000	U	1100	U
4,6-Dinitro-2-methylphenol		910	U	910	U	1000	U	1000	U	1000	U	1100	U
4-Bromophenyl-phenylether		360	U	360	U	400	U	400	U	400	U	430	U
4-Chloro-3-methylphenol		360	U	360	U	400	U	400	U	400	U	430	U
4-Chloroaniline		360	U	360	U	400	U	400	U	400	U	430	U
4-Chlorophenyl-phenylether		360	U	360	U	400	U	400	U	400	U	430	U
4-Methylphenol		360	U	360	U	400	U	400	U	400	U	430	U
4-Nitroaniline		910	U	910	U	1000	U	1000	U	1000	U	1100	U
4-Nitrophenol		910	U	910	U	1000	U	1000	U	1000	U	1100	U
9H-CARBAZOLE			NA		NA		NA		NA		NA		NA
Acenaphthene		360	U	190	J	400	U	400	U	400	U	430	U
Acenaphthylene		360	U	360	U	400	U	400	U	400	U	430	U
Anthracene		360	U	420		400	U	400	U	400	U	1500	
Benzo(a)anthracene	900	360	U	840		610		350	J	170	J	580	
Benzo(a)pyrene	400	360	U	690		500		360	J	400	U	350	
Benzo(b)fluoranthene	900	360	U	650		380	J	240	J	400	U	430	
Benzo(g,h,i)perylene	900	360	U	360	U	400	U	400	U	400	U	430	U
Benzo(k)fluoranthene	800	360	U	530		410		270	J	400	U	490	
Benzoic acid			NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane		360	U	360	U	400	U	400	U	400	U	430	U
Bis(2-Chloroethyl)ether		360	U	360	U	400	U	400	U	400	U	430	U
bis(2-Ethylhexyl)phthalate		360	U	360	U	400	U	400	U	400	U	430	U
Butylbenzylphthalate		360	U	360	U	400	U	400	U	400	U	430	U
Carbazole		360	U	170	J	400	U	400	U	400	U	430	U
Chrysene	400	360	U	810		650		380	J	160	J	460	
Dibenzo(a,h)anthracene	400	360	U	180	J	190	J	400	U	400	U	430	U
Dibenzofuran		360	U	360	U	400	U	400	U	400	U	1800	
Diethylphthalate		360	U	360	U	400	U	400	U	400	U	430	U
Dimethylphthalate		360	U	360	U	400	U	400	U	400	U	430	U
Di-n-Butylphthalate		360	U	360	U	400	U	400	U	400	U	430	U
Di-n-octylphthalate		360	U	360	U	400	U	400	U	400	U	430	U
Fluoranthene		360	U	1700		860		520		240	J	2000	
Fluorene		360	U	160	J	400	U	400	U	400	UJ	3400	
Hexachlorobenzene		360	U	360	U	400	U	400	U	400	U	430	U
Hexachlorobutadiene		360	U	360	U	400	U	400	U	400	U	430	U
Hexachlorocyclopentadiene		360	U	360	U	400	U	400	U	400	U	430	U
Hexachloroethane		360	U	360	U	400	U	400	U	400	U	430	U

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-S-TP-02-0203		OFF-S-TP-05-0708		OFF-S-TP-06-0607		OFF-S-TP-07-0708		OFF-S-TP-08-0304		OFF-S-TP-11-0506-MAX	
Sample Location		TP-02		TP-05		TP-06		TP-07		TP-08		TP-11	
Date Sampled		6/30/1997		7/1/1997		7/1/1997		7/2/1997		7/2/1997		7/2/1997	
Interval		2.0-3.0		7.0-8.0		6.0-7.0		7.0-8.0		3.0-4.0		5.0-6.0	
QC Identifier		None		None		None		None		None		Field Dup. OFF-S-TP-11-0506	
Criteria	PRG												
Indeno(1,2,3-cd)pyrene	900	360	U	520		350	J	280	J	400	U	350	
Isophorone		360	U	360	U	400	U	400	U	400	U	430	U
Naphthalene		360	U	360	U	400	U	400	U	400	U	4000	
Nitrobenzene		360	U	360	U	400	U	400	U	400	U	430	U
N-Nitroso-di-n-propylamine		360	U	360	U	400	U	400	U	400	U	430	U
N-Nitroso-diphenylamine		360	U	360	U	400	U	400	U	400	U	430	U
Pentachlorophenol		910	U	910	U	1000	U	1000	U	1000	U	1100	U
Phenanthrene		360	U	1800		1300		510		200	J	4900	
Phenol			NA		NA		NA		NA		NA		NA
Phenols		360	U	360	U	400	U	400	U	400	U	430	U
Pyrene		360	U	1700		1800		800		330	J	710	
Total PAH			NA		NA		NA		NA		NA		NA
TAL Metal Analysis (MG/KG)													
Aluminum		6600		11100		11900		9000		11800		9210	
Antimony	10	0.34	UR	0.49	U	0.36	U	0.93	U	0.35	UR	0.51	U
Arsenic	7.0	4.1	J	14.3	J	5.7	J	6.2	J	13.8	J	8.3	
Barium		14.1	J	41.4	J	26.0	J	22.7	J	33.7	J	90.0	
Beryllium	0.4	0.27	U	0.27	U	0.32	U	0.29	U	0.35	U	0.46	U
Cadmium		1.3	U	0.14	U	0.090	U	0.090	U	0.030	U	0.13	U
Calcium		597	J	1480	J	1570	J	1320	J	1090	J	1650	
Chromium		8.7	J	15.6	J	12.3	J	10.1	J	15.4	J	13.1	
Cobalt		6.8		14.2		10.0		7.4		10.8		9.9	
Copper		16.5		88.2		22.7		19.7		41.0		49.7	
Cyanide			NA		NA		NA		NA		NA		NA
Iron		25300		56300		25000		19100		27500		26500	
Lead	150	46.6	J	540	J	55.5	J	40.7	J	57.8	J	563	
Magnesium		2360		3970		3000		2180		2590		2400	
Manganese	390	292	J	698	J	410	J	417	J	478	J	306	
Mercury		0.020	U	0.21	J	0.060	J	0.10	J	0.11	J	0.24	
Nickel		14.6		24.5		20.5		19.2		20.1		19.6	
Potassium		418		417		363	U	316	U	380	U	450	
Selenium		0.81	J	0.53	J	0.45	UJ	0.50	J	0.66	J	1.1	
Silver		0.13	U	0.13	U	0.13	U	0.13	U	0.13	U	0.16	U
Sodium		99.1	U	1070	J	71.9	U	65.0	U	51.4	U	199	
Thallium		0.62	UJ	0.63	U	0.61	UJ	0.61	UJ	0.65	UJ	0.73	U
Vanadium		8.2		17.8		17.5		13.2		20.7		19.8	
Zinc		986	J	533	J	101	J	80.0	J	60.6	J	201	
Total Petroleum Hydrocarbon Analysis (MG/KG)													
Total Petroleum Hydrocarbons	500	140	J	40	U	130	J	59	U	31	U	7500	

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-S-TP-12-0405		OFF-S-TP-13-0607		OFF-S-TP-14-0304-MAX		OFF-S-TP-15-0506		OFF-S-TP-16-1011		OFF-S-TP-17-0809-MAX	
Sample Location		TP-12		TP-13		TP-14		TP-15		TP-16		TP-17	
Date Sampled		7/2/1997		7/3/1997		7/3/1997		7/3/1997		7/7/1997		7/7/1997	
Interval		4.0-5.0		6.0-7.0		3.0-4.0		5.0-6.0		10.0-11.0		8.0-9.0	
QC Identifier		None		None		Field Dup. OFF-S-TP-14-0304		None		None		Field Dup. OFF S-TP-17-0809	
Criteria	PRG												
Semivolatile Organic Analysis (UG/KG)													
1,2,4-Trichlorobenzene		360	U	400	UJ	430	U	460	U	5000	U	400	U
1,2-Dichlorobenzene		360	U	400	U	430	U	460	U	5000	U	400	U
1,3-Dichlorobenzene		360	U	400	U	430	U	460	U	5000	U	400	U
1,4-Dichlorobenzene		360	U	400	U	430	U	460	U	5000	U	400	U
2,2'-oxybis(1-Chloropropane)		360	U	400	U	430	U	460	U	5000	U	400	U
2,4,5-Trichlorophenol		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
2,4,6-Trichlorophenol		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
2,4-Dichlorophenol		360	U	400	U	430	U	460	U	5000	U	400	U
2,4-Dimethylphenol		360	U	400	U	430	U	460	U	5000	U	400	U
2,4-Dinitrophenol		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
2,4-Dinitrotoluene		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
2,6-Dinitrotoluene		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
2-Chloronaphthalene		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
2-Chlorophenol		360	U	400	U	430	U	460	U	5000	U	400	U
2-Methylnaphthalene		360	U	400	U	430	U	1300	J	5000	U	690	
2-Methylphenol		360	U	400	U	430	U	460	U	5000	U	400	U
2-Nitroaniline		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
2-Nitrophenol		360	U	400	U	430	U	460	U	5000	U	400	U
3,3'-Dichlorobenzidine		360	UJ	400	UJ	430	U	460	UJ	5000	UJ	400	U
3-Nitroaniline		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
4,6-Dinitro-2-methylphenol		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
4-Bromophenyl-phenylether		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
4-Chloro-3-methylphenol		360	U	400	UJ	430	U	460	U	5000	U	400	U
4-Chloroaniline		360	U	400	U	430	U	460	U	5000	U	400	U
4-Chlorophenyl-phenylether		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
4-Methylphenol		360	U	400	U	430	U	460	U	5000	U	400	U
4-Nitroaniline		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
4-Nitrophenol		910	UJ	1000	UJ	1100	U	1200	U	12000	U	1000	U
9H-CARBAZOLE			NA		NA		NA		NA		NA		NA
Acenaphthene		1900	J	400	UJ	430	U	4900		5000	U	400	U
Acenaphthylene		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
Anthracene		700	J	400	UJ	430	U	2200	J	5000	U	400	U
Benzo(a)anthracene	900	360	U	230	J	430	U	1200	J	5000	U	400	U
Benzo(a)pyrene	400	360	U	200	J	430	U	970	J	5000	U	400	U
Benzo(b)fluoranthene	900	360	U	400	U	430	U	610	J	300	J	400	U
Benzo(g,h,i)perylene	900	360	U	400	U	430	U	460	UJ	5000	U	400	U
Benzo(k)fluoranthene	800	360	U	400	U	430	U	730	J	5000	U	400	U
Benzoic acid			NA		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane		360	U	400	U	430	U	460	U	5000	U	400	U
Bis(2-Chloroethyl)ether		360	U	400	U	430	U	460	U	5000	U	400	U
bis(2-Ethylhexyl)phthalate		360	UJ	400	U	430	U	460	UJ	5000	U	400	U
Butylbenzylphthalate		360	U	400	U	430	U	460	UJ	5000	U	400	U
Carbazole		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
Chrysene	400	170	J	280	J	170		1700	J	5000	U	400	U
Dibenzo(a,h)anthracene	400	360	U	400	U	430	U	460	UJ	5000	UJ	400	U
Dibenzofuran		1100	J	400	UJ	430	U	4000		5000	U	400	U
Diethylphthalate		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
Dimethylphthalate		360	UJ	400	U	430	U	460	UR	5000	U	400	U
Di-n-Butylphthalate		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
Di-n-octylphthalate		360	UJ	400	U	430	U	460	UJ	5000	UJ	400	U
Fluoranthene		650	J	750	J	340		3600	J	910	J	400	U
Fluorene		2600	J	400	UJ	430	U	1900	J	5000	U	120	
Hexachlorobenzene		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
Hexachlorobutadiene		360	U	400	U	430	U	460	U	5000	U	400	U
Hexachlorocyclopentadiene		360	UJ	400	UJ	430	U	460	UR	5000	UJ	400	U
Hexachloroethane		360	U	400	U	430	U	460	U	5000	U	400	U

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number		OFF-S-TP-12-0405		OFF-S-TP-13-0607		OFF-S-TP-14-0304-MAX		OFF-S-TP-15-0506		OFF-S-TP-16-1011		OFF-S-TP-17-0809-MAX	
Sample Location		TP-12		TP-13		TP-14		TP-15		TP-16		TP-17	
Date Sampled		7/2/1997		7/3/1997		7/3/1997		7/3/1997		7/7/1997		7/7/1997	
Interval		4.0-5.0		6.0-7.0		3.0-4.0		5.0-6.0		10.0-11.0		8.0-9.0	
QC Identifier		None		None		Field Dup. OFF-S-TP-14-0304		None		None		Field Dup. OFF-S-TP-17-0809	
Criteria	PRG												
Indeno(1,2,3-cd)pyrene	900	360	U	400	U	180		800	J	5000	U	400	U
Isophorone		360	U	400	U	430	U	460	U	5000	U	400	U
Naphthalene		360	U	400	U	430	U	1300		5000	U	140	
Nitrobenzene		360	U	400	U	430	U	460	U	5000	U	400	U
N-Nitroso-di-n-propylamine		360	U	400	U	430	U	460	U	5000	U	400	U
N-Nitroso-diphenylamine		360	UJ	400	UJ	430	U	460	UR	5000	U	400	U
Pentachlorophenol		910	UJ	1000	UJ	1100	U	1200	UR	12000	U	1000	U
Phenanthrene		3600	J	400	UJ	520		14000		5000	U	240	
Phenol			NA		NA		NA		NA		NA		NA
Phenols		360	U	400	U	430	U	460	U	5000	U	400	U
Pyrene		360		710		310		2700	J	1300	J	400	U
Total PAH			NA		NA		NA		NA		NA		NA
TAL Metal Analysis (MG/KG)													
Aluminum		8340		8620		13200		5220		7510		11700	
Antimony	10	0.44	U	39.2	J	0.41	U	0.76	U	4.0	J	0.36	U
Arsenic	7.0	4.8	J	18.3	J	10.5		9.9	J	74.4	J	8.2	
Barium		23.9	J	160	J	15.6		144	J	126		13.4	
Beryllium	0.4	0.22	U	0.20	U	0.28	U	0.38	U	0.24	J	0.32	U
Cadmium		0.030	U	4.4	J	0.040	U	1.7	U	6.3	U	0.030	U
Calcium		1740	J	24400	J	917		5190	J	14400		1090	
Chromium		8.0	J	21.7	J	16.6		12.3	J	61.9		14.5	
Cobalt		6.0		12.9		9.8		5.6		15.3	J	14.1	
Copper		51.0		604		22.8		146		264		25.6	
Cyanide			NA		NA		NA		NA		NA		NA
Iron		18500		110000		31100		19000		186000		31400	
Lead	150	283	J	7820	J	42.0		766	J	3350		13.3	
Magnesium		1800	J	3870		4720		2810		3240		4320	
Manganese	390	516	J	898	J	231		157	J	1110	J	267	
Mercury		0.090	J	0.35		0.050	U	0.18	J	2.2	J	0.010	U
Nickel		18.4		29.1		21.9		14.3		37.3		25.0	
Potassium		355	U	382	U	492		481	U	362	U	374	U
Selenium		0.50	UJ	0.71	J	0.65		0.87	J	1.2	J	0.50	U
Silver		0.14	U	0.97	U	0.16	U	0.89	U	0.48	U	0.14	U
Sodium		85.6	U	926	J	1540		1720	J	1030	J	243	
Thallium		0.68	UJ	0.75	UJ	0.76	U	0.86	UJ	0.89	UJ	0.67	U
Vanadium		13.8		18.2		17.4		19.2		16.5		16.0	
Zinc		63.7	J	2870	J	70.1		577	J	4240		65.9	
Total Petroleum Hydrocarbon Analysis (MG/KG)													
Total Petroleum Hydrocarbons	500	4100	J	7400	J	4800		21000	J	6400	J	200	

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	PTW-FB01		OFF-SB-RB01		OFF-SB-RB02		RB03		OFF-SB-RB04		OFF-SB-RB05		OFF-SB-RB06		RB07		RB08		RB09		OFF-SB-RB10		OFF-SB-RB11		RB12		OFF-SB-TB01	
Sample Location	Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank	
Date Sampled	11/26/2003		11/18/2003		11/18/2003		11/19/2003		11/20/2003		11/21/2003		11/24/2003		11/25/2003		11/26/2003		12/1/2003		12/2/2003		12/3/2003		12/4/2003		11/17/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Field Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Blank		Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Blank		Trip Blank	
Filtered																												
Semivolatile Organic Analysis (UG/L)																												
1,1'-Biphenyl	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2,2'-oxybis(1-Chloropropane)	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2,4,5-Trichlorophenol	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
2,4,6-Trichlorophenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2,4-Dichlorophenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2,4-Dimethylphenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2,4-Dinitrophenol	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
2,4-Dinitrotoluene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2,6-Dinitrotoluene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2-Chloronaphthalene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2-Chlorophenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2-Methylnaphthalene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2-Methylphenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
2-Nitroaniline	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
2-Nitrophenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
3,3'-Dichlorobenzidine	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
3-Nitroaniline	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
4,6-Dinitro-2-methylphenol	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
4-Bromophenyl-phenylether	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
4-Chloro-3-methylphenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
4-Chloroaniline	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
4-Chlorophenyl-phenylether	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
4-Methylphenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
4-Nitroaniline	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
4-Nitrophenol	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
Acenaphthene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Acenaphthylene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Acetophenone	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Anthracene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Atrazine	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Benzaldehyde	5	J		NA		NA	10	U		NA		NA		NA	10	U	11		10			NA		NA	3	J		NA
Benzo(a)anthracene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Benzo(a)pyrene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Benzo(b)fluoranthene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Benzo(g,h,i)perylene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Benzo(k)fluoranthene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Bis(2-Chloroethoxy)methane	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Bis(2-Chloroethyl)ether	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
bis(2-Ethylhexyl)phthalate	5	J		NA		NA	6	JB		NA		NA		NA	1	J	10	U	2	J		NA		NA	10	U		NA
Butylbenzylphthalate	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Caprolactam	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Carbazole	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Chrysene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Dibenzo(a,h)anthracene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Dibenzofuran	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Diethylphthalate	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Dimethylphthalate	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Di-n-Butylphthalate	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	1	J		NA		NA	10	U		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	PTW-FB01		OFF-SB-RB01		OFF-SB-RB02		RB03		OFF-SB-RB04		OFF-SB-RB05		OFF-SB-RB06		RB07		RB08		RB09		OFF-SB-RB10		OFF-SB-RB11		RB12		OFF-SB-TB01	
Sample Location	Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank	
Date Sampled	11/26/2003		11/18/2003		11/18/2003		11/19/2003		11/20/2003		11/21/2003		11/24/2003		11/25/2003		11/26/2003		12/1/2003		12/2/2003		12/3/2003		12/4/2003		11/17/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Field Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Blank		Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Blank		Trip Blank	
Filtered																												
Di-n-octylphthalate	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Fluoranthene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Fluorene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Hexachlorobenzene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Hexachlorobutadiene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Hexachlorocyclopentadiene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Hexachloroethane	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Indeno(1,2,3-cd)pyrene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Isophorone	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Naphthalene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Nitrobenzene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
N-Nitroso-di-n-propylamine	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
N-Nitroso-diphenylamine	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Pentachlorophenol	20	U		NA		NA	20	U		NA		NA		NA	20	U	20	U	20	U		NA		NA	20	U		NA
Phenanthrene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Phenol	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	5	J		NA		NA	10	U		NA
Pyrene	10	U		NA		NA	10	U		NA		NA		NA	10	U	10	U	10	U		NA		NA	10	U		NA
Low Concentration PAH (SIM) Analysis (UG/L)																												
2-Methylnaphthalene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.37		0.10	U	0.10	U	0.10	U	0.10	U		NA
Acenaphthene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Acenaphthylene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Anthracene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Benzo(a)anthracene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Benzo(a)pyrene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Benzo(b)fluoranthene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Benzo(g,h,i)perylene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Benzo(k)fluoranthene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Chrysene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Dibenzo(a,h)anthracene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Fluoranthene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Fluorene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Indeno(1,2,3-cd)pyrene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Naphthalene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Phenanthrene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Pyrene	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U		NA
Gasoline Range Organic Analysis (UG/L)																												
Gasoline Range Organics	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U	50	U
TAL Metal Analysis (UG/L)																												
Aluminum	46.9	B	26.0	U	26.0	U	26.5	B	26.0	U	13.0	U	13.0	U	22.1	B	13.0	U	38.4	*	49.3	*	71.1	B	63.3	B		NA
Antimony	4.0	U	2.1	BN	2.0	U	5.1	B	2.0	U	4.9	B	6.2	B	4.0	U	4.0	U	2.0	U	2.0	U	4.0	U	4.0	U		NA
Arsenic	3.0	U	2.0	U	2.0	U	3.0	U	2.0	U	3.0	U	3.0	U	3.0	U	3.0	U	2.0	U	2.0	U	3.0	U	3.0	U		NA
Barium	10.6	B	7.4	B	6.7	B	4.0	B	4.3	B	3.1	B	1.8	B	3.1	B	1.7	B	3.0	U	3.3	B	0.60	U	0.60	U		NA
Beryllium	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U		NA
Cadmium	0.30	U	0.20	U	0.20	U	0.30	U	0.20	U	0.30	U	0.30	U	0.58	B	0.30	U	0.20	U	0.20	U	0.30	U	0.46	B		NA
Calcium	21100		55.8	B	64.7	B	167	B	38.0	U	158	U	158	U	206	B	158	U	38.0	U	38.0	U	158	U	239	B		NA
Chromium	0.88	B	0.60	U	0.60	U	0.44	B	0.60	U	0.30	U	0.86	B	0.55	B	0.36	B	0.60	U	0.60	U	0.30	U	0.32	B		NA
Cobalt	0.40	U	1.9	B	1.8	B	0.44	B	0.88	B	0.40	U	0.40	U	0.63	B	0.40	U	0.20	U	0.20	U	0.40	U	0.40	U		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	PTW-FB01		OFF-SB-RB01		OFF-SB-RB02		RB03		OFF-SB-RB04		OFF-SB-RB05		OFF-SB-RB06		RB07		RB08		RB09		OFF-SB-RB10		OFF-SB-RB11		RB12		OFF-SB-TB01	
Sample Location	Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank		Blank	
Date Sampled	11/26/2003		11/18/2003		11/18/2003		11/19/2003		11/20/2003		11/21/2003		11/24/2003		11/25/2003		11/26/2003		12/1/2003		12/2/2003		12/3/2003		12/4/2003		11/17/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Field Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Blank		Blank		Rinsate Blank		Rinsate Blank		Rinsate Blank		Blank		Trip Blank	
Filtered																												
Copper	34.7		6.3	B	3.8	B	0.80	U	7.6	B	0.80	U	0.80	U	5.3	B	4.0	B	5.7	B	6.5	B	4.5	B	2.5	B		NA
Iron	106	B	73.7	B	67.1	B	238		67.7	B	66.4	B	15.5		26.1	B	4.5	B	22.3	B*	14.3	B*	48.2	B	23.1	B		NA
Lead	4.2	B	1.3	B	0.73	B	2.0	U	0.70	U	2.2	B	2.0	U	2.0	U	2.0	U	0.70	U	0.70	U	2.1	B	2.0	U		NA
Magnesium	3430		7.0	U	7.0	U	15.0	B	16.7	B	14.6	B	9.0	U	23.1	B	9.0	U	7.0	U	7.0	U	70.4	B	23.9	B		NA
Manganese	5.6	B	5.5	B	2.3	B	7.9	B	2.0	U	2.5	B	1.3	B	2.8	B	0.98	B	2.0	U	2.0	U	0.71	B	0.85	B		NA
Mercury	0.13	U	0.12	U	0.14	U	0.13	U	0.12	U	0.14	U	0.13	U	0.13	U	0.14	U	0.14	U	0.16	U	0.13	U*	0.12	U		NA
Nickel	0.70	U	2.7	B	1.9	B	0.91	B	1.0	B	0.70	U	1.1	B	0.99	B	0.70	U	0.60	U	0.60	U	0.70	U	0.70	U		NA
Potassium	2910		290	B	146	B	75.4	B	57.0	U	78.1	B	57.0	U	126	B	88.7	B	125	B*	79.9	B*	158	B	423	B		NA
Selenium	5.0	U	3.0	U	3.0	U	5.0	U	3.0	U	5.0	U	5.0	U	5.1	B	5.0	U	3.0	U	3.0	U	5.0	U	5.0	U		NA
Silver	0.70	U	0.40	U	0.40	U	4.0	B	0.40	U	3.4	B	0.88	B	1.3	B	0.70	U	0.40	U	0.40	U	10.3	B	2.1	B		NA
Sodium	30400		152	B	100	B	78.3	B	43.0	U	78.5	B	43.0	U	43.0	U	43.0	U	43.0	U	43.0	U*	124	B	95.4	B		NA
Thallium	4.0	U	2.0	U	2.0	U	4.0	U	2.0	U	4.0	U	4.0	U	4.0	U	4.0	U	2.0	U	2.0	U	4.0	U	4.0	U		NA
Vanadium	1.8	B	0.40	U	0.40	U	0.60	U	0.40	U	0.60	U	0.60	U	0.60	U	0.60	U	0.40	U	0.40	U	0.60	U	0.60	U		NA
Zinc	10.2	B	10.2	B	7.2	B	5.5	B	2.9	B	4.1	B	4.5	B	9.3	B	3.8	B	4.3	B	4.9	B	7.1	B	8.6	B		NA
Total Petroleum Hydrocarbon Analysis (MG/L)																												
Total Petroleum Hydrocarbons	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U	0.35	U		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	OFF-SB-TB02		OFF-SB-TB03		OFF-SB-TB04		OFF-SB-TB05		OFF-SB-TB06	
Sample Location	Blank		Blank		Blank		Blank		Blank	
Date Sampled	11/18/2003		11/19/2003		11/20/2003		11/24/2003		11/24/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank	
Filtered										
Semivolatile Organic Analysis (UG/L)										
1,1'-Biphenyl		NA		NA		NA		NA		NA
2,2'-oxybis(1-Chloropropane)		NA		NA		NA		NA		NA
2,4,5-Trichlorophenol		NA		NA		NA		NA		NA
2,4,6-Trichlorophenol		NA		NA		NA		NA		NA
2,4-Dichlorophenol		NA		NA		NA		NA		NA
2,4-Dimethylphenol		NA		NA		NA		NA		NA
2,4-Dinitrophenol		NA		NA		NA		NA		NA
2,4-Dinitrotoluene		NA		NA		NA		NA		NA
2,6-Dinitrotoluene		NA		NA		NA		NA		NA
2-Chloronaphthalene		NA		NA		NA		NA		NA
2-Chlorophenol		NA		NA		NA		NA		NA
2-Methylnaphthalene		NA		NA		NA		NA		NA
2-Methylphenol		NA		NA		NA		NA		NA
2-Nitroaniline		NA		NA		NA		NA		NA
2-Nitrophenol		NA		NA		NA		NA		NA
3,3'-Dichlorobenzidine		NA		NA		NA		NA		NA
3-Nitroaniline		NA		NA		NA		NA		NA
4,6-Dinitro-2-methylphenol		NA		NA		NA		NA		NA
4-Bromophenyl-phenylether		NA		NA		NA		NA		NA
4-Chloro-3-methylphenol		NA		NA		NA		NA		NA
4-Chloroaniline		NA		NA		NA		NA		NA
4-Chlorophenyl-phenylether		NA		NA		NA		NA		NA
4-Methylphenol		NA		NA		NA		NA		NA
4-Nitroaniline		NA		NA		NA		NA		NA
4-Nitrophenol		NA		NA		NA		NA		NA
Acenaphthene		NA		NA		NA		NA		NA
Acenaphthylene		NA		NA		NA		NA		NA
Acetophenone		NA		NA		NA		NA		NA
Anthracene		NA		NA		NA		NA		NA
Atrazine		NA		NA		NA		NA		NA
Benzaldehyde		NA		NA		NA		NA		NA
Benzo(a)anthracene		NA		NA		NA		NA		NA
Benzo(a)pyrene		NA		NA		NA		NA		NA
Benzo(b)fluoranthene		NA		NA		NA		NA		NA
Benzo(g,h,i)perylene		NA		NA		NA		NA		NA
Benzo(k)fluoranthene		NA		NA		NA		NA		NA
Bis(2-Chloroethoxy)methane		NA		NA		NA		NA		NA
Bis(2-Chloroethyl)ether		NA		NA		NA		NA		NA
bis(2-Ethylhexyl)phthalate		NA		NA		NA		NA		NA
Butylbenzylphthalate		NA		NA		NA		NA		NA
Caprolactam		NA		NA		NA		NA		NA
Carbazole		NA		NA		NA		NA		NA
Chrysene		NA		NA		NA		NA		NA
Dibenzo(a,h)anthracene		NA		NA		NA		NA		NA
Dibenzofuran		NA		NA		NA		NA		NA
Diethylphthalate		NA		NA		NA		NA		NA
Dimethylphthalate		NA		NA		NA		NA		NA
Di-n-Butylphthalate		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	OFF-SB-TB02		OFF-SB-TB03		OFF-SB-TB04		OFF-SB-TB05		OFF-SB-TB06	
Sample Location	Blank		Blank		Blank		Blank		Blank	
Date Sampled	11/18/2003		11/19/2003		11/20/2003		11/24/2003		11/24/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank	
Filtered										
Di-n-octylphthalate		NA		NA		NA		NA		NA
Fluoranthene		NA		NA		NA		NA		NA
Fluorene		NA		NA		NA		NA		NA
Hexachlorobenzene		NA		NA		NA		NA		NA
Hexachlorobutadiene		NA		NA		NA		NA		NA
Hexachlorocyclopentadiene		NA		NA		NA		NA		NA
Hexachloroethane		NA		NA		NA		NA		NA
Indeno(1,2,3-cd)pyrene		NA		NA		NA		NA		NA
Isophorone		NA		NA		NA		NA		NA
Naphthalene		NA		NA		NA		NA		NA
Nitrobenzene		NA		NA		NA		NA		NA
N-Nitroso-di-n-propylamine		NA		NA		NA		NA		NA
N-Nitroso-diphenylamine		NA		NA		NA		NA		NA
Pentachlorophenol		NA		NA		NA		NA		NA
Phenanthrene		NA		NA		NA		NA		NA
Phenol		NA		NA		NA		NA		NA
Pyrene		NA		NA		NA		NA		NA
Low Concentration PAH (SIM) Analysis (UG/L)										
2-Methylnaphthalene		NA		NA		NA		NA		NA
Acenaphthene		NA		NA		NA		NA		NA
Acenaphthylene		NA		NA		NA		NA		NA
Anthracene		NA		NA		NA		NA		NA
Benzo(a)anthracene		NA		NA		NA		NA		NA
Benzo(a)pyrene		NA		NA		NA		NA		NA
Benzo(b)fluoranthene		NA		NA		NA		NA		NA
Benzo(g,h,i)perylene		NA		NA		NA		NA		NA
Benzo(k)fluoranthene		NA		NA		NA		NA		NA
Chrysene		NA		NA		NA		NA		NA
Dibenzo(a,h)anthracene		NA		NA		NA		NA		NA
Fluoranthene		NA		NA		NA		NA		NA
Fluorene		NA		NA		NA		NA		NA
Indeno(1,2,3-cd)pyrene		NA		NA		NA		NA		NA
Naphthalene		NA		NA		NA		NA		NA
Phenanthrene		NA		NA		NA		NA		NA
Pyrene		NA		NA		NA		NA		NA
Gasoline Range Organic Analysis (UG/L)										
Gasoline Range Organics	50	U	50	U	50	U	50	U	50	U
TAL Metal Analysis (UG/L)										
Aluminum		NA		NA		NA		NA		NA
Antimony		NA		NA		NA		NA		NA
Arsenic		NA		NA		NA		NA		NA
Barium		NA		NA		NA		NA		NA
Beryllium		NA		NA		NA		NA		NA
Cadmium		NA		NA		NA		NA		NA
Calcium		NA		NA		NA		NA		NA
Chromium		NA		NA		NA		NA		NA
Cobalt		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	OFF-SB-TB02		OFF-SB-TB03		OFF-SB-TB04		OFF-SB-TB05		OFF-SB-TB06	
Sample Location	Blank		Blank		Blank		Blank		Blank	
Date Sampled	11/18/2003		11/19/2003		11/20/2003		11/24/2003		11/24/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank	
Filtered										
Copper		NA		NA		NA		NA		NA
Iron		NA		NA		NA		NA		NA
Lead		NA		NA		NA		NA		NA
Magnesium		NA		NA		NA		NA		NA
Manganese		NA		NA		NA		NA		NA
Mercury		NA		NA		NA		NA		NA
Nickel		NA		NA		NA		NA		NA
Potassium		NA		NA		NA		NA		NA
Selenium		NA		NA		NA		NA		NA
Silver		NA		NA		NA		NA		NA
Sodium		NA		NA		NA		NA		NA
Thallium		NA		NA		NA		NA		NA
Vanadium		NA		NA		NA		NA		NA
Zinc		NA		NA		NA		NA		NA
Total Petroleum Hydrocarbon Analysis (MG/L)										
Total Petroleum Hydrocarbons		NA		NA		NA		NA		NA

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	OFF-SB-TB07		OFF-SB-TB08		OFF-SB-TB09		OFF-SB-TB10		OFF-SB-TB11		OFF-SB-TB12		OFF-SB-TB13		DIUF-FB01	
Sample Location	Blank		Blank		Blank		Blank		Blank		Blank		Blank		DIUF	
Date Sampled	11/25/2003		11/26/2003		11/26/2003		12/1/2003		12/1/2003		12/2/2003		12/3/2003		11/21/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Field Blank	
Filtered																
Semivolatile Organic Analysis (UG/L)																
1,1'-Biphenyl		NA		NA		NA		NA		NA		NA		NA	10	U
2,2'-oxybis(1-Chloropropane)		NA		NA		NA		NA		NA		NA		NA	10	U
2,4,5-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA	20	U
2,4,6-Trichlorophenol		NA		NA		NA		NA		NA		NA		NA	10	U
2,4-Dichlorophenol		NA		NA		NA		NA		NA		NA		NA	10	U
2,4-Dimethylphenol		NA		NA		NA		NA		NA		NA		NA	10	U
2,4-Dinitrophenol		NA		NA		NA		NA		NA		NA		NA	20	U
2,4-Dinitrotoluene		NA		NA		NA		NA		NA		NA		NA	10	U
2,6-Dinitrotoluene		NA		NA		NA		NA		NA		NA		NA	10	U
2-Chloronaphthalene		NA		NA		NA		NA		NA		NA		NA	10	U
2-Chlorophenol		NA		NA		NA		NA		NA		NA		NA	10	U
2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA	10	U
2-Methylphenol				NA		NA		NA				NA		NA	10	
2-Nitroaniline		NA		NA		NA		NA		NA		NA		NA	20	U
2-Nitrophenol		NA		NA		NA		NA		NA		NA		NA	10	U
3,3'-Dichlorobenzidine		NA		NA		NA		NA		NA		NA		NA	10	U
3-Nitroaniline		NA		NA		NA		NA		NA		NA		NA	20	U
4,6-Dinitro-2-methylphenol		NA		NA		NA		NA		NA		NA		NA	20	U
4-Bromophenyl-phenylether		NA		NA		NA		NA		NA		NA		NA	10	U
4-Chloro-3-methylphenol		NA		NA		NA		NA		NA		NA		NA	10	U
4-Chloroaniline		NA		NA		NA		NA		NA		NA		NA	10	U
4-Chlorophenyl-phenylether		NA		NA		NA		NA		NA		NA		NA	10	U
4-Methylphenol		NA		NA		NA		NA		NA		NA		NA	10	U
4-Nitroaniline		NA		NA		NA		NA		NA		NA		NA	20	U
4-Nitrophenol		NA		NA		NA		NA		NA		NA		NA	20	U
Acenaphthene		NA		NA		NA		NA		NA		NA		NA	10	U
Acenaphthylene		NA		NA		NA		NA		NA		NA		NA	10	U
Acetophenone		NA		NA		NA		NA		NA		NA		NA	10	U
Anthracene		NA		NA		NA		NA		NA		NA		NA	10	U
Atrazine		NA		NA		NA		NA		NA		NA		NA	10	U
Benzaldehyde		NA		NA		NA		NA		NA		NA		NA	2	J
Benzo(a)anthracene		NA		NA		NA		NA		NA		NA		NA	10	U
Benzo(a)pyrene		NA		NA		NA		NA		NA		NA		NA	10	U
Benzo(b)fluoranthene		NA		NA		NA		NA		NA		NA		NA	10	U
Benzo(g,h,i)perylene		NA		NA		NA		NA		NA		NA		NA	10	U
Benzo(k)fluoranthene		NA		NA		NA		NA		NA		NA		NA	10	U
Bis(2-Chloroethoxy)methane		NA		NA		NA		NA		NA		NA		NA	10	U
Bis(2-Chloroethyl)ether		NA		NA		NA		NA		NA		NA		NA	10	U
bis(2-Ethylhexyl)phthalate		NA		NA		NA		NA		NA		NA		NA	4	JB
Butylbenzylphthalate		NA		NA		NA		NA		NA		NA		NA	10	U
Caprolactam		NA		NA		NA		NA		NA		NA		NA	10	U
Carbazole		NA		NA		NA		NA		NA		NA		NA	10	U
Chrysene		NA		NA		NA		NA		NA		NA		NA	10	U
Dibenzo(a,h)anthracene		NA		NA		NA		NA		NA		NA		NA	10	U
Dibenzofuran		NA		NA		NA		NA		NA		NA		NA	10	U
Diethylphthalate		NA		NA		NA		NA		NA		NA		NA	10	U
Dimethylphthalate		NA		NA		NA		NA		NA		NA		NA	10	U
Di-n-Butylphthalate		NA		NA		NA		NA		NA		NA		NA	10	U

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

Sample Number	OFF-SB-TB07		OFF-SB-TB08		OFF-SB-TB09		OFF-SB-TB10		OFF-SB-TB11		OFF-SB-TB12		OFF-SB-TB13		DIUF-FB01	
Sample Location	Blank		Blank		Blank		Blank		Blank		Blank		Blank		DIUF	
Date Sampled	11/25/2003		11/26/2003		11/26/2003		12/1/2003		12/1/2003		12/2/2003		12/3/2003		11/21/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Field Blank	
Filtered																
Di-n-octylphthalate		NA		NA		NA		NA		NA		NA		NA	10	U
Fluoranthene		NA		NA		NA		NA		NA		NA		NA	10	U
Fluorene		NA		NA		NA		NA		NA		NA		NA	10	U
Hexachlorobenzene		NA		NA		NA		NA		NA		NA		NA	10	U
Hexachlorobutadiene		NA		NA		NA		NA		NA		NA		NA	10	U
Hexachlorocyclopentadiene		NA		NA		NA		NA		NA		NA		NA	10	U
Hexachloroethane		NA		NA		NA		NA		NA		NA		NA	10	U
Indeno(1,2,3-cd)pyrene		NA		NA		NA		NA		NA		NA		NA	10	U
Isophorone		NA		NA		NA		NA		NA		NA		NA	10	U
Naphthalene		NA		NA		NA		NA		NA		NA		NA	10	U
Nitrobenzene		NA		NA		NA		NA		NA		NA		NA	10	U
N-Nitroso-di-n-propylamine		NA		NA		NA		NA		NA		NA		NA	10	U
N-Nitroso-diphenylamine		NA		NA		NA		NA		NA		NA		NA	10	U
Pentachlorophenol		NA		NA		NA		NA		NA		NA		NA	20	U
Phenanthrene		NA		NA		NA		NA		NA		NA		NA	10	U
Phenol		NA		NA		NA		NA		NA		NA		NA	10	U
Pyrene		NA		NA		NA		NA		NA		NA		NA	10	U
Low Concentration PAH (SIM) Analysis (UG/L)																
2-Methylnaphthalene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Acenaphthene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Acenaphthylene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Anthracene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Benzo(a)anthracene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Benzo(a)pyrene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Benzo(b)fluoranthene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Benzo(g,h,i)perylene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Benzo(k)fluoranthene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Chrysene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Dibenzo(a,h)anthracene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Fluoranthene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Fluorene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Indeno(1,2,3-cd)pyrene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Naphthalene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Phenanthrene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Pyrene		NA		NA		NA		NA		NA		NA		NA	0.10	U
Gasoline Range Organic Analysis (UG/L)																
Gasoline Range Organics		NA	50	U		NA	50	U	50	U	50	U	50	U	50	U
TAL Metal Analysis (UG/L)																
Aluminum		NA		NA		NA		NA		NA		NA		NA	26.0	U
Antimony		NA		NA		NA		NA		NA		NA		NA	2.0	U
Arsenic		NA		NA		NA		NA		NA		NA		NA	2.0	U
Barium		NA		NA		NA		NA		NA		NA		NA	7.6	B
Beryllium		NA		NA		NA		NA		NA		NA		NA	0.20	U
Cadmium		NA		NA		NA		NA		NA		NA		NA	0.20	U
Calcium		NA		NA		NA		NA		NA		NA		NA	38.0	U
Chromium		NA		NA		NA		NA		NA		NA		NA	1.4	B
Cobalt		NA		NA		NA		NA		NA		NA		NA	2.2	B

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

SUBSURFACE SOIL
ANALYTICAL RESULTS
OFFTA, NEWPORT, RI

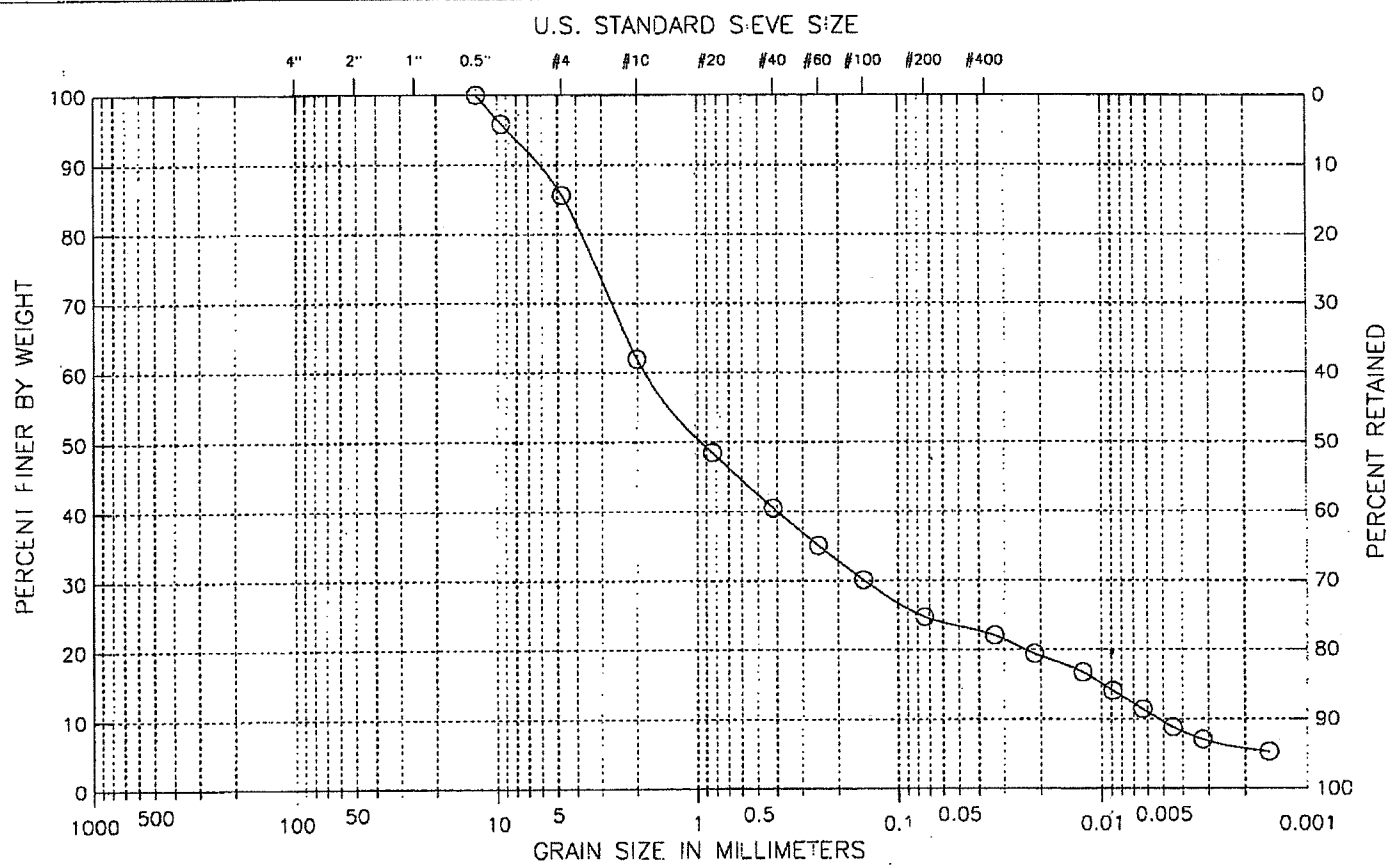
Sample Number	OFF-SB-TB07		OFF-SB-TB08		OFF-SB-TB09		OFF-SB-TB10		OFF-SB-TB11		OFF-SB-TB12		OFF-SB-TB13		DIUF-FB01	
Sample Location	Blank		Blank		Blank		Blank		Blank		Blank		Blank		DIUF	
Date Sampled	11/25/2003		11/26/2003		11/26/2003		12/1/2003		12/1/2003		12/2/2003		12/3/2003		11/21/2003	
Interval	0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0		0.0-0.0	
QC Identifier	Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Trip Blank		Field Blank	
Filtered																
Copper		NA		NA		NA		NA		NA		NA		NA	1.1	B
Iron		NA		NA		NA		NA		NA		NA		NA	83.3	B
Lead		NA		NA		NA		NA		NA		NA		NA	0.70	U
Magnesium		NA		NA		NA		NA		NA		NA		NA	32.4	B
Manganese		NA		NA		NA		NA		NA		NA		NA	2.2	B
Mercury		NA		NA		NA		NA		NA		NA		NA	0.12	U
Nickel		NA		NA		NA		NA		NA		NA		NA	4.0	B
Potassium		NA		NA		NA		NA		NA		NA		NA	57.0	U
Selenium		NA		NA		NA		NA		NA		NA		NA	3.0	U
Silver		NA		NA		NA		NA		NA		NA		NA	0.40	U
Sodium		NA		NA		NA		NA		NA		NA		NA	43.0	U
Thallium		NA		NA		NA		NA		NA		NA		NA	2.0	U
Vanadium		NA		NA		NA		NA		NA		NA		NA	0.40	U
Zinc		NA		NA		NA		NA		NA		NA		NA	2.8	B
Total Petroleum Hydrocarbon Analysis (mg/kg)																

Black Background = Criteria Exceeded; U - Not detected; UJ - Detection limit approximate; J - Quantitation approximate;
R - Rejected; NA - Not Analyzed; * - From dilution analysis

APPENDIX D2

GRAIN SIZE ANALYSIS

Project : 0833 SDG : B1868	Boring No. : --- Sample No.: B1868-12C Test Method ASTM D 422 Filename : 12C	Project : B1868 Project No.: GTX-4946 OFF-SB-400-0608 Location: --- Date : Mon Dec 15 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark olive gray silty sand

Figure 2

Project: 0833; SD6: B1868

Mon Dec 15 13:27:01 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1868
Project No. : GTX-4946
Boring No. : ---
Sample No. : B1868-12C
Location : ---
Soil Description : Moist, dark olive gray silty sand
Remarks :

Depth : ---
Test Date : 12/11/03
Test Method : ASTM D 422

Filename : 12C
Elevation : ---
Tested by : ahp
Checked by : jdt

OFF-SB-400-0608

HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 13.76 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	17.50	22.00	12.50	0.034	22	0.034
5.00	16.00	22.00	11.00	0.021	19	0.021
15.00	14.50	22.50	9.50	0.012	17	0.012
30.00	13.00	22.50	8.00	0.009	14	0.009
60.00	11.50	22.50	6.50	0.006	11	0.006
120.00	10.00	22.50	5.00	0.004	9	0.004
240.00	9.00	22.00	4.00	0.003	7	0.003
1063.00	8.00	22.00	3.00	0.002	5	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	2.32	2.32	96
#4	0.187	4.75	5.67	7.99	86
#10	0.079	2.00	13.22	21.21	62
#20	0.033	0.84	7.52	28.73	48
#40	0.017	0.42	4.47	33.20	40
#60	0.010	0.25	2.99	36.19	35
#100	0.006	0.15	2.78	38.97	30
#200	0.003	0.07	3.02	41.99	25
Pan			13.77	55.76	0

Total Dry Weight of Sample = 176.52

D85 : 4.6352 mm
D60 : 1.7632 mm
D50 : 0.9275 mm
D30 : 0.1469 mm
D15 : 0.0099 mm
D10 : 0.0052 mm

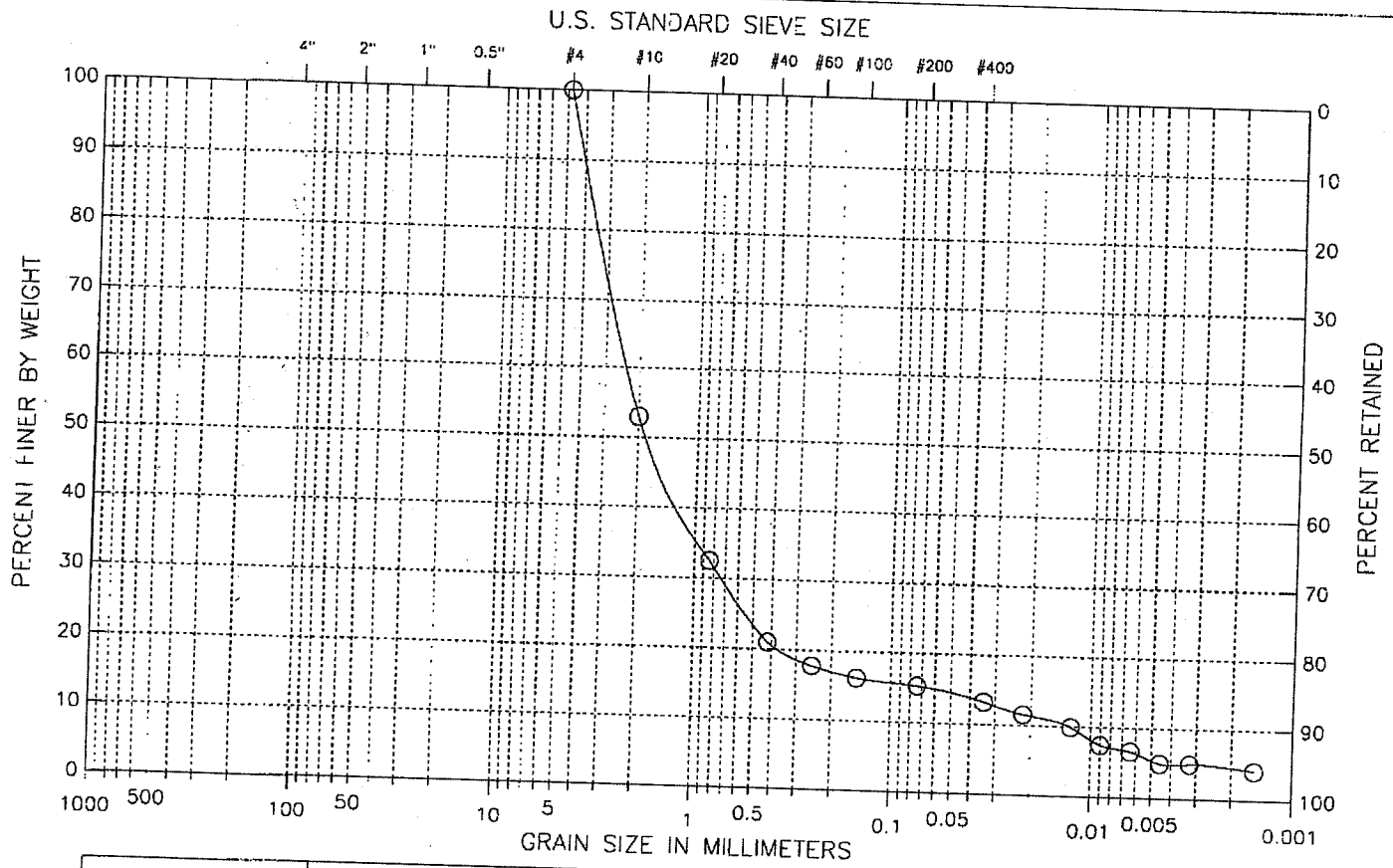
Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-b(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

Project: 0833
SDG: B1820

Boring No. : ---
Sample No: B1820-08C
Test Method ASTM D 422
Filename : 08C

Project : B1820
Project No.: GTX-4940
Location: ---
Date : Tue Dec 16 2003

OFF-SB-402-0810



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, black sand with organics

Figure 1

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Project: 0833 ; SDG: B1820

Tue Dec 16 08:32:52 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1820
Project No. : GTX-4940
Boring No. : ---
Sample No. : B1820-08C
Location : ---

Depth : ---
Test Date : 12/11/03
Test Method : ASTM D 422

Filename : 08C
Elevation : ---
Tested by : ahp
Checked by : jdt

Soil Description : Moist, black sand with organics
Remarks :

OFF-SB-402-0810

HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil - 9.07 gm
Specific Gravity - 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	13.00	22.00	8.00	0.034	13	0.034
5.00	12.00	22.00	7.00	0.022	12	0.022
15.00	11.00	22.50	6.00	0.013	10	0.013
30.00	9.50	22.50	4.50	0.009	7	0.009
60.00	9.00	22.50	4.00	0.006	7	0.006
120.00	8.00	22.50	3.00	0.005	5	0.005
240.00	8.00	22.00	3.00	0.003	5	0.003
1061.00	7.50	22.00	2.50	0.002	4	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
#4	0.187	4.75	0.00	0.00	100
#10	0.079	2.00	12.30	12.30	53
#20	0.033	0.84	5.36	17.66	32
#40	0.017	0.42	2.99	20.65	21
#60	0.010	0.25	0.85	21.50	18
#100	0.006	0.15	0.42	21.92	16
#200	0.003	0.07	0.24	22.16	15
Pan			3.99	26.15	0

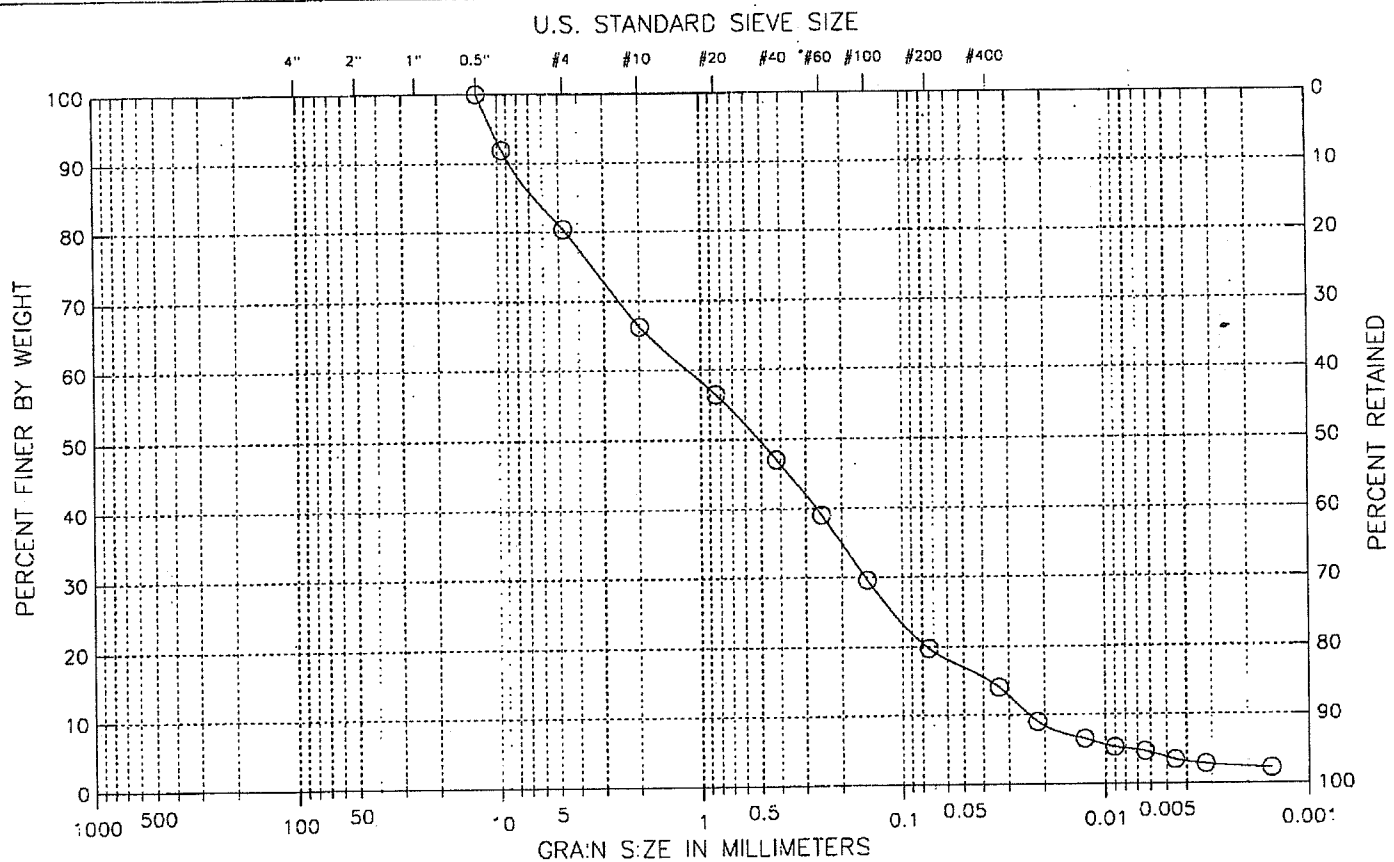
Total Dry Weight of Sample = 145.3

D85 : 3.6049 mm
D60 : 2.2763 mm
D50 : 1.7645 mm
D30 : 0.7240 mm
D15 : 0.0672 mm
D10 : 0.0131 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-b(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

Project: 0833 SDG: B1855	Boring No. : --- Sample No.: B1855-19C Test Method ASTM D 422 Filename : 19C	Project : B1855 Project No.: GTX-4945 Location: --- Date : Mon Dec 15 2003

OFF-SB-404-1618



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark greenish grey silty sand

Figure 2

Project: 0833; SDG: B1855

GEOTECHNICAL LABORATORY TEST DATA

Project : B1855
Project No. : GTX-4945
Boring No. : ---
Sample No. : B1855-19C
Location : ---
Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422
Filename : 19C
Elevation : ---
Tested by : ahp
Checked by : jdt

Soil Description : Moist, dark greenish gray silty sand
Remarks :

OFF-SB-4041618

HYDROMETER

Hydrometer ID : 343611
Weight of air-dried soil = 15.47 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	17.50	22.00	11.25	0.034	14	0.034
5.00	13.50	22.00	7.25	0.022	9	0.022
15.00	11.50	22.00	5.25	0.013	7	0.013
30.00	10.50	22.00	4.25	0.009	5	0.009
60.00	10.00	22.00	3.75	0.006	5	0.006
120.00	9.00	22.00	2.75	0.005	3	0.005
240.00	8.50	22.00	2.25	0.003	3	0.003
1067.00	8.00	22.00	1.75	0.002	2	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	6.33	6.33	92
#4	0.187	4.75	9.08	15.41	80
#10	0.079	2.00	11.07	26.48	66
#20	0.033	0.84	7.75	34.23	56
#40	0.017	0.42	7.31	41.54	47
#60	0.010	0.25	6.29	47.83	39
#100	0.006	0.15	7.43	55.26	30
#200	0.003	0.07	7.73	62.99	20
Pan			15.47	78.46	0

Total Dry Weight of Sample = 196.01

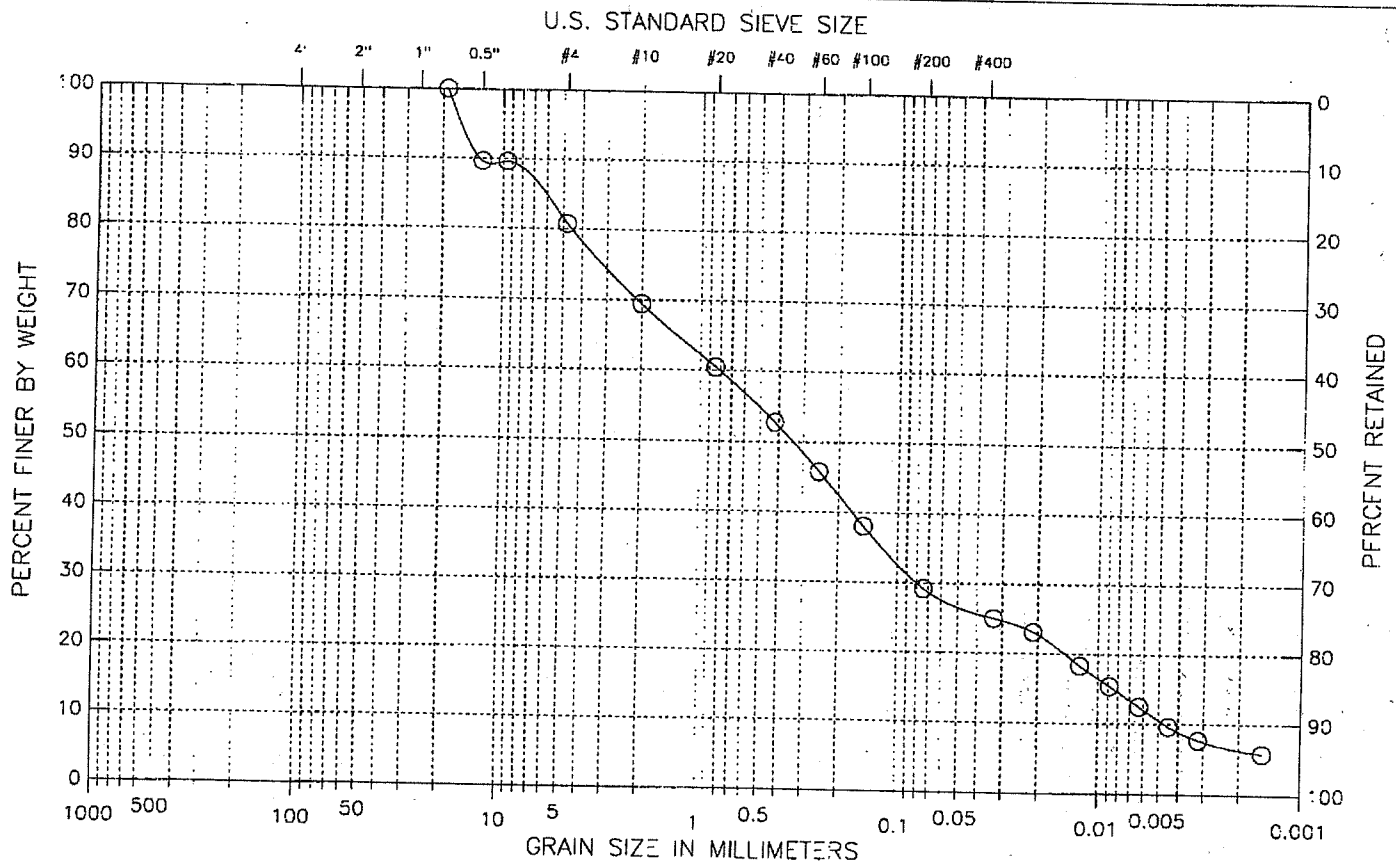
D85 : 6.2746 mm
D60 : 1.1560 mm
D50 : 0.5230 mm
D30 : 0.1525 mm
D15 : 0.0382 mm
D10 : 0.0235 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-b(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

Project: 0833
SDG: B1820

Boring No. : ---
Sample No.: B1820-17C
Test Method ASTM D 422
Filename : 17C

Project : B1820
Project No.: GTX-4940 OFF-SB-405-1012
Location: ---
Date : Tue Dec 16 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark greenish grey silty sand with gravel

Figure 2

0937

Project: 0833 ; SDG: B1820

Tue Dec 16 08:32:53 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1820
Project No. : GTX-4940
Boring No. : ---
Sample No. : B1820-17C
Location : ---

Depth : ---
Test Date : 12/11/03
Test Method : ASTM D 422

Filename : 17C
Elevation : ---
Tested by : ahp
Checked by : jdt

Soil Description : Moist, dark greenish gray silty sand with gravel
Remarks :

OFF-SB-405-1012

HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 14.85 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	18.00	22.50	13.00	0.033	25	0.033
5.00	17.00	22.50	12.00	0.021	23	0.021
15.00	14.50	22.50	9.50	0.012	18	0.012
30.00	13.00	22.50	8.00	0.009	15	0.009
60.00	11.50	22.50	6.50	0.006	13	0.006
120.00	10.00	22.50	5.00	0.004	10	0.004
240.00	9.00	22.50	4.00	0.003	8	0.003
1060.00	8.00	22.00	3.00	0.002	6	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.75"	0.748	19.00	0.00	0.00	100
0.5"	0.500	12.70	5.29	5.29	90
0.375"	0.374	9.51	0.00	5.29	90
#4	0.187	4.75	4.50	9.79	81
#10	0.079	2.00	5.75	15.54	69
#20	0.033	0.84	4.58	20.12	60
#40	0.017	0.42	3.91	24.03	53
#60	0.010	0.25	3.54	27.57	46
#100	0.006	0.15	3.95	31.52	38
#200	0.003	0.07	4.51	36.03	29
Pan			14.85	50.88	0

Total Dry Weight of Sample = 155.68

D85 : 6.6263 mm
D60 : 0.8071 mm
D50 : 0.3416 mm
D30 : 0.0789 mm
D15 : 0.0084 mm
D10 : 0.0047 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-2-4(0)
AASHTO Group Name : Silty Gravel and Sand

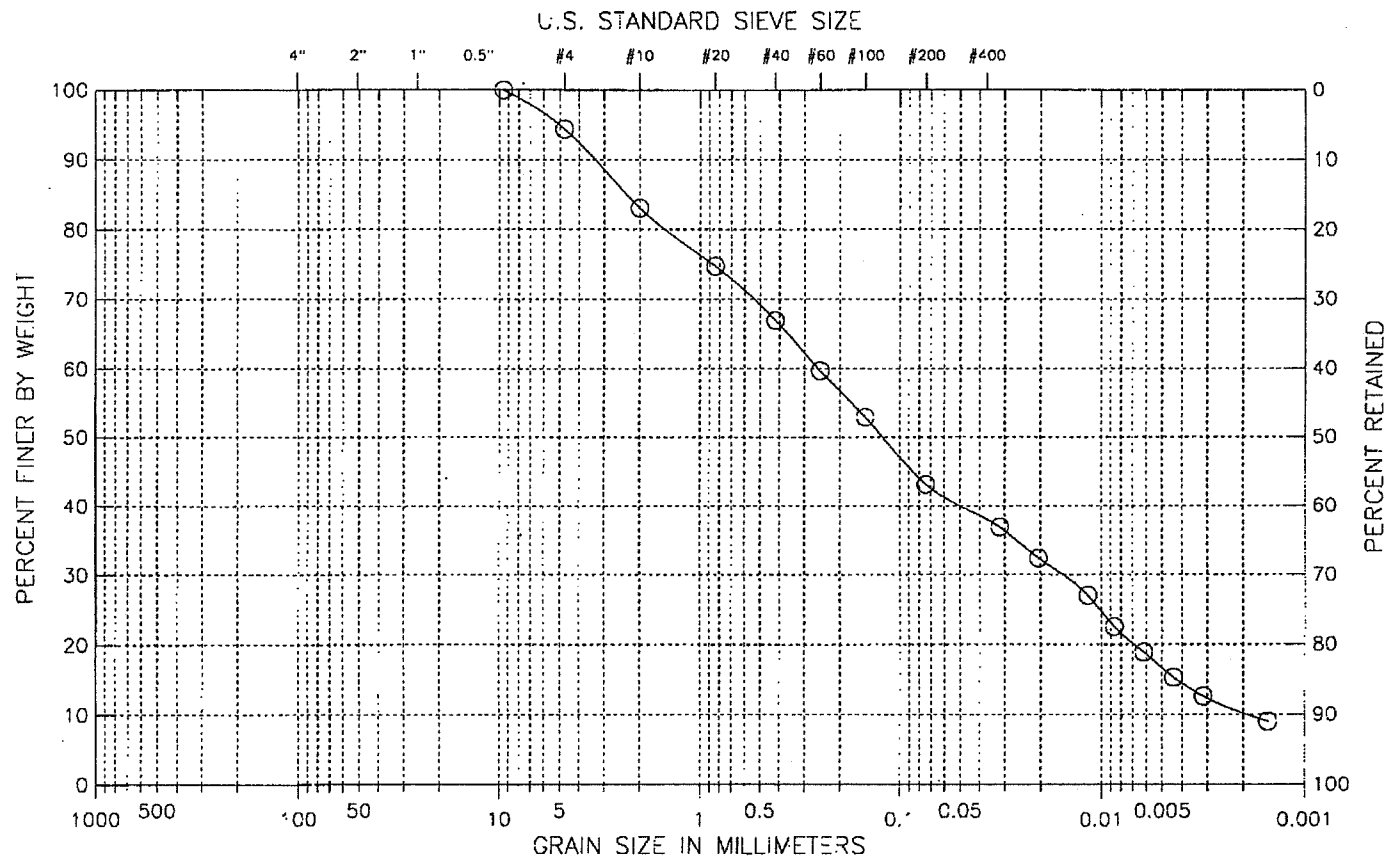
Project: 0833

SDG: B1882

Boring No. : ---
Sample No.: B1882-11C
Test Method ASTM D 422
Filename : 11C

Project : B1882
Project No.: GTX-4941
Location: ---
Date : Tue Dec 16 2003

OFF-SB-406-1416



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark greenish gray silty, clayey sand

Figure 1

Project: 0833; SDG: B1882

Tue Dec 16 08:21:27 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1882
Project No. : GTX-4941
Boring No. : ---
Sample No. : B1882-11C
Location : ---
Soil Description : Moist, dark greenish gray silty, clayey sand
Remarks :

Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422

Filename : 11C
Elevation : ---
Tested by : ahp
Checked by : jdL

OFF-SB-406-1416

HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 23.49 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	25.50	22.00	20.50	0.032	37	0.032
5.00	23.00	22.00	18.00	0.020	32	0.020
16.00	20.00	22.00	15.00	0.012	27	0.012
30.00	17.50	22.00	12.50	0.009	22	0.009
60.00	15.50	22.00	10.50	0.006	19	0.006
120.00	13.50	22.50	8.50	0.004	15	0.004
240.00	12.00	22.50	7.00	0.003	13	0.003
1063.00	10.00	22.00	5.00	0.002	9	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.375"	0.374	9.51	0.00	0.00	100
#4	0.187	4.75	3.05	3.05	94
#10	0.079	2.00	6.17	9.22	83
#20	0.033	0.84	4.55	13.77	75
#40	0.017	0.42	4.26	18.03	67
#60	0.010	0.25	3.94	21.97	60
#100	0.006	0.15	3.69	25.66	53
#200	0.003	0.07	5.33	30.99	43
Pan			23.49	54.48	0

Total Dry Weight of Sample = 169.03

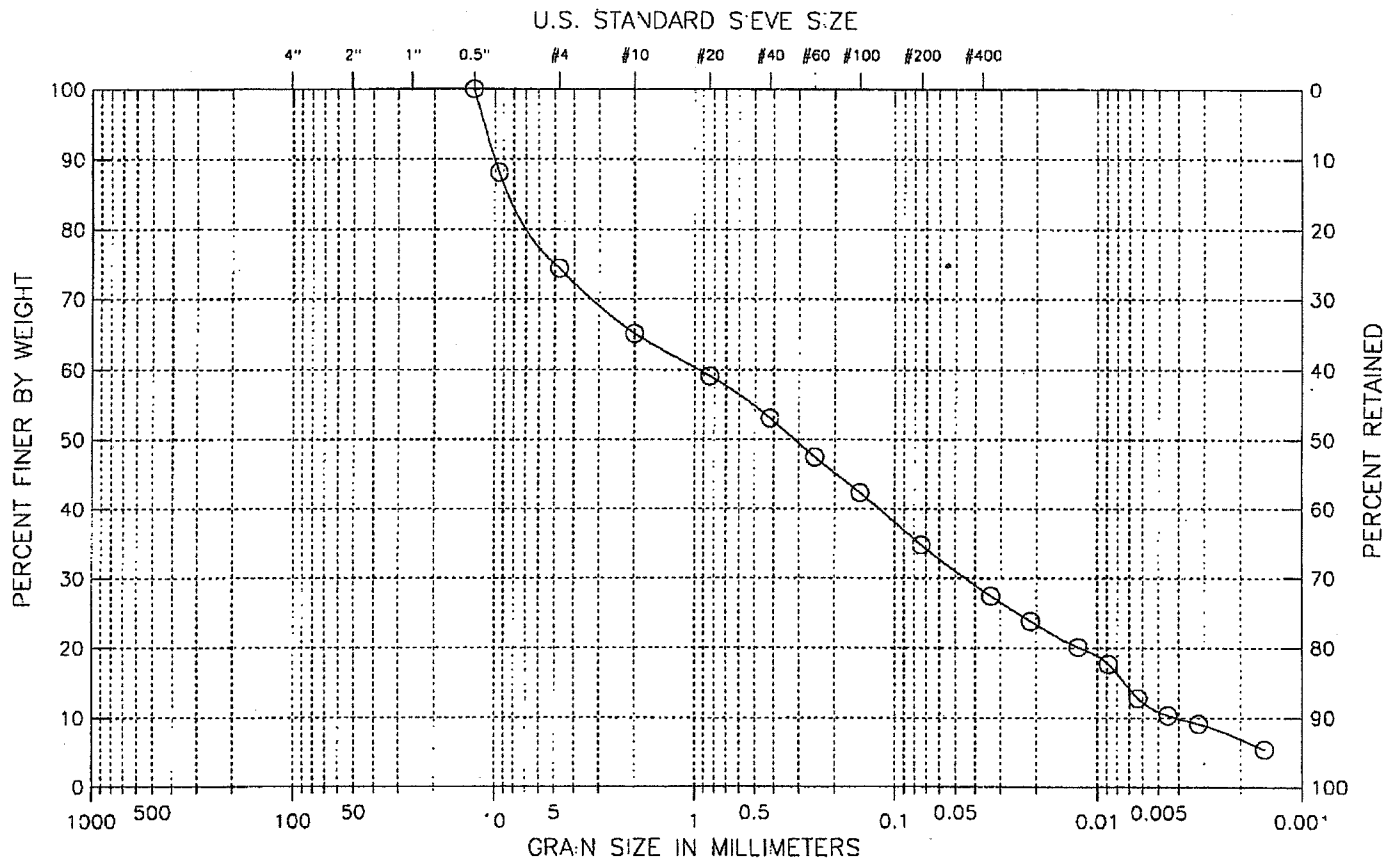
D85 : 2.3165 mm
D60 : 0.2559 mm
D50 : 0.1211 mm
D30 : 0.0159 mm
D15 : 0.0042 mm
D10 : 0.0019 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-4(0)
AASHTO Group Name : Silty Soils

Project: 0833
SDG: B1868

Boring No. : ---
Sample No.: B1868-06C
Test Method ASTM D 422
Filename : 06C

Project : B1868
Project No.: GTX-4946 OFF-SB-407-1618
Location: ---
Date : Mon Dec 15 2003



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, yellowish brown silty sand with gravel

Figure 1

Project: 0833 SDG: B1868

Mon Dec 15 13:27:01 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1868
Project No. : GTX-4946
Boring No. : ---
Sample No. : B1868-06C
Location :
Soil Description : Moist, yelowish brown silty sand with gravel
Remarks :

Depth : ---
Test Date : 12/11/03
Test Method : ASTM D 422

Filename : 06C
Elevation : ---
Tested by : ahp
Checked by : jdt

OFF-SB-407-1618

HYDROMETER

Hydrometer ID : 343611
Weight of air-dried soil = 14.01 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	17.50	22.00	11.25	0.034	27	0.034
5.00	16.00	22.00	9.75	0.021	24	0.021
15.00	14.50	22.00	8.25	0.012	20	0.012
30.00	13.50	22.00	7.25	0.009	18	0.009
60.00	11.50	22.00	5.25	0.006	13	0.006
120.00	10.50	22.00	4.25	0.005	10	0.005
240.00	10.00	22.00	3.75	0.003	9	0.003
1067.00	8.50	22.00	2.25	0.002	5	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	4.10	4.10	88
#4	0.187	4.75	4.73	8.83	74
#10	0.079	2.00	3.22	12.05	65
#20	0.033	0.84	2.06	14.11	59
#40	0.017	0.42	2.09	16.20	53
#60	0.010	0.25	1.93	18.13	47
#100	0.006	0.15	1.77	19.90	42
#200	0.003	0.07	2.60	22.50	35
Pan			12.01	34.51	0

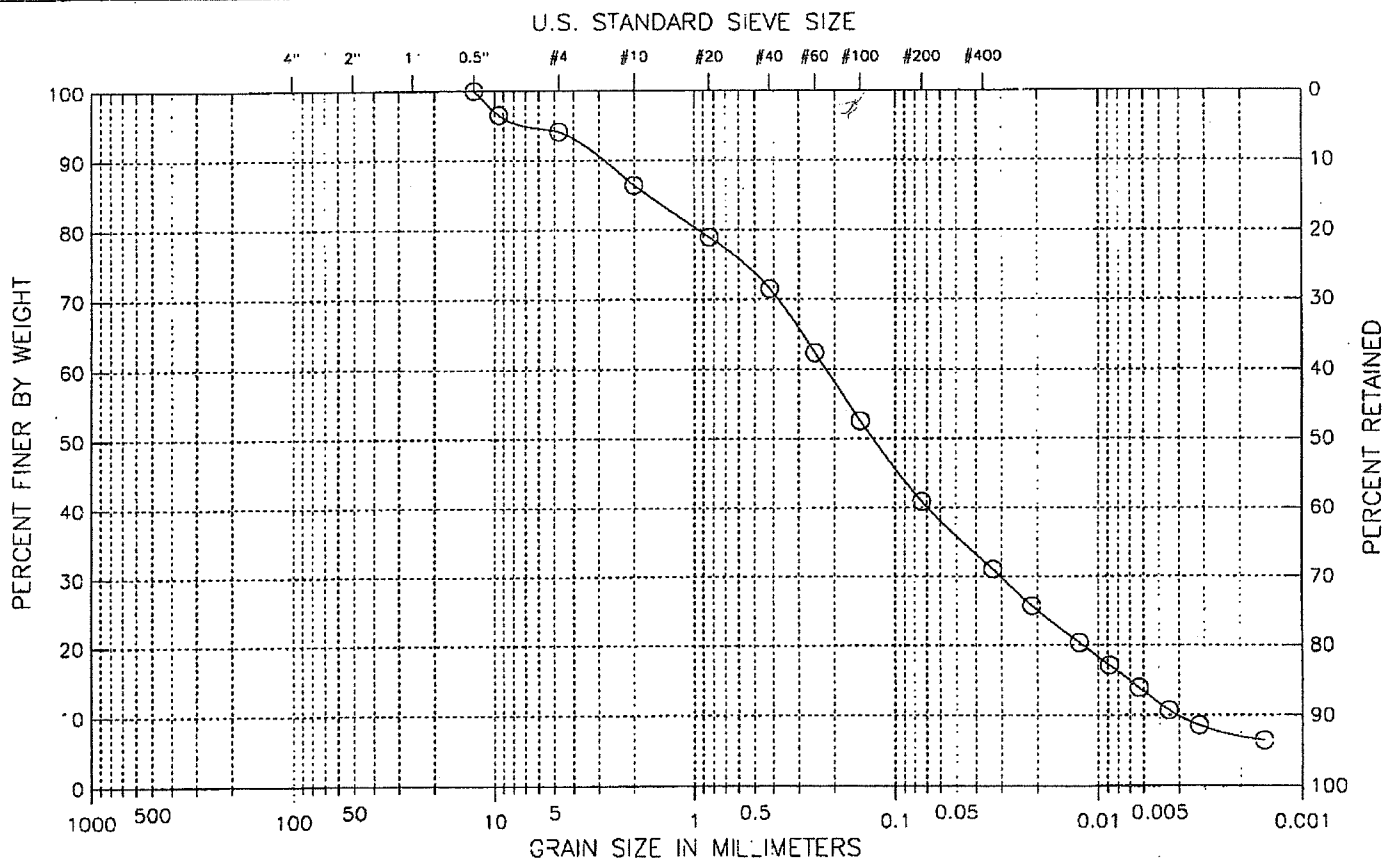
Total Dry Weight of Sample = 153.83

D85 : 8.1202 mm
D60 : 0.9565 mm
D50 : 0.3163 mm
D30 : 0.0443 mm
D15 : 0.0074 mm
D10 : 0.0041 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-2-4(0)
AASHTO Group Name : Silty Gravel and Sand

Project: 0833 SDG: B1868	Boring No. : --- Sample No.: B1868-14C Test Method ASTM D 422 Filename : 14C	Project : B1868 Project No.: GTX-4946 Location: --- Date : Mon Dec 15 2003

OFF-SB-414-0204



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark olive gray silty sand

Figure 3

Project 0833; SD6 B1868

Mon Dec 15 13:27:01 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1868
Project No. : GTX-4946
Boring No. : ---
Sample No. : B1868-14C
Location : ---
Soil Description : Moist, dark olive gray silty sand
Remarks :

Depth : ---
Test Date : 12/11/03
Test Method : ASTM D 422

Filename : 14C
Elevation : ---
Tested by : ahp
Checked by : jdt

OFF-SB-414-0204

HYDROMETER

Hydrometer ID : 127630
Weight of air-dried soil = 18.72 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	19.50	22.00	14.50	0.033	31	0.033
5.00	17.00	22.00	12.00	0.021	26	0.021
15.00	14.50	22.50	9.50	0.012	20	0.012
30.00	13.00	22.50	8.00	0.009	17	0.009
60.00	11.50	22.50	6.50	0.006	14	0.006
120.00	10.00	22.50	5.00	0.004	11	0.004
240.00	9.00	22.50	4.00	0.003	9	0.003
1063.00	8.00	22.00	3.00	0.002	6	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	1.71	1.71	97
#4	0.187	4.75	1.20	2.91	94
#10	0.079	2.00	3.77	6.68	86
#20	0.033	0.84	3.69	10.37	79
#40	0.017	0.42	3.65	14.02	72
#60	0.010	0.25	4.50	18.52	62
#100	0.006	0.15	4.83	23.35	53
#200	0.003	0.07	5.75	29.10	41
Pan			20.13	49.23	0

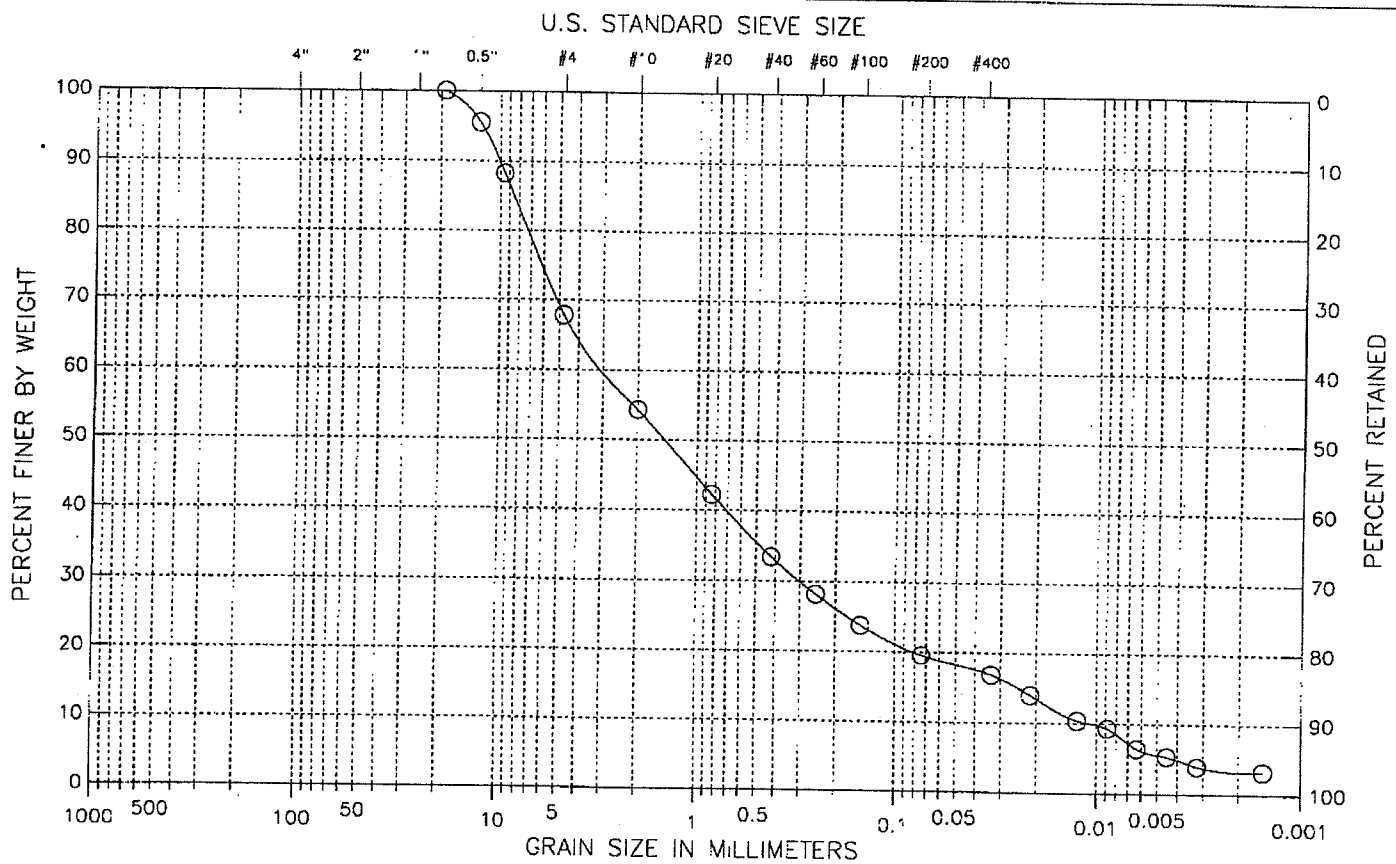
Total Dry Weight of Sample = 153.11

D85 : 1.6951 mm
D60 : 0.2205 mm
D50 : 0.1277 mm
D30 : 0.0303 mm
D15 : 0.0071 mm
D10 : 0.0040 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-4(0)
AASHTO Group Name : Silty Soils

Project: 0833 SDG: B1836	Boring No. : --- Sample No.: B1836-04C Test Method ASTM D 422 Filename : 04C	Project : B1836 Project No.: GTX-4942 Location: --- Date : Mon Dec 15 2003

OFF-SB-415-1012



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark grayish brown silty sand with gravel

Figure 1

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Project: 0833; SDG: B1836

Mon Dec 15 14:09:18 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1836
Project No. : GTX-4942
Boring No. : ---
Sample No. : B1836-04C
Location : ---

Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422

Filename : 04C
Elevation : ---
Tested by : ahp
Checked by : jdt

Soil Description : Moist, dark grayish brown silty sand with gravel
Remarks :

HYDROMETER

OFF-SB-415-1012

Hydrometer ID : 343611
Weight of air-dried soil = 13.41 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	18.00	22.00	11.75	0.033	17	0.033
5.00	16.00	22.00	9.75	0.021	14	0.021
15.00	13.50	22.00	7.25	0.013	10	0.013
30.00	12.50	22.50	6.50	0.009	9	0.009
60.00	10.50	22.50	4.50	0.006	6	0.006
120.00	10.00	22.00	3.75	0.005	5	0.005
240.00	9.00	22.00	2.75	0.003	4	0.003
1064.00	8.50	22.00	2.25	0.002	3	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.75"	0.748	19.00	0.00	0.00	100
0.5"	0.500	12.70	3.07	3.07	96
0.375"	0.374	9.51	4.98	8.05	88
#4	0.187	4.75	14.01	22.06	68
#10	0.079	2.00	9.29	31.35	54
#20	0.033	0.84	8.29	39.64	42
#40	0.017	0.42	6.04	45.68	33
#60	0.010	0.25	3.62	49.30	28
#100	0.006	0.15	3.02	52.32	24
#200	0.003	0.07	2.90	55.22	20
Pan			13.41	68.63	0

Total Dry Weight of Sample = 187.06

D85 : 8.5090 mm
D60 : 2.8751 mm
D50 : 1.4671 mm
D30 : 0.2994 mm
D15 : 0.0253 mm
D10 : 0.0112 mm

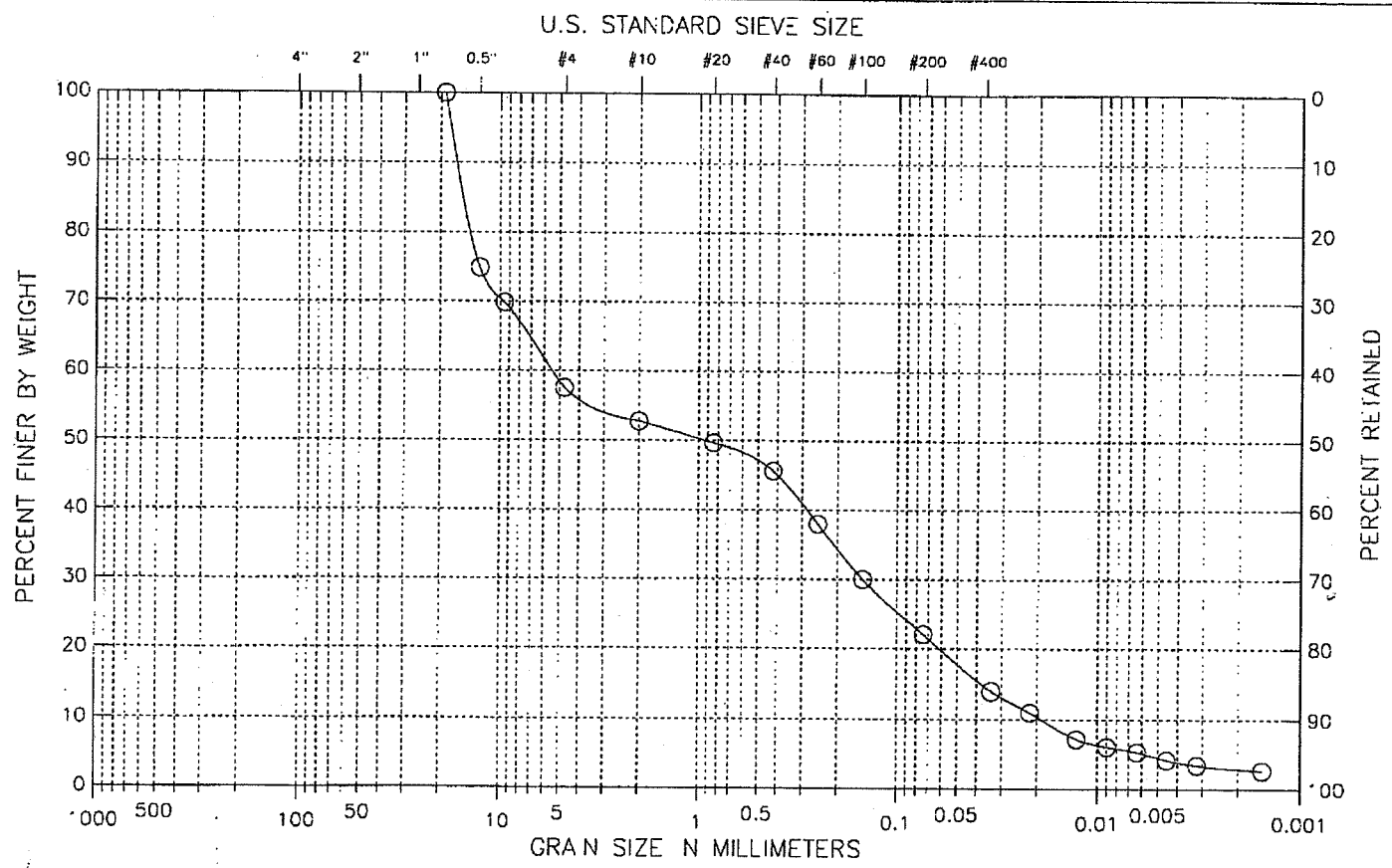
Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-b(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

Project: 0833
SDG: B1845

Boring No. : ---
Sample No.: B1845-12C
Test Method ASTM D 422
Filename : 12C

Project : B1845
Project No.: GTX-4943
Location: ---
Date : Mon Dec 15 2003

OFF-SB-427-0608



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark greenish gray silty sand with gravel

Figure 1

GeoTesting Express, Inc. • Boxborough, MA • (978) 635-0424 • Fax (978) 635-0266

Project : 0833 ; SDG : B1845

Mon Dec 15 14:08:56 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1845
Project No. : GTX-4943
Boring No. : ---
Sample No. : B1845-12C
Location : ---
Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422
Filename : 12C
Elevation : ---
Tested by : ahp
Checked by : jdL
Soil Description : Moist, dark greenish gray silty sand with gravel
Remarks :

OFF-SB-427-0608

HYDROMETER

Hydrometer ID : 343611
Weight of air-dried soil = 14.31 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	15.50	22.00	9.25	0.034	14	0.034
5.00	13.50	22.00	7.25	0.022	11	0.022
15.00	11.00	22.00	4.75	0.013	7	0.013
30.00	10.00	22.50	4.00	0.009	6	0.009
60.00	9.50	22.50	3.50	0.006	5	0.006
120.00	9.00	22.00	2.75	0.005	4	0.005
240.00	8.50	22.00	2.25	0.003	3	0.003
1067.00	8.00	22.00	1.75	0.002	3	0.002

FINE SIEVE SET

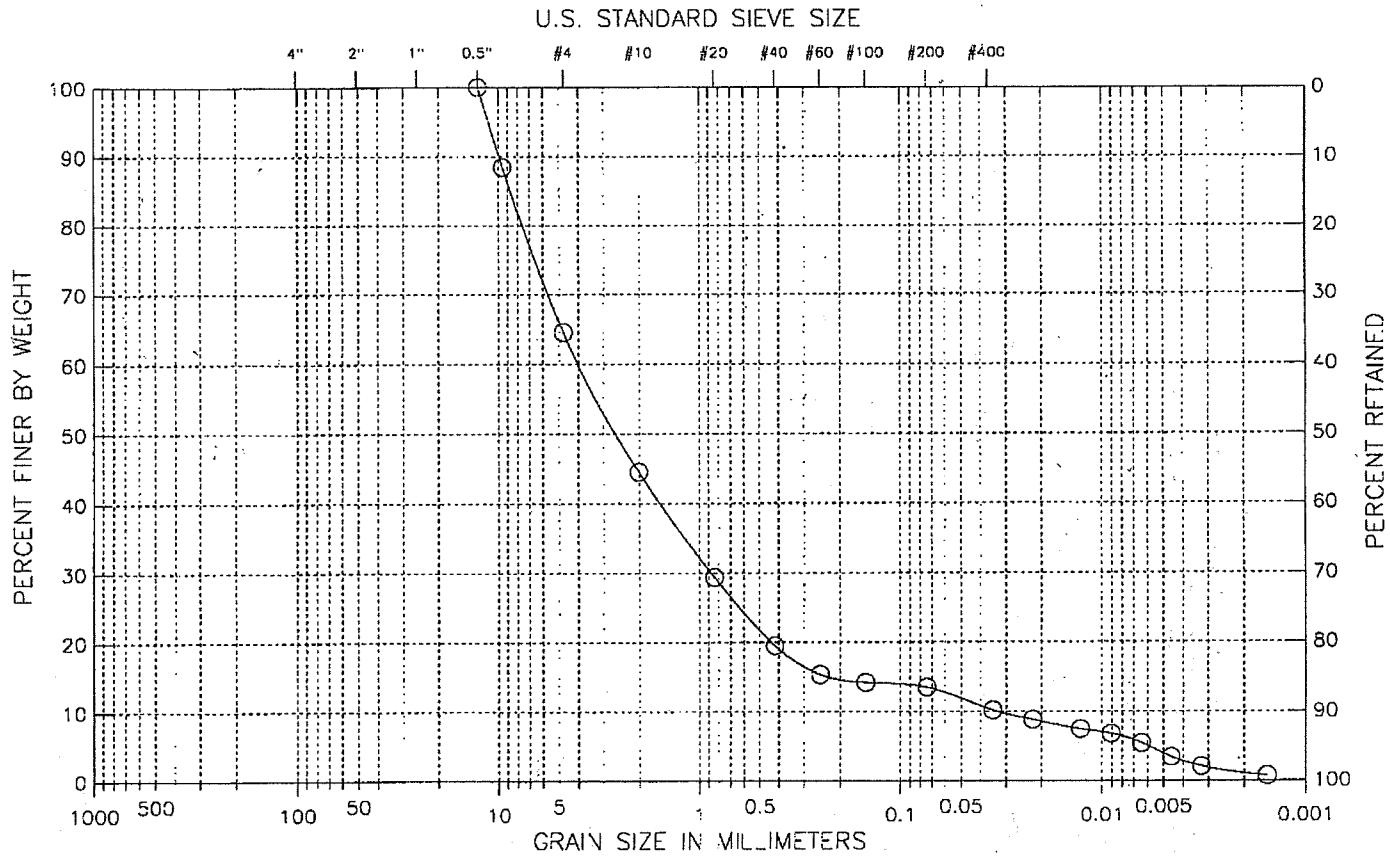
Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.75"	0.748	19.00	0.00	0.00	100
0.5"	0.500	12.70	16.27	16.27	75
0.375"	0.374	9.51	3.27	19.54	70
#4	0.187	4.75	7.98	27.52	58
#10	0.079	2.00	3.10	30.62	53
#20	0.033	0.84	2.03	32.65	50
#40	0.017	0.42	2.65	35.30	46
#60	0.010	0.25	4.94	40.24	38
#100	0.006	0.15	5.16	45.40	30
#200	0.003	0.07	5.14	50.54	22
Pan			14.31	64.85	0

Total Dry Weight of Sample = 172.3

D85 : 14.9333 mm
D60 : 5.4499 mm
D50 : 0.9258 mm
D30 : 0.1491 mm
D15 : 0.0374 mm
D10 : 0.0189 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-b(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

Project: 0833 SDG: B1845	Boring No. : --- Sample No.: B1845-16C Test Method ASTM D 422 Filename : 16C	Project : B1845 Project No.: GTX-4943 Location: --- Date : Mon Dec 15 2003 OFF-SB-428-1012



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, black sand with silt and gravel

Figure 2

Project : 0833 ; SDG : B1845

Mon Dec 15 14:08:56 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1845
Project No. : GTX-4943
Boring No. : ---
Sample No. : B1845 16C
Location : ---
Soil Description : Moist, black sand with silt and gravel
Remarks :

Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422

Filename : 16C
Elevation :
Tested by : ahp
Checked by : jdt

HYDROMETER

OFF-SB-428-1012

Hydrometer ID : 343611
Weight of air-dried soil = 4.87 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	10.00	22.00	3.75	0.035	10	0.035
5.00	9.50	22.00	3.25	0.022	9	0.022
15.00	9.00	22.00	2.75	0.013	7	0.013
30.00	8.50	22.50	2.50	0.009	7	0.009
60.00	8.00	22.50	2.00	0.006	5	0.006
120.00	7.50	22.00	1.25	0.005	3	0.005
240.00	7.00	22.00	0.75	0.003	2	0.003
1067.00	6.50	22.00	0.25	0.002	1	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	3.15	3.15	88
#4	0.187	4.75	6.53	9.68	65
#10	0.079	2.00	5.48	15.16	44
#20	0.033	0.84	4.12	19.28	29
#40	0.017	0.42	2.70	21.98	19
#60	0.010	0.25	1.14	23.12	15
#100	0.006	0.15	0.31	23.43	14
#200	0.003	0.07	0.19	23.62	13
Pan			3.68	27.30	0

Total Dry Weight of Sample = 130.76

D85 : 8.6010 mm
D60 : 3.9056 mm
D50 : 2.5383 mm
D30 : 0.8716 mm
D15 : 0.2169 mm
D10 : 0.0330 mm

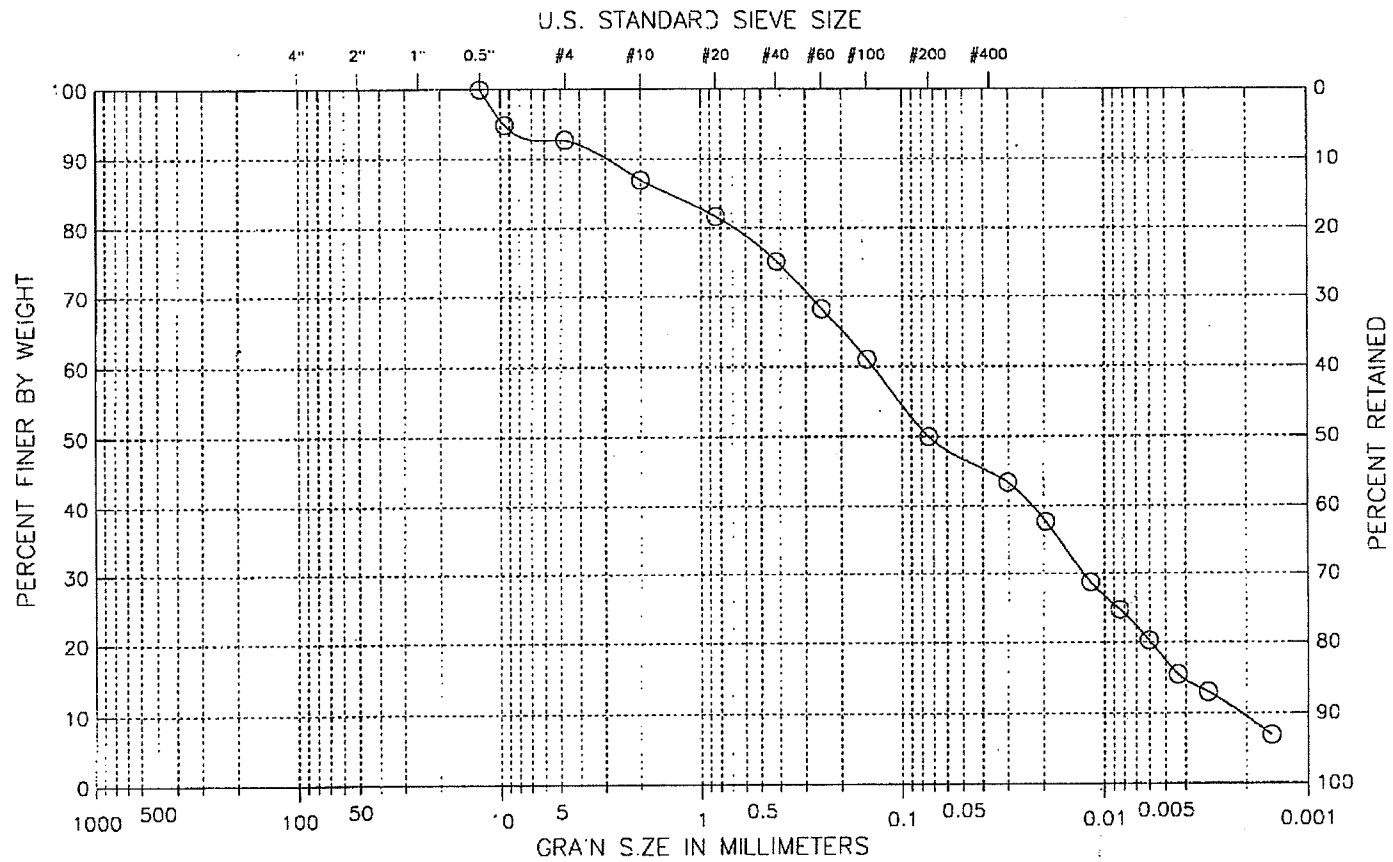
Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-a(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

Project: 0833

SDG: B1855

Boring No. : ----	Project : B1855
Sample No.: B1855-13C	Project No.: GTX-4945
Test Method ASTM D 422	Location: ---
Filename : 13C	Date : Mon Dec 15 2003

OFF-SB-429-1416



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark greenish grey silty sand

Figure 1

Project: 0833; SDG: B1855

GEOTECHNICAL LABORATORY TEST DATA

Project : B1855
Project No. : GTX-4945
Boring No. : ---
Sample No. : B1855-13C
Location : ---
Soil Description : Moist, dark greenish gray silty sand
Remarks :

Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422

Filename : 13C
Elevation : ---
Tested by : ahp
Checked by : jdt

HYDROMETER

Hydrometer ID : 343611
Weight of air-dried soil = 30.25 gm
Specific Gravity = 2.75

OFF-SB-429-14lb

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	33.00	22.00	26.75	0.030	43	0.030
5.00	29.50	22.00	23.25	0.020	38	0.020
15.00	24.00	22.00	17.75	0.012	29	0.012
30.00	21.50	22.00	15.25	0.008	25	0.008
60.00	18.50	22.50	12.50	0.006	20	0.006
120.00	15.50	22.50	9.50	0.004	15	0.004
240.00	14.00	22.50	8.00	0.003	13	0.003
1067.00	10.50	22.00	4.25	0.002	7	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.5"	0.500	12.70	0.00	0.00	100
0.375"	0.374	9.51	3.08	3.08	95
#4	0.187	4.75	1.30	4.38	93
#10	0.079	2.00	3.51	7.89	87
#20	0.033	0.84	3.20	11.09	82
#40	0.017	0.42	3.96	15.05	75
#60	0.010	0.25	4.19	19.24	68
#100	0.006	0.15	4.36	23.60	61
#200	0.003	0.07	6.69	30.29	50
Pan			30.28	60.57	0

Total Dry Weight of Sample = 164.06

D85 : 1.4470 mm
D60 : 0.1395 mm
D50 : 0.0740 mm
D30 : 0.0126 mm
D15 : 0.0041 mm
D10 : 0.0022 mm

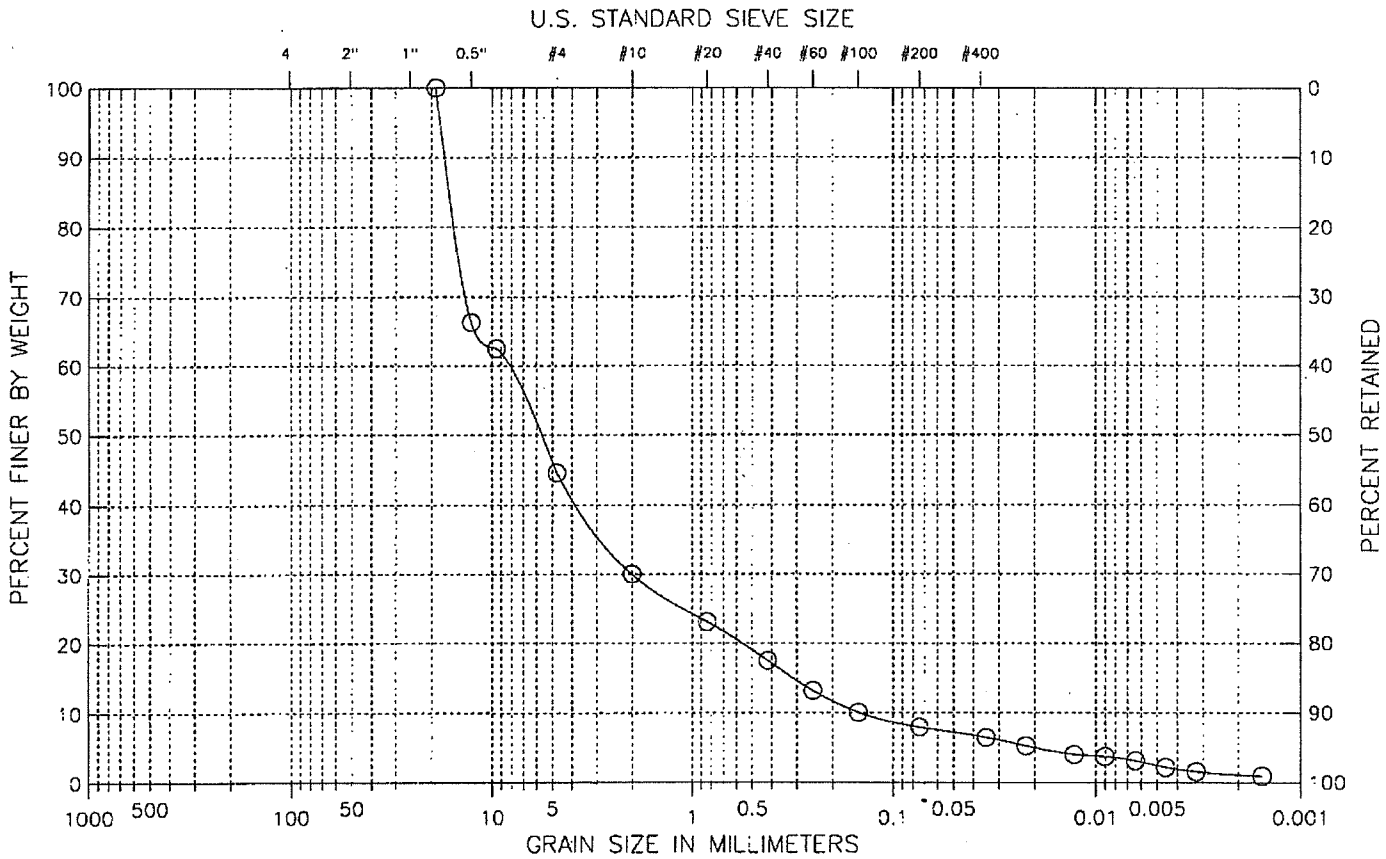
Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-4(0)
AASHTO Group Name : Silty Soils

Project: 0833
SDG: B1878

Boring No.: ---
Sample No.: B1878-05C
Test Method ASTM D 422
Filename : 05C

Project : B1878
Project No.: GTX-4944
Location: ---
Date : Mon Dec 15 2003

OFF-SB-430-0810



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

Classification :

Remarks :

Visual Description :
Moist, dark greenish gray sand with silt

Figure 1

Project: 0833 ; SDG: B1878

Mon Dec 15 13:58:51 2003

GEOTECHNICAL LABORATORY TEST DATA

Project : B1878
Project No. : GTX-4944
Boring No. : ---
Sample No. : B1878-05C
Location : ---
Soil Description : Moist, dark greenish gray sand with silt
Remarks :

Depth : ---
Test Date : 12/09/03
Test Method : ASTM D 422

Filename : 05C
Elevation : ---
Tested by : ahp
Checked by : jdt

OFF-SB-430-810

HYDROMETER

Hydrometer ID : 343611
Weight of air-dried soil = 6.4 gm
Specific Gravity = 2.75

Hydroscopic Moisture Content :
Weight of Wet Soil = 0 gm
Weight of Dry Soil = 0 gm
Moisture Content = 0

Elapsed Time (min)	Reading	Temperature (deg. C)	Corrected Reading	Particle Size (mm)	Percent Finer (%)	Adjusted Particle Size
2.00	11.50	22.00	5.25	0.035	6	0.035
5.00	10.50	22.00	4.25	0.022	5	0.022
15.00	9.50	22.00	3.25	0.013	4	0.013
30.00	9.00	22.50	3.00	0.009	4	0.009
60.00	8.50	22.50	2.50	0.006	3	0.006
120.00	8.00	22.00	1.75	0.005	2	0.005
240.00	7.50	22.00	1.25	0.003	2	0.003
1066.00	7.00	22.00	0.75	0.002	1	0.002

FINE SIEVE SET

Sieve Mesh	Sieve Openings Inches	Sieve Openings Millimeters	Weight Retained (gm)	Cumulative Weight Retained (gm)	Percent Finer (%)
0.75"	0.748	19.00	0.00	0.00	100
0.5"	0.500	12.70	26.64	26.64	66
0.375"	0.374	9.51	2.99	29.63	62
#4	0.187	4.75	14.12	43.75	45
#10	0.079	2.00	11.54	55.29	30
#20	0.033	0.84	5.47	60.76	23
#40	0.017	0.42	4.40	65.16	17
#60	0.010	0.25	3.39	68.55	13
#100	0.006	0.15	2.47	71.02	10
#200	0.003	0.07	1.67	72.69	8
Pan			6.28	78.97	0

Total Dry Weight of Sample = 183.6

D85 : 15.8841 mm
D60 : 8.6372 mm
D50 : 5.8581 mm
D30 : 2.0016 mm
D15 : 0.3109 mm
D10 : 0.1457 mm

Soil Classification
ASTM Group Symbol : N/A
ASTM Group Name : N/A
AASHTO Group Symbol : A-1-a(0)
AASHTO Group Name : Stone Fragments, Gravel and Sand

APPENDIX E
CALCULATIONS

TABLE E-1
AVERAGE METALS CONCENTRATIONS IN FILL
SOIL PREDESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Sample Number	OFF-SB-400-0002	OFF-SB-400-0608	OFF-SB-402-0204	OFF-SB-403-0204	OFF-SB-403-0608	OFF-SB-404-0204	OFF-SB-404-0608	OFF-SB-404-1012	OFF-SB-405-0204	OFF-SB-405 0608	OFF-SB-406-0608	OFF-SB-408-0204	OFF-SB-410-0204	OFF-SB-416-0406
Sample Location	400	400	402	403	403	404	404	404	405	405	406	408	410	416
Interval	0.0-2.0	6.0-8.0	2.0-4.0	2.0-4.0	6.0-8.0	2.0-4.0	6.0-8.0	10.0-12.0	2.0-4.0	6.0-8.0	6.0-8.0	2.0-4.0	2.0-4.0	4.0-6.0
QC Identifier	None	None	None	None	None	None	None	None	None	None	None	None	None	None
Antimony	0.98 BN*	0.38 BN*	0.79 BN	1 BN	3.9 N	39.4 N	3.4 N	2.3 N	0.9 BN	0.84 BN	8.7 N	0.54 BN	0.27 UN	6.2 N
Arsenic	0.49 B*	4.3 *	4 B	6.7 *	9.4 *	27.8	9.3 *	8.6 *	10.7	3.8 B	2.9	4.3 B	10	11.8
Beryllium	0.0055 U*	0.2 B*	0.24 B	0.22 B	0.3	0.42 B	0.55	0.23 B	0.26 B	0.21 B	0.5	0.2 B	0.22 B	0.43
Lead	8.9 *	33.2 *	147 N*	22.3 NE*	1950 NE*	8250	2490 NE*	729 NE*	846 N*	64.9 N*	107 E	71.2 N*	42.4	136
Manganese	313 *	516 *	220 *	471 E	382 E	806	185 E	351 E	543 *	279 *	481 E	1010 *	274	570

*number is averaged from dup and sample
**samples with a "U" qualifier are listed for purposes of averaging as 1/2 the detection limit
Black Background = Criteria Exceeded
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

TABLE E-1
AVERAGE METALS CONCENTRATIONS IN FILL
SOIL PREDESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Sample Number	OFF-SB-416-0810	OFF-SB-417-0406	OFF-SB-417-0608	OFF-SB-419 0204	OFF-SB-420 0204	OFF-SB-421 0204	OFF-SB-427 0204	OFF-SB-428 0204	OFF-SB-429 0406	OFF-SB-430 0204	OFF-SB-432 0204	OFF-SB-432 0608	OFF-SB-433 1214	OFF-B132-112393
Sample Location	416	417	417*	419	420	421*	427	428	429	430	432	432	433	B-13
Interval	8.0-10.0	4.0-6.0	6.0-8.0	2.0-4.0	2.0-4.0	2.0-4.0	2.0-4.0	2.0-4.0	4.0-6.0	2.0-4.0	2.0-4.0	6.0-8.0	12.0-14.0	4.0-6.0
QC Identifier	None	None	Dup.	None	None	Field Dup.	None	None	None	None	None	None	None	None
Antimony	7.1 N	5.5 N	4.9 N	1.3 BN	0.1 UN	4.95 N	6 N	19.3 N	2.1 N	19.7 N	0.1 UN	0.105 UN	1.5 N	2.95 UJ
Arsenic	12.4	7.8	8.4	34.7	9.1	9.25	8.3	17.3	6.9 *	0.08 U	6.2	7.2	15	6.3 J
Beryllium	0.52	0.44	0.33	0.6 B	0.73	0.53	0.39	0.32 B	0.29	0.33	0.35 B	0.42 B	0.34	0.25 B
Lead	20.7	101	101.6	14.3 N*	77.7	200.5 *	47.1 *	760 *	2490 NE*	127 E	158	188	55 E	68.6
Manganese	189	129	192.5	209 *	448	224.5	342	383	173 E	557 E	314	344	582 E	309

*number is averaged from dup and sample
**samples with a "U" qualifier are listed for purposes of averaging as 1/2 the detection limit
Black Background = Criteria Exceeded
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

TABLE E-1
AVERAGE METALS CONCENTRATIONS IN FILL
SOIL PREDESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Sample Number	OFF-S-TP-05-0708	OFF-S-TP-06-0607	OFF-S-TP-07-0708	OFF-S-TP-11-0506-MAX	OFF-S-TP-12-0405	OFF-S-TP-13-0607	OFF-S-TP-15-0506	OFF-S-TP-16-1011	OFF-S-TP-17-0809-MAX	OFF-TP12-011194	OFF-TP13-011194	OFF-TP31-011194	OFF-TP32-011194	
Sample Location	TP-05	TP-06	TP-07	TP-11	TP-12	TP-13	TP-15	TP-16	TP-17	TP-12	TP-13	TP-31	TP-32	
Interval	7.0-8.0	6.0-7.0	7.0-8.0	5.0-6.0	4.0-5.0	6.0-7.0	5.0-6.0	10.0-11.0	8.0-9.0	0.0-0.0	0.0-0.0	0.0-0.0	0.0-0.0	
QC Identifier	None	None	None	Field Dup.	None	None	None	None	Field Dup.	None	None	None	None	E
Antimony	0.245 U	0.18 U	0.465 U	0.255 U	0.22 U	39.2 J	0.38 U	4 J	0.18 U	3.15 U	2.9 U	6.7	3 U	5.0
Arsenic	14.3 J	5.7 J	6.2 J	8.3	4.8 J	18.3 J	9.9 J	74.4 J	8.2	4.1 J	2.6 J	16.3 J	2.9 J	10.7
Beryllium	0.135 U	0.16 U	0.145 U	0.23 U	0.11 U	0.1 U	0.19 U	0.24 J	0.16 U	0.28 B	0.37 B	0.12 U	0.29 B	0.30
Lead	540 J	55.5 J	40.7 J	563	283 J	7820 J	766 J	3350	13.3	475 J	40.1 J	3090 J	67.6 J	888.1
Manganese	698 J	410 J	417 J	306	516 J	898 J	157 J	1110 J	267	255 J	186 J	299 J	413 J	408.0

*number is averaged from dup and sample
**samples with a "U" qualifier are listed for purposes of averaging as 1/2 the detection limit
Black Background = Criteria Exceeded
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

TABLE E-2
AVERAGE METALS CONCENTRATIONS IN NATIVE SOIL (EXCLUDES TILL)
SOIL PREDESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Sample Number	OFF-SB-402-0810	OFF-SB-402-1214	OFF-SB-417-1416	OFF-SB-428-1012	OFF-SB-428-1416	OFF-SB-428-1820	OFF-SB-429-1416	OFF-SB-429-1820	FF-B052-417	
Sample Location	402	402	417	428	428	428	429	429	B-5	
Interval	8.0-10.0	12.0-14.0	14.0-16.0	10.0-12.0	14.0-16.0	18.0-20.0	14.0-16.0	18.0-20.0	6.0-8.0	
QC Identifier	None	None	None	None	None	None	None	None	None	AVERAGE
Antimony	0.85 UN	0.7 BN	9.7 N	3.6 N	8.6 N	10.7 N	0.84 BN	0.59 BN	NA	4.4
Arsenic	4.4 B	3.3 B	14.3	4.4	8	7.6	6.1 *	4.9 *	1.4	6.0
Beryllium	0.19 B	0.23 B	0.41	0.18 B	0.38 B	0.34 B	0.24 B	0.25 B	NA	0.28
Lead	1300 N*	37.7 N*	14.8	25.8 *	8 *	7.6 *	28 NE*	11.7 NE*	7	160.1
Manganese	152 *	92.5 *	1540	99.9	165	421	198 E	270 E	70.7	334.3

**samples with a "U" qualifier are listed as 1/2 the detection limit for averaging
Black Background = Criteria Exceeded
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

TABLE E-3
AVERAGE METALS CONCENTRATIONS IN TILL
SOIL PRE DESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Sample Number	OFF-SB-402-1618	OFF-SB-402-1820	OFF-SB-405-1416	OFF-SB-406-1820	OFF-SB-407-1618	OFF-SB-407-2022	OFF-SB-409-1012	OFF-SB-416-1618	OFF-SB-417-1820	OFF-SB-418-1618	OFF-SB-419-1012	OFF-SB-420-1012
Sample Location	402	402	405	406	407	407*	409	416	417	418*	419	420
Interval	16.0-18.0	18.0-20.0	14.0-16.0	18.0-20.0	16.0-18.0	20.0-22.0	10.0-12.0	16.0-18.0	18.0-20.0	16.0-18.0	10.0-12.0	10.0-12.0
QC Identifier	None	None	None	None	None	Field Dup.	None	None	None	Field Dup.	None	None
Antimony	1 BN	0.89 BN	0.99 BN	6.6 N	0.56 BN*	1.095 BN*	0.235 UN	8.9 N	8.7 N	6.85 N	0.87 BN	13.9 N
Arsenic	8	8.6	25.4	3.1	4 *	3.4 *	13.2	25.9	14.1	5.2	69.2	7.2
Beryllium	0.44 B	0.34 B	0.45 B	0.22 B	0.3 *	0.36 *	0.28 B	0.42	0.45	0.39	0.66 B	0.38 B
Lead	17.4 N*	12.9 N*	10.1 N*	10.9 E	13.1 *	9.8 *	32.2	12.4	12.2	10.3 E	6.6 N*	8.5 *
Manganese	297 *	311 *	3520 *	335 E	352 *	430.5 *	716	3210	219	1360 E	737 *	428

*number is averaged from dup and sample
**samples with a "U" qualifier are listed as 1/2 the detection limit for averaging
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

Black Background = Criteria Exceeded
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

TABLE E-3
AVERAGE METALS CONCENTRATIONS IN TILL
SOIL PRE DESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Sample Number	OFF-SB-421-1820		OFF-SB-422-1820		OFF-SB-432-1820		OFF-SB-433-2426		OFF-S-MW101-0608		
Sample Location	421		422		432		433*		MW-101		
Interval	18.0-20.0		18.0-20.0		18.0-20.0		24.0-26.0		6.0-8.0		
QC Identifier	None		None		None		Field Dup.		None		AVERAGE
Antimony	11.3	N	10.5	N	0.255	UN	0.92	N	0.175	UR	4.3
Arsenic	11.9		2		4.5	B	3.925		9.3	J	12.9
Beryllium	0.44	B	0.4		0.15	B	0.405		0.12	U	0.37
Lead	10.6	*	10.7	E	8.8		15.375	E	12.7		12.6
Manganese	284		514	E	181		2247.5	E	144	J	899.2

*number is averaged from dup and sample
**samples with a "U" qualifier are listed as 1/2 the detection limit for averaging
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

Black Background = Criteria Exceeded
U - Not detected
UJ - Detection limit approximate
J - Quantitation approximate;
R - Rejected
NA - Not Analyzed
* - From dilution analysis

TABLE E-4
GROUNDWATER ELEVATIONS (8/2002)
SOIL PREDESIGN INVESTIGATION REPORT, APPENDIX E
OLD FIRE FIGHTING TRAINING AREA

Well ID	Date	water level indicator reading	measure from	LNAPL/ DNAPL present?	elevation top of PVC (1)	elevation ground surface (1)	depth GW below ground surface (ft)	elevation GW (1)
MW-1R	8/8/2002	5.94	top of PVC	No	11.14	11.34	6.14	5.20
MW-2D	8/8/2002	4.12	top of PVC	No	8.56	9.16	4.72	4.44
MW-3S	8/8/2002	5.77	top of PVC	No	9.61	9.83	5.99	3.84
MW-4S	8/8/2002	4.60	top of PVC	No	7.53	7.73	4.80	2.93
MW-5S	8/8/2002	6.99	top of PVC	No	12.30	12.47	7.16	5.31
MW-6S	8/8/2002	8.23	top of PVC	No	13.39	13.59	8.43	5.16
MW-6R	8/8/2002	8.14	top of PVC	No	13.49	13.81	8.46	5.35
MW-8R	8/8/2002	6.50	top of PVC	No	11.90	12.70	7.30	5.40
MW-9R	8/8/2002	6.12	top of PVC	No	11.18	11.73	6.67	5.06
MW-10S	8/8/2002	6.25	top of PVC	No	10.20	10.35	6.40	3.95
MW-11S	8/8/2002	4.02	top of PVC	No	7.70	7.85	4.17	3.68
MW-101	8/8/2002	5.65	top of PVC	No	9.20	9.40	5.85	3.55
MW-102	8/8/2002	4.50	top of PVC	No	8.10	8.30	4.70	3.60

(1) elevation = feet above MLW (NGVD 1929)
note: monitoring wells MW-11R and MW-7S could not be located
monitoring well MW-2S was permanently sealed