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SITE ASSESSMENT REPORT FOR SITE 1241 NS MAYPORT FL  
5/1/2004  
TETRA TECH NUS

**Site Assessment Report**  
for  
**Site 1241**

**Naval Station Mayport**  
**Mayport, Florida**



**Southern Division**  
**Naval Facilities Engineering Command**  
**Contract Number N62467-94-D-0888**  
**Contract Task Order 0303**

May 2004

**SITE ASSESSMENT REPORT  
FOR  
SITE 1241**

**NAVAL STATION MAYPORT  
MAYPORT, FLORIDA**

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

**Submitted to:  
Southern Division  
Naval Facilities Engineering Command  
2155 Eagle Drive  
North Charleston, South Carolina 29406**

**Submitted by:  
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**CONTRACT NUMBER N62467-94-D-0888  
CONTRACT TASK ORDER 0303**

**MAY 2004**

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**PROFESSIONAL CERTIFICATION**

Site Assessment Report  
Site 1241  
Naval Station Mayport, Mayport, Florida

This Site Assessment Report was prepared under the direct supervision of the undersigned geologist using geologic and hydrogeologic principles standard to the profession at the time the report was prepared in general conformance with the Requirements of Chapter 62-770, Florida Administrative Code. If conditions are determined to exist that differ from those described, the undersigned geologist should be notified to evaluate the effects of additional information on the assessment described in this report. This report was developed specifically for the referenced site and should not be construed to apply to any other site.


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May 27, 2004  
Mark Peterson, P.G.  
Florida License Number PG-1852

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## ACRONYMS

|                  |   |
|------------------|---|
| BTEX             | Benzene, Toluene, Ethylbenzene, and Total Xylenes       |
| bls              | Below Land Surface                                      |
| °C               | Degrees Celsius   |
| CLEAN            | Comprehensive Long-term Environmental Action Navy       |
| CTO              | Contract Task Order                                     |
| DPT              | Direct-Push Technology                                  |
| EEG              | Ellis Environmental Group                               |
| ENCO             | Environmental Conservation Laboratories, Inc.           |
| FAC              | Florida Administrative Code                             |
| FDEP             | Florida Department of Environmental Protection          |
| FID              | Flame-Ionization Detector                               |
| FL-PRO           | Florida Petroleum Range Organics                        |
| ft               | Feet (or Foot)  |
| ft/day           | Feet (or Foot) per Day                                  |
| ft/ft            | Feet (or Foot) per Foot                                 |
| GAG              | Gasoline Analytical Group                               |
| GCTLs            | Groundwater Cleanup Target Levels                       |
| HSA              | Hollow Stem Auger                                       |
| ID               | Inside Diameter   |
| KAG              | Kerosene Analytical Group                               |
| Katahdin         | Katahdin Analytical Services                            |
| µg/kg            | Micrograms per Kilogram                                 |
| µg/L             | Micrograms per Liter                                    |
| mg/kg            | Milligrams per Kilogram                                 |
| mg/L             | Milligrams per Liter                                    |
| mgd              | Million Gallons per Day                                 |
| msl              | Mean Sea Level  |
| MTBE             | Methyl Tertiary-Butyl Ether                             |
| NAVFAC EFD SOUTH | Southern Division, Naval Facilities Engineering Command |
| NAVSTA           | Naval Station   |
| Navy             | United States Navy                                      |
| OVA              | Organic Vapor Analyzer                                  |
| PAH              | Polynuclear Aromatic Hydrocarbon                        |
| ppm              | Parts per Million                                       |

## ACRONYMS (Continued)

|       |   |
|-------|---|
| PVC   | Polyvinyl Chloride                            |
| RCRA  | Resource Conservation and Recovery Act        |
| SA    | Site Assessment                               |
| SAR   | Site Assessment Report                        |
| SCH   | Schedule                                      |
| SCTL  | Soil Cleanup Target Level                     |
| SOPs  | Standard Operating Procedures                 |
| TBM   | Temporary Benchmark                           |
| TOC   | Top-of-Casing                                 |
| TPH   | Total Petroleum Hydrocarbons                  |
| TRPH  | Total Recoverable Petroleum Hydrocarbons      |
| TtNUS | Tetra Tech NUS, Inc.                          |
| USACE | United States Army Corps of Engineers         |
| USDA  | United States Department of Agriculture       |
| USEPA | United States Environmental Protection Agency |
| USGS  | United States Geological Survey               |
| USTs  | Underground Storage Tanks                     |
| VOCs  | Volatile Organic Compounds                    |

## EXECUTIVE SUMMARY

Tetra Tech NUS, Inc. (TtNUS) has completed a Site Assessment (SA) at the Steam Plant, Site 1241, Naval Station (NAVSTA) Mayport, Mayport, Florida in accordance with the requirements of Chapter 62-770, Florida Administrative Code (FAC). This Site Assessment Report (SAR) is being submitted to the Florida Department of Environmental Protection (FDEP) for approval. A SAR summary sheet is included as Appendix A.

To complete this SA, TtNUS:

- Reviewed available United States Navy (Navy) documents to:
  - Identify potential sources and receptors for petroleum hydrocarbons in the vicinity.
  - Identify private potable wells within a 0.25-mile radius of the site and public water supply wells within a 0.5-mile radius.
  - Locate nearby surface water bodies.
  - Evaluate surface hydrology and drainage.
- Performed a soil vapor survey in the unsaturated zone to delineate areas of excessively contaminated soil, if present.
- Advanced 13 soil borings on site using Direct-Push Technology (DPT) and collected soil and groundwater samples from the borings for analysis by mobile and fixed-base laboratories.
- Installed five shallow monitoring wells and one deep monitoring well and collected groundwater samples from these wells and from one existing monitoring well for analysis of Gasoline Analytical Group (GAG)/Kerosene Analytical Group (KAG) constituents.
- Referenced and obtained appropriate aquifer data from the United States Geological Survey (USGS) to calculate aquifer characteristics at NAVSTA Mayport.

The investigation was centered on two potential source areas: one approximately 20 feet (ft) west of the Steam Plant (Building 1241) where three in-service 30,000-gallon underground storage tanks (USTs) containing diesel fuel/used oil mixtures for operation of steam-producing boilers are located; the other approximately 15 ft north of the USTs where a 10,000-gallon heating oil UST was removed in 1997. The in-service USTs were installed in 2000 as replacements for three previously-existing 35,000-gallon USTs, which were located in the same enclosure and used for the same purpose.

"Excessively contaminated soil," as defined by Chapter 62-770.200(12), FAC, was not identified during the soil vapor survey performed in and around the potential source areas. Analytical results on soil samples were in agreement with the field screening survey in that no fuel oil constituent was reported at a concentration equal to or exceeding its FDEP Soil Cleanup Target Level (SCTL) by either the mobile laboratory or the fixed-base laboratory.

Concentrations exceeding FDEP Groundwater Cleanup Target Levels (GCTLs) were reported on 4 of 12 groundwater grab samples collected by DPT (analyzed by mobile laboratory), but no exceedences were reported by the fixed-base laboratory on samples collected from seven permanent monitoring wells. Naphthalene and 2-methylnaphthalene were reported at elevated levels in three groundwater grab samples, and 1-methylnaphthalene and total recoverable petroleum hydrocarbon (TRPH) exceedences were reported in two samples. The highest concentrations of these four constituents were reported in a sample collected from the backfilled excavation area of the removed heating oil UST. In a monitoring well sample subsequently collected at this same location (MW-06), seven polynuclear aromatic hydrocarbon (PAH) constituents (including the three naphthalene compounds) and TRPH were identified at levels below GCTL values.

Approximately six weeks after the initial sampling event, groundwater samples were collected a second time from MW-06 (former heating oil location) and from a downgradient monitoring well (MW-04). The second set of analyses was comparable to the first. No concentrations exceeding GCTLs were reported.

During removal/replacement of the three USTs used for fueling the steam boilers (November 2000), the Navy's contractor reported recurrence of free product and product sheen entering the tank excavation even as the new tanks were being installed. It was reported that the former USTs were overfilled and, because the manways were improperly sealed, the product entered concrete sumps at the crowns of the tanks and was released to the ground from the sumps. Product was observed to be concentrated on the eastern side of the excavation. Apparently, only a small quantity of petroleum product remained in the excavation because no evidence of free product or elevated groundwater contamination was demonstrated by data generated during the SA. Therefore, it is recommended that No Further Action be granted Site 1241.

## **1.0 INTRODUCTION**

### **1.1 PURPOSE AND SCOPE**

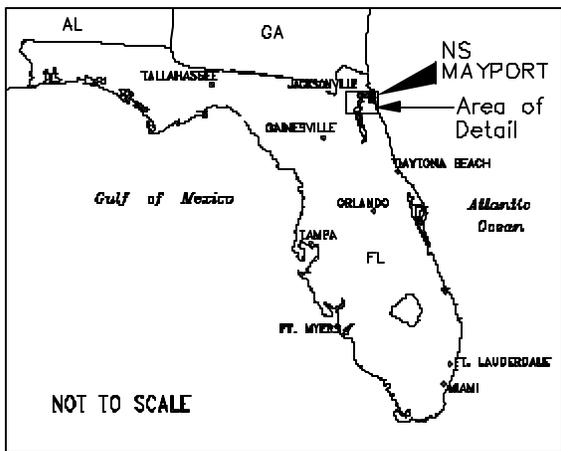
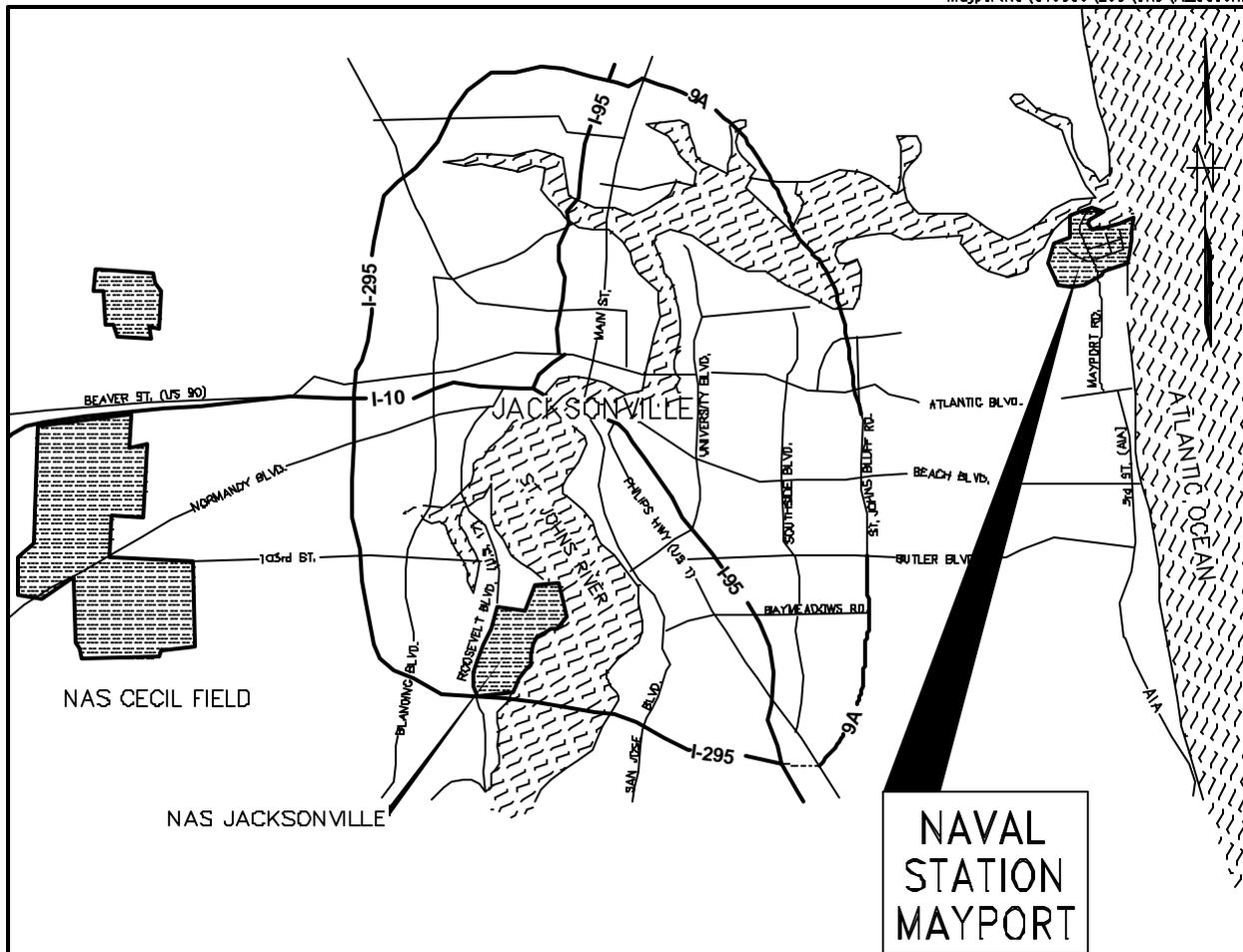
TtNUS performed a SA at Site 1241, NAVSTA Mayport, for the Southern Division, Naval Facilities Engineering Command (NAVFAC EFD SOUTH) under Contract Task Order (CTO) 0303 of the Comprehensive Long-term Environmental Action Navy (CLEAN) III, Contract Number N62467-94-D-0888. The data collected during the investigation was used to prepare a SAR. Information from the field investigation has been assimilated into this SAR to provide a characterization of site conditions from which to base future courses of action. A SAR Summary Sheet is included as Appendix A.

A 10,000-gallon steel UST containing fuel oil for heating was excavated and removed from the site in August 1997 by Ellis Environmental Group (EEG). In November 2000, three 35,000-gallon USTs, located approximately 15 ft south of the heating oil UST, were removed by EEG and replaced by three double-walled 30,000-gallon USTs. Immediately prior to removal, the three former USTs contained a mixture of diesel fuel and used oil for operating three steam-producing boilers housed in Building 1241, located approximately 20 ft to the east of the USTs. Over the years of service, the tanks contained several different types of fuel, including Bunker C fuel. The replacement tanks are used for the same purpose as those removed in 2000 (i.e., for storage of fuel mixtures used for operation of the three boilers inside Building 1241). The purpose of the SA recently completed was to evaluate the extent of petroleum hydrocarbons, if any, in subsurface soils and groundwater at Site 1241 resulting from past or current site operations in accordance with the requirements of Chapter 62-770, FAC. A summary of site investigative history is provided below in Section 1.8.

### **1.2 FACILITY AND SITE LOCATION**

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, approximately 12 miles northeast of downtown Jacksonville and adjacent to the town of Mayport. A Site Vicinity Map showing NAVSTA Mayport's location in northeast Florida is provided as Figure 1-1. The station complex is located on the northern end of a peninsula bounded by the Atlantic Ocean to the east and the St. Johns River to the north and west. NAVSTA Mayport occupies the entire northern part of the peninsula except for the town of Mayport, which is located to the west between the station and the St. Johns River.

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SITE VICINITY MAP  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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Site 1241 is located at the intersection of Maine Street and Patrol Road at the base of a narrow spit of land which separates the Mayport turning basin to the south from the St. Johns River to the north as illustrated on Figure 1-2. The area of investigation is centered west of the Steam Plant (Building 1241) where the three in-service USTs are located and the former heating oil UST was removed.

### **1.3 REGIONAL GEOLOGY AND HYDROGEOLOGY**

Northeast Florida is underlain by two main aquifer systems: the surficial aquifer system and the Floridan aquifer system. The surficial aquifer system in the vicinity of NAVSTA Mayport includes sediments of the Upper Hawthorn Group, upper Miocene and Pliocene deposits, and Pleistocene and Holocene deposits [United States Department of Agriculture (USDA), 1978]. These undifferentiated surficial deposits extend from land surface to the top of the Hawthorn Group about 50 ft below land surface (bls) (USGS, 1992).

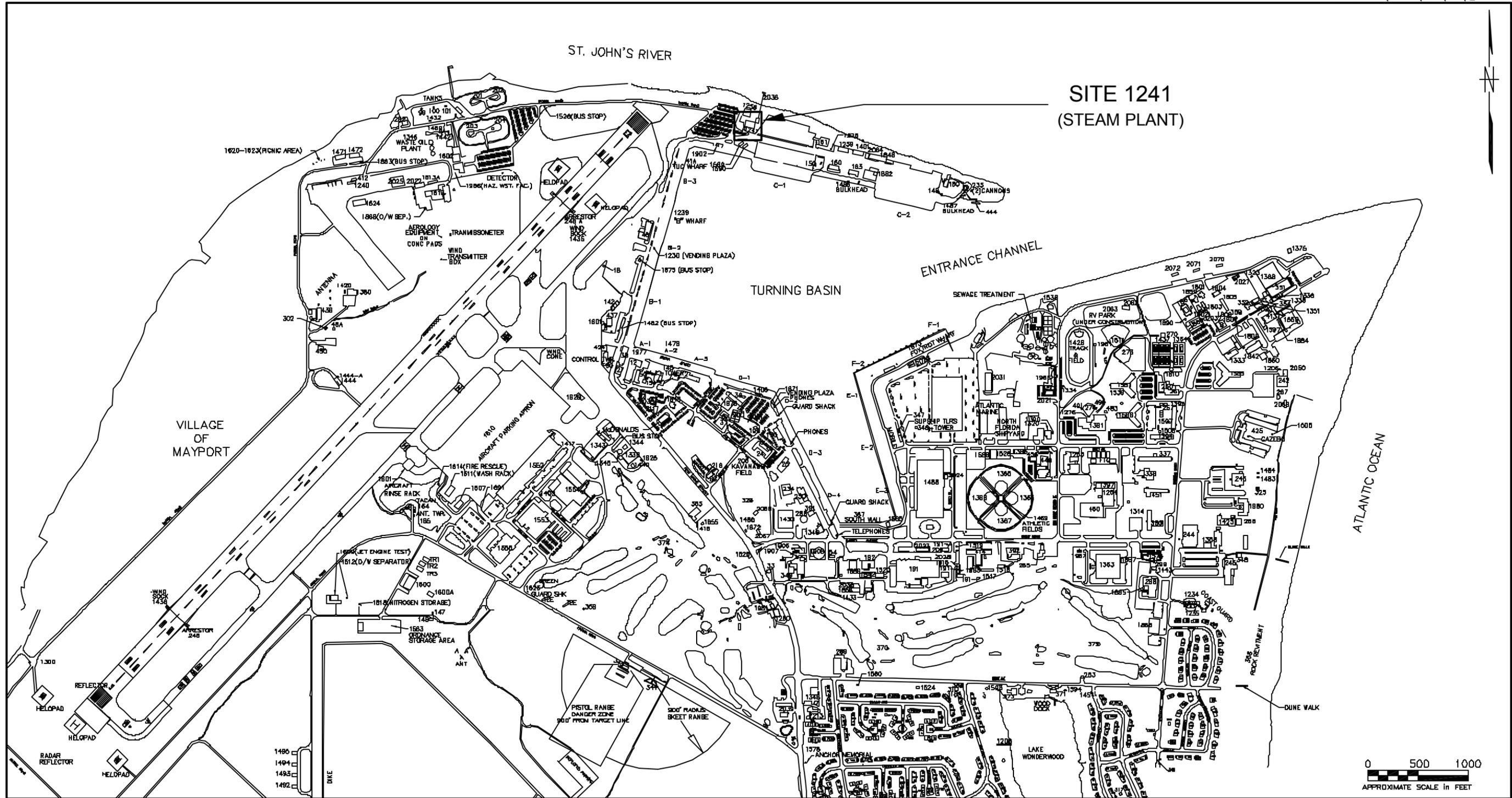
The surficial aquifer system consists of fine-grained sands near the surface interspersed with thin (less than 1 ft) clay lenses and generally grades to a mixture of sand and coarse shell fragments from 30 to 50 ft bls. The base of the surficial aquifer system is its contact with the underlying intermediate confining unit, which is a sequence of marine clays and discontinuous limestone stringers (Spechler, 1994).

The Floridan aquifer system is the principal source of groundwater for public drinking water in most of northeast Florida. In the area of investigation, the system is comprised of (from youngest to oldest) the Ocala Formation, the Avon Park Formation, and the Oldsmar Limestone. The Hawthorn Group, a confining unit between the surficial aquifer system and Floridan aquifer system, unconformably overlies the Floridan aquifer (USDA, 1978).

### **1.4 POTABLE WATER WELL SURVEY**

The potable water supply information presented in this report was obtained from a Contamination Assessment Report prepared by the United States Army Corps of Engineers (USACE) for a nearby site (Site 1330) in 1992 (USACE, 1992). Personnel at the water treatment plant confirmed the accuracy of the water well information. The locations of the potable wells are depicted on Figure 1-3. Potable well information is summarized on Table 1-1.

Potable water is supplied to NAVSTA Mayport by three on-base supply wells. One of the three wells is 12 inches in diameter, and the other two are 16-inch diameter wells. All three wells draw water from the Floridan aquifer from depths of approximately 1,000 ft bls. Well capacities range between 2.1 and 2.9 million gallons per day (mgd) with a combined total pumping capacity of 10.0 mgd. Two of the active wells (Well Numbers 1 and 2) are within 1 mile of the site as shown on Figure 1-3. The water is treated by the base water treatment plant prior to distribution.



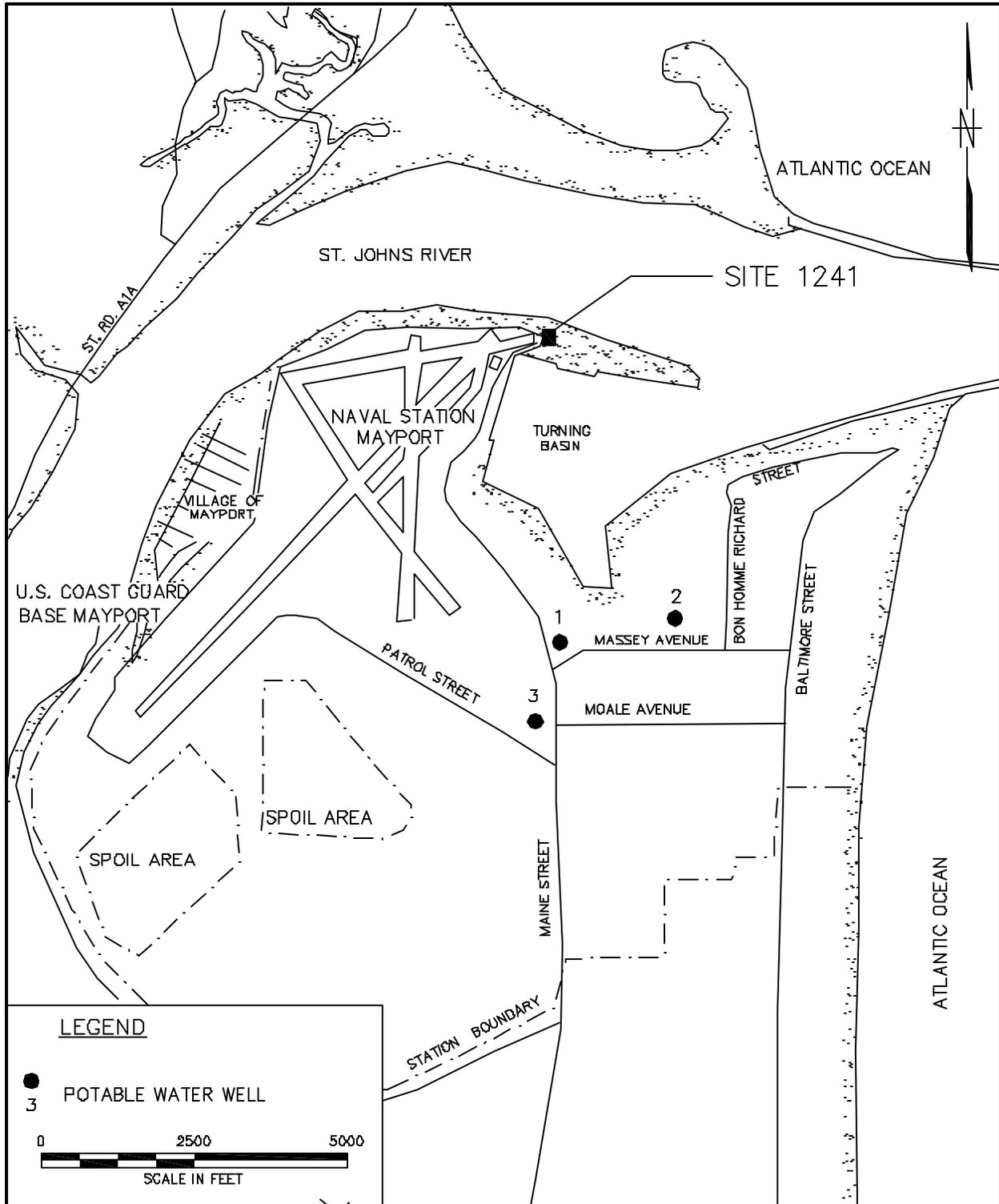
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SITE LOCATION MAP  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
MAYPORT NAVAL STATION  
MAYPORT, FLORIDA

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POTABLE WATER WELL LOCATIONS  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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| <b>Table 1-1</b><br><b>Potable Water Well Survey Results</b><br>Site Assessment Report, Site 1241<br>Naval Station Mayport<br>Mayport, Florida |                               |                      |                           |        |
|--|-------------------------------|----------------------|---------------------------|--------|
| Well ID  | Distance from Site<br>(miles) | Diameter<br>(inches) | Depth of Well<br>(ft b/s) | Use    |
| 1  | 0.8                           | 12                   | 1,000                     | In use |
| 2  | 0.5                           | 16                   | 1,000                     | In use |
| 3  | 1.1                           | 16                   | 1,000                     | In use |

### 1.5 TOPOGRAPHY AND DRAINAGE

NAVSTA Mayport is located in the Southeastern Coastal Plain physiographic province. The topography is mostly low, gentle to flat, and composed of a series of ancient marine terraces. NAVSTA Mayport is located within the Silver Bluff Terrace. The average land surface elevation at NAVSTA Mayport is between 8 and 10 ft above mean sea level (msl) (USGS, 1992).

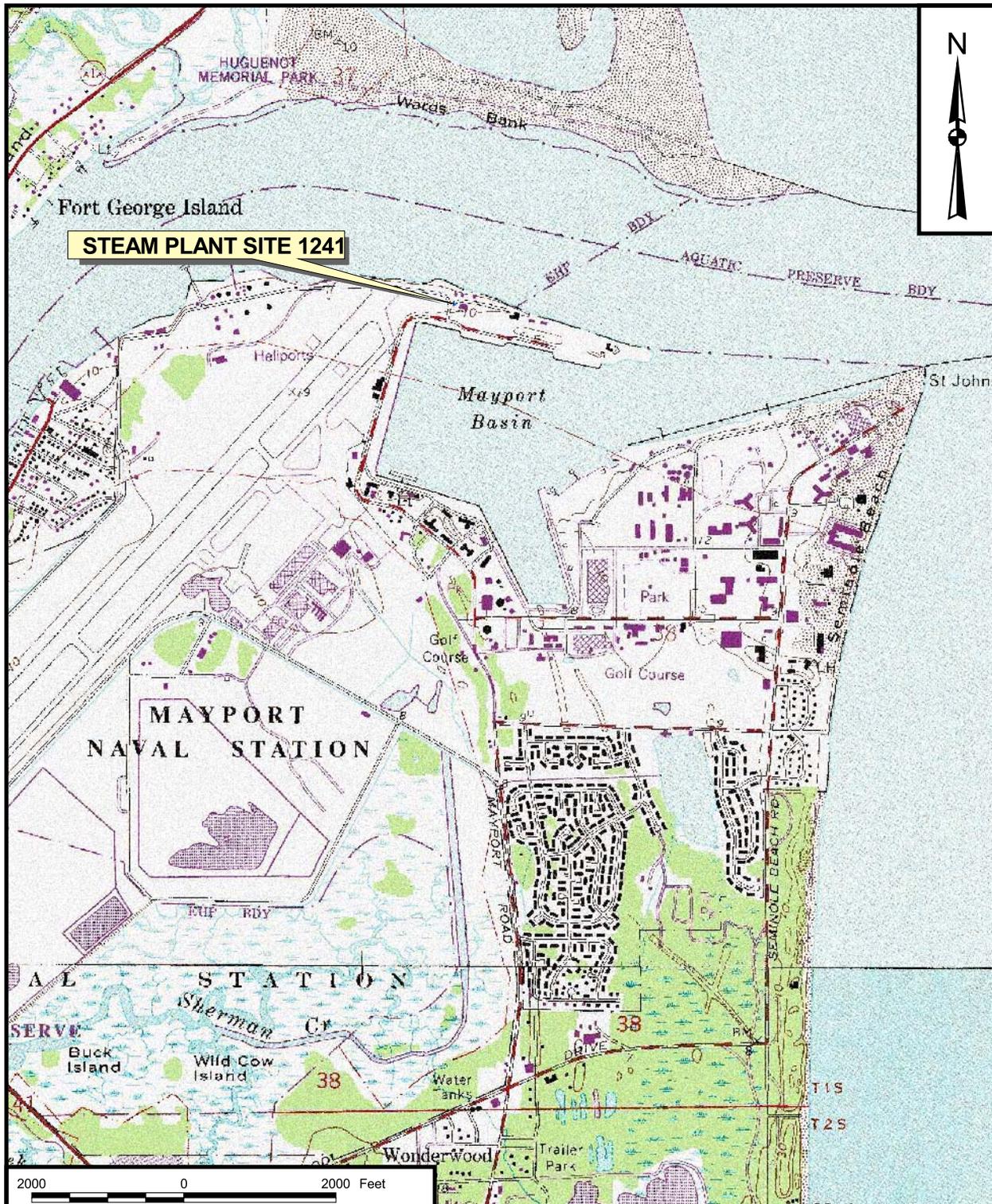
Site 1241 is a relatively flat parcel located at the base of a narrow tongue of land separating the St. Johns River from the Mayport turning basin as shown on Figure 1-2. The northern side of the site is bounded by the St. Johns River. Land surface slopes off precipitously from approximately 15 ft above msl from the northern edge of the site to the beach along the river. A portion of the USGS Mayport, Florida 7.5-minute quadrangle has been reproduced as Figure 1-4 to show the site location relative to its topographic surroundings.

### 1.6 LAND USE IN SITE VICINITY

The site is bounded by asphalt pavement and parking areas to the east, south, and west and by a grass area, beach, and the St. Johns River to the north. Further to the southeast is C (Charlie) Pier and to the southwest B (Bravo) Pier where Navy ships dock. Farther to the northwest is the eastern end of the runway where military aircraft arrive and depart.

### 1.7 SITE DESCRIPTION

A site plan depicting the Building 1241 and its surroundings is provided as Figure 1-5. Building 1241, which houses the steam plant, is a 6000 square ft structure with a rectangular floor plan. It is situated in the southeastern portion of the parcel upon which it is located. The building is surrounded by manicured grass on the south and east, beyond which is asphalt pavement in both directions. An asphalt area approximately 15 ft wide abuts the building to the west. A 30-ft wide concrete slab adjoins the asphalt,



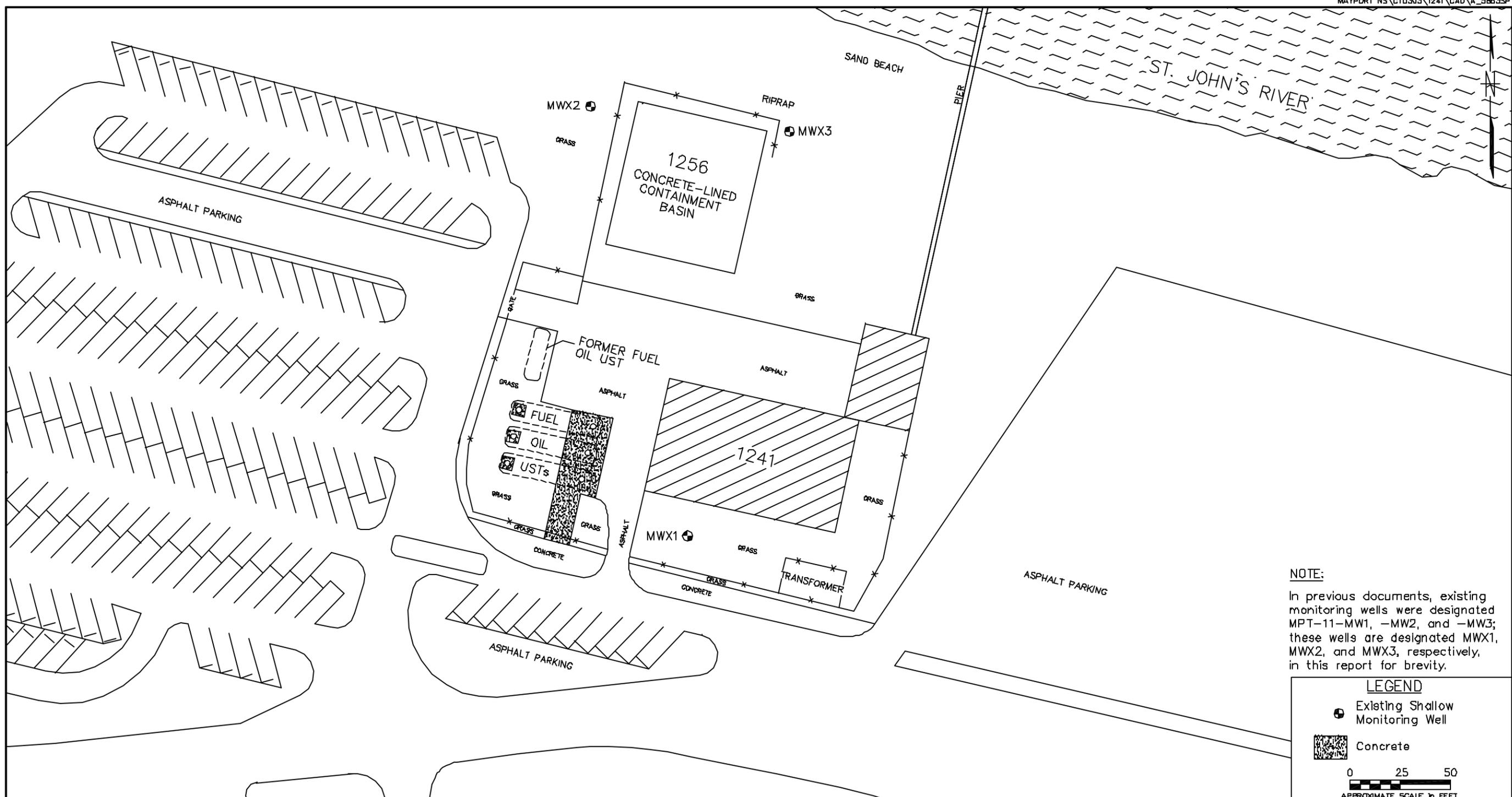
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| SCALE<br>AS NOTED       |                  |



USGS TOPOGRAPHIC MAP  
STEAM PLANT SITE 1241  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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| CONTRACT NUMBER<br><b>5863</b>   |                 |
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| DRAWING NO.<br><b>FIGURE 1-4</b> | REV<br><b>0</b> |

P:\GIS\MAYPORT\_NSI\APR4195\_230\_283QUAD.APR USGS TOPOGRAPHIC MAP\_1241 11/13/03 KMP



**NOTE:**  
In previous documents, existing monitoring wells were designated MPT-11-MW1, -MW2, and -MW3; these wells are designated MWX1, MWX2, and MWX3, respectively, in this report for brevity.

**LEGEND**

- Existing Shallow Monitoring Well (Symbol: circle with cross)
- Concrete (Symbol: hatched pattern)

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APPROXIMATE SCALE IN FEET

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SITE PLAN  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
MAYPORT NAVAL STATION  
MAYPORT, FLORIDA

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beyond which is grass. The three in-service 30,000-gallon USTs located west of Building 1241 are oriented east-west, partially underlie concrete, and partially underlie grass. A chain link fence wraps around the previously-mentioned grass areas to the south and east of the building and to the west of the USTs. There are two entrances to the facility through gates in the chain link fence: one off of Maine Street south of the southwestern corner of Building 1241 and another off of Patrol Road northwest of the northwestern corner of the building. An asphalt-paved area approximately 30 ft wide abuts the building to the north. A concrete-lined containment basin used for cooling water is positioned beyond this asphalt area northwest of the building to the north of the entrance drive off of Patrol Road. The water cooling basin is designated Structure Number 1256 and is square in plan view, measuring approximately 75 ft on each side as shown on Figure 1-5. The area east of the containment basin and north of the asphalt area is covered with grass and eventually merges with the beach and St. Johns River. The containment basin is surrounded by grass on all sides and by a chain link fence to the west and north.

Three permanent shallow monitoring wells were present at the site at the outset of the investigation. Originally, these wells were designated MPT-11-MW1, -MW2, and -MW3, but have been designated MWX1, MWX2, and MWX3, respectively, for the purposes of this report. Locations of these three existing wells are shown on Figure 1-5. These wells were installed to monitor the release of sodium hydroxide. MPT-11-MW1 and -MW2 were installed in 1989 as part of a Resource Conservation and Recovery Act (RCRA) Compliance Assessment. MPT-11-MW3 was installed in the early 1990s during RCRA Facility Investigation activities to comply with 40 Code of Federal Regulations 270.1.

## **1.8 SITE OPERATIONS AND INVESTIGATIVE HISTORY**

### **1.8.1 Tank Closure (EEG, 1997)**

A 10,000-gallon steel UST that contained fuel oil for on-site heating was removed by EEG on August 18, 1997. A copy of the Tank Closure Report is provided in Appendix B.

The tank was oriented north-south and was situated inside the fence near the western property boundary south of the entrance drive off of Patrol Road as indicated on Figure 1-5. An area 12 ft wide (east-west) by 30 ft long (north-south) and 11 ft deep was excavated to remove the tank. Soil samples were collected 11 ft bls from the four corners of the excavation for screening of organic vapors using an Organic Vapor Analyzer (OVA) equipped with a Flame-Ionization Detector (FID). No measurements indicative of "excessively contaminated" soil were reported. Groundwater from the northern part of the excavation was collected from a temporary monitoring well installed several months after tank removal and analyzed for volatile organic compounds (VOCs) and PAHs. Acenaphthene, the only constituent detected, was reported at a concentration of 6 micrograms per liter ( $\mu\text{g/L}$ ), below the FDEP GCTL of 20  $\mu\text{g/L}$ .

**1.8.2 Tank Closure Assessment Report, Removal and Replacement of Heating Oil Tanks, Building 1241 (EEG, 2001)**

The Tank Closure Assessment Report (EEG, 2001) documents closure and replacement activities of three USTs containing a diesel fuel/waste oil mixture used for operation of the steam-producing boilers at Building 1241. A copy of the report is also included in Appendix B. Three steel 35,000-gallon USTs were removed and replaced by three 30,000-gallon double-walled USTs at the same location, west of the building as shown on Figure 1-5.

At the time of removal, the old USTs contained a diesel fuel/waste oil mixture used for operating the boilers, but various petroleum products had been stored in the tanks during their operational history, including Bunker C fuel. A shored excavation measuring 50 ft on the north/south axis, 60 ft on the east/west axis, and 18 ft deep was constructed around the tanks to facilitate removal. The tanks were 56 ft long, 10 ft in diameter, buried 7 to 17 ft bls, coated with a tar pitch and paper combination, and free of rusting or pitting at the time of removal.

Soils overlying the tanks were free of contamination however, beginning at the water table (approximately 9 ft bls), EEG noted the presence of free product in the excavation. As reported by EEG, the previous tanks had no level indicators and were routinely overfilled by the operators which resulted in fuel leakage from the manways of the tanks into concrete sumps and eventually into the ground at the base of the sumps just above the water table, approximately 8.5 ft bls. During cleaning of the tanks, free product approximately 6 to 8 inches thick was reported in the sumps on all three tanks.

As the excavation proceeded into the saturated zone, 863 cubic yards of contaminated soil [greater than 50 parts per million (ppm) organic vapor content as determined by field screening instruments], 58,750 gallons of petroleum contact water, and some free product were segregated and transported offsite for disposal.

A concrete slab positioned 18 ft bls and used for anchoring of the old and new tanks marked the base of the excavation. As much soil, free product, and water were removed from the excavation as possible during extraction of the tanks; however, some free product continued to appear on the water surface in the excavation as the new tanks were being installed. At the conclusion of the report, EEG stated that free product remained in the excavation and "appeared to be limited to the eastern half of the tank length."

A groundwater sample collected from a hand-augered temporary monitoring well installed in the approximate center of the excavation was analyzed for constituents associated with diesel fuel and waste oil. PAHs, notably naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthylene,

acenaphthene, and fluorene were reported at concentrations up to three magnitudes higher than FDEP GCTLs. Benzene and ethylbenzene were also reported at concentration exceeding GCTLs.

## **1.9 PURPOSE OF CURRENT INVESTIGATION**

The objective of the SA was to assess the extent and magnitude of soil and/or groundwater contamination at Site 1241 resulting from past and/or current fuel storage at the site. The data collected during the investigation was used to prepare this SAR as required by Chapter 62-770.600, FAC. This SAR provides a characterization of site conditions from which to base future courses of action. A SAR summary sheet is provided as Appendix A.

## **2.0 SUBSURFACE INVESTIGATION METHODS**

### **2.1 QUALITY ASSURANCE**

The site investigation was conducted in general accordance with the FDEP-approved Standard Operating Procedures (SOPs) (DEP-001/92).

### **2.2 ASSESSMENT STRATEGY**

Soil and groundwater quality was assessed at the site in two phases: a screening phase (Phase I) in which soil and groundwater grab samples were collected by DPT methods and analyzed by an on-site mobile laboratory and a second phase (Phase II) in which permanent monitoring wells were installed at optimum locations based upon Phase I analytical results. Groundwater samples were collected from the wells for analysis of constituents of concern by a fixed-base laboratory.

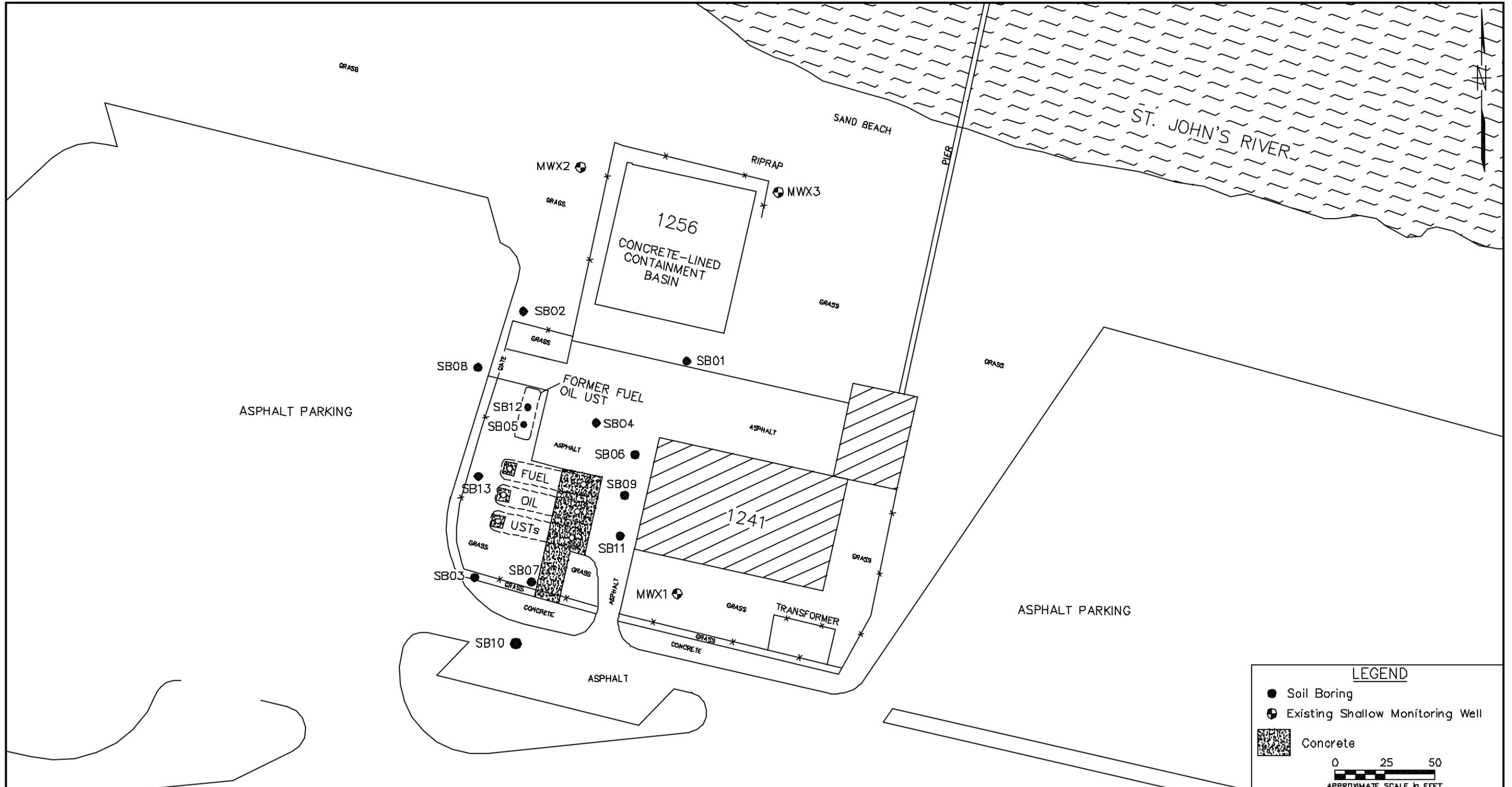
### **2.3 DETERMINATION OF GROUNDWATER GRADIENT**

During the week of August 11 to 15, 2003, 13 soil borings (SB-01 through SB-13) were advanced below the water table by DPT in the area of concern as part of the Phase I assessment. Three of the borings (SB-01, SB-02, and SB-03) were converted to temporary piezometers (PZ-01, PZ-02, and PZ-03, respectively). The top-of-casing elevations of the piezometers and one existing monitoring well located south of Building 1241 (designated MWX1) were surveyed relative to a selected temporary benchmark (TBM) on site. The TBM was assigned an arbitrary elevation of 25 ft msl. Depth-to-water was measured from the top-of-casing of the three piezometers and MWX1 using an electronic water level indicator. The relative water table elevation at each location was calculated by subtracting the depth-to-water measurement from the surveyed top-of-casing elevation, and a groundwater flow direction (potentiometric) map was generated from the water table elevation data.

### **2.4 SOIL QUALITY ASSESSMENT**

#### **2.4.1 Soil Borings**

Locations of the 13 soil borings completed during the Phase I assessment are shown on Figure 2-1. Three borings (SB-01, -02, and -03) were advanced to a depth of 7 ft bls, and the other 10 borings were advanced to a depth of 9 ft bls using a stainless steel, 3-inch inside diameter (ID) hand-auger assembly. Boring SB-11 was subsequently advanced from 9 ft bls to 40 ft bls using DPT (GeoProbe<sup>®</sup>) to establish a site lithologic profile. A 5-ft long, stainless steel macrocore sampler lined with plastic sleeves was attached to the end of the DPT push rod. Continuous samples were collected with the macrocore tool



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SOIL BORING LOCATIONS  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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from 9 to 40 ft bls. A lithologic description of materials retrieved in the macrocores is provided in Appendix C. At the other 12 locations, borings were advanced approximately 3 to 4 ft into the water table to total depths of 14 ft bls using DPT for the purpose of collecting groundwater grab samples (discussed below in Section 2.5.1).

#### **2.4.2 Field Screening Procedures**

Soil samples were collected from the hand auger bucket in the unsaturated zone at 2-ft vertical intervals from 1 ft bls to the soil/water interface at each boring location and retained for field screening with an OVA-FID. Soil vapor analyses were performed in accordance with the headspace screening method described in Chapter 62-770.200(2), FAC. Results of the soil vapor screening survey conducted at Site 1241 are discussed in Section 3.2.

#### **2.4.3 Soil Sampling Strategy for Laboratory Analysis**

##### **2.4.3.1 Mobile Laboratory**

Twelve soil samples were submitted to KB Laboratories (on-site mobile laboratory) for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX); methyl tertiary-butyl ether (MTBE); naphthalene; 1-methylnaphthalene; 2-methylnaphthalene; and total petroleum hydrocarbons (TPH). One sample from each soil boring was submitted in a 4-ounce glass jar provided by KB Laboratories. The sample selected for mobile laboratory analysis at each location was a split of the sample exhibiting the highest organic vapor reading. If organic vapors were not detected at a particular location, the sample collected from immediately above the water table was selected.

##### **2.4.3.2 Fixed-Base Laboratory**

During the Phase I assessment, three soil samples were submitted to Environmental Conservation Laboratories, Inc. (ENCO) of Jacksonville, Florida (fixed-base laboratory) for analysis of GAG/KAG constituents. These constituents include VOCs, PAHs, and TRPH. Soil samples submitted for fixed-base laboratory analysis were based on field screening results. The three samples selected were the one producing the highest headspace measurement (high range), one containing no organic vapors (low range), and one exhibiting intermediate organic vapor content (medium range) as specified in Chapter 62-770.600(3)(e), FAC.

## **2.5 GROUNDWATER ASSESSMENT METHODS**

### **2.5.1 DPT Grab Samples (Phase I)**

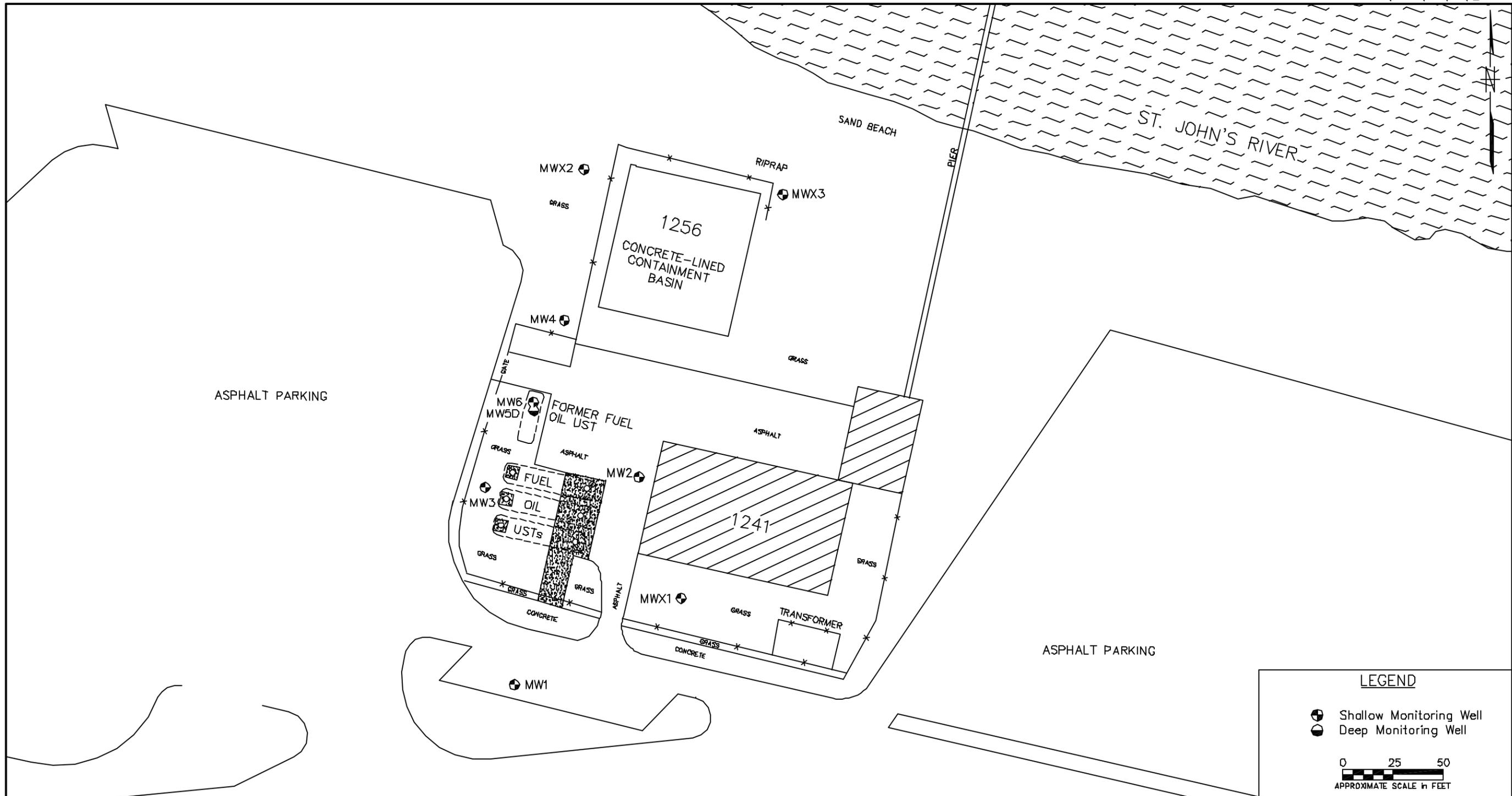
The primary purpose of the DPT investigation (August 11 to 14, 2003) was to collect groundwater grab samples from the upper 4 ft of the saturated zone and, in conjunction with quick turnaround mobile laboratory analyses, estimate the lateral and vertical extent of contamination in the shallow surficial aquifer. Grab samples were collected by DPT (GeoProbe<sup>®</sup>) from the approximate depth interval 10 to 14 ft bls at the 13 soil boring locations. The samples were collected using a detachable drive tip attached to a 48-inch, retractable stainless steel well screen encased in the lead drive casing. After the water sampler was advanced into the designated zone, the casing was withdrawn 48 inches to allow influx of groundwater to the retractable screen. For groundwater recovery, Teflon<sup>®</sup> tubing was inserted into the probe and connected to a peristaltic pump. Several screen volumes were then pumped from the probe in order to reduce turbidity. After purging, groundwater samples were collected by pumping directly into 40-milliliter vials. Groundwater samples were also collected from three existing permanent monitoring wells on site (MWX1, MWX2, and MWX3) following procedures outlined below in Section 2.5.2.3. These samples and those collected from the borings were delivered to the on-site mobile laboratory immediately after collection for analysis of BTEX, MTBE, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, and TPH.

### **2.5.2 Permanent Monitoring Wells (Phase II)**

Six permanent monitoring wells [MPT-1241-MW-01 (MW-01), MW-02, MW-03, MW-04, MW-05D, and MW-06] were installed at the site on August 15, 21, and 22, 2003, by Partridge Well Drilling, Inc. of Jacksonville, Florida under TtNUS supervision. Wells MW-01, MW-02, MW-03, and MW-04 are shallow monitoring wells with 10-ft screened sections intersecting the water table. Well MW-06 is a piezometer converted to a permanent microwell with a 5-ft screened section intersecting the water table. Well MW-05D is a deep monitoring well with a submerged 5-ft screen 35 to 40 ft bls. Monitoring well locations are shown on Figure 2-2. Well locations were selected based upon analytical results generated during Phase I. Positions of the new wells relative to the potential source area(s) of contamination are as follows: MW-5D and MW-06, source area wells; MW-01, upgradient; MW-02 and MW-03, crossgradient; and MW-04, downgradient

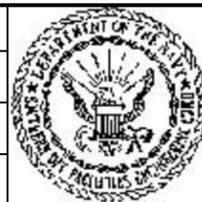
#### **2.5.2.1 Drilling Method**

Soil Boring SB-12 was converted to a permanent microwell (MW-06) by installing 14 ft of 1¼-inch diameter Schedule (SCH) 40 polyvinyl chloride (PVC) screen and riser into the borehole following collection of the grab sample during the Phase I assessment (August 15, 2003). The borehole was created by direct push using a stainless steel drive tip and 4-inch diameter hollow steel rods. The bottom



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MONITORING WELL LOCATIONS  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

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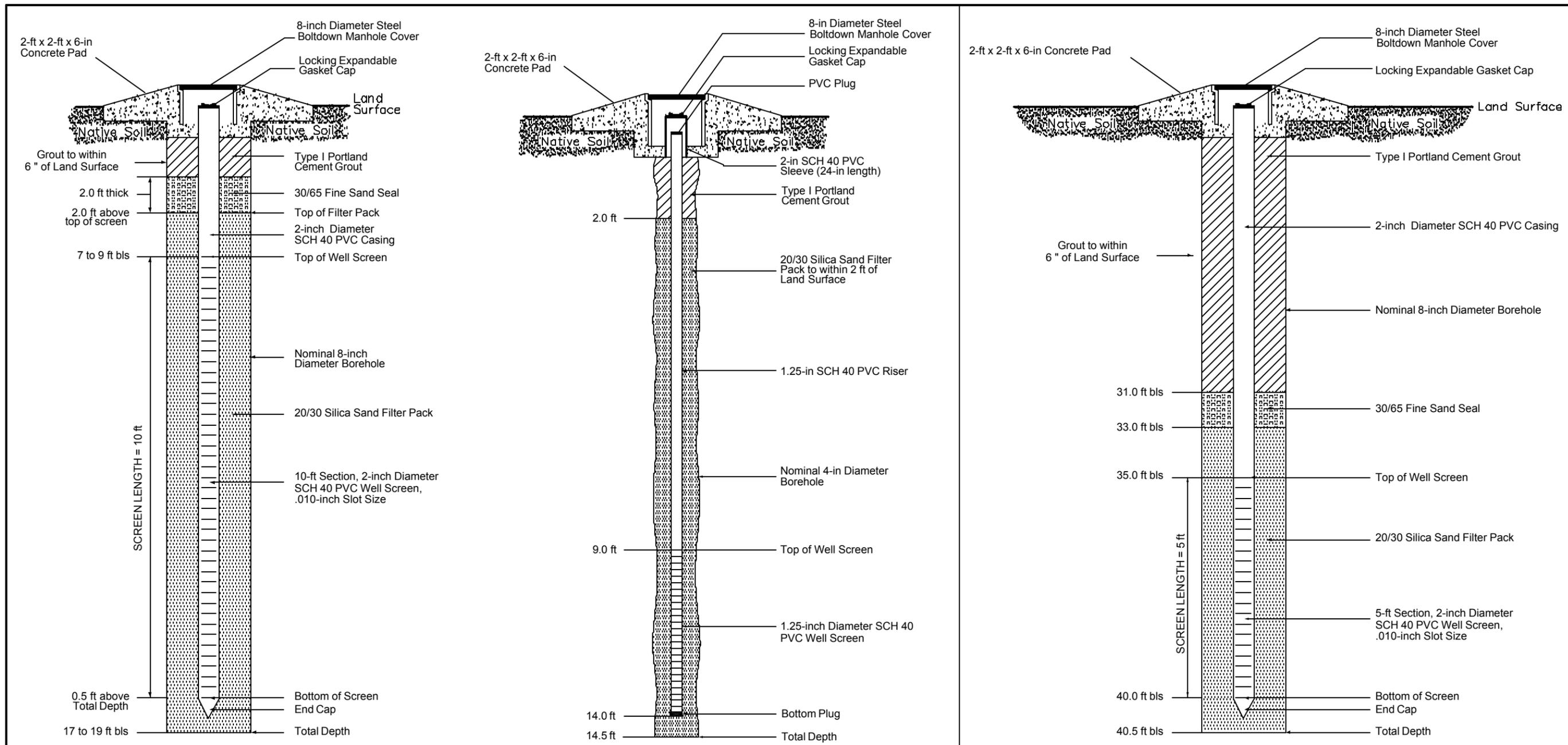
5 ft (9 to 14 ft bls) of the microwell consists of 0.010-inch slotted pipe (well screen) and the section from land surface to 9 ft bls is solid riser. Standard silica sand (20/30) was poured into the annular space between the PVC well and the borehole from total depth (14 ft) to approximately 2 ft bls. The upper 2 ft was filled with Type I Portland cement grout.

At the other five monitoring well locations, a posthole digger was used to excavate boreholes from ground surface to a depth of 5 ft bls to verify absence of subsurface utilities. From that point (5 ft bls) to total depth, boreholes were advanced using 4¼-inch ID hollow stem augers (HSAs) attached to a truck-mounted drill rig. Soil boring logs containing descriptions of cuttings generated during drilling are provided in Appendix C.

### **2.5.2.2 Construction and Development**

Boreholes for shallow wells MW-01 through MW-04 were advanced to total depths ranging from 17.25 to 19.50 ft bls and the deep well (MW-05D) to a total depth of approximately 40 ft bls. Monitoring wells constructed of 2-inch diameter, 0.010-inch mill slotted SCH 40 PVC screen attached to a suitable length of solid riser (flush threaded) were inserted through the HSAs after attaining total depth. Shallow wells were constructed with 10-ft screens and the deep well with a 5-ft screen. Graded 20/30 silica sand was poured from the surface between the PVC well and HSAs as the augers were being removed from the borehole to create a filter pack in the annular space between borehole and screened section of the monitoring well. During construction of the shallow wells, the filter pack was poured into the annular space to a depth approximately 2 ft above the top of the screen and was capped by approximately 2 ft of 30/65 fine sand. The remaining annular space from the top of the fine sand seal to within 6 inches of ground surface was filled with Type I Portland cement grout. In the deep well, 20/30 filter sand was poured to a depth of 33 ft bls, or 2 ft above the top of the screen, and was capped with 2 ft of 30/65 fine sand. The remaining annular space was filled with Type I Portland cement grout to within 6 inches of land surface. Each well, including MW-06, was completed at the surface with an 8-inch diameter steel manhole equipped with a bolt-down cover. Manholes were secured in place with concrete pads 2 ft square and 6 inches thick. A locking, expansible gasket cap was inserted at the top of the PVC casing after well installation. A schematic diagram showing details of well construction (shallow and deep) is provided as Figure 2-3. Construction diagrams for the individual wells are provided in Appendix D.

Piezometers were installed to an approximate depth of 14 ft bls. Each piezometer was constructed with 1.25-inch diameter, 0.010-inch mill slotted SCH 40 PVC screen that was attached to a suitable length of riser. The piezometers were installed using direct push technology. The annular space was filled with 20/30 filter sand to an approximate depth of 2 ft bls. Microwell MW-6 was also constructed in the same fashion, although it was fitted with a seal of Type 1 Portland grout from 2 ft to about 6 inches bls



TYPICAL CONSTRUCTION DETAIL OF CONVENTIONAL SHALLOW MONITORING WELLS MW-1, MW-2, MW-3, and MW-4

CONSTRUCTION DETAIL OF SHALLOW MICROWELL MW-6

CONSTRUCTION DETAIL OF DEEP MONITORING WELL MW-5D

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where a metal manhole was added in a 2 ft by 2 ft cement pad that was placed around the well. The screen length of the MW-6 is 5 ft.

Wells were developed a minimum 24 hours after completion by a TtNUS or Partridge Well Drilling, Inc. representative using either a submersible Whale pump or centrifugal pump. Wells were developed until field measurements became stable and purge water virtually clear. Water quality stabilization was determined using the following criteria: temperature  $\pm 5$  degrees Celsius ( $^{\circ}\text{C}$ ), pH  $\pm 0.1$  unit, and specific conductance  $\pm 10$  micro-ohms per centimeter. All development water was containerized for disposal in 55-gallon steel drums. Monitoring well development records are provided with other field data sampling forms in Appendix E.

### **2.5.2.3 Groundwater Sampling**

Groundwater samples were collected from the six newly-installed monitoring wells and from existing well MWX1 on October 8 and 9, 2003. A second set of samples was collected from new wells MW-04 and MW-06 on November 24, 2003. This supplemental sampling event was requested by the NAVSTA Mayport Partnering Team and NAVFAC EFD SOUTH in a November 5-6, 2003, meeting due to significant differences in analytical results reported by the mobile laboratory as opposed to those reported by the fixed-base laboratory from the DPT phase of the investigation. Sampling activities were documented in a site-specific field logbook

Groundwater sampling was conducted in general accordance with SOPs adopted by FDEP in 2002. A minimum one well volume was pumped from each shallow well (partially submerged screen), and a minimum one volume of the pump, associated tubing, and flow cell was pumped from the deep well (fully submerged screen) using a peristaltic pump and the low flow quiescent purging method. After purging of these initial quantities, purging was continued and field parameters pH, specific conductance, dissolved oxygen, temperature, and oxidation/reduction potential were measured periodically (minimum 3-minute intervals) using a YSI 556 instrument. Turbidity was measured using LaMotte 2020 turbidimeter. Purging was considered complete when three consecutive measurements were within the following limits:

- Temperature  $\pm 0.2$   $^{\circ}\text{C}$
- pH  $\pm 0.2$  Standard Units
- Specific conductivity  $\pm 5$  percent of previous reading(s)
- Dissolved oxygen not greater than 20 percent of saturation at field measured temperature
- Turbidity less than or equal to 20 Nephelometric Units.

Groundwater sampling logs and low flow purge sheets compiled during purging and sampling of the six wells are provided in Appendix E.

After collection, samples were immediately placed on ice and delivered to ENCO in Jacksonville, Florida the following morning under proper chain-of-custody and preservation (4 °C) protocol. Samples were analyzed for VOCs using United States Environmental Protection Agency (USEPA) Method 8260, PAHs using USEPA Method 8270, ethylene dibromide using USEPA Method 504.1, lead using USEPA Method 200.7, and TRPH using Florida Petroleum Range Organics (FL-PRO). Samples collected from MW-04 and MW-06 during the second event (November 24, 2003) were shipped to Katahdin Analytical Services in Westbrook, Maine for analysis of PAHs and TRPH only.

## 3.0 RESULTS OF INVESTIGATION

### 3.1 SITE GEOLOGY AND HYDROGEOLOGY

#### 3.1.1 Lithology

The most resolute description of material underlying Site 1241 was obtained during retrieval of 5-ft macrocore samples collected by DPT during advancement of deep boring SB-12 to 40 ft bls on August 15, 2003. Soil cuttings generated during excavation of monitoring well boreholes by HSAs were also described by TtNUS' on-site geologist. Soil borings logs containing these lithologic descriptions are provided in Appendix C.

Sediments encountered in the upper 40 ft consisted primarily of fine and very fine sand and, secondarily, of shell hash and clay. Generally speaking, little to no silt or clay was encountered in the upper 20 ft. Considerable shell hash was observed in the upper 10 ft, but little was encountered below this depth. It is likely that the upper 10 ft consists of fill material dredged from the turning basin. Between 20 and 30 ft bls, clay was present in discrete sandy stringers ¼ to ½-inch thick spaced 1 to 5 inches apart within a fine sand matrix. A fine to very fine grained orange sand was encountered from 30 to 34.5 ft bls, and below this to total depth (40 ft bls), clay lenses ranging in thickness from ½ to 6 inches were observed. This lower 5.5 ft had the highest clay content within the 40-ft section, but none of the lenses were thick enough to be considered a confining unit. Sediments were light brown in the upper 15 ft, orange from 30 to 35 ft bls, and light to medium olive green elsewhere (i.e., 15 to 30 ft bls and 35 to 40 ft bls).

#### 3.1.2 Groundwater Flow Direction

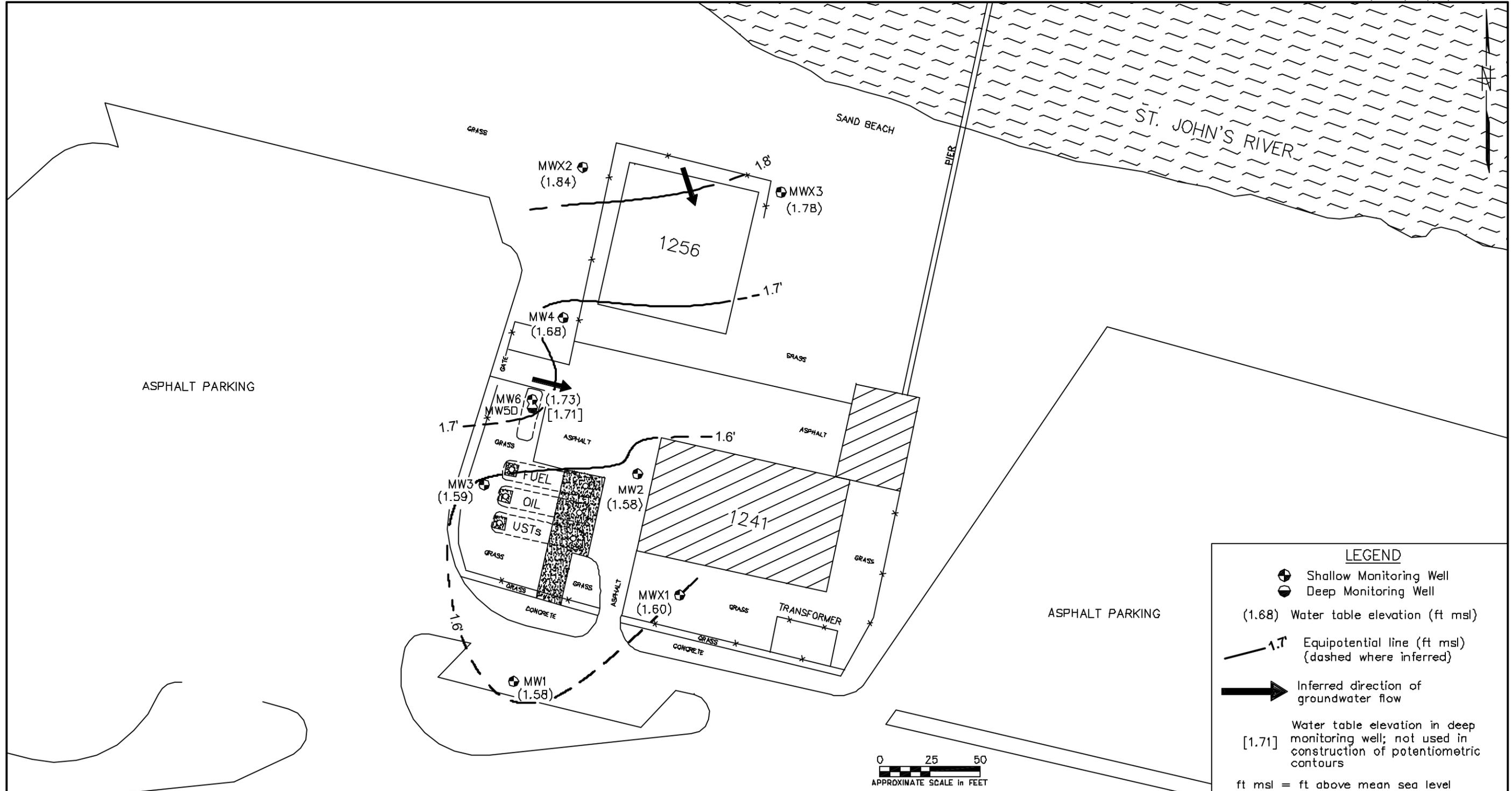
Using the method described in Section 2.2, the direction of groundwater flow in the surficial aquifer underlying the site was estimated to be northeasterly toward the St. Johns River. This preliminary determination of groundwater flow direction using data from temporary piezometers and one of the existing monitoring wells was one of the criteria used in selecting permanent monitoring well locations. After installation of the permanent monitoring wells, direction of groundwater flow was determined using the wells as control points in the same fashion that the piezometers were used in the preliminary determination. Surveyed top-of-casing (TOC) elevations of the permanent monitoring wells; depth-to-water measurements obtained on October 29, 2003, and January 16, 2004; and water table elevation values for these two sets of measurements are presented in Table 3-1. Groundwater elevation contour maps (potentiometric map) generated from the October 29 and January 16 data are provided as Figures 3-1 and 3-2, respectively. A review of Figure 3-1 and 3-2 shows that groundwater flow is in opposite directions between the two events. This effect is caused by the influences associated with the adjacent St. Johns River and Turning Basin.

**Table 3-1  
Water Table Elevation Data**

Site Assessment Report, Site 1241  
Naval Station Mayport  
Mayport, Florida

| Well ID<br>Number<br>MPT-1241- | Total Well<br>Depth (ft) | TOC Elevation<br>(ft msl) | October 29, 2003                    |                                      | January 16, 2004                    |                                      |
|--------------------------------|--------------------------|---------------------------|-------------------------------------|--------------------------------------|-------------------------------------|--------------------------------------|
|                                |                          |                           | Depth to<br>Water Below<br>TOC (ft) | Water Table<br>Elevation<br>(ft msl) | Depth to<br>Water Below<br>TOC (ft) | Water Table<br>Elevation<br>(ft msl) |
| MW-1                           | 17.55                    | 11.96                     | 10.38                               | 1.58                                 | 11.18                               | 0.78                                 |
| MW-2                           | 17.25                    | 11.69                     | 10.11                               | 1.58                                 | 11.00                               | 0.69                                 |
| MW-3                           | 19.05                    | 11.65                     | 10.06                               | 1.59                                 | 10.96                               | 0.69                                 |
| MW-4                           | 19.50                    | 10.74                     | 9.06                                | 1.68                                 | 10.18                               | 0.56                                 |
| MW-5                           | 40.00                    | 10.60                     | 8.89                                | 1.71                                 | NM                                  | NM                                   |
| MW-6                           | 14.00                    | 10.98                     | 9.25                                | 1.73                                 | 10.34                               | 0.64                                 |
| MWX1                           | 19.90                    | 11.80                     | 10.20                               | 1.60                                 | 11.05                               | 0.75                                 |
| MWX2                           | 16.80                    | 9.62                      | 7.78                                | 1.84                                 | 9.02                                | 0.60                                 |
| MWX3                           | 16.10                    | 9.96                      | 8.18                                | 1.78                                 | 9.35                                | 0.61                                 |

**Notes:**  
NM = not measured

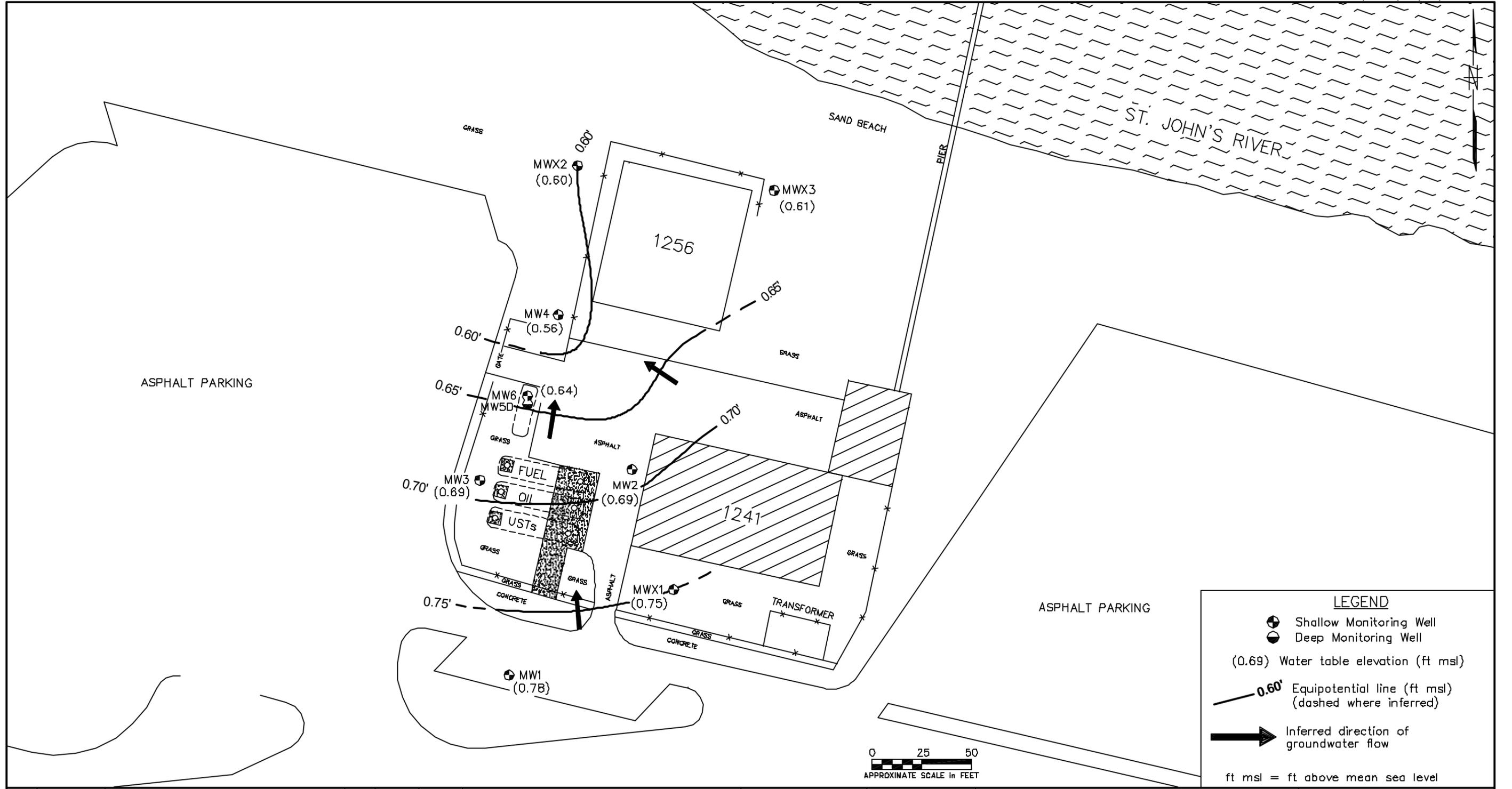


**LEGEND**

- ⊕ Shallow Monitoring Well
- ⊙ Deep Monitoring Well
- (1.68) Water table elevation (ft msl)
- 1.7' Equipotential line (ft msl) (dashed where inferred)
- ➔ Inferred direction of groundwater flow
- [1.71] Water table elevation in deep monitoring well; not used in construction of potentiometric contours

ft msl = ft above mean sea level

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|     |      |           |    |      |      |            | LLK      | 11/10/03 |  | 5863         |      |
|     |      |           |    |      |      |            |          |          |  | APPROVED BY  | DATE |
|     |      |           |    |      |      |            |          |          |  | APPROVED BY  | DATE |
|     |      |           |    |      |      |            |          |          |  | DRAWING NO.  | REV. |
|     |      |           |    |      |      |            |          |          | FIGURE 3-1   | 0            |      |



| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES | DRAWN BY | DATE    | GROUNDWATER ELEVATION CONTOUR MAP,<br>JANUARY 16, 2004<br>SITE 1241 (STEAM PLANT)<br>SITE ASSESSMENT REPORT<br>NAVAL STATION MAYPORT<br>MAYPORT, FLORIDA | CONTRACT NO. | 5863       |      |
|-----|------|-----------|----|------|------|------------|----------|---------|--|--------------|------------|------|
|     |      |           |    |      |      |            | LLK      | 1/19/04 |  | APPROVED BY  | DATE       |      |
|     |      |           |    |      |      |            |          |         |  | APPROVED BY  | DATE       |      |
|     |      |           |    |      |      |            |          |         |  | DRAWING NO.  | FIGURE 3-2 | REV. |
|     |      |           |    |      |      |            |          |         |  |              |            | 0    |

### 3.1.3 Aquifer Classification and Characteristics

The State of Florida classifies the surficial aquifer underlying the site as G-II. Previous USGS aquifer test data indicate that the average hydraulic conductivity of the surficial aquifer is approximately 4.34 ft per day (ft/day) (TtNUS, 2001).

The horizontal groundwater (hydraulic) gradient across the site was evaluated from water level data listed in Table 3-1 and shown on Figures 3-1 and 3-2. As these data and figures indicate, the hydraulic gradient at the site is subject to 180 degree reversal due to the site's position on a narrow peninsula roughly equidistant between two water bodies (St. Johns River and Mayport turning basin). The average horizontal hydraulic gradient beneath the site, calculated from potentiometric contours depicted on Figures 3-1 and 3-2, was determined to be 0.00063 ft per ft (ft/ft).

Based on information provided by Driscoll (Driscoll, 1986) and on lithologic descriptions of material encountered during the current investigation, the effective porosity of surficial aquifer sediments was estimated to be 0.30.

Using Darcy's Law, the groundwater velocity at the site was calculated.

Darcy's Law may be expressed as follows:

$$V = \frac{(K \times I)}{n}$$

where: V = average seepage velocity  
K = hydraulic conductivity  
n = effective porosity  
I = average hydraulic gradient

Using a hydraulic conductivity of 4.34 ft/day, a hydraulic gradient of 0.00063 ft/ft, an inferred effective porosity value of 0.30, and Darcy's law, the groundwater seepage velocity across the site was calculated at 0.0091 ft/day or 3.329 ft per year. However, the reversal in flow direction with tidal influences likely results in a lower velocity.

## 3.2 SOIL SCREENING RESULTS

Soil vapor screening methods and sampling locations for headspace analyses are discussed in Section 2.3.2. Results of the soil vapor survey are listed on Table 3-2 and illustrated on Figure 3-3. A total of 62 samples were screened. None of the samples produced an instrument response of 50 ppm or

| <b>Table 3-2</b>                       |                     |                       |                          |                 |     |
|--|---------------------|-----------------------|--------------------------|-----------------|-----|
| <b>Soil Vapor Measurements</b>         |                     |                       |                          |                 |     |
| Site Assessment Report, Tank Site 1241 |                     |                       |                          |                 |     |
| Naval Station Mayport                  |                     |                       |                          |                 |     |
| Mayport, Florida                       |                     |                       |                          |                 |     |
| Soil Boring Number                     | Date of Measurement | Sample Depth (ft bls) | Headspace Readings (ppm) |                 |     |
|  |                     |                       | Total Organic            | Carbon Filtered | Net |
| SB-01                                  | 8/11/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
| SB-02                                  | 8/11/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
| SB-03                                  | 8/11/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
| SB-04                                  | 8/11/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
| SB-05                                  | 8/13/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
|  |                     | 9                     | 0                        | 0               | 0   |
| SB-06                                  | 8/13/2003           | 1                     | 1                        | 0               | 1   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 1                        | 0               | 1   |
|  |                     | 7                     | 0                        | 0               | 0   |
|  |                     | 9                     | 0                        | 0               | 0   |
| SB-07                                  | 8/13/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
|  |                     | 9                     | 0                        | 0               | 0   |
| SB-08                                  | 8/13/2003           | 1                     | 0                        | 0               | 0   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
|  |                     | 9                     | 0                        | 0               | 0   |
| SB-09                                  | 8/13/2003           | 1                     | 24                       | 15              | 9   |
|  |                     | 3                     | 0                        | 0               | 0   |
|  |                     | 5                     | 0                        | 0               | 0   |
|  |                     | 7                     | 0                        | 0               | 0   |
|  |                     | 9                     | 0                        | 0               | 0   |

**Table 3-2  
Soil Vapor Measurements (Continued)**

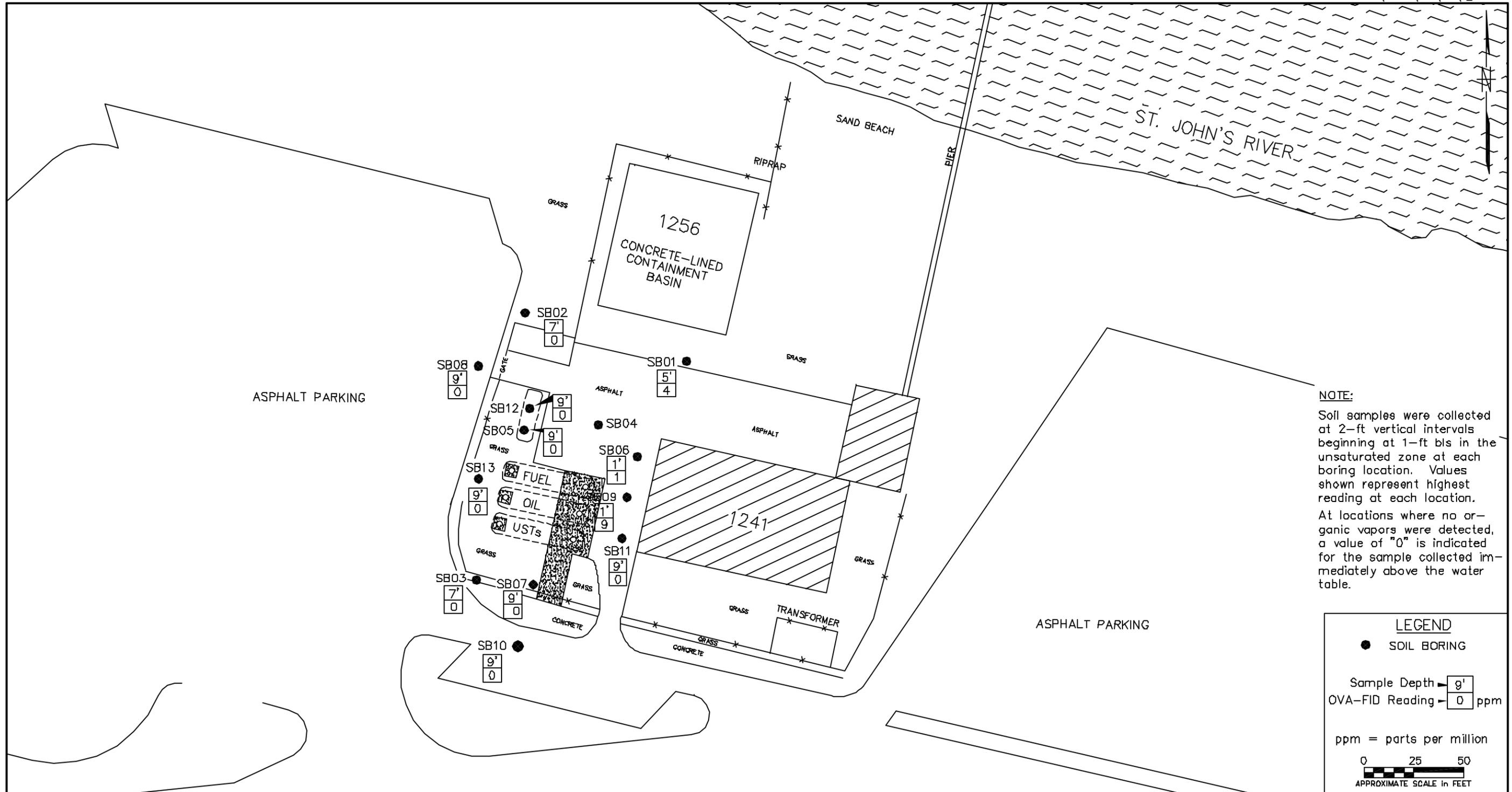
Site Assessment Report, Tank Site 1241  
Naval Station Mayport  
Mayport, Florida

| Soil Boring Number | Date of Measurement | Sample Depth (ft bls) | Headspace Readings (ppm) |                 |     |
|--------------------|---------------------|-----------------------|--------------------------|-----------------|-----|
|                    |                     |                       | Total Organic            | Carbon Filtered | Net |
| SB-10              | 8/13/2003           | 1                     | 0                        | 0               | 0   |
|                    |                     | 3                     | 0                        | 0               | 0   |
|                    |                     | 5                     | 0                        | 0               | 0   |
|                    |                     | 7                     | 0                        | 0               | 0   |
|                    |                     | 9                     | 0                        | 0               | 0   |
| SB-11              | 8/14/2003           | 1                     | 0                        | 0               | 0   |
|                    |                     | 3                     | 0                        | 0               | 0   |
|                    |                     | 5                     | 0                        | 0               | 0   |
|                    |                     | 7                     | 0                        | 0               | 0   |
|                    |                     | 9                     | 0                        | 0               | 0   |
| SB-12              | 8/14/2003           | 1                     | 0                        | 0               | 0   |
|                    |                     | 3                     | 0                        | 0               | 0   |
|                    |                     | 5                     | 0                        | 0               | 0   |
|                    |                     | 7                     | 0                        | 0               | 0   |
|                    |                     | 9                     | 0                        | 0               | 0   |
| SB-13              | 8/14/2003           | 1                     | 0                        | 0               | 0   |
|                    |                     | 3                     | 0                        | 0               | 0   |
|                    |                     | 5                     | 0                        | 0               | 0   |
|                    |                     | 7                     | 0                        | 0               | 0   |
|                    |                     | 9                     | 0                        | 0               | 0   |

**Notes:**

Wet soils encountered at depths ranging from approximately 10 ft bls.

MAYPORT NS\CT0303\1241\CAD\A\_58630VA



| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES | DRAWN BY | DATE     | SOIL VAPOR FIELD SCREENING RESULTS<br>SITE 1241 (STEAM PLANT)<br>SITE ASSESSMENT REPORT<br>NAVAL STATION MAYPORT<br>MAYPORT, FLORIDA | CONTRACT NO. |      |
|-----|------|-----------|----|------|------|------------|----------|----------|--|--------------|------|
|     |      |           |    |      |      |            | LLK      | 11/10/03 |  | 5863         |      |
|     |      |           |    |      |      |            |          |          |  | APPROVED BY  | DATE |
|     |      |           |    |      |      |            |          |          |  | APPROVED BY  | DATE |
|     |      |           |    |      |      |            |          |          |  | DRAWING NO.  | REV. |
|     |      |           |    |      |      |            |          |          | FIGURE 3-3   | 0            |      |

greater. Organic vapors were detected at low concentrations in five of the samples, the highest being 9 ppm in the sample collected 1 ft bls at SB-09.

### **3.3 SOIL SAMPLE ANALYTICAL RESULTS**

#### **3.3.1 Mobile Laboratory**

Twelve soil samples (one from each boring except SB-01) were analyzed by the mobile laboratory. Samples selected for analysis were determined from field screening results as described in Section 2.4.3.1. No targeted constituent was reported at a concentration exceeding regulatory criteria. The only detections were reported on a sample collected 9 ft bls at SB-07, located south of the USTs. Both 1-methylnaphthalene and 2-methylnaphthalene were identified in this sample at a concentration of 0.11 milligrams per kilogram (mg/kg). The most stringent regulatory criteria for these two compounds are the leachability SCTLs which are 2.2 mg/kg for 1-methylnaphthalene and 6.1 mg/kg for 2-methylnaphthalene. Detected concentrations are listed in Table 3-3 and illustrated on Figure 3-4. A copy of KB Laboratories' analytical report is provided in Appendix F.

#### **3.3.2 Fixed-Base Laboratory**

Soil samples submitted to ENCO for analysis were SB-07 (9 ft), a split of the sample having the 1- and 2-methylnaphthalene detections; SB-11 (9 ft); and SB-12 (9 ft). Detected concentrations reported by the laboratory are listed in Table 3-4. The laboratory report submitted by ENCO is provided as Appendix G.

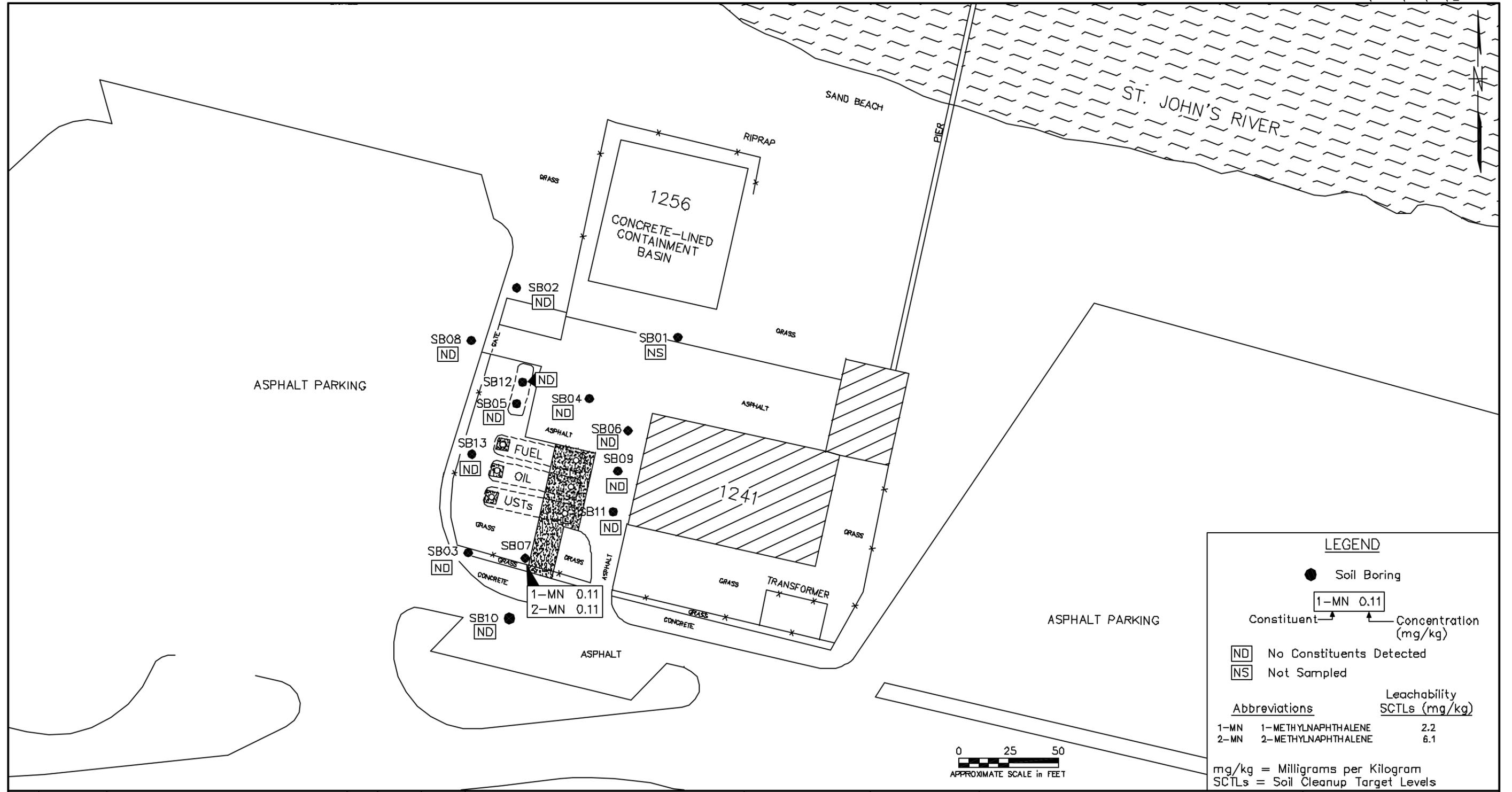
No constituents were reported at concentrations exceeding regulatory criteria. TRPH was reported in SB-12 (100 mg/kg) and in SB-07 (11 mg/kg). Both the residential and leachability SCTL for TRPH is 340 mg/kg. Toluene was reported at low concentrations [less than 3 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ )] in all three samples and total xylenes were reported at a concentration of 2  $\mu\text{g}/\text{kg}$  in SB-07. No PAHs were detected.

### **3.4 GROUNDWATER ANALYTICAL RESULTS**

#### **3.4.1 Mobile Laboratory**

The naphthalene compounds (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene) and TPH were identified at concentrations exceeding GCTLs by the mobile laboratory. A summary of detected concentrations is listed in Table 3-5 and illustrated on Figure 3-5. The analytical report submitted by KB Laboratories is included with the mobile laboratory soil analytical results in Appendix F.

| <b>Table 3-3</b>   |                   |            |              |  |           |           |           |           |           |
|--|-------------------|------------|--------------|--|-----------|-----------|-----------|-----------|-----------|
| <b>Compounds Detected in Soil Samples by Mobile Laboratory</b>                 |                   |            |              |  |           |           |           |           |           |
| Site Assessment Report, Site 1241<br>Naval Station Mayport<br>Mayport, Florida |                   |            |              |  |           |           |           |           |           |
| Compound   | FDEP SCTL (mg/kg) |            |              | Sample ID, Sample Date, and Sample Depth |           |           |           |           |           |
|  |                   |            |              | SB-02                                    | SB-03     | SB-04     | SB-05     | SB-06     | SB-07     |
|  | Residential       | Industrial | Leachability | 8/12/2003                                | 8/12/2003 | 8/13/2003 | 8/13/2003 | 8/13/2003 | 8/13/2003 |
|  |                   |            |              | 3 ft                                     | 3 ft      | 5 ft      | 9 ft      | 1 ft      | 9 ft      |
| <b>VOCs (USEPA Method 8260) (mg/kg)</b>  |                   |            |              |  |           |           |           |           |           |
| 1-Methylnaphthalene  | 68                | 470        | 2.2          | <.050                                    | <.050     | <.050     | <.050     | <.050     | 0.11      |
| 2-Methylnaphthalene  | 80                | 560        | 6.1          | <.050                                    | <.050     | <.050     | <.050     | <.050     | 0.11      |
| Compound   | FDEP SCTL (mg/kg) |            |              | Sample ID, Sample Date, and Sample Depth |           |           |           |           |           |
|  |                   |            |              | SB-08                                    | SB-09     | SB-10     | SB-11     | SB-12     | SB-13     |
|  | Residential       | Industrial | Leachability | 8/13/2003                                | 8/13/2003 | 8/13/2013 | 8/14/2003 | 8/14/2003 | 8/14/2003 |
|  |                   |            |              | 9 ft                                     | 1 ft      | 3 ft      | 9 ft      | 1 ft      | 1 ft      |
| <b>VOCs (USEPA Method 8260) (mg/kg)</b>  |                   |            |              |  |           |           |           |           |           |
| 1-Methylnaphthalene  | 68                | 470        | 2.2          | <0.50                                    | <.050     | <.050     | <0.50     | <.050     | <.050     |
| 2-Methylnaphthalene  | 80                | 560        | 6.1          | <0.50                                    | <.050     | <.050     | <0.50     | <.050     | <.050     |
| <b>Notes:</b>  |                   |            |              |  |           |           |           |           |           |
| < = less than  |                   |            |              |  |           |           |           |           |           |



| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES | DRAWN BY | DATE     | MOBILE LABORATORY SOIL ANALYTICAL RESULTS<br>SITE 1241 (STEAM PLANT)<br>SITE ASSESSMENT REPORT<br>NAVAL STATION MAYPORT<br>MAYPORT, FLORIDA | CONTRACT NO. |      |
|-----|------|-----------|----|------|------|------------|----------|----------|---|--------------|------|
|     |      |           |    |      |      |            | LLK      | 11/10/03 |   | 5863         |      |
|     |      |           |    |      |      |            |          |          |   | APPROVED BY  | DATE |
|     |      |           |    |      |      |            |          |          |   | APPROVED BY  | DATE |
|     |      |           |    |      |      |            |          |          | DRAWING NO.   | REV.         |      |
|     |      |           |    |      |      |            |          |          | FIGURE 3-4  | 0            |      |

**Table 3-4  
Compounds Detected in Soil Samples by Fixed-Base Laboratory**

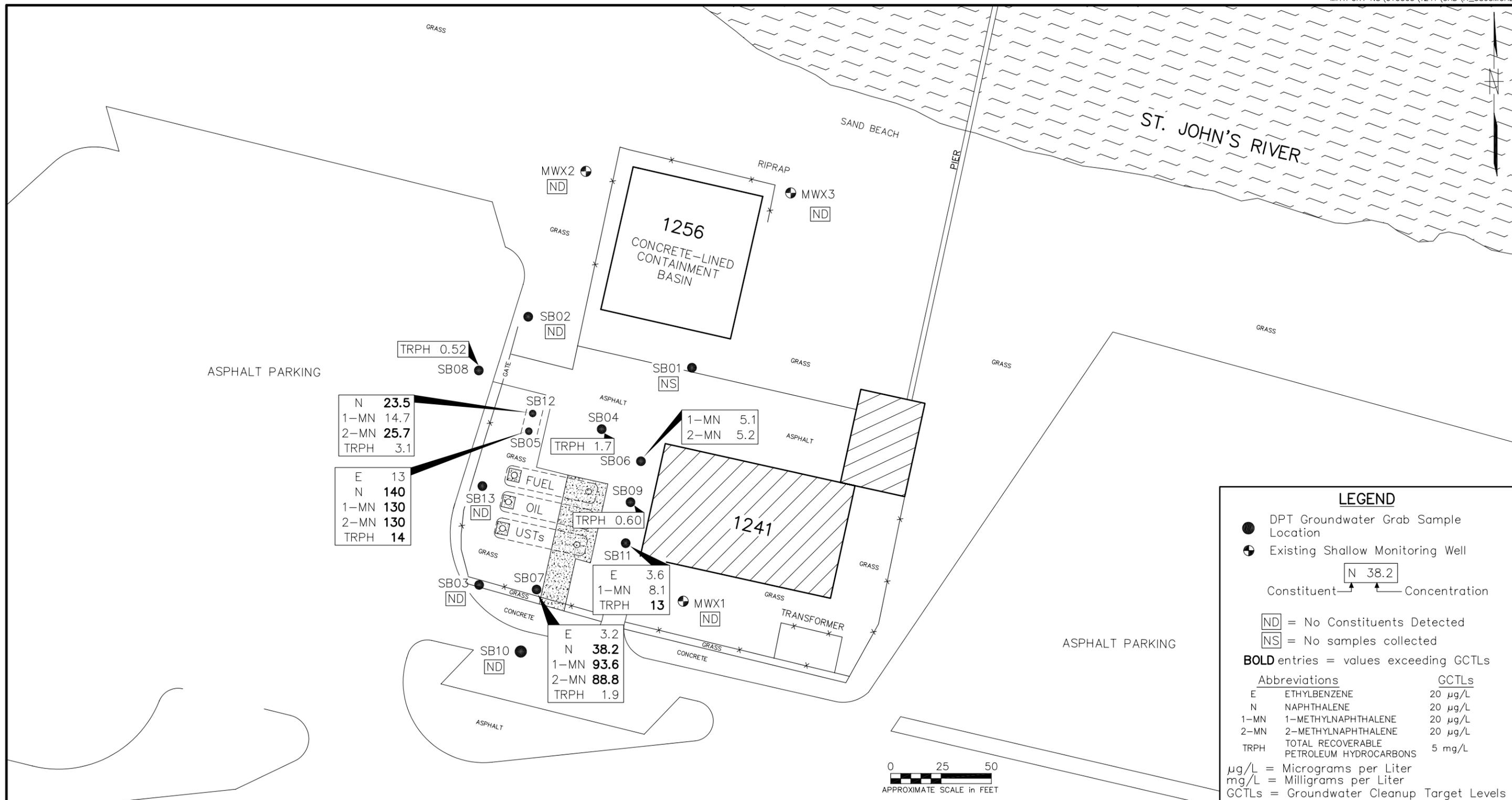
Site Assessment Report, Site 1241  
Naval Station Mayport  
Mayport, Florida

| Compound   | FDEP SCTL (mg/kg) |            |              | Sample ID and Sample Interval |        |        |
|--|-------------------|------------|--------------|-------------------------------|--------|--------|
|  |                   |            |              | SB-07                         | SB-12  | SB-11  |
|  | Residential       | Industrial | Leachability | 9 ft                          | 9 ft   | 9 ft   |
| <b><u>VOCs (USEPA Method 8021B) (mg/kg)</u></b>  |                   |            |              |                               |        |        |
| Toluene  | 380               | 2600       | 0.5          | 0.0028                        | 0.0027 | 0.0022 |
| <b><u>FL-PRO (USEPA Method 8270) (mg/kg)</u></b> |                   |            |              |                               |        |        |
| TRPH   | 340               | 2500       | 340          | 11                            | 100    | 6.7    |

**Table 3-5  
Compounds Detected in Groundwater Samples by Mobile Laboratory**

Site Assessment Report, Site 1241  
Naval Station Mayport  
Mayport, Florida

| Compound   | GCTLs | Sample ID and Date |         |         |           |             |         |             |
|--|-------|--------------------|---------|---------|-----------|-------------|---------|-------------|
|  |       | SB-01              | SB-02   | SB-03   | SB-04     | SB-05       | SB-06   | SB-07       |
|  |       | 8/12/03            | 8/12/03 | 8/12/03 | 8/13/03   | 8/13/03     | 8/13/03 | 8/13/03     |
| <b>VOCs (USEPA Method 8021B) (µg/L)</b>  |       |                    |         |         |           |             |         |             |
| Ethylbenzene   | 20    | <1.0               | <1.0    | <1.0    | <1.0      | 13          | <1.0    | 3.2         |
| Naphthalene  | 20    | <5.0               | <5.0    | <5.0    | <5.0      | <b>140</b>  | <5.0    | <b>38.2</b> |
| 1-Methylnaphthalene  | 20    | <5.0               | <5.0    | <5.0    | <5.0      | <b>130</b>  | 5.1     | <b>93.6</b> |
| 2-Methylnaphthalene  | 20    | <5.0               | <5.0    | <5.0    | <5.0      | <b>130</b>  | 5.2     | <b>88.8</b> |
| TPH ( mg/L)  | 5     | NA                 | NA      | NA      | 1.7       | <b>14</b>   | ND      | 1.9         |
| Compound   | GCTLs | Sample ID and Date |         |         |           |             |         |             |
|  |       | SB-08              | SB-09   | SB-10   | SB-11     | SB-12       | SB-13   |             |
|  |       | 8/13/03            | 8/13/03 | 8/13/03 | 8/14/03   | 8/14/03     | 8/14/03 |             |
| <b>VOCs (USEPA Method 8021B) (µg/L)</b>  |       |                    |         |         |           |             |         |             |
| Ethylbenzene   | 20    | <1.0               | <1.0    | <1.0    | 3.6       | <1.0        | <1.0    |             |
| Naphthalene  | 20    | <5.0               | <5.0    | <5.0    | <5.0      | <b>23.5</b> | <5.0    |             |
| 1-Methylnaphthalene  | 20    | <5.0               | <5.0    | <5.0    | 8.1       | 14.7        | <5.0    |             |
| 2-Methylnaphthalene  | 20    | <5.0               | <5.0    | <5.0    | <5.0      | <b>25.7</b> | <5.0    |             |
| TPH (mg/L)   | 5     | 0.52               | 0.6     | ND      | <b>13</b> | 3.1         | ND      |             |
| <b>Notes:</b><br><b>Bold</b> values exceed GCTLs.<br>ND = not defined<br>mg/L = milligrams per liter |       |                    |         |         |           |             |         |             |



**LEGEND**

- DPT Groundwater Grab Sample Location
- ⊕ Existing Shallow Monitoring Well

Constituent → **N 38.2** ← Concentration

**ND** = No Constituents Detected  
**NS** = No samples collected

**BOLD** entries = values exceeding GCTLs

| Abbreviations                                 | GCTLs   |
|---|---------|
| E ETHYLBENZENE                                | 20 µg/L |
| N NAPHTHALENE                                 | 20 µg/L |
| 1-MN 1-METHYLNAPHTHALENE                      | 20 µg/L |
| 2-MN 2-METHYLNAPHTHALENE                      | 20 µg/L |
| TRPH TOTAL RECOVERABLE PETROLEUM HYDROCARBONS | 5 mg/L  |

µg/L = Micrograms per Liter  
mg/L = Milligrams per Liter  
GCTLs = Groundwater Cleanup Target Levels

| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES |
|-----|------|-----------|----|------|------|------------|
|     |      |           |    |      |      |            |
|     |      |           |    |      |      |            |
|     |      |           |    |      |      |            |
|     |      |           |    |      |      |            |

DRAWN BY: LLK  
DATE: 11/10/03  
CHECKED BY: \_\_\_\_\_  
DATE: \_\_\_\_\_  
COST/SCHED-AREA: \_\_\_\_\_  
SCALE: AS NOTED



MOBILE LABORATORY GROUNDWATER ANALYTICAL RESULTS  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

|              |            |
|--------------|------------|
| CONTRACT NO. | 5863       |
| APPROVED BY  | DATE       |
| APPROVED BY  | DATE       |
| DRAWING NO.  | FIGURE 3-5 |
| REV.         | 0          |

Exceedences of GCTLs were reported in four samples: SB-05 and SB-12, collected at the location of the former heating oil UST northwest of Building 1241; SB-07, located south of the three in-service USTs; and SB-11, located between Building 1241 and the three USTs. The highest concentrations, reported from SB-05 samples, are naphthalene at 140 µg/L; 1-methylnaphthalene and 2-methylnaphthalene at 130 µg/L; and TRPH at 14 mg/L. Two GCTL exceedences (naphthalene and 2-methylnaphthalene) were reported in the SB-12 sample, and three (the naphthalene compounds) were reported above GCTLs in SB-07. One GCTL exceedence was reported for TRPH from SB-11.

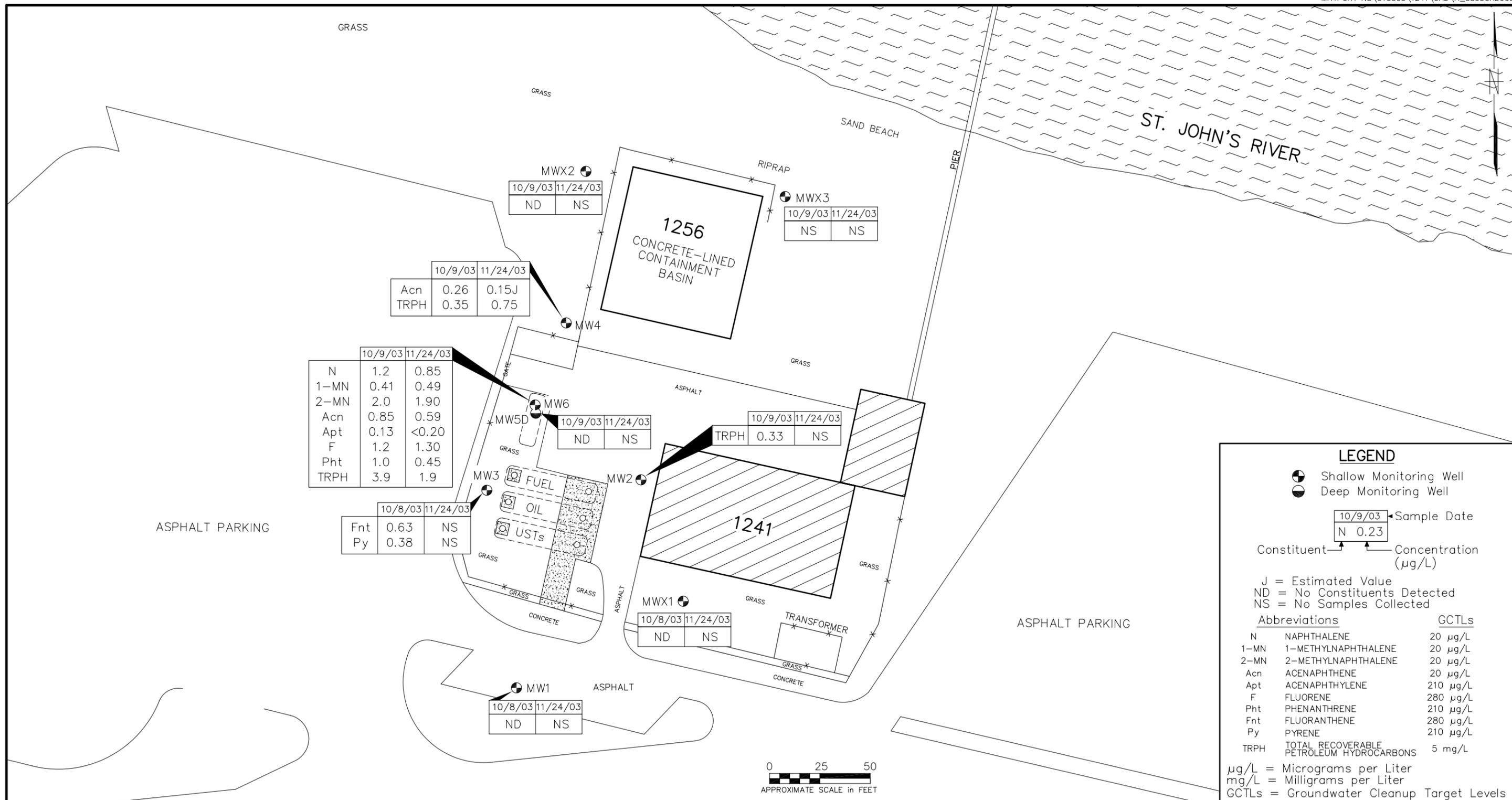
### **3.4.2 Fixed-Base Laboratory**

TiNUS personnel collected groundwater samples from the permanent monitoring wells at Site 1241 on two occasions: October 8-9, 2003, and November 24, 2003. The six newly-installed wells (MW-01, MW-02, MW-03, MW-04, MW-05D, and MW-06) and one of the existing wells (MWX1) were sampled during the first event and submitted to ENCO for analysis of GAG/KAG constituents. The fixed-base sample results did demonstrate the presence of petroleum impacts in monitoring well MW-03, MW-04 and MW-06, but at trace levels well below the GCTL, unlike the numbers from the mobile laboratory. Seven PAHs and TRPH were reported at low concentrations in samples collected from well MW-06, located in the former excavation area of the removed heating oil UST and also down-gradient to the tank pit. TRPH was also identified at low concentrations in MW-02 (cross-gradient) and MW-04 (down-gradient).

Results from the ENCO data did not coincide with the mobile laboratory data that reported exceedences of the GCTLs for PAH and TRPH in groundwater samples collected from SB-05, SB-07, SB-11, and SB-12 (see Table 3-5). In an attempt to confirm the presence of the groundwater petroleum impacts, a second sampling of select wells and parameters were taken on November 24, 2003. The groundwater samples from the November 2003 event were sent to Katahdin Analytical Services (Katahdin) and analyzed for PAH and TRPH. The parameters were selected based on the GCTL exceedences of the mobile laboratory. Monitoring well MW-06 was selected to be resampled since it was in the area the mobile laboratory results depicted as the location of greatest groundwater impacts. Monitoring well MW-04 was also resampled due to its positioned down-gradient of well MW-06.

Results of both the Katahdin and the ENCO sample analysis closely resemble each other verifying that the fixed-base data is both valid and accurate. With few exceptions, the same compounds were identified in the two samples as were identified earlier by ENCO, and reported concentrations were also similar. A summary of detected compounds in samples collected from the permanent monitoring wells is presented in Table 3-6 and illustrated on Figure 3-6. Validated laboratory reports are provided in Appendix H.

| <p align="center"><b>Table 3-6</b><br/> <b>Compounds Detected in Groundwater Samples by Fixed-Base Laboratory</b></p> <p align="center">Site Assessment Report, Site 1241<br/>           Naval Station Mayport<br/>           Mayport, Florida</p> |                           |                    |         |         |         |          |         |         |          |         |
|--|---------------------------|--------------------|---------|---------|---------|----------|---------|---------|----------|---------|
| Compound   | FDEP<br>GCTL <sup>1</sup> | Sample ID and Date |         |         |         |          |         |         |          |         |
|  |                           | MW-01              | MW-02   | MW-03   | MW-04   |          | MW-05D  | MW-06   |          | MWX1    |
|  |                           | 10/8/03            | 10/8/03 | 10/8/03 | 10/9/03 | 11/24/03 | 10/9/03 | 10/9/03 | 11/24/03 | 10/8/03 |
| <b>PAHs (USEPA Method 8270 SIM) (µg/L)</b>   |                           |                    |         |         |         |          |         |         |          |         |
| Naphthalene  | 20                        | <0.10              | <0.10   | <0.10   | <0.10   | <0.10    | <0.10   | 1.2     | 0.85     | <0.10   |
| 2-Methylnaphthalene  | 20                        | <0.10              | <0.10   | <0.10   | <0.10   | <0.10    | <0.10   | 2.0     | 1.9      | <0.10   |
| 1-Methylnaphthalene  | 20                        | <0.10              | <0.10   | <0.10   | <0.10   | <0.10    | <0.10   | 0.41    | 0.49     | <0.10   |
| Acenaphthylene   | 210                       | <0.10              | <0.10   | <0.10   | <0.10   | <0.10    | <0.10   | 0.13    | <0.20    | <0.10   |
| Acenaphthene   | 20                        | <0.10              | <0.10   | <0.10   | 0.26    | 0.15 J   | <0.10   | 0.85    | 0.59     | <0.10   |
| Fluorene   | 280                       | <0.10              | <0.10   | <0.10   | <0.10   | <0.10    | <0.10   | 1.2     | 1.3      | <0.10   |
| Phenanthrene   | 210                       | <0.10              | <0.10   | <0.10   | <0.10   | <0.10    | <0.10   | 1.0     | 0.45     | <0.10   |
| Fluoranthene   | 280                       | <0.10              | <0.10   | 0.63    | <0.10   | <0.10    | <0.10   | <0.10   | <0.10    | <0.10   |
| Pyrene   | 210                       | <0.10              | <0.10   | 0.38    | <0.10   | <0.10    | <0.10   | <0.10   | <0.10    | <0.10   |
| <b>FL-PRO (mg/L)</b>   |                           |                    |         |         |         |          |         |         |          |         |
| TRPH   | 5                         | <0.20              | 0.33    | <0.20   | 0.35    | 0.75     | <0.20   | 3.9     | 1.9      | <0.20   |
| <b>Notes:</b><br><sup>1</sup> Chapter 62-770, FAC (April 30, 1999)<br>J = estimated value  |                           |                    |         |         |         |          |         |         |          |         |



| NO. | DATE | REVISIONS | BY | CHKD | APPD | REFERENCES |
|-----|------|-----------|----|------|------|------------|
|     |      |           |    |      |      |            |
|     |      |           |    |      |      |            |
|     |      |           |    |      |      |            |
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CHECKED BY DATE  
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SCALE AS NOTED



GROUNDWATER ANALYTICAL RESULTS OF PERMANENT MONITORING WELL SAMPLES  
SITE 1241 (STEAM PLANT)  
SITE ASSESSMENT REPORT  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

|              |            |
|--------------|------------|
| CONTRACT NO. | 5863       |
| APPROVED BY  | DATE       |
| APPROVED BY  | DATE       |
| DRAWING NO.  | FIGURE 3-6 |
| REV.         | 0          |

## 4.0 DISCUSSION

When three in-service fuel oil tanks were removed and replaced by new ones in late 2000, the Navy's contractor, EEG, reported 6 to 8 inches of free product in each of the concrete sumps at the crowns of the tanks before removal. EEG maintained that free product leaked from the sumps into the ground surrounding the tanks to a depth of 8.5 ft bls, which is at or slightly above the average depth to groundwater at the site. EEG's explanation was as follows:

During removal of the tanks, EEG noted recurrence of product sheen on the surface of the water in the excavation despite stockpiling of contaminated soil and skimming and/or vacuum removal of free product and product contact water entering the excavation. Product was reported to have reappeared until installation of the new tanks was completed and was observed mainly on the eastern side of the excavation. The area around the new tanks was backfilled with crushed stone, and the walls of the shored excavation were lined with filter fabric.

Based on this observance, a site assessment was initiated by the Navy. During this SA, soil contamination was not documented in the vadose zone. Field screening of soil samples with an OVA-FID indicated absence of excessively contaminated soils and laboratory analyses of select soil samples for targeted petroleum constituents indicated no concentrations exceeding regulatory criteria.

Groundwater contamination (naphthalene compounds and TRPH) was reported on shallow grab samples (upper 4 ft of water table) analyzed by the mobile laboratory during the preliminary phase of the SA. Highest concentrations (140 µg/L naphthalene, 14 mg/L TRPH) were identified in samples collected north of the in-service USTs where a heating oil UST was removed in 1997. The groundwater grab sample collected nearest the eastern half of the in-service UST enclosure, where EEG observed free product during tank replacement, only had one reported exceedence, TRPH, at a concentration of 13 mg/L. Based on these results, groundwater monitoring wells were installed to verify the extent and levels of contamination. No exceedences were reported on groundwater samples collected from permanent monitoring wells installed in and around the current and former UST enclosures.

## 5.0 SUMMARY

A SA was performed at Site 1241 (Steam Plant), NAVSTA Mayport, in which soil samples were field screened with an OVA-FID for organic vapor content, and soil and groundwater samples were analyzed by mobile and fixed-base laboratories for waste oil and diesel constituents. The investigation was centered on an area where a 10,000-gallon heating oil UST was formerly located and on an area to the south of the UST where three 30,000-gallon fuel oil USTs are currently in service for operation of steam-generating boilers. The heating oil UST was excavated and removed in 1997, and the three in-service USTs were installed in 2000 as replacements for three 35,000-gallon USTs, which were excavated and removed from the same cavity immediately prior to replacement.

Prior to soil and groundwater assessment activities, three temporary piezometers were installed at the site. Based on relative groundwater elevations in the three piezometers and one existing monitoring well on site, it was determined that groundwater flow direction beneath the site was to the northeast toward the St. Johns River, but is heavily influenced by tidal fluctuations.

Thirteen soil borings were advanced by DPT in and around the areas of concern during the preliminary phase of the assessment for evaluation of soil and groundwater quality, and six permanent monitoring wells were installed and sampled during a follow-up phase. The water table was encountered at approximately 9 to 10 ft bls. Soil samples were collected at 2-ft vertical intervals above the water table at the 13 boring locations and field screened for organic vapor content with an OVA-FID. No "excessively contaminated soil" per Chapter 62-770, FAC, was identified.

Twelve soil samples (one from each boring except one) were analyzed by the mobile laboratory. None of the petroleum constituents targeted were reported at concentrations equal to or exceeding regulatory criteria.

Concentrations exceeding GCTLs were reported in 4 of 12 groundwater grab samples analyzed by the mobile laboratory during the preliminary DPT assessment. The following four targeted compounds were reported at elevated values: naphthalene and 2-methylnaphthalene (three exceedences each) and 1-methylnaphthalene and TRPH (two exceedences each). The highest concentrations of all four of these compounds were reported in sample SB-05, collected at the location of the former heating oil UST. No exceedences were reported by the fixed-base laboratory in groundwater samples collected from seven permanent monitoring wells, six of which (five shallow, one deep) were installed during Phase II of the assessment. Seven naphthalene compounds and TRPH were identified at concentrations equal to or exceeding laboratory detection limits in the samples collected from the monitoring well installed approximately at the same location as SB-05 (MW-06). There was some agreement between mobile and

fixed-base laboratory results in that the number and magnitude of detections were higher in samples collected at the former heating oil UST location (SB-05/MW-06) than elsewhere on site. However, since reported concentrations were significantly lower in samples collected from the permanent wells (fixed-base laboratory analyses) than in grab samples collected by DPT (mobile laboratory), a second set of samples was collected from the source area well (MW-06) and downgradient well (MW-04) for verification purposes. Concentrations reported during this second sampling were comparable to those of the first event (i.e., of low magnitude slightly exceeding laboratory detection limits but below GCTLs).

## 6.0 RECOMMENDATIONS

Due to the lack of impact to soils and groundwater above FDEP criteria, TtNUS recommends No Further Action for Site 1241.

## REFERENCES

Driscoll, Fletcher G., 1986. "Groundwater and Wells", St. Paul, Minnesota.

EEG (Ellis Environmental Group), 2001. Tank Closure Assessment Report. March.

EEG, 1997. Tank Closure Report. August.

FDEP (Florida Department of Environmental Protection), Standard Operating Procedure DEP-001/92.

FDEP, 1999. Chapter 62-770, FAC, Petroleum Contamination Cleanup Criteria

FDEP, 1999. Chapter 62-777, FAC, Contaminant Cleanup Target Levels.

Spechler, R.M., 1994. "*Saltwater Intrusion and Quality of Water in the Floridan Aquifer System, Northeastern Florida*": U.S. Geological Survey Water-Resources Investigations Report 92-4174.

TtNUS (Tetra Tech NUS, Inc.), 2001 Site Assessment Report for Building 351. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. January.

USACE (United States Army Corps of Engineers), 1992. Contamination Assessment Report, Site 1330, Naval Station Mayport, Mayport, Florida.

USDA (United States Department of Agriculture Soil Conservation Services), 1978. Soil Survey of City of Jacksonville Duval, County Florida.

USEPA (United States Environmental Protection Agency), 1997. Standard Operating Procedures.

USGS (United States Geologic Survey), 1992. USGS Mayport, Florida Quadrangle 7.5 Minute Series, Topographic Quadrangle Maps of Florida: scale 1:24,000.

**APPENDIX A**  
**SAR SUMMARY SHEET**

## CONTAMINATION ASSESSMENT REPORT SUMMARY SHEET

Facility Name: Site 1241 (Steam Plant), Naval Station Mayport Reimbursement Site:

Location: Mayport, Florida State Contract Site:

EDI #: \_\_\_\_\_ FAC I.D.# \_\_\_\_\_ Other: Non-Prog.

Date Reviewed: \_\_\_\_\_ Local Government: \_\_\_\_\_

(1) Source of Spill: 3 USTs (Diesel/Waste Oil mixture) Date of Spill: Unknown

| (2) Type of Product:                      | Gasoline Group | Gallons Lost | Kerosene Group                                | Gallons Lost   |
|---|----------------|--------------|---|----------------|
| <input type="checkbox"/> Leaded           | _____          | _____        | <input type="checkbox"/> Kerosene             | _____          |
| <input type="checkbox"/> Unleaded Regular | _____          | _____        | <input checked="" type="checkbox"/> Diesel    | <u>unknown</u> |
| <input type="checkbox"/> Unleaded Premium | _____          | _____        | <input type="checkbox"/> JP-4 Jet Fuel        | _____          |
| <input type="checkbox"/> Gasohol          | _____          | _____        | <input type="checkbox"/> Heating Fuel         | _____          |
| <input type="checkbox"/> Undetermined     | _____          | _____        | <input checked="" type="checkbox"/> Waste Oil | <u>unknown</u> |

(3) Description of IRA: Soil, free product, product contact water from tank excavation removed.  Free product/product contact water Removal: 58,750 (gals)  
 Soil Removal: 863 yd<sup>3</sup> (cubic yds)  
 Soil Incineration: \_\_\_\_\_ (cubic yds)

(4) Free Product still present (yes/no) No Maximum apparent product thickness: N/A (feet)

(5) Maximum Groundwater contamination levels (ppb): Total VOA: Non-detect benzene: <1 EDB: < 0.020  
 lead: <10 MTBE: <1 other: TRPH/PAHs(<GCTLs)

(6) Brief lithologic description: Medium to fine grained sand w/ abundant shell in places and some disseminated clay.

(7) Areal and vertical extent of soils contamination defined (yes/no) Yes

Highest current soil concentration (OVA): 9 ppm or (EPA method 5030/8020: \_\_\_\_\_ ppb)

(8) Lower aquifer contaminated? (yes/no) No Depth of vertical contamination: N/A

(9) Date of last complete round of groundwater sampling: 10/9/03 Date of last soil sampling: 8/14/03

(10) QAPP approved? (yes/no) Date: 8/24/98

(11) Direction (e.g. NNW) of surficial groundwater flow: NW to ESE (tidally influenced) (Fig. 3-1 on page \_\_\_\_\_)

(12) Average depth to groundwater: 9.25 (ft)

(13) Observed range of seasonal groundwater fluctuations: @ 1 (ft) (Based on water level data at nearby sites)

(14) Estimated rate of groundwater flow: 0.0091 (ft/day)

(15) Hydraulic gradient across site: 0.00063 (ft/ft)

| (16) Aquifer characteristics: | Values      | Units             | Method                          |
|-------------------------------|-------------|-------------------|---------------------------------|
| Hydraulic conductivity        | <u>4.34</u> | <u>ft/day</u>     | <u>Kasenow &amp; Pare, 1995</u> |
| Storage coefficient           | <u>-</u>    | <u>ft/ft</u>      | <u>-</u>                        |
| Aquifer thickness             | <u>40</u>   | <u>ft</u>         | <u>Literature</u>               |
| Effective soil porosity       | <u>30</u>   | <u>%</u>          | <u>Literature</u>               |
| Transmissivity                | <u>10</u>   | <u>gal/day/ft</u> | <u>Specific Capacity Tests</u>  |

(17) Other remarks: None

**APPENDIX B**

**TANK CLOSURE REPORT (EEG, 1997)  
TANK CLOSURE ASSESSMENT REPORT (EEG, 2001)**

**CLOSURE ASSESSMENT REPORT**  
**UNDERGROUND STORAGE TANK**  
**BUILDING 1241**

**NAVAL STATION MAYPORT**  
**MAYPORT, FLORIDA**

**Unit Identification Code: N68931**

**Prepared by:**

**Navy Public Works Center  
Environmental Department  
310 John Tower Road  
Pensacola, Florida, 32508**

**Prepared for:**

**Navy Public Works Center  
Code 300, Environmental Department  
Jacksonville, Florida 32212-0030**

**Mr Jerome Jackson  
Environmental Engineering Technician**

**December 1997**

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Naval Station Mayport  
Mayport, Florida

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| 2.0     | Operator . . . . .                | 1        |
| 3.0     | Site Location. . . . .            | 1        |
| 4.0     | Date of Closure. . . . .          | 1        |
| 5.0     | Project Description. . . . .      | 1        |
| 6.0     | Tank Contents. . . . .            | 1        |
| 7.0     | Tank Condition. . . . .           | 2        |
| 8.0     | Excavation Area. . . . .          | 2        |
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| 10.0    | Groundwater Analysis . . . . .    | 2        |
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FIGURES

- Figure 1: Regional Map
- Figure 2: Vicinity Map
- Figure 3: Site Map

ATTACHMENTS

- Attachment A: Photographs
- Attachment B: Disposal Documents - Tanks, Rinsate
- Attachment C: Storage Tank Registration Form
- Attachment D: Application for Closure of Pollutant Storage Tank System
- Attachment E: Underground Storage Tank Installation and Removal Form
- Attachment F: Closure Assessment Form, Soil & Groundwater Analyses
- Attachment G: Decontamination Certification

## GLOSSARY

|      |  |
|------|--|
| AST  | Aboveground Storage Tank   |
| DRMO | US Navy, Defense Reutilization and Marketing Office, Jacksonville, Florida |
| EPA  | Environmental Protection Agency  |
| FAC  | Florida Administrative Code  |
| FDEP | Florida Department of Environmental Protection                             |
| OVA  | Organic Vapor Analyzer   |
| PWC  | US Navy, Public Works Center, Pensacola, Florida                           |
| UST  | Underground Storage Tank   |

CLOSURE ASSESSMENT REPORT  
UNDERGROUND STORAGE TANK  
BUILDING 1241

**1.0 Facility**

Building 1241, Naval Station Mayport  
Mayport, Duval County, Florida

**2.0 Operator**

Commanding Officer, Public Works Center  
Code 300, Environmental Department  
Jacksonville, Florida 32212-0030

**3.0 Site Location**

The Naval Station Mayport is located along the Atlantic Ocean near the mouth of the St John's River north of Mayport, Florida (Figures 1 and 2).

**4.0 Date of Closure**

18 August 1997

**5.0 Project Description**

The Navy Public Works Center (PWC), Pensacola, Florida was tasked by the Navy Public Works Center, Jacksonville, Florida to close a 10,000 gallon underground storage tank (UST) system located on the west side of Building 1241, Naval Station Mayport (Figure 3). The UST was removed, cleaned and rendered unuseable by PWC. Photographs of the removal are provided as Attachment A. The UST was properly disposed by the US Navy, Defense Reutilization and Marketing Office (DRMO), Jacksonville, Florida (Attachment B).

The Storage Tank Registration Form, Application for Closure of Pollutant Storage Tank System, Underground Storage Tank Installation and Removal Form, Closure Assessment Form, and Certificate of Decontamination are provided in Attachments C, D, E, F, and G respectively.

**6.0 Tank Contents**

The UST was used to store diesel for on-site heating. The contents were emptied prior to commencement of work.

The rinsate from the UST cleaning operations was drummed by PWC and properly disposed by the DRMO (Attachment B).

## **7.0 Tank Condition**

The UST was cylindrically shaped and constructed of steel. The UST was in good condition at the time of removal.

## **8.0 Excavation Area**

The excavation was made approximately twelve (12) feet wide, thirty (30) feet long and eleven (11) feet deep. The excavation was filled with clean fill, compacted to grade, and grassed.

## **9.0 Soil Screening**

Four (4) soil borings were installed around the UST using a manually operated, hollow stem auger. The soil samples were collected and screened for organic vapor concentrations using the headspace screening technique. The soil samples were extracted at each corner of the excavation. The soil boring locations and screening results are provided in Attachment F.

The soil screening was conducted in accordance with the headspace screening criteria in Chapter 62-770 FAC and PWC's Comprehensive Quality Assurance Plan using an organic vapor analyzer (OVA). The OVA was manufactured by Thermo Environmental Instruments, Inc (Model 680 HVM) and equipped with a flame ionization detector (FID).

## **10.0 Groundwater Analysis**

A temporary groundwater monitoring well was installed on 4 November 1997 by GFA International, Inc, (GFA) Sarasota, Florida. The well was constructed with a 2" diameter by 13 foot long, Schedule 40 polyvinyl chloride (PVC) riser. The riser was equipped with a ten foot long by 0.010 inch slotted screen. The well was constructed with a coarse silica sand filter and a bentonite seal. The top of the well was encased with concrete and equipped with a lock and a steel cover. The well location, well construction diagram, and groundwater laboratory analyses are provided in Attachment F.

The well was sampled by PWC on 4 November 1997. The samples were transported to the PWC Laboratory in Pensacola, Florida and analyzed for volatile content in accordance with Environmental Protection Agency (EPA) Method 8260 and for poly aromatic hydrocarbons (PAH's) in accordance with EPA Method 8270.

## **11.0 Findings and Conclusions**

There was no petroleum contamination detected above the state target levels for storage tank closures.

## **12.0 Recommendations**

This site is recommended for No Further Action.

**13.0 Closure Assessment**

Performed by the US Navy, Public Works Center (PWC) Pensacola, Florida.

**14.0 Project Manager**

Paul R. Semmes, P.E.

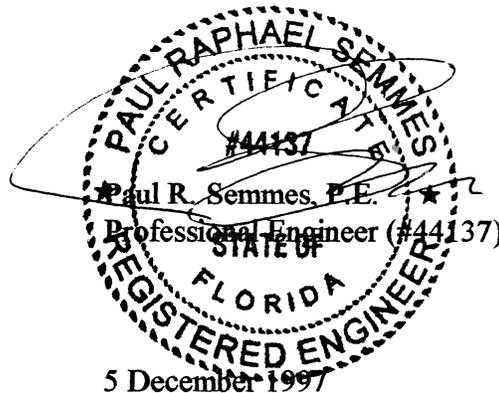
**15.0 Project Number**

1406001

**16.0 Report Date**

5 December 1997

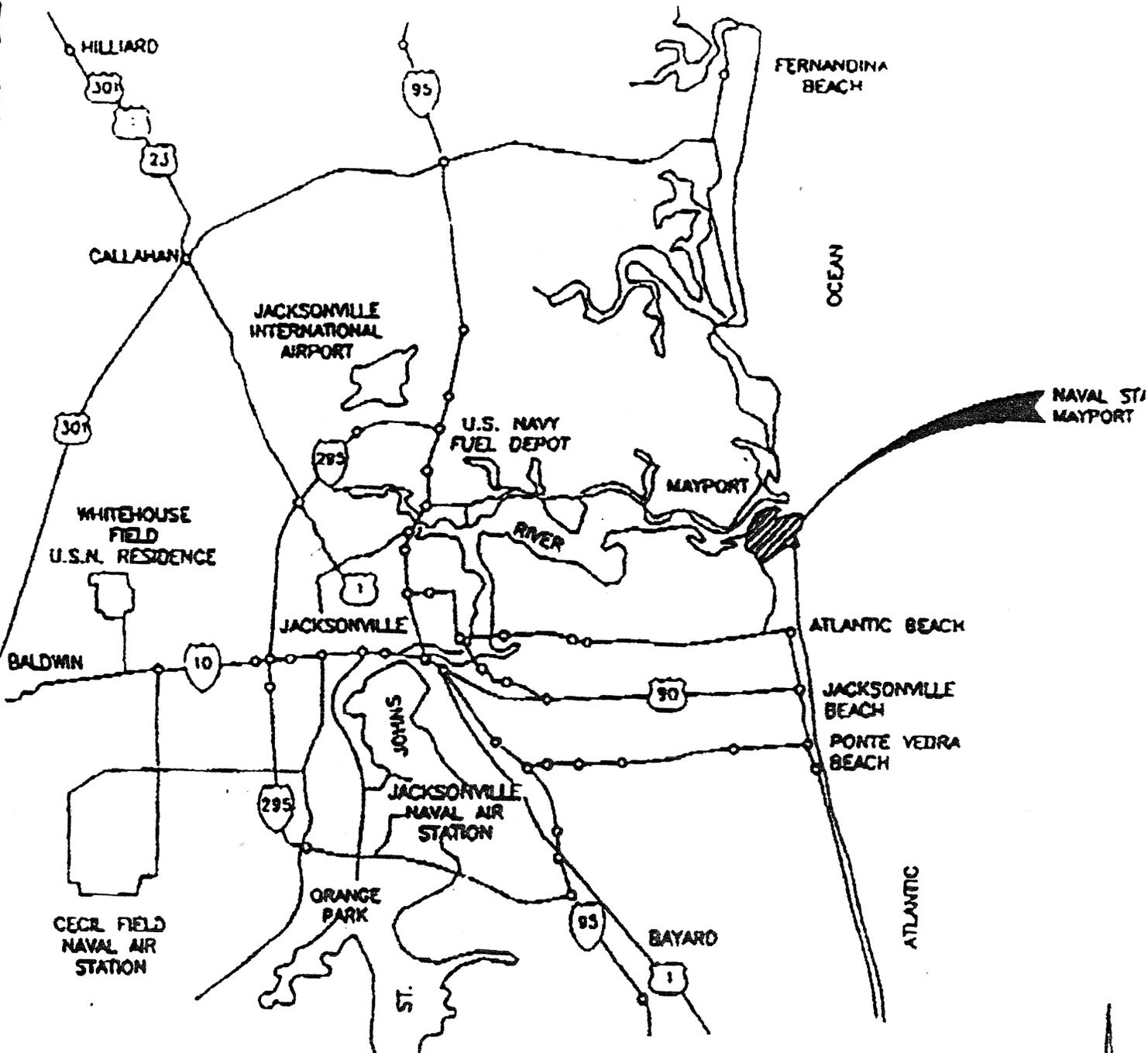
The engineering evaluations and professional opinions rendered in this Closure Assessment Report that describes the work associated with the storage tank removal at the Naval Station Mayport, Mayport, Florida were conducted or developed in accordance with the commonly accepted procedures consistent with applicable standards of practice. If conditions are determined to exist differently than those described, the undersigned professional engineer should be notified to evaluate the effects of any additional information on the design described in this report.



Paul R. Semmes, P.E.  
Professional Engineer (#44137)  
5 December 1997

**FIGURES**

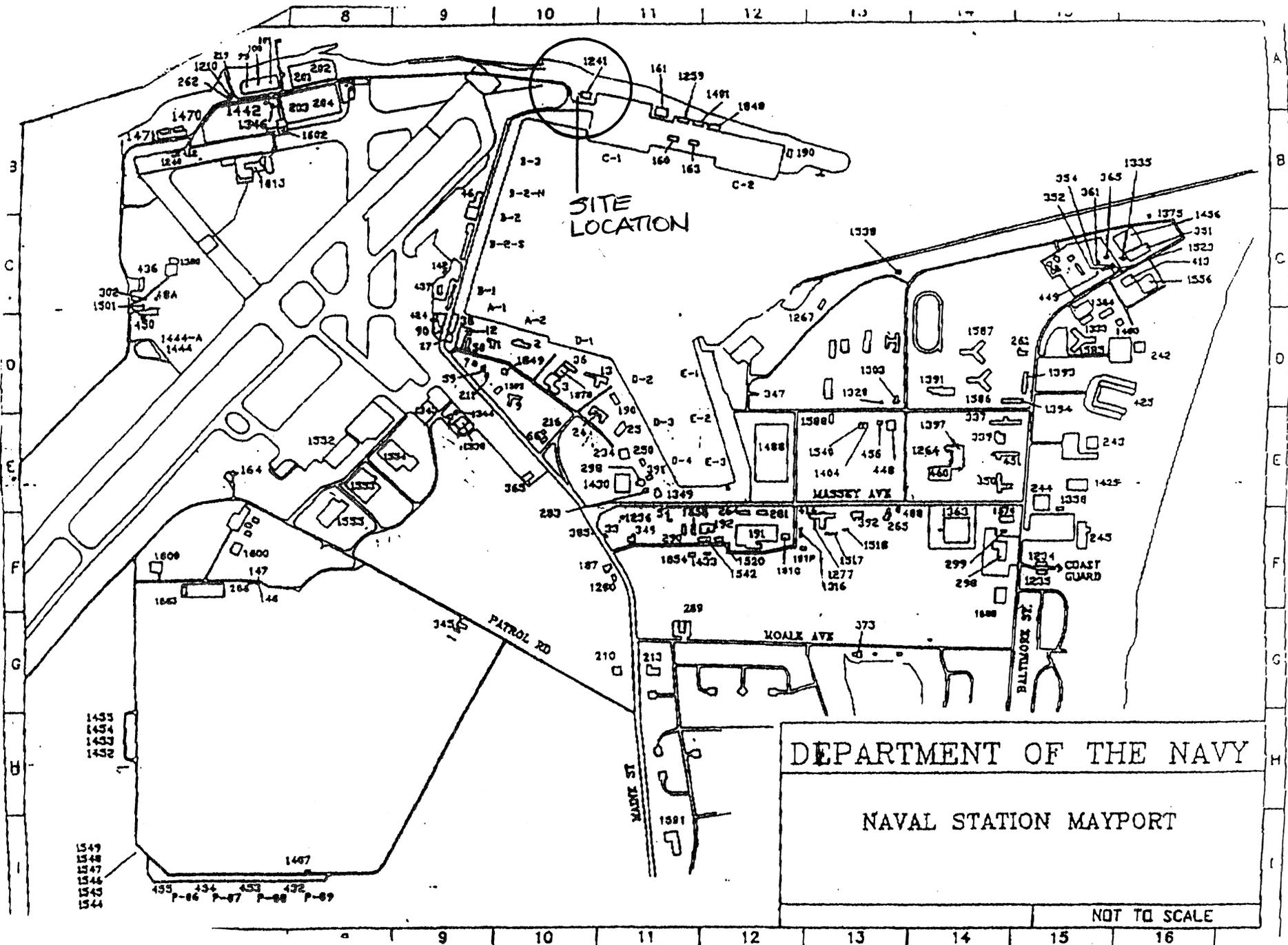
**FIGURE 1**  
**Regional Map**



NAVAL ST/  
MAYPORT

22

**FIGURE 2**  
**Vicinity Map**



**FIGURE 3**  
**Site Map**

BLDG  
1241

PUMP BOX

8'

26'

U  
S  
T

ASPHALT

DRIVEWAY

LEGEND



BUILDING



CONCRETE



ASPHALT

BUILDING 1241

NOT TO SCALE



BUILDING 1241  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

FIGURE 3-SITE MAP

**ATTACHMENTS**

**ATTACHMENT A**  
**Photographs**



| STOCK NUMBER             |  |  |  |              |  |                        |  |                       |  | DOCUMENT NUMBER |  |                            |  |              |  |               |  |          |  | QUANTITY |  | REQUISITION |  | DATE    |  | SERIAL |  | SUFFIX |  | SUPPLEMENTARY |  | FUND  |  | DISTR. |  | PROJ. |  | PRIO. |  | REQ. D.     |  | ADVISE  |  | RI  |  | UNIT PRICE |  |     |  |
|--------------------------|--|--|--|--------------|--|------------------------|--|-----------------------|--|-----------------|--|----------------------------|--|--------------|--|---------------|--|----------|--|----------|--|-------------|--|---------|--|--------|--|--------|--|---------------|--|-------|--|--------|--|-------|--|-------|--|-------------|--|---------|--|-----|--|------------|--|-----|--|
| FSC                      |  |  |  |              |  |                        |  |                       |  | NIN             |  |                            |  |              |  |               |  |          |  | ACC      |  | SERV        |  | DATE    |  | SERIAL |  | SUFFIX |  | ADDRESS       |  | CIGUA |  | BUTION |  | ECT   |  | ORITY |  | DEL DATE    |  | ADVICE  |  | RI  |  | DOLLARS    |  | CTS |  |
| 9999                     |  |  |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  | 09650    |  | N68951      |  | 7233    |  | 600B   |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| lic Works Center         |  |  |  |              |  |                        |  |                       |  | SHIP TO         |  |                            |  |              |  |               |  |          |  | SYB314   |  | MARK FOR    |  | PROJECT |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  | TOTAL PRICE |  | DOLLARS |  | CTS |  |            |  |     |  |
| ille                     |  |  |  |              |  |                        |  |                       |  | DRMO Mayport    |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| ille, FL                 |  |  |  |              |  |                        |  |                       |  | Mayport, FL     |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| DN                       |  | TYPE OF CARGO                                    |  | UNIT PACK    |  | UNIT WEIGHT            |  | UNIT CUBE             |  | U F C           |  | N M F C                    |  | FREIGHT RATE |  | DOCUMENT DATE |  | MAT COND |  | QUANTITY |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | G  |  | H            |  | I                      |  | J                     |  | K               |  | L                          |  | M            |  | N             |  | O        |  | P        |  | Q           |  | R       |  | S      |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| EM ORIGINALLY REQUESTED) |  | FREIGHT CLASSIFICATION NOMENCLATURE              |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | U SCRAP METAL (7 TANKS) RECEIPT COPY             |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | ITEM NOMENCLATURE                                |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | X  |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| IND DATE                 |  | TYPE OF CONTAINER(S)                             |  | TOTAL WEIGHT |  | RECEIVED BY AND DATE   |  | INSPECTED BY AND DATE |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | 2  |  | 3            |  | 7                      |  | 8                     |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| D DATE                   |  | NO OF CONTAINERS                                 |  | TOTAL CUBE   |  | WAREHOUSED BY AND DATE |  | WAREHOUSE LOCATION    |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | 5  |  | 6            |  | 9                      |  | 10                    |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| P METAL                  |  | ( REMOVED BY PWC PENSACOLA))                     |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| ing from Bldg. 1241A     |  |  |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| ing from Bldg. G1340     |  |  |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| ADDRESS                  |  | cc   |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | DATE SHIPPED                                     |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | DD   |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | EE   |  |              |  |                        |  |                       |  |                 |  |                            |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
| V CHARGEABLE TO          |  | 12   |  |              |  |                        |  |                       |  |                 |  | FF                         |  |              |  |               |  |          |  |          |  | GG          |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | 14   |  |              |  |                        |  |                       |  |                 |  | 15                         |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |
|                          |  | BLADING. AWB. OR RECEIVER'S SIGNATURE (AND DATE) |  |              |  |                        |  |                       |  |                 |  | RECEIVER'S DOCUMENT NUMBER |  |              |  |               |  |          |  |          |  |             |  |         |  |        |  |        |  |               |  |       |  |        |  |       |  |       |  |             |  |         |  |     |  |            |  |     |  |

PWC WASTE TRACKING FORM

JAX MYPT CECIL  
772-5979 278-6468 772-5979

M8029-019

|  |  |                                     |  |                                   |  |
|--|--|-------------------------------------|--|-----------------------------------|--|
| TYPE SERVICE 87  |  | NON PROFILED WASTE INFORMATION      |  |                                   |  |
| CONTAINER SIZE 55                                      |  | PSN NON-Regulated liquid (DIRT OIL) |  |                                   |  |
| CONTAINER TYPE DM                                      |  | CLASS - UNNA - PG -                 |  | SN                                |  |
| LOCATION 1602 M-1-R-B                                  |  | CONSTITUENT DIRT-OIL                |  | KVA                               |  |
|  |  | NOS -                               |  | SIZE                              |  |
| SITE NO. MP035   |  | WASTE CODES -                       |  | MANUF.                            |  |
| BUILDING NO.   |  | CLIN 9902 JV                        |  | ERG -                             |  |
| DISPOSITION  |  | CONTRACT NO. 0014                   |  | BQ -                              |  |
| CUSTODY DATE 1-29-98                                   |  | PROCESS CODE                        |  | SAMPLE NO. -                      |  |
| WPN M109   |  | SOURCE CODE                         |  | PHYSICAL STATE Liquid             |  |
| QTY 1  |  | FORM CODE                           |  | COLOR MIX                         |  |
| LBS 670  |  | ORIGIN CODE                         |  | PH ACID? BASE?                    |  |
| UNIT G   |  | FSCNIN 9999                         |  |                                   |  |
| ASD 1-29-98 OSD  |  | CHARACTERIZATION METHOD             |  | ANALYTICAL MSDS NON WASTE UNKNOWN |  |
| SSD 1-29-98  |  | TS 89 MANIFEST # <sup>UPN</sup>     |  | LINE # 11 MANIFEST DATE           |  |
| LINK TO  |  | TP #                                |  |                                   |  |
| EDIT OR UPDATE   |  | PREVIOUS UNKNOWN? REASON            |  | FIELDS CHANGED?                   |  |
| REMARKS<br>As per genome Jackson Job order no. 5221202 |  |                                     |  |                                   |  |
| GEN. SIGNATURE   |  |                                     |  |                                   |  |
| RECEIVED BY <i>Winston</i> ERNEST HAROLD               |  | DOCUMENTED BY <i>Winston</i>        |  | CHECKED BY                        |  |
| INPUT BY   |  | VERIFIED BY                         |  |                                   |  |

PWC WASTE TRACKING FORM

JAX MYPT CECIL  
 772-5979 278-6468 772-5979

M8029-020

|   |  |                                     |  |                                   |  |
|---|--|-------------------------------------|--|-----------------------------------|--|
| TYPE SERVICE 87                                 |  | NON PROFILED WASTE INFORMATION      |  |                                   |  |
| CONTAINER SIZE 55                               |  | PSN NON-Regulated liquid (DIRT OIL) |  |                                   |  |
| CONTAINER TYPE DM                               |  | CLASS - UNVNA - PG -                |  | SN                                |  |
| LOCATION 1602 M.I. - R.B.                       |  | CONSTITUENT DIRT OIL                |  | KVA                               |  |
| SITE NO. MP035                                  |  | NOS -                               |  | SIZE                              |  |
| BUILDING NO.                                    |  | WASTE CODES -                       |  | MANUF.                            |  |
| DISPOSITION                                     |  | CLIN 9902 JV ERG -                  |  | PPM                               |  |
| CUSTODY DATE 1-29-98                            |  | CONTRACT NO. 0014 RQ -              |  |                                   |  |
| WPN M109  |  | PROCESS CODE                        |  | SAMPLE NO. -                      |  |
| QTY 1   |  | SOURCE CODE                         |  | PHYSICAL STATE Liquid             |  |
| LBS 608   |  | FORM CODE                           |  | COLOR Mix                         |  |
| UNIT G  |  | ORIGIN CODE                         |  | PH ACID? BASE?                    |  |
| ASD 1-29-98 OSD                                 |  | FSC/IN 9999                         |  |                                   |  |
| SSD 1-29-98                                     |  | CHARACTERIZATION METHOD WPN         |  | ANALYTICAL MSDS NON WASTE UNKNOWN |  |
| LINK TO   |  | TS 89 MANIFEST #                    |  | LINE # 11 MANIFEST DATE           |  |
| EDIT OR UPDATE                                  |  | PREVIOUS UNKNOWN? REASON            |  | FIELDS CHANGED?                   |  |
| REMARKS<br>As per Jerome Jackson JOB No 5221202 |  |                                     |  |                                   |  |
| GEN. SIGNATURE                                  |  |                                     |  |                                   |  |
| RECEIVED BY <i>Winston</i> / ERNEST Harold      |  | DOCUMENTED BY <i>Winston</i>        |  | CHECKED BY                        |  |
| INPUT BY  |  | VERIFIED BY                         |  |                                   |  |

**PWC WASTE TRACKING FORM**

JAX MYPT CECIL  
772-5979 270-6468 772-5979

M8029-021

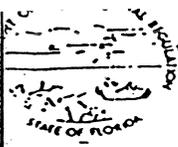
|   |  |   |  |                              |  |
|---|--|---|--|------------------------------|--|
| TYPE SERVICE <u>87</u>                              |  | NON PROFILED WASTE INFORMATION                            |  |                              |  |
| CONTAINER SIZE <u>35</u>                            |  | PSN <u>NON-Regulated Liquid (DIRT OIL)</u>                |  |                              |  |
| CONTAINER TYPE <u>DM</u>                            |  | CLASS - <u>UNNA</u> - PG -                                |  | SN                           |  |
| LOCATION <u>1602 M-1-RB</u>                         |  | CONSTITUENT <u>DIRT-OIL</u>                               |  | KVA                          |  |
|   |  | NOS -   |  | SIZE                         |  |
| SITE NO. <u>4</u>                                   |  | WASTE CODES -   |  | MANUF.                       |  |
| BUILDING NO.  |  | CLIN <u>9902 JV</u> ERG -                                 |  | PPM                          |  |
| DISPOSITION   |  | CONTRACT NO. <u>0014</u> RQ -                             |  |                              |  |
| CUSTODY DATE <u>1-29-98</u>                         |  | PROCESS CODE  |  | SAMPLE NO. -                 |  |
| WPN <u>M109</u>                                     |  | SOURCE CODE   |  | PHYSICAL STATE <u>Liquid</u> |  |
| QTY <u>1</u>  |  | FORM CODE   |  | COLOR <u>Mix</u>             |  |
| LBS <u>518</u>                                      |  | ORIGIN CODE   |  | PH ACID? BASE?               |  |
| UNIT <u>G</u>                                       |  | FSC/NIN <u>9009</u>                                       |  |                              |  |
| ASD <u>1-29-98</u> OSD                              |  | CHARACTERIZATION METHOD ANALYTICAL MSDS NON WASTE UNKNOWN |  |                              |  |
| SSD <u>1-29-98</u>                                  |  | TS 89 <u>WPN</u> MANIFEST #                               |  | LINE # 11 MANIFEST DATE      |  |
| LINK TO   |  | TF #  |  |                              |  |
| EDIT OR UPDATE                                      |  | PREVIOUS UNKNOWN? REASON                                  |  | FIELDS CHANGED?              |  |
| REMARKS <u>As per Jerome Jackson job No 5221202</u> |  |   |  |                              |  |
| GEN SIGNATURE                                       |  |   |  |                              |  |
| RECEIVED BY <u>Winston / ERNEST / Harold</u>        |  | DOCUMENTED BY <u>Winston</u>                              |  | CHECKED BY                   |  |
| INPUT BY  |  | VERIFIED BY   |  |                              |  |

PWC WASTE TRACKING FORM  
 JAX MYPT CECIL  
 772-5979 278-6463 772-5979

M8029-022

|                                      |                 |                                     |                       |               |           |
|--------------------------------------|-----------------|-------------------------------------|-----------------------|---------------|-----------|
| TYPE SERVICE                         |                 | NON PROFILED WASTE INFORMATION      |                       |               |           |
| CONTAINER SIZE                       | 87              | PSN NON-Regulated liquid (DIRT OIL) |                       |               |           |
| CONTAINER TYPE                       | SS              | CLASS -                             | UNNA -                | PG -          | S/N       |
| LOCATION                             | DM              | CONSTITUENT                         | DIRT-OIL              |               | KVA       |
| SITE NO.                             | 1602 M. & R. B. | NOS                                 | -                     |               | SIZE      |
| BUILDING NO.                         | MP035           | WASTE CODES                         | -                     |               | MANUF.    |
| DISPOSITION                          |                 | CLIN                                | 9902 JV               | ERG           | PPM       |
| CUSTODY DATE                         |                 | CONTRACT NO.                        | 0014                  | RQ            |           |
| WPN                                  | 1-29-98         | PROCESS CODE                        | SAMPLE NO. -          |               |           |
| QTY                                  | M109            | SOURCE CODE                         | PHYSICAL STATE Liquid |               |           |
| LBS                                  | 1               | FORM CODE                           | COLOR Mix             |               |           |
| UNIT                                 | 434             | ORIGIN CODE                         | PH                    | ACID?         | BASE?     |
| ASD                                  | G               | FSCNIN                              | 9999                  |               |           |
| SSD                                  | 1-29-98         | CHARACTERIZATION METHOD             | ANALYTICAL            | MSDS          | NON WASTE |
| LINK TO                              |                 | TS 89 MANIFEST #                    | LINE # 11             | MANIFEST DATE |           |
| EDIT OR UPDATE                       |                 | REASON                              | FIELDS CHANGED?       |               |           |
| REMARKS                              |                 |                                     |                       |               |           |
| As per Jerome Jackson job No 572/202 |                 |                                     |                       |               |           |
| GEN. SIGNATURE                       |                 |                                     |                       |               |           |
| RECEIVED BY                          |                 | DOCUMENTED BY                       |                       | CHECKED BY    |           |
| Wm. Ernest Harold                    |                 | Wm. Ston                            |                       |               |           |
| INPUT BY                             |                 | VERIFIED BY                         |                       |               |           |

**ATTACHMENT C**  
**Storage Tank Registration Form**



# Florida Department of Environmental Regulation

Twin Towers Office Bldg. • 2600 Blair Stone Road • Tallahassee, Florida 32399-2400

DER Form # 17-761.900(2)  
 Form Title Storage Tank Registration Form  
 Effective Date December 30, 1990  
 DER Application No. \_\_\_\_\_  
 (Filed in by DER)

## Storage Tank Registration Form

Please Print or Type - Review Instructions Before Completing Form

1. DER Facility ID Number: 16/8731736      2. Facility Type: Federal Government  
 3. New Registration     New Owner Data     Facility Revision     Tank(s) Revision   
 4. County and Code of tank(s) location: Duval / 16

5. Facility Name: Navy Public Works Center Jacksonville  
 Tank(s) Address: Naval Station Mayport  
 City/State/Zip: Jacksonville, FL. 32228  
 Contact Person: Jerome Jackson      Telephone: (904) 542-4553 Ext. 8315

6. Financial Responsibility Type: \_\_\_\_\_

7a. Tank(s) Owner: Navy Public Works Center Jacksonville  
 Owner Mailing Address: Navy Public Works Center Jacksonville  
 City/State/Zip: Jacksonville, Florida 32212-0030  
 Contact Person: Jerome Jackson      Telephone: (904) 542-4553 Ext. 8315

7b. New Owner Signature/Change Date: \_\_\_\_\_ / \_\_\_\_/\_\_\_\_/\_\_\_\_

8. Location (optional)    Latitude: \_\_\_\_° \_\_\_\_' \_\_\_\_"    Longitude: \_\_\_\_° \_\_\_\_' \_\_\_\_"    Section \_\_\_\_ Township \_\_\_\_ Range \_\_\_\_

Complete One Line For Each Tank At This Facility (Use Codes - See Instructions)  
 Complete 9 - 16 for tanks in use; 9 - 19 for tanks out of use

| 9      | 10   | 11 | 12    | 13 | 14 | 15 | 16 | 17 | 18 | 19      |
|--------|------|----|-------|----|----|----|----|----|----|---------|
| 1241A  | 5000 | L  | 03/70 | U  | CN | B  | DM | B  | 00 | 8/18/97 |
| G-1430 | 600  | G  | 10/80 | U  | C  | BI | I  | B  | 00 | 8/20/97 |
|        |      |    |       |    |    |    |    |    |    |         |
|        |      |    |       |    |    |    |    |    |    |         |

20. Navy Public Works Center, Pensacola      DPR# N/A  
Certified Contractor\*      Department of Professional Regulation License Number\*

\*For new tank installation or tank removal

I, the best of my knowledge and belief all information submitted on this form is true, accurate and complete.

Jim Schroeder, Environmental Dept Head  
Navy Public Works Center Jacksonville  
 Print name & title of owner or authorized person      Signature [Signature]      Date 3/13/98

- Northwest District: 180 Government Center, Pensacola, Florida 32501-5794, 904-436-8300
- Northwest District: 7825 Bernardino Ave, Suite B 200, Jacksonville, Florida 32207, 904-796-4200
- Central District: 3319 Marine Blvd, Suite 232, Orlando, Florida 32803-3707, 407-894-7555
- Southeast District: 4520 Oak Fair Blvd., Tampa, Florida 33610-7347, 813-423-5641
- South District: 2709 Bay St, Fort Myers, Florida 33901-2908, 813-332-4975
- Southeast District: 1800 S Congress Ave., Suite A, West Palm Beach, Florida 33408, 407-433-2450

**ATTACHMENT D**  
**Application for Closure of**  
**Pollutant Storage Tank System**

**APPLICATION FOR CLOSURE OF POLLUTANT STORAGE TANK SYSTEM**

**Provide the facility information requested below.**

FDEP Facility # 16/8731736 Facility Name U. S. Navy

Facility Location Building 1241, Naval Station Mayport

Property Owner Commanding Officer, Public Works Center (Code 300)

Property Owner Address Environmental Department, Jacksonville, Florida 32212-0030

Phone (904) 772-2124 x 8315

Method of Tank Closure Removal

**Pollutant Storage Systems Specialty Contractor (PSSSC) who will be on site supervising closure activities. Attach copy of PSSSC license.**

Individual Licensed as PSSSC N/A PSSSC # N/A

Firm U.S. Navy - Public Works Center (PWC)

Address 310 John Tower Road, Pensacola, FL 32508

**Indicate the firm (s) that will degas, remove, and transport the tank(s), and the method of degassification.**

Degassification Method Air Eduction (API 1604-4.2.5)

Firm Removing Tanks U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (850) 293-0635

Firm Transporting Tanks U. S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (888) 418-6026

Firm Receiving Tanks for Ultimate Disposal U.S. Navy - DRMO

Contact Mr Howard Fox Phone (904) 270-6127

**Indicate the laboratory that will conduct groundwater analysis.**

Contracted Laboratory U.S. Navy - PWC Phone (850) 452-3180

Contact Mr. Joe Moore FDEP QA/QC 920121G

**Indicate firm(s) transporting and disposing of contaminated soils.**

Firm Transporting Soils N/A

Contact \_\_\_\_\_ Phone \_\_\_\_\_

Firm Remediating/Disposing Soils N/A

Contact \_\_\_\_\_ Phone \_\_\_\_\_

Disposal/Remediation Method \_\_\_\_\_

**Indicate the firm(s) that will transport and ultimately dispose of residual product and sludge from the tanks.**

Firm Transporting Residual Product and Sludge Chem Met Services

Contact Mr Pete Hesse Phone (904) 278-5979

Firm Receiving/Disposal Residual Product and Sludge Chem Met Services

Contact Mr Pete Hesse Phone (904) 278-5979

**Indicate the firm and names of personnel that will conduct field sampling.**

Contracted Firm U.S. Navy - Public Works Center (PWC)

Contact Mr. Paul Semmes, P.E. Phone (904) 293-0635

Person (s) Sampling Mr. Paul Semmes, P.E.

Equipment used for soil screening (Specific Make and Model) Organic Vapor Analyzer

(OVA) Thermo Environmental (680 HVM) equipped w/Flame Ionization Detector (FID).

**ATTACHMENT E**  
**Underground Storage Tank**  
**Installation and Removal Form**



## Underground Storage Tank Installation and Removal Form For Certified Contractors

Pollutant Storage Systems Contractor as defined in Section 489.105, Florida Statutes (certified contractors as defined in Section 62-761.200, Florida Administrative Code) shall use this form to certify that the installation, replacement or removal of the storage tank system(s) located at the address listed below was performed in accordance with Department Reference Standards.

### General Facility Information

1. DEP Facility Identification No.: 16/8731736
2. Facility Name: US Navy Telephone: (904) 542-4553 x 8315
3. Street Address (physical location): Building 1241, Naval Station Mayport
4. Owner Name: CO, Public Works Center Telephone: (904) 542-4553 x 8315
5. Owner Address: Code 300, Environmental Department, Jacksonville, FL 32212
6. Number of Tanks: a. Installed at this time \_\_\_\_\_ b. Removed at this time One
7. Tank(s) Manufactured by: Unknown
8. Date Work Initiated: 8/18/97 9. Date Work Completed: 8/18/97

### Underground Pollutant Tank Installation Checklist

Please certify the completion of the following installation requirements by placing an (X) in the appropriate box.

1. The tanks and piping are corrosion resistant and approved for use by State and Federal Laws.
2. Excavation, backfill and compaction completed in accordance with NFPA (National Fire Protection Association) 30(96), API (American Petroleum Institute) 1615, PEI (Petroleum Equipment Institute) RP100-94 and the manufacturers' specifications.
3. Tanks and piping pretested and installed in accordance with NFPA 30(96), API 1615, PEI/RP100-94 and the manufacturers' specifications.
4. Steel tanks and piping are cathodically protected in accordance with NFPA 30(96), API 1632, UL (Underwriters Laboratory) 1746, STI (Steel Tank Institute) R892-89 and the manufacturers' specifications.
5. Tanks and piping tested for tightness after installation in accordance with NFPA 30(96) and PEI RP100-94.
6. Monitoring well(s) or other leak detection devices installed and tested in accordance with Section 62-761.640, Florida Administrative Code (F.A.C.)
7. Spill and overfill protection devices installed in accordance with Section 62-761.500, F.A.C.
8. Secondary containment installed for tanks and piping as applicable in accordance with Section 62-761.500, F.A.C.

Please Note: The numbers following the abbreviations (e.g. API 1615) are publication or specification numbers issued by these institutions.

### Underground Pollutant Tank Removal Checklist

1. Closure assessment performed in accordance with Section 62-761.800, F.A.C.
2. Underground tank removed and disposed of as specified in API 1604 in accordance with Section 62-761.800, F.A.C.

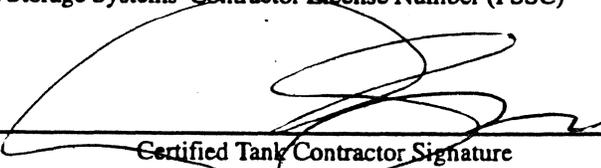
# Certification

I hereby certify and attest that I am familiar with the facility that is registered with the Florida Department of Environmental Protection; that to the best of my knowledge and belief, the tank installation, replacement or removal at this facility was conducted in accordance with Chapter 489 and Section 376.303, Florida Statutes and Chapter 62-761, Florida Administrative Code (and its adopted reference sources from publications and standards of the National Fire Protection Association (NFPA), the American Petroleum Institute (API), the National Association of Corrosion Engineers (NACE), American Society for Testing and Materials (ASTM); Petroleum Equipment Institute (PEI); Steel Tank Institute (STI); Underwriters Laboratory (UL); and the tank and integral piping manufacturers' specifications; and that the operations on the checklist were performed accordingly.

Navy Public Works Center, Pensacola, FL  
(Type or Print)

N/A  
PSSSC Number

Certified Pollutant Tank Contractor Name  
Pollutant Storage Systems Contractor License Number (PSSC)

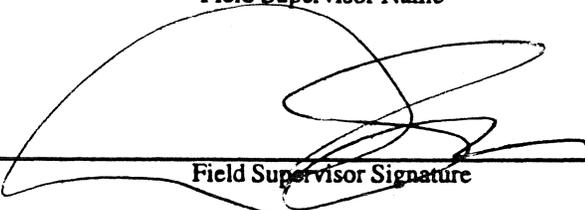
  
\_\_\_\_\_  
Certified Tank Contractor Signature

12/5/97  
Date

Paul R Semmes, PE  
Environmental Engineer

(Type or Print)  
Field Supervisor Name

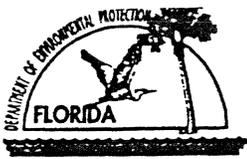
12/5/97  
Date

  
\_\_\_\_\_  
Field Supervisor Signature

12/5/97  
Date

The owner or operator of the facility must register the tanks with the Department upon completion of the installation. The installer must submit this form no more than 30 days after the completion of installation to the Department of Environmental Protection at the address printed at the top page one.

**ATTACHMENT F**  
**Closure Assessment Form,**  
**Soil & Groundwater Analyses**



## Closure Assessment Form

Owners of storage tank systems that are replacing, removing or closing in place storage tanks shall use this form to demonstrate that a storage system closure assessment was performed in accordance with Rule 62-761.800(3) or 62-762.800(3), Florida Administrative Code.

Please Print or Type  
Complete All Applicable Blanks

1. Date 12/5/97
2. DEP Facility ID Number: 16/8731736      3. County Duval
4. Facility Name: US Navy - Public Works Center
5. Facility Owner: Commanding Officer, Public Works Center
6. Facility Address: Building 1241
7. Mailing Address: Code 300, Environmental Department, Jacksonville, FL 32212
8. Telephone Number: (904) 542-4553 x 8315      9. Facility Operator: Jerome Jackson
10. Are the Storage Tank(s): (Circle one or both)    A. Aboveground      or       B. Underground
11. Type of Product(s) Stored: Diesel
12. Were the Tank(s):      (Circle one)    A. Replaced     B. Removed    C. Closed in Place    D. Upgraded (aboveground tanks only)
13. Number of Tanks closed: One      14. Age of Tanks: 27

### Facility Assessment Information

- | Yes                                 | No                                  | Not<br>Applicable                   |   |
|-------------------------------------|-------------------------------------|-------------------------------------|---|
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     | 1. Was a Discharge Reporting Form submitted to the Department?<br>If yes, When: _____ Where: _____  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     | 2. Is the depth to ground water less than 20 feet?  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 3. Are monitoring wells present around the storage system?<br>If yes, please specify <input type="checkbox"/> Vapor Monitoring <input checked="" type="checkbox"/> Water Monitoring   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 4. Is there free product present in the monitoring wells or within the excavation?  |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 5. Were the petroleum hydrocarbon vapor levels in the soil greater than 500 parts per million for gasoline?<br>Specify sample type: <input type="checkbox"/> Vapor Monitoring wells <input type="checkbox"/> Soil sample(s)                   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 6. Were the petroleum hydrocarbon vapor levels in the soils greater than 50 parts per million for diesel/kerosene?<br>Specify sample type: <input type="checkbox"/> Vapor Monitoring wells <input checked="" type="checkbox"/> Soil sample(s) |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 7. Were the analytical laboratory results of the ground water sample(s) greater than the allowable state target levels?<br>(See target levels on reverse side of this form and supply laboratory data sheet(s).                               |
| <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | 8. If a used oil storage system, did a visual inspection detect any discolored soil indicating a release?   |
| <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | 9. Are any potable wells located within 1/4 of a mile radius of the facility?   |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 10. Is there a surface water body within 1/4 mile radius of the site? If yes, indicate distance: <u>150 feet</u>  |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 11. A detailed drawing or sketch of the facility that includes the storage system location, monitoring wells, buildings, storm drains, sample locations, and dispenser locations must accompany this form.                                    |
| <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | 12. If a facility has a pollutant storage tank system that has both gasoline and kerosine/diesel stored on site, both EPA method 602 and EPA method 610 must be performed on the ground water samples.  |

BLDG  
1241

PUMP BOX

SB-1

SB-3

SB-2

SB-4

MW

U  
S  
T

ASPHALT

DRIVEWAY

FENCE

LEGEND

● SOIL BORING

⊙ MW MONITORING WELL

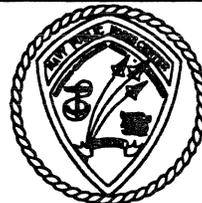
▨ BUILDING

⋯ CONCRETE

⋯ ASPHALT

BUILDING 1241

NOT TO SCALE



BUILDING 1241  
NAVAL STATION MAYPORT  
MAYPORT, FLORIDA

**Summary of OVA Readings**

**Closure Assessment Report  
Underground Storage Tank  
Building 1241  
Naval Station Mayport  
Mayport, Florida**

| Hand Auger<br>Sample No. | Depth<br>(Feet) | Unfiltered<br>(ppm) | Filtered<br>(ppm) | Total Hydrocarbon<br>Readings (ppm) |
|--------------------------|-----------------|---------------------|-------------------|-------------------------------------|
| SS-1                     | 11              | 4                   | <1                | 4                                   |
| SS-2                     | 11              | <1                  | <1                | 0                                   |
| SS-3                     | 11              | 12                  | <1                | 12                                  |
| SS-4                     | 11              | 11                  | <1                | 11                                  |

*Readings for unfiltered samples are total hydrocarbon readings including methane; readings for filtered samples are methane only.*

*Notes: ppm = parts per million.*

# Navy Public Works Center Environmental Laboratory

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NS MAYPORT  
Address: JAX, FL 32228  
Phone #: (904) 772-2114/8315  
Contact: Jerome Jackson

## Analytical Report

601/602 Volatiles by Method 8260

Lab Report Number: 74916  
Sample Date: 11/04/97  
Received Date: 11/07/97  
Sample Site: NS JAX  
Job Order No.: 104 6001

|                                  |                 |       |            |       |
|----------------------------------|-----------------|-------|------------|-------|
| LAB Sample ID#                   | 1- <b>74916</b> |       |            |       |
| Sample Name / Location           | B-1241          |       |            |       |
| Collector's Name                 | PRS             |       |            |       |
| Date & Time Collected            | 11/04/97 @ 1130 |       |            |       |
| Sample Type (composite or grab)  | Grab            |       |            |       |
| Analyst                          | M. Chambers     |       |            |       |
| Date of Extraction / Initials    | 11/07/97 MC     |       |            |       |
| Date of Analysis                 | 11/07/97        |       |            |       |
| Sample Matrix                    | GW              |       |            |       |
| Dilution                         | X 1             |       |            |       |
| Compound Name                    | 1- <b>74916</b> | units | Det. Limit | Flags |
| Benzene                          | BDL             | ug/L  | 1          |       |
| Bromodichloromethane             | BDL             | ug/L  | 1          |       |
| Bromoform                        | BDL             | ug/L  | 2          |       |
| Bromomethane                     | BDL             | ug/L  | 3          |       |
| Carbon Tetrachloride             | BDL             | ug/L  | 1          |       |
| Chlorobenzene                    | BDL             | ug/L  | 1          |       |
| Chloroethane                     | BDL             | ug/L  | 1          |       |
| 2-Chloroethylvinyl ether         | BDL             | ug/L  | 1          |       |
| Chloroform                       | BDL             | ug/L  | 1          |       |
| Chloromethane                    | BDL             | ug/L  | 1          |       |
| Dibromochloromethane             | BDL             | ug/L  | 1          |       |
| 1,2-Dichlorobenzene              | BDL             | ug/L  | 1          |       |
| 1,3-Dichlorobenzene              | BDL             | ug/L  | 1          |       |
| 1,4-Dichlorobenzene              | BDL             | ug/L  | 1          |       |
| Dichlorodifluoromethane          | BDL             | ug/L  | 1          |       |
| 1,1-Dichloroethane               | BDL             | ug/L  | 1          |       |
| 1,2-Dichloroethane               | BDL             | ug/L  | 1          |       |
| 1,1-Dichloroethene               | BDL             | ug/L  | 1          |       |
| trans-1,2-Dichloroethene         | BDL             | ug/L  | 1          |       |
| 1,2-Dichloropropane              | BDL             | ug/L  | 1          |       |
| cis-1,3-Dichloropropene          | BDL             | ug/L  | 1          |       |
| trans-1,3-Dichloropropene        | BDL             | ug/L  | 1          |       |
| Ethylbenzene                     | BDL             | ug/L  | 1          |       |
| Methylene Chloride               | BDL             | ug/L  | 1          |       |
| Methyl-tert-butyl ether (MTBE) * | BDL             | ug/L  | 1          |       |
| 1,1,2,2-Tetrachloroethane        | BDL             | ug/L  | 1          |       |
| Tetrachloroethene                | BDL             | ug/L  | 1          |       |
| Toluene                          | BDL             | ug/L  | 1          |       |
| 1,1,1-Trichloroethane            | BDL             | ug/L  | 1          |       |
| 1,1,2-Trichloroethane            | BDL             | ug/L  | 1          |       |
| Trichloroethene                  | BDL             | ug/L  | 1          |       |
| Trichlorofluoromethane           | BDL             | ug/L  | 1          |       |
| Vinyl Chloride                   | BDL             | ug/L  | 1          |       |
| Xylenes (Total)                  | BDL             | ug/L  | 1          |       |

### SURROGATE SPIKE RECOVERIES

|                       | Acceptance Limits | Percent Recovery |
|-----------------------|-------------------|------------------|
| 1,2-Dichloroethane-d4 | 75-133            | 119              |
| Toluene-d8            | 86-119            | 104              |
| Bromofluorobenzene    | 85-116            | 110              |

COMMENTS :

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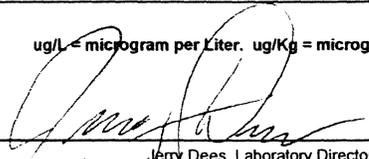
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BDL = Below Detection Limit. ug/L = microgram per Liter. ug/Kg = microgram per Kilogram. \* = FL HRS certification pending.

Approved by :

  
Jerry Dees, Laboratory Director

Date: 11/21/97

Report Generated

**Navy Public Works Center  
Environmental Laboratory**

Bldg. 3887, Code 440  
NAS Pensacola, FL 32508  
Phone (850) 452-3180/3642  
DSN 922-3180/3642  
FAX (850) 452-2799/2387

Client: NS MAYPORT  
Address: JAX, FL 32228  
Phone #: (904) 772-2114/8315  
Contact: Jerome Jackson

**Analytical Report**

**610 PAH's by Method 8270**

Lab Report Number: 74916  
Sample Date: 11/04/97  
Received Date: 11/07/97  
Sample Site: NS JAX  
Job Order No.: 104 6001

|                                 |                 |              |                   |              |
|---------------------------------|-----------------|--------------|-------------------|--------------|
| LAB Sample ID#                  | 1- <b>74916</b> |              |                   |              |
| Sample Name / Location          | B-1241          |              |                   |              |
| Collector's Name                | PRS             |              |                   |              |
| Date & Time Collected           | 11/04/97 @ 1130 |              |                   |              |
| Sample Type (composite or grab) | Grab            |              |                   |              |
| Analyst                         | J. Moore        |              |                   |              |
| Date of Extraction / Initials   | 11/07/97 JJ     |              |                   |              |
| Date of Analysis                | 11/14/97        |              |                   |              |
| Sample Matrix                   | GW              |              |                   |              |
| Dilution                        | X 1             |              |                   |              |
| <b>Compound Name</b>            | <b>1- 74916</b> | <b>units</b> | <b>Det. Limit</b> | <b>Flags</b> |
| Acenaphthene                    | 6               | ug/L         | 2                 |              |
| Acenaphthylene                  | BDL             | ug/L         | 2                 |              |
| Anthracene                      | BDL             | ug/L         | 2                 |              |
| Benzo(a)anthracene              | BDL             | ug/L         | 2                 |              |
| Benzo(a)pyrene                  | BDL             | ug/L         | 2                 |              |
| Benzo(b)fluoranthene            | BDL             | ug/L         | 2                 |              |
| Benzo(g,h,i)perylene            | BDL             | ug/L         | 2                 |              |
| Benzo(k)fluoranthene            | BDL             | ug/L         | 3                 |              |
| Chrysene                        | BDL             | ug/L         | 2                 |              |
| Dibenz(a,h)anthracene           | BDL             | ug/L         | 2                 |              |
| Fluoranthene                    | BDL             | ug/L         | 2                 |              |
| Fluorene                        | BDL             | ug/L         | 2                 |              |
| Indeno(1,2,3-cd)pyrene          | BDL             | ug/L         | 2                 |              |
| 1-Methylnaphthalene *           | BDL             | ug/L         | 2                 |              |
| 2-Methylnaphthalene             | BDL             | ug/L         | 3                 |              |
| Naphthalene                     | BDL             | ug/L         | 2                 |              |
| Phenanthrene                    | BDL             | ug/L         | 2                 |              |
| Pyrene                          | BDL             | ug/L         | 2                 |              |

**SURROGATE SPIKE RECOVERIES**

|                  | Acceptance Limits | Percent Recovery |
|------------------|-------------------|------------------|
| Nitrobenzene- d5 | 35-114            | 85               |
| 2-Fluorobiphenyl | 43-116            | 88               |
| Terphenyl -d14   | 33-141            | 79               |

COMMENTS :

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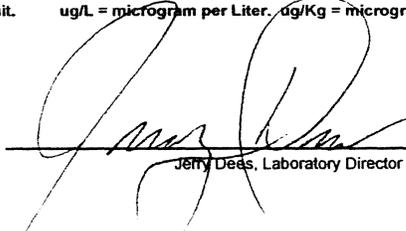
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BDL = Below Detection Limit. ug/L = microgram per Liter. ug/Kg = microgram per Kilogram. \* = FL HRS certification pending.

Approved by :



Jerry Dees, Laboratory Director

Date: 11/21/97

Report Generated

# HAZARDOUS WASTE CHAIN OF CUSTODY/REQUEST FOR ANALYSIS

NPWC Environmental Laboratory

Report Required?  Yes  No DEP?  Yes  No

Bldg. 3887, Code 920  
 NAS Pensacola, FL 32508  
 Ph#: (904) 452-4728/3642  
 DSN: 922-4728/3642  
 FAX: (904) 452-2799/2387

Requester: NS MAYO RT  
 Address: JAX, FL 32228  
 Phone #: (904) 772-2114 x 8315  
 Contact: GEROME JACKSON  
 Job Order #: 1046001

Lab ID Number: \_\_\_\_\_  
 Sample Date: 11/4/97  
 Received Date: \_\_\_\_\_  
 Sample S#s: NS JAX  
 Lab Due Date: \_\_\_\_\_

| Sample ID #                     | Lab              | #1- 074916 | #2- 74917     | #3- 74918 | #4-           | Notes: |               |   |               |      |                        |   |
|---------------------------------|------------------|------------|---------------|-----------|---------------|--------|---------------|---|---------------|------|------------------------|---|
| Sample Name                     | -----            | B.12 +1    | B.1430        | 06        |               |        |               |   |               |      |                        |   |
| or Location                     | -----            |            |               |           |               |        |               |   |               |      |                        |   |
| Sampled by                      | -----            | PRS        | PRS           | PRS       |               |        |               |   |               |      |                        |   |
| Collection                      | Date             | 11/4/97    | 11/4/97       | 11/4/97   |               |        |               |   |               |      |                        |   |
| Date/Time                       | Time             | 1130       | 1150          | 1155      |               |        |               |   |               |      |                        |   |
| Sample Matrix                   | -----            | GW         | GW            | GW        |               |        |               |   |               |      |                        |   |
| <b>GROUP PARAMETERS</b>         |                  |            |               |           |               |        |               |   |               |      |                        |   |
| by Method Name                  | METHOD #         | X          | Bottle ID #'s | X         | Bottle ID #'s | X      | Bottle ID #'s | X | Bottle ID #'s | FY97 | Containers             | Preservative(s)                               |
| HW Charact. (complete)          | EPA SW 848       |            |               |           |               |        |               |   |               | 58   | See below              | See below                                     |
| Ignitability (Flashpoint)       | SW 848 1010      |            |               |           |               |        |               |   |               | 2    | 250ml/4 oz.            | 4° C  |
| Reactivity (Cyanide & Sulfide)  | EPA SW-848       |            |               |           |               |        |               |   |               | 4    | 1L/4 oz.               | 4° C  |
| Corrosivity (pH)                | SW 848 8040/8045 |            |               |           |               |        |               |   |               | 0.5  | 250ml/4 oz.            | 4° C  |
| Toxicity (TCLP) complete        | EPA SW-848       |            |               |           |               |        |               |   |               | 50   | See below              | See below                                     |
| Toxicity (TCLP) complete        | EPA SW-848       |            |               |           |               |        |               |   |               | 50   | See below              | See below                                     |
| TCLP Non Volatile Extraction    | SW 848 1311      |            |               |           |               |        |               |   |               | 4    | 40 ml x 3/4 oz.        | 4° C  |
| TCLP Volatile ZHE Extraction    | SW 848 1311      |            |               |           |               |        |               |   |               | 4    | 1L x 3/4 oz.           | HCl to pH < 2/4° C                            |
| TCLP BNA Extractables           | SW 848 8270      |            |               |           |               |        |               |   |               | 18   | 1L x 3/4 oz.           | 4° C  |
| TCLP Acid Extractables          | SW 848 8270      |            |               |           |               |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| TCLP BNA Extractables           | SW 848 8270      |            |               |           |               |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| TCLP Pesticides                 | SW 848 8080      |            |               |           |               |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| TCLP Herbicides                 | SW 848 8150      |            |               |           |               |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| TCLP Volatiles                  | SW 848 8280      |            |               |           |               |        |               |   |               | 8    | 40 ml x 3/4 oz.        | HCl to pH < 2/4° C                            |
| TCLP Metals (8)                 | EPA SW-848       |            |               |           |               |        |               |   |               | 8.5  | 500 ml/4 oz.           | HNO <sub>3</sub> to pH < 2                    |
| Mutagenicity Screens            | EPA SW-848       |            |               |           |               |        |               |   |               | +50% | See above              | See above                                     |
| Complete Priority Pollutants    | EPA SW-848       |            |               |           |               |        |               |   |               | 40   | See below              | See below                                     |
| PP Acid Extractables            | SW 848 8270      |            |               |           |               |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| PP B/N Extractables             | SW 848 8270      | X          | p AIF         | X         | p AIF         |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| PP Pesticide/PCB's              | SW 848 8080      |            |               |           |               |        |               |   |               | 9    | 1L x 3/4 oz.           | 4° C  |
| PP Volatiles                    | SW 848 8280      | X          | 601/602       | X         | 601/602       |        |               |   |               | 8    | 40 ml x 3/4 oz.        | HCl to pH < 2/4° C                            |
| PP Metals (13)                  | EPA SW-848       |            |               |           |               |        |               |   |               | 9    | 500 ml/4 oz.           | HNO <sub>3</sub> to pH < 2                    |
| PP Cyanide/Phenol               | EPA SW-848       |            |               |           |               |        |               |   |               | 4    | 1L Plastic/1L Glass    | NaOH/H <sub>2</sub> SO <sub>4</sub>           |
| Toxicity (TCLP) less Pesticides | EPA SW-848       |            |               |           |               |        |               |   |               | 38   | See below              | See below                                     |
| FD01 - F005 Solvents            | EPA SW-848       |            |               |           |               |        |               |   |               | 24   | 1L x 36-40mls/4/16 oz. | 4° C  |
| Kerosene Anal. Group (FL-PRO)   | SW-848/FL DEP    |            |               |           |               |        |               |   |               | 24   | Multiple               | As Required                                   |
| FL-P.R.O.                       | FL DEP           |            |               |           |               |        |               |   |               | 5    | 1L x 3/16 oz.          | H <sub>2</sub> SO <sub>4</sub> to pH < 2/4° C |
| Total Volatiles                 | SW 848 8280      |            |               |           |               |        |               |   |               | 8    | 40 ml x 3/4 oz.        | HCl to pH < 2/4° C                            |
| Total BNA Extractables          | SW 848 8270      |            |               |           |               |        |               |   |               | 18   | 1L x 2/16 oz.          | 4° C  |
| Total RCRA Metals (8)           | EPA SW-848       |            |               |           |               |        |               |   |               | 8.5  | 500 ml/4 oz.           | HNO <sub>3</sub> to pH < 2                    |
| Single Metals                   | EPA SW-848       |            |               |           |               |        |               |   |               | 1    | 500 ml/4 oz.           | HNO <sub>3</sub> to pH < 2                    |
| PCB's in Oil                    | SW 848 8080      |            |               |           |               |        |               |   |               | 3    | 40 ml/4 oz.            | None  |
| PCB's in Water/Sed/Wipes        | SW 848 8080      |            |               |           |               |        |               |   |               | 4    | 1L/4 oz.               | None  |
| Other:                          |                  |            |               |           |               |        |               |   |               |      |                        |   |

Comments:

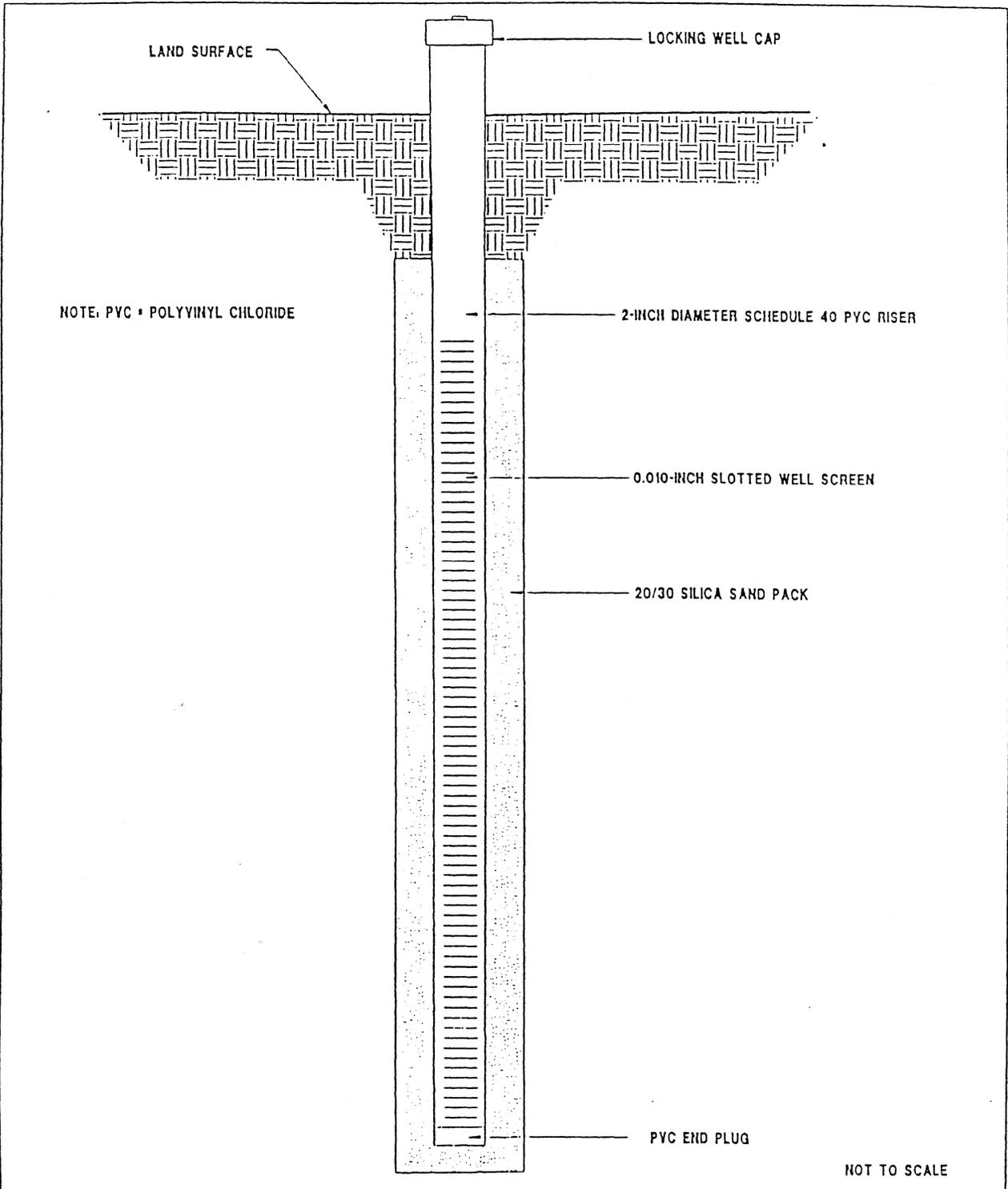
3<sup>rd</sup> sample written only consisted of 5 extra  
 UOA vials sample was deleted.

Retrieved by: [Signature]  
 Date/Time: 11/5/97

Received by: [Signature]  
 Date/Time: 11-7-97

U.S. 241 (Rev. 10/79)

Report under  
 1MSE..



TYPICAL TEMPORARY MONITORING WELL  
INSTALLATION DETAIL

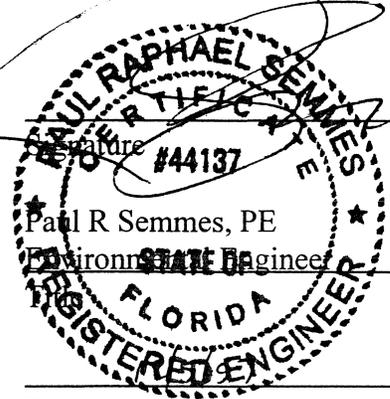
**ATTACHMENT G**  
**Certificate of Decontamination**

# CERTIFICATE OF DECONTAMINATION

It is hereby certified that the following Storage Tank located at the Naval Station Mayport, Mayport, Florida has been decontaminated by the Navy Public Works Center (PWC), Pensacola, Florida:

Tank 1241 A

The Storage Tank listed above has been triple rinsed and cleaned in accordance with 40 CFR 261.7 and has been rendered unusable.

  
Paul R Semmes, PE  
Environmental Engineer  
Date

**REMOVAL AND REPLACEMENT  
OF HEATING OIL TANKS  
Building 1241**

***Tank Closure Assessment Report***

*Prepared For:  
Department of the Navy  
Navy Facilities Engineering Command  
Combined Acquisition Office, Jacksonville Region  
PO Box 139 Building 13  
Jacksonville, FL 32212-0139*

**MARCH 2001**



**PROFESSIONAL GEOLOGIST CERTIFICATION**

This is to certify that the attached document:

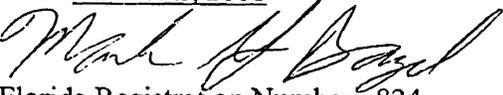
Removal and Replacement of Heating Oil Tanks  
Building 1241 Tank  
Closure Assessment Report

For the facility ID : 8626008  
U.S. Naval Station, Mayport

and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. In my professional judgement, the information submitted is, to the best of my knowledge and belief, true, accurate, and technically complete.

Name: Mark Gary Bagel, P.G.

Date: March 22, 2001

  
Florida Registration Number: 824

(Affix Seal)



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  - UST Removal & Installation Notification
  - Tank Disposal Certification
  - Tank Cleaning Certification
  - Petroleum Discharge Report Form



## LIST OF ACRONYMS

|        |   |
|--------|---|
| bgs    | below ground surface                                |
| DCDEP  | Duval County Department of Environmental Protection |
| EEG    | Ellis Environmental Group, L.C.                     |
| FAC    | Florida Administrative Code                         |
| FDEP   | Florida Department of Environmental Protection      |
| FID    | Flame Ionization Detector                           |
| NAVFAC | Naval Facilities Engineering Command                |
| NS     | Naval Station                                       |
| OVA    | Organic Vapor Analyzer                              |
| PVC    | Polyvinyl Chloride                                  |
| UST    | Underground Storage Tank                            |



## 1.0 INTRODUCTION

On October 29, 2000 Ellis Environmental Group L.C. (EEG) entered into a contract #62467-00-R-2011 with the Department of the Navy, Naval Facilities Engineering Command (NAVFAC), Combined Acquisitions Office Of Jacksonville, FL to remove three (3), 35,000-gallon single wall steel underground heating oil tanks and replace those tanks with new double wall 30,000-gallon tanks that meet the current regulatory requirements. This report includes a description of the underground storage tank (UST), closure activities as per Chapter 62-761, Florida Administrative Code (F.A.C.) Requirements and is in accordance with:

### "Storage Tank System Closure Assessment Requirements"

Division of Waste Management  
Bureau of Petroleum Storage Systems  
Storage Tank Regulation Section  
Revised April 1998.

This report includes a map showing the area excavated and approximate locations of samples; a table summary of all field and analytical samples; copy of laboratory reports; information on the dimensions of the excavation, depth to groundwater, volume of soil excavated, and disposal method for the excavated soil; and information on the procedures followed during closure. Please note that although the tanks were and are used for the sole purpose of storage of heating oils for the production of steam, they are regulated under the FDEP because they are 30,000-gallons or greater in volume.

## 2.0 SITE DESCRIPTION

Mayport Naval Station (NS) is located on the south side of the mouth of the St. Johns River in Duval County north of Jacksonville, Florida. Figure 2-1 shows the location of the site. Figure 2-2 illustrates the location of the tanks within the Mayport NS site. The site is at the intersection of Main Street and Patrol road. The figure also illustrates the location and the orientation of the tanks. The station provides docking and repair facilities for many ships of the United States Navy. The tanks removed are located at Building 1241 (Figure 2-2). The facility houses three steam producing boilers that provide steam to all ships docked at the facility. The tanks are on the west side of the building. They are buried side by side and lie in a east west direction. The tanks are 56-feet long and ten-feet in diameter. The tops of the tanks are buried approximately seven-feet below ground surface (bgs). Total depth to the bottom of the tanks was 17-feet (bgs). The tie down slabs are at 18-feet (bgs). The tanks are constructed of mild steel and were heavily coated with a tar pitch coating. 'Attachment D' is a printout obtained from the Florida Department Of Environmental Protection (FDEP) indication the registration status of these tanks.

The top of the tank was approximately seven-feet (bgs) and the bottom of the tank was 17-feet bgs. Due to the depth of the excavation and the characteristics of the soil, it was necessary to shore all sides of the excavation to a depth of 18-feet. The shoring dimensions and therefore the excavation dimensions were 50-feet on the north south axis and 60-feet on the east west axis. This limited the excavation to those dimensions. The tanks were buried in and covered with a course sandy gray soil containing oyster shell. This material was dredged fill that is indigenous to most of the site. During the excavation groundwater was encountered at nine-feet (bgs). The soils above the tanks showed no contamination and were removed and stockpiled separately. When the tie down straps was removed the tanks floated upward approximately three-feet. The concrete slabs under the tanks were not removed and therefore no samples could be taken directly under each tank. The tanks were removed and disposed of as per FDEP



requirements ('Appendix D'). The contaminated soils were removed and transported to an approved facility for disposal. Free product was encountered at the level of the groundwater. Notification was immediately made to the Duval County Department of Environmental Protection (DCDEP). The product was skimmed from the surface but reappeared until the excavation and installation of new tanks was completed. The water in the excavation was removed and disposed of at an approved facility. Some of the water was processed at the Mayport water/oil separator facility on site.

### 3.0 EXCAVATION DESCRIPTION

On November 6, 2000 a confined space entry was made into the tanks for the purposes of cleaning each tank. The sumps on all three (3) tanks contained free product at the edges approximately 6" to 8" deep. The tanks and sumps and the free product in the sumps were certified clean by a Certified Marine Chemist ('Appendix D'). The location and a description of the utilities encountered can be found in Figure 3-4. These utilities were in close proximity to the excavation in some cases they were within the excavation (See 'Appendix C', Photo 3-5).

Demolition of the concrete covering the tanks began on November 15, 2000. The tank sumps were constructed of concrete and rested against the tank surface (See 'Appendix C', Photo 3-2). The sumps measured six-feet long by five-feet wide and were seven-feet deep at the crown of the tank. It was apparent that the tanks had leaked fuel from the manway covers of the tanks, into the sumps. Free product could be seen six to eight-inches deep at the lower sides of the sumps. This free product leaked from the sumps into the ground surrounding the tanks. It is important to note here that the lower edges of the sumps were at eight to 8.5-feet (bgs). This puts the point source of leakage just above the ground water table. Over the years of operation of these tanks contained several different types of fuel. Initially Bunker C Fuel was used and therefore the feed and return lines were four-inch diameter and steam jacketed. The steam jackets were 12-inch outside diameter. This effectively acted as double wall containment for feed and return lines. The fuel type was changed at various times. The most recent fuel type was Number 2 diesel often mixed with waste oils. When the conversion to mixed fuel types occurred the piping of the feed and return remained but additional piping was added. This additional piping and the waste oil tank were removed in the early nineties under a separate tank closure.

The cause of the contamination could be traced to leaking from the sumps. On occasions the operators would blend fuels from Tank A to Tank B or C. As there were no level indicators on the tanks the operators could not determine when each tank was full. This resulted in the overfilling of the tanks. The manway covers on the tanks were not sealed, which lead to fuel leakage into the sump with resultant release into the ground. The tanks themselves had no corrosion or holes apparent over the entire length and were remarkably well preserved.

#### 3.1 Excavation Methodology

The seven-feet of overburden on the tanks was removed with a John Deere 550 backhoe/loader and stockpiled on the asphalt parking lot north and west of the site. 'Appendix C', Photo 3-1 illustrates the demolition and excavation of the tank site. Figure 3-3 is a graphic representation of the site and the installed shoring. The soils were routinely screened to insure that no contamination was present in these soils. Soils continued to be excavated between and at the ends the tanks to a depth of approximately eight-feet. At that time the shoring was placed around the tank site measuring of 50-feet on the north south axis and 60-feet on the east west axis. The shoring delimits the extent of the excavation and all soils outside the shoring remained untouched. At the time of demolition all utilities had been located and physically observed. A four-inch natural gas main feeding the steam plant entered the excavation on the north side and extended along the north wall through the entire excavation. That line was directly above



the outer edge of the northern most tanks. The gas line exited the excavation on the eastern wall of the shoring approximately seven-feet from the northeast corner. A 6-inch water main, a 12-inch steam line and the four-inch gas line all lay on the eastern side of the excavation. The gas line was four-feet deep and three-feet from the shoring, the water main was six-feet deep and five-feet from the shoring and the steam line was five-feet deep and ten-feet from the eastern wall of the shoring. During installation of the shoring the water main broke due to vibration, three times. This added water to the excavation. This main was taken out of service but the valves did not hold and water continually entered the excavation. These valves were finally exercised and the water released into the excavation ceased. It was estimated that a minimum of 20,000 to 25000-gallons of water entered the excavation through this broken water main.

Once the shoring was in place the additional soils were removed using a 75-ton crane and a clamshell bucket (See 'Appendix C', Photo 3-4). The tank tie downs were cut and the tanks were removed from the excavation. All contaminated soils were excavated directly from the hole to waiting trucks to be transported to the disposal facility. The soils were removed to the tops of the existing tie down slabs. Soils were continuously analyzed during excavation and clean soils were segregated and stockpiled at the site in separate areas. Soils with OVA readings in excess of 50-ppm were considered contaminated and segregated.

### **3.2 Excavated Materials**

The excavated material consisted of gray coarse to medium silty sand. As the excavation proceeded below the existing water all soils were contaminated by the presence of the free product. The water was not pumped continuously but was removed at intervals to reduce the level in the excavation. A total of 863-yards of contaminated soils were shipped off site to Kadish, Underground Utilities in Kingsland, GA ('Appendix A').

### **3.3 Disposition of Contaminated Water**

During the excavation it became necessary to remove some of the water from the tank pit. The water in the pit exhibited a layer of free product, which was skimmed, pumped or otherwise removed. It was not possible to remove all of the water from the tank pit, as the volume was too large. A total of 43,750-gallon was shipped off site to Industrial Wastewater Services of Jacksonville, FL. An additional 15,000-gallons was processed by the on-site Oily Water Treatment Facility of the Mayport NS.

## **4.0 FIELD SCREENING PROCEDURES**

### **4.1 Soil Headspace Analysis**

For the purposes of tracking the sampling points a grid was laid out on the site using the alphabet on the east/west axes and a numeric system on the north/south axes. The grid lines were set five-feet apart on both axis and sample points were recorded along with depths. Samples were collected at grid intersections and from the excavation, each representing an approximately two-foot deep five-feet by five-foot area of excavated soil. These soil samples were placed in a glass jar, labeled, and then sealed with aluminum foil. The sample atmosphere inside the jar was allowed to equilibrate for a minimum of five-minutes at temperatures greater than 20 degrees centigrade (C). The samples were labeled and later screened using a calibrated Foxboro 128 Organic Vapor Analyzer (OVA)/Flame Ionization Detector (FID). Samples screened with the FID, having readings greater than 5.0-ppm were resealed immediately with a second piece of aluminum foil allowed to equilibrate then re-analyzed using a charcoal filter. The filter prevents organic constituents from entering the analyzer, but does not filter out Methane. The



resulting value represents the portion of the initial value that is caused by Methane. The methane value was then subtracted from the concentration of TVOCs to calculate the TVOC concentrations due to other volatile (assumed petroleum related) constituents.

#### 4.1.1 Soil Headspace Results

Soils at the excavation were screened to a maximum depth of eight-feet bgs. The ground water level was estimated to be at nine-feet. No samples were collected below the vadose zone. A total of 260 headspace samples were collected from soils at this site including one sample that was analyzed from the soil stockpile and two samples that were located under the fuel lines. The results of the headspace analysis, approximate sample locations, and sample depth are presented in Table 4-1. The headspace readings ranged from non detect to 71060-ppm TVOC. The sampling locations are included in Figure 3-5.

#### 4.1.2 Sampling Near Fuel Lines

A total of two headspace samples were collected below the fuel lines. The approximate sample locations are included in Figure 3-6. The headspace analysis of these samples did not detect elevated levels of TVOCs adjacent to the lines at this site.

#### 4.1.3 Tank Condition and Disposal

The three 35,000-gallon steel tanks were inspected after removal from the trench. The tanks looked to be in good condition. There were no signs of rust or holes in the tanks. The tanks were coated with a heavy tar and paper combination to protect the outer surfaces. Holes were cut in the ends of the tanks and the tanks were transported to a metal recycler in Baldwin, FL. 'Appendix D' indicates the certification of proper disposal of the tanks.

#### 4.1.4 Ground Water Sampling

One groundwater sample was taken at the approximate center of the excavation (See Figure 3-5). The well installation was accomplished by hand augering to a depth of 14-feet and installing a two-inch Polyvinyl Chloride (PVC) casing. The well was baled and allowed to equilibrate for approximately 12-hours. The water sample was then collected and sent to the laboratory for analysis. The results can be found in Table 4-2.

### 4.2 Assessment and Chemical Analysis Results

The soil screening indicated that all soils above the tanks and down to the water table were clean. See Table 4-1 for Headspace Screening results. It was evident from the groundwater sample that free product existed at the water table between the tanks. There were some high readings at that depth. These readings were not considered accurate as they are in the Vadose Zone. Free product was observed in the sample well and therefore an Incident/Release Report was filed with the Duval County Department of Environmental Protection ('Appendix D').

## 5.0 SUMMARY & CONCLUSIONS

Upon excavation and removal of the 35,000-gallon single wall USTs at Building 1241, Mayport NS the following observations were confirmed:

1. Soils above the tanks and down to the water table (nine-feet bgs) were free of contamination (as confirmed by extensive soil screening).



2. Initially, tank sumps contained 6" to 8" of free product. The sumps were concluded to be the point source of release.
3. Free product was recovered from the well that was advanced between the tanks. Also free product was encountered during excavation.
4. No soil or water samples were taken outside the excavation. (i.e. shored area).
5. During excavation a continuous accumulation of fuel could be observed on the water. Fuel returned to the water surface within 30-minutes of skimming.
6. Installation of new tanks required that the entire area around those tanks be backfilled with #78 crushed stone. The walls of the excavation were lined with filter fabric.
7. The free product appeared to be limited to the eastern 1/2 of the tank length.
8. Free product remains in the excavation.

Since all of the Assessment Data obtained in this report was limited to the 50'x60' Shored Excavation Area, EEG suggests that a Contamination Assessment of the site be completed.

**APPENDIX B-Chemical Analytical Results**

## TABLES

Table 4-1. Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

Table 4-2. Groundwater Analysis for Mayport Building 1241, Mayport, FL

Table 4-3. Soil Analysis for Mayport Building 1241, Mayport, FL

Table 4-1. Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION                          | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|--|--------------------|--------------------------------|------------------------------|---------------------------|
| (REFER TO FIGURE--- FOR GRID LOCATION) |                    |                                |                              |                           |
| H-8<br>WATER SAMPLE<br>WELL            | 1                  | 6                              | 6                            | 0                         |
|  | 3                  | 4                              | 4                            | 0                         |
|  | 5                  | 2                              | 2                            | 0                         |
|  | 7                  | 3                              | 3                            | 0                         |
|  | 9                  | 300                            | 12                           | 288                       |
|  | 12                 | > 1000                         | > 1000                       | > 1000                    |
| L-1                                    | 1                  | 0                              | 0                            | 0                         |
|  | 3                  | 0                              | 0                            | 0                         |
|  | 5                  | 0                              | 0                            | 0                         |
|  | 7                  | 0                              | 0                            | 0                         |
|  | 9                  | 0                              | 0                            | 0                         |
| L-2                                    | 1                  | 0                              | 0                            | 0                         |
|  | 3                  | 0                              | 0                            | 0                         |
|  | 5                  | 0                              | 0                            | 0                         |
|  | 7                  | 0                              | 0                            | 0                         |
|  | 9                  | 0                              | 0                            | 0                         |
| L-3                                    | 1                  | 0                              | 0                            | 0                         |
|  | 3                  | 0                              | 0                            | 0                         |
|  | 5                  | 0                              | 0                            | 0                         |
|  | 7                  | 0                              | 0                            | 0                         |
|  | 9                  | 0                              | 0                            | 0                         |
| L-4                                    | 1                  | 0                              | 0                            | 0                         |
|  | 3                  | 0                              | 0                            | 0                         |
|  | 5                  | 0                              | 0                            | 0                         |
|  | 7                  | 0                              | 0                            | 0                         |
|  | 9                  | 0                              | 0                            | 0                         |
| L-5                                    | 1                  | 0                              | 0                            | 0                         |
|  | 3                  | 0                              | 0                            | 0                         |
|  | 5                  | 0                              | 0                            | 0                         |
|  | 7                  | 0                              | 0                            | 0                         |
|  | 9                  | 0                              | 0                            | 0                         |
| H-11<br>Under Feed & Return Lines      | 3                  | 0                              | 0                            | 0                         |
|  | 6                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| I-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| L-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| L-9           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 26                             | 3                            | 23                        |
|               | 7                  | 40                             | 6                            | 34                        |
|               | 9                  | 260                            | 60                           | 200                       |
| K-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| K-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| K-4           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| K-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| K-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| K-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| I-1           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| I-2           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| I-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| I-4           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| I-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| I-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| I-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| H-2           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| H-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 16                             | 16                           | 0                         |
| H-4           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 24                             | 8                            | 16                        |
| H-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| H-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| H-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| J-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| J-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| J-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| G-1           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| G-2           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| G-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| G-4           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| G-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| G-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| G-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| G-8           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| G-9           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-1           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| F-2           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-4           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| F-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-8           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| F-9           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
| E-1           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| E-2           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| E-3           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| E-4           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| E-5           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |

Upgrade of Fuel Tanks, Mayport Naval Station OVA Readings of Soil Borings

| GRID LOCATION | DEPTH<br>(IN FEET) | READING<br>STD. PROBE<br>(ppm) | READING<br>CHARCOAL<br>(ppm) | READING<br>(VOC)<br>(ppm) |
|---------------|--------------------|--------------------------------|------------------------------|---------------------------|
| E-6           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| E-7           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 20                             | 0                            | 20                        |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | >1000                          | 520                          | >480                      |
| E-8           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |
| E-9           | 1                  | 0                              | 0                            | 0                         |
|               | 3                  | 0                              | 0                            | 0                         |
|               | 5                  | 0                              | 0                            | 0                         |
|               | 7                  | 0                              | 0                            | 0                         |
|               | 9                  | 0                              | 0                            | 0                         |

Table 4-2. Groundwater Analysis for Mayport Building 1241, Mayport, FL

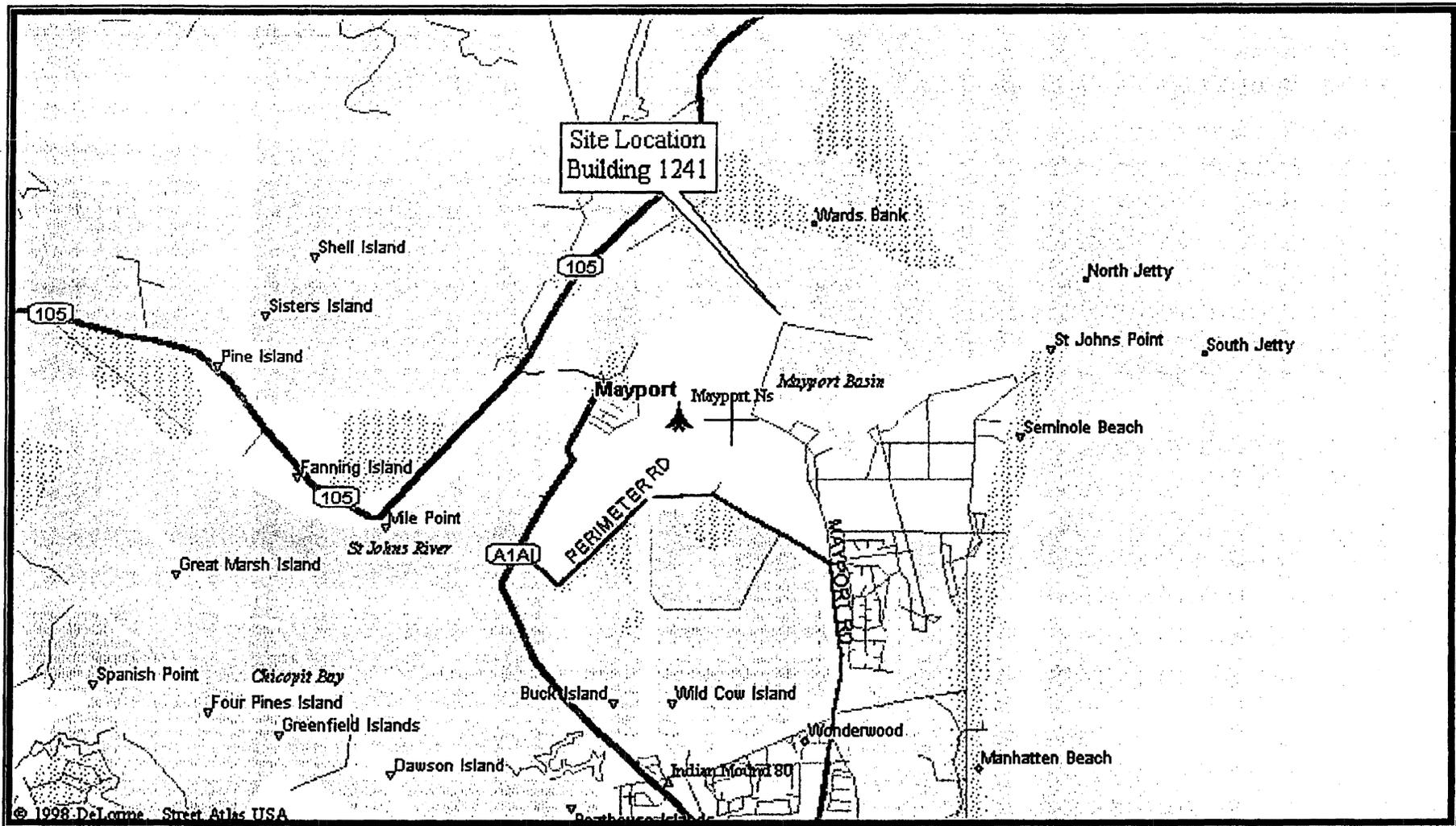
| ANALYTE                 | DETECTION LEVELS | CLEANUP TARGET LEVELS |
|-------------------------|------------------|-----------------------|
| Methyl-tert-butyl Ether | 5.8 ug/l         | 35 ug/l               |
| Benzene                 | 19.7 ug/l        | 1 ug/l                |
| Toluene                 | 3.6 ug/l         | 40 ug/l               |
| Ethylbenzene            | 114 ug/l         | 30 ug/l               |
| total Xylene            | 13.9 ug/l        | 20 ug/l               |
| Acenaphthylene          | 13770 ug/l       | 20 ug/l               |
| Naphthalene             | 10590 ug/l       | 20 ug/l               |
| Acenaphthene            | 1230 ug/l        | 20 ug/l               |
| 2-Methylnaphthlene      | 10650 ug/l       |                       |
| 1-Methylnaphthlene      | 5640 ug/l        |                       |
| Fluorene                | 1120 ug/l        | 280 ug/l              |
| Decane                  | 128 ug/l         |                       |
| Dodecane                | 285 ug/l         |                       |
| Tetradecane             | 221 ug/l         |                       |
| Hexadecane              | 79 ug/l          |                       |
| Total PHS               | 12520 ug/l       |                       |

Table 4-3. Soil Sample Analysis for Mayport Building 1241, Mayport, FL

| ANALYTE  | DETECTION LEVELS                      | CLEANUP TARGET LEVELS<br>Industrial Exposure |
|--|---------------------------------------|--|
| Ethylbenzene<br>Total Xylenes                              | 642 ug/Kg<br>30.7 ug/Kg               | 240 ug/Kg<br>290 ug/Kg                       |
| Naphthalene<br>2-Methylnaphthalene<br>1 -Methylnaphthalene | 26.6 ug/Kg<br>101 ug/Kg<br>72.3 ug/Kg | 8600 ug/Kg                                   |
| Acenaphthylene   | 2.49 ug/Kg                            | 11000 ug/Kg                                  |
| Acenaphthene   | 10.1 ug/Kg                            | 22000 ug/Kg                                  |
| Fluorene   | 17.9 ug/Kg                            | 24000 ug/Kg                                  |
| Phenanthrene   | 75.9 ug/Kg                            | 29000 ug/Kg                                  |
| Anthracene   | 15.8 ug/Kg                            | 290000 ug/Kg                                 |
| Fluoranthene   | 64.8 ug/Kg                            | 45000 ug/Kg                                  |
| Pyrene   | 53.3 ug/Kg                            | 40000 ug/Kg                                  |
| Benzo(a)anthracene   | 13.7 ug/Kg                            | 5.1 ug/Kg                                    |
| Chrysene   | 9.83 ug/Kg                            | 490 ug/Kg                                    |
| Benzo(b)fluoranthene                                       | 11.3 ug/Kg                            | 5 ug/Kg                                      |
| Benzo(k)fluranthene  | 10.9 ug/Kg                            | 52 ug/Kg                                     |
| Benzo(a)pyrene   | 12.4 ug/Kg                            | 0.5 ug/Kg                                    |
| Indeo-1 -2-3(cd)pyrene                                     | 1.59 ug/Kg                            | 5.2 ug/Kg                                    |
| Decane   | 33.6 ug/Kg                            |  |
| Hexadecane   | 546 ug/Kg                             |  |
| Hexacosance  | 270 ug/Kg                             |  |
| Barium   | 3.48 ug/Kg                            | 87000 ug/Kg                                  |
| Chromiun   | 0.58 ug/Kg                            | 430 ug/Kg                                    |
| Lead   | 1.56 ug/Kg                            | 1000 ug/Kg                                   |

## FIGURES

- Figure 2-1. Site Location Building 1241 Mayport NAS
- Figure 2-2. Tank Location Building 1241 Mayport NAS
- Figure 3-3. Building 1241 Plan View
- Figure 3-4. Utilities Encountered
- Figure 3-5. Sampling Grid & Surface Water Sample Well
- Figure 3-6. Area of Excavation & Tank Lines Orientation
- Figure 3-7. OVA Readings @ 9'-0" (Readings in PPM)



**Figure 2-1. Site Location-Building 1241**  
**Mayport Naval Air Station**  
 (not to scale)



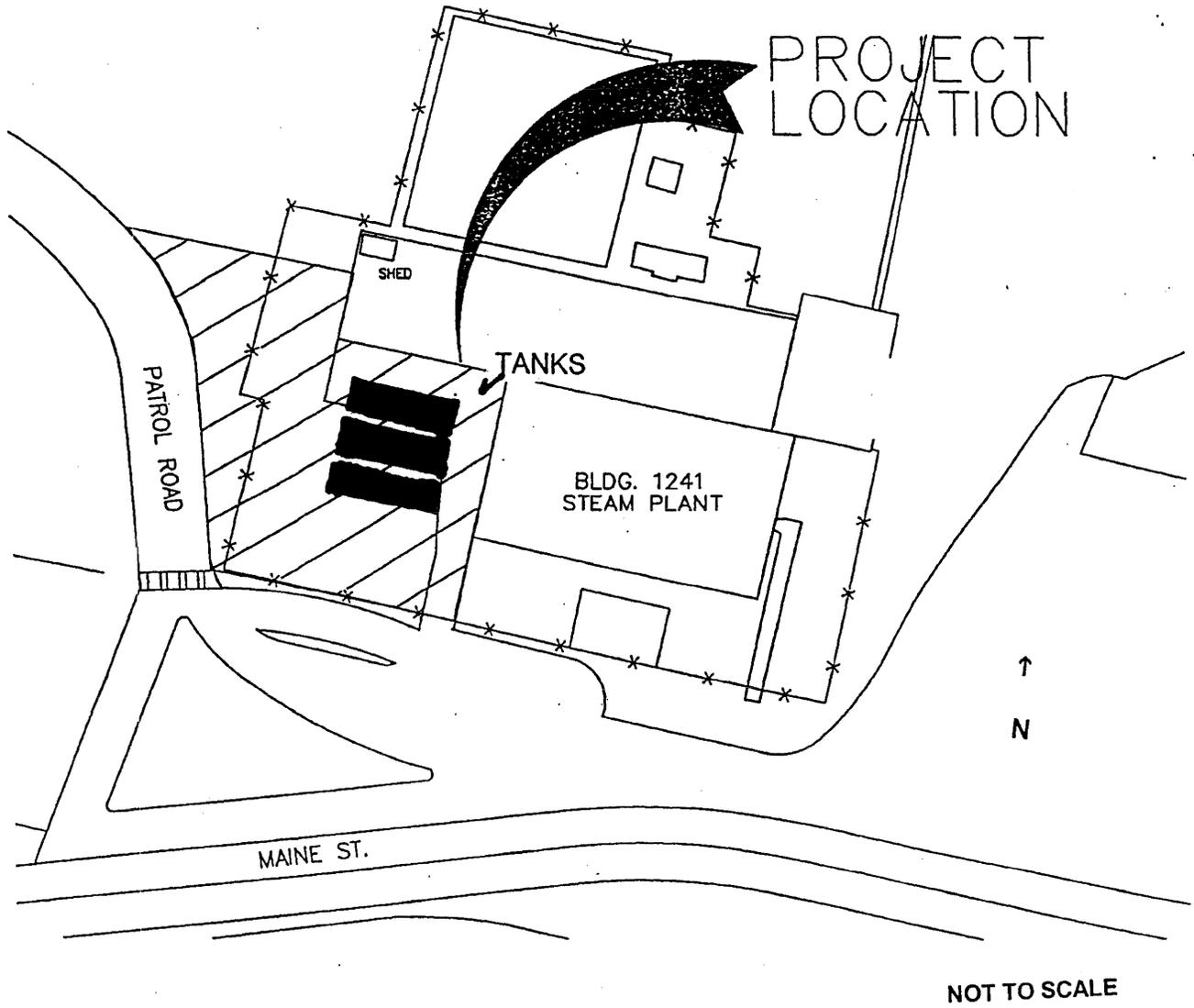


Figure 2-2. Tank Location Building 1241 Mayport NAS

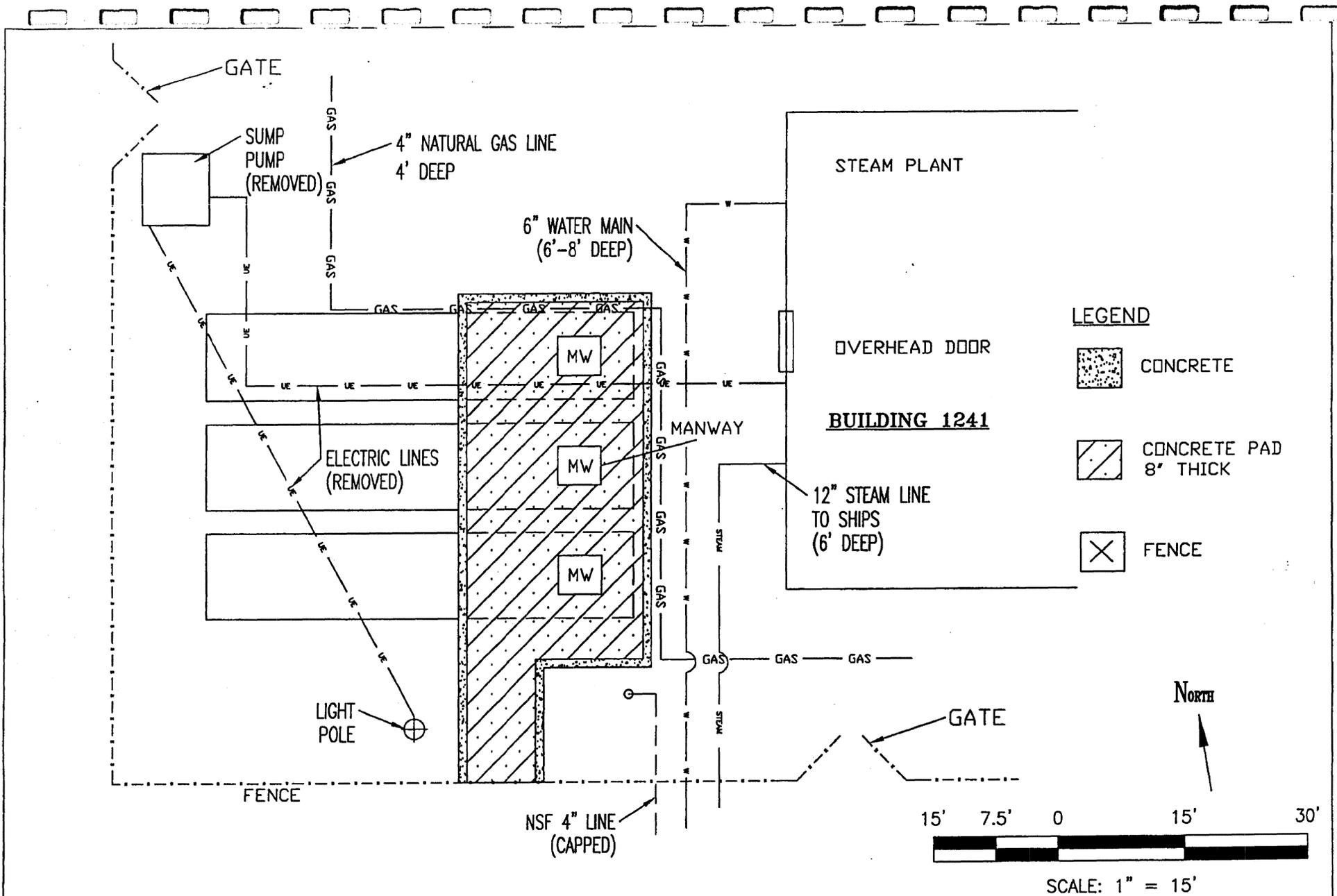


Figure 3-4

UTILITIES ENCOUNTERED



MAYPORT NAVAL STATION

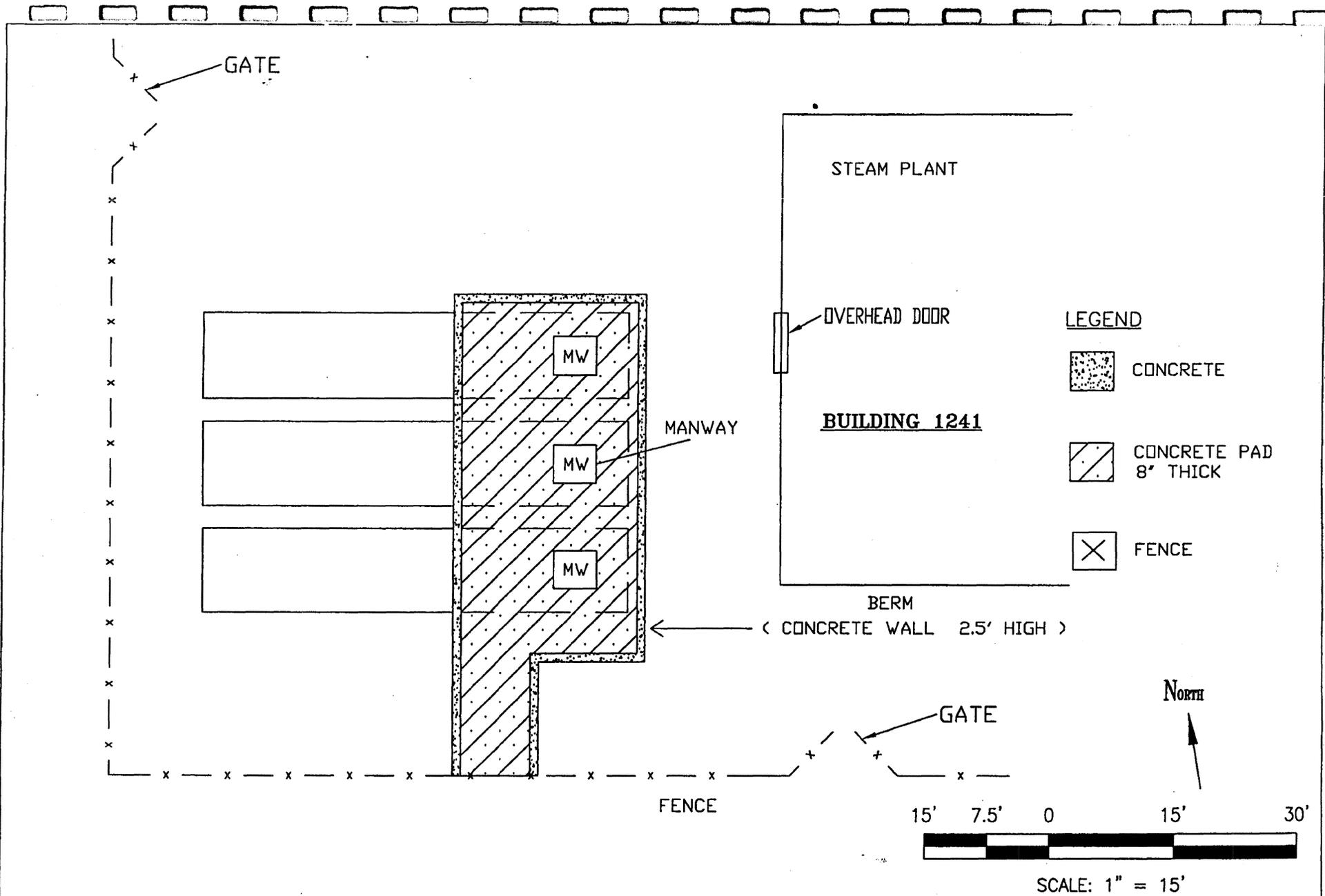


Figure 3-3

Building 1241 Plan View



MAYPORT NAVAL STATION

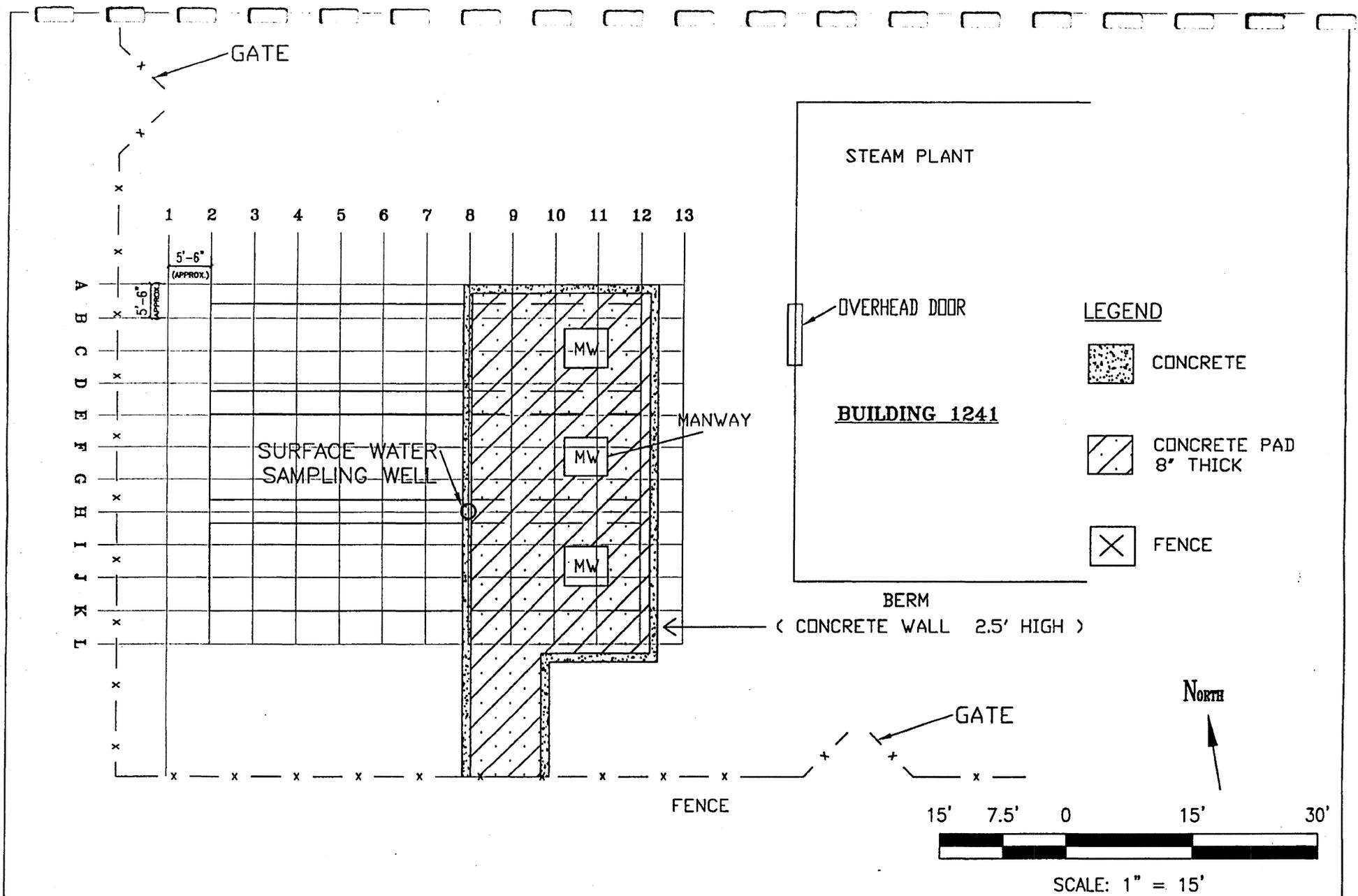


Figure 3-5

Sampling Grid  
&  
Surface Water Sample Well



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GROUP, LLC**

MAYPORT NAVAL STATION

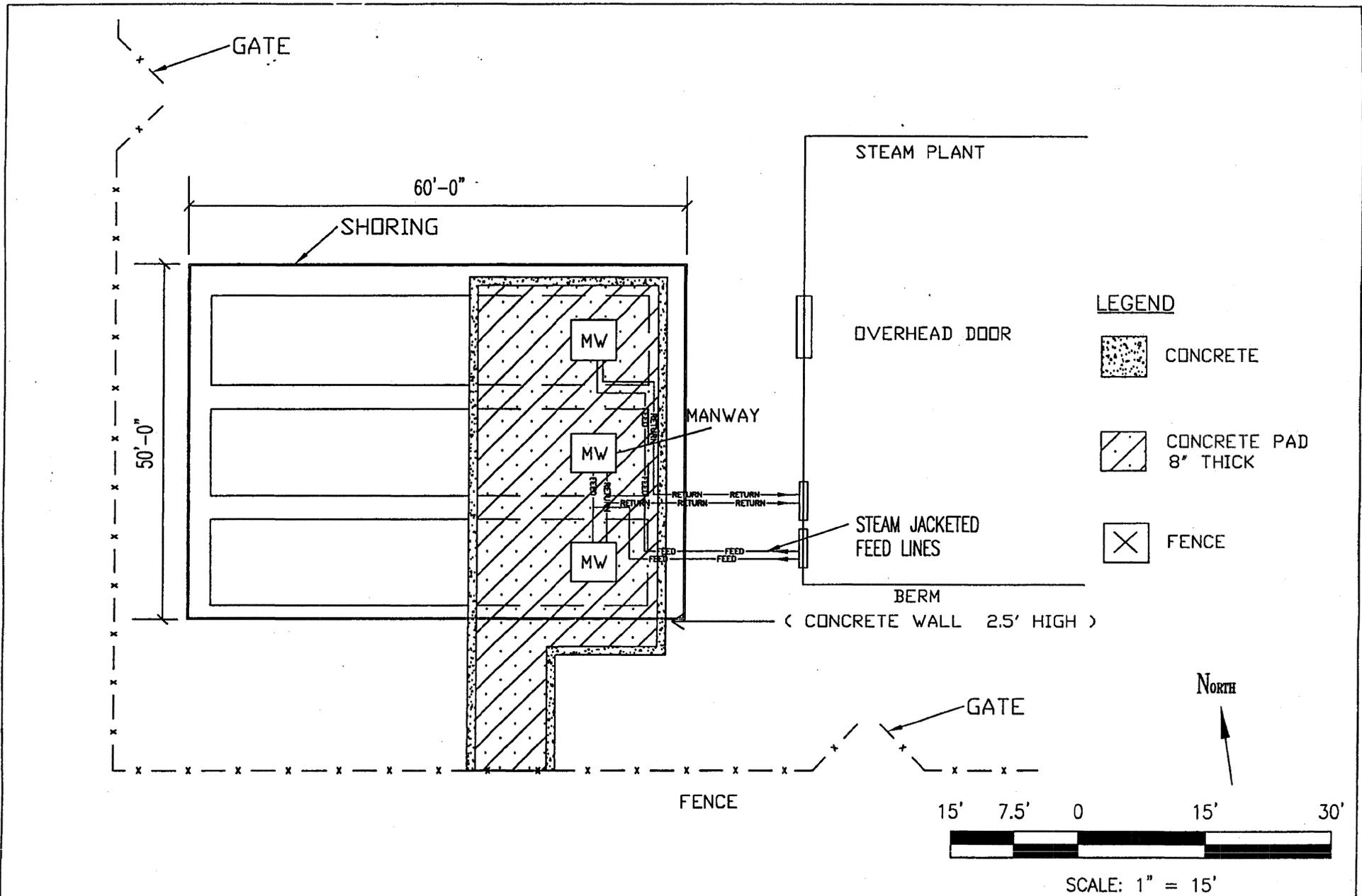


Figure 3-6

AREA OF EXCAVATION  
& TANK LINES ORIENTATION



**ELLIS  
ENVIRONMENTAL  
GROUP, LLC**

MAYPORT NAVAL STATION

BUILDING 1241

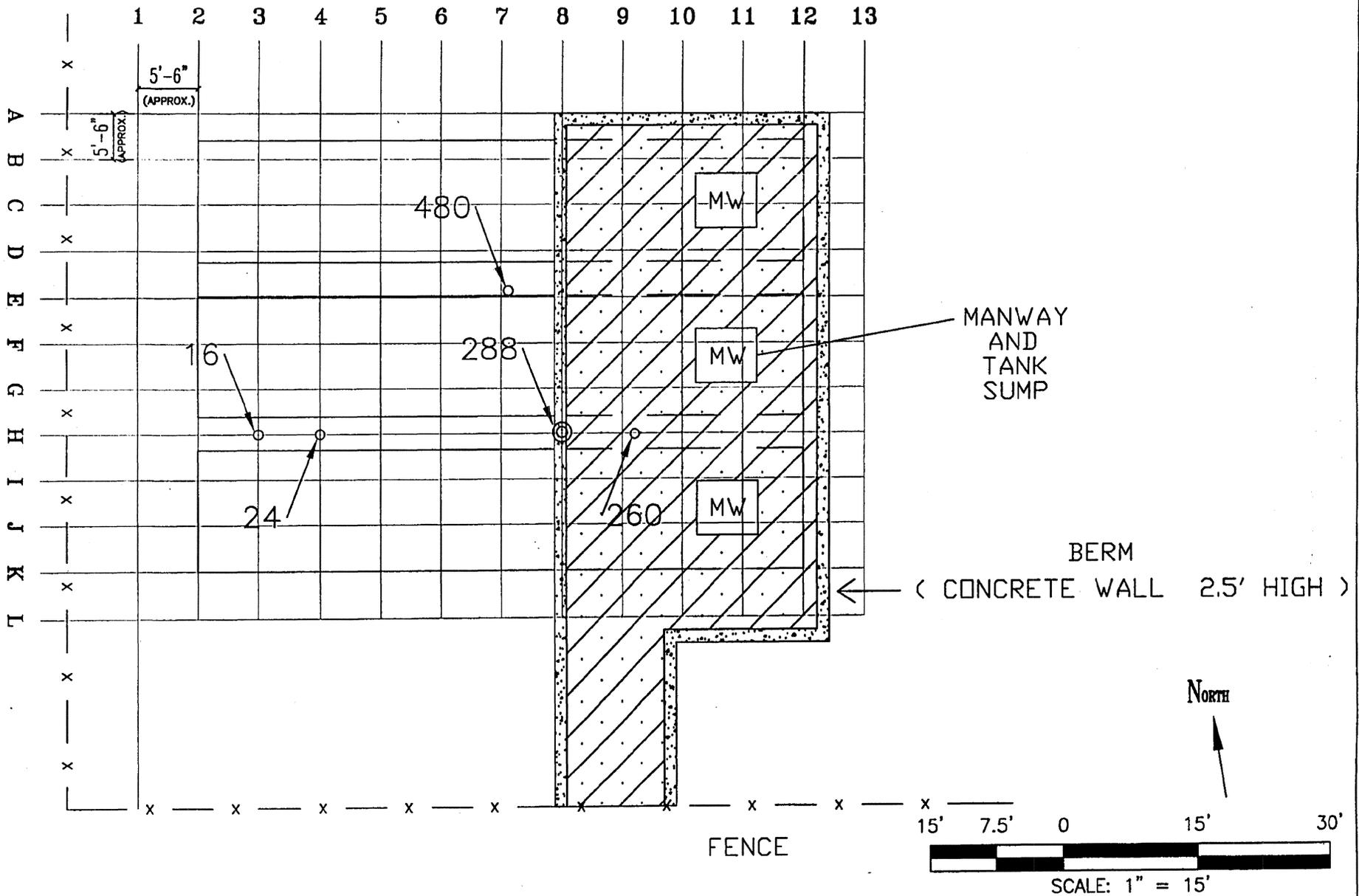


Figure 3-7

OVA Reading @ 9'-0"  
(Readings in PPM)



**ELLIS  
ENVIRONMENTAL  
GROUP, LLC**

MAYPORT NAVAL STATION

**APPENDIX C**  
**SOIL BORING LOGS AND LITHOLOGIC DESCRIPTIONS**



**SHALLOW MONITORING WELL SHEET**

PROJECT: CTO 303 DRILLING Co.: Partridge Well Drilling BORING No.: MW1  
 PROJECT No.: N5863 DRILLER: Alan Kelly DATE COMPLETED: 08/21/03  
 SITE: Site 1241 DRILLING METHOD: H.S.A. NORTHING: 2205263.67  
 GEOLOGIST: David Siekfen DEV. METHOD: Submersible EASTING: 525999.06

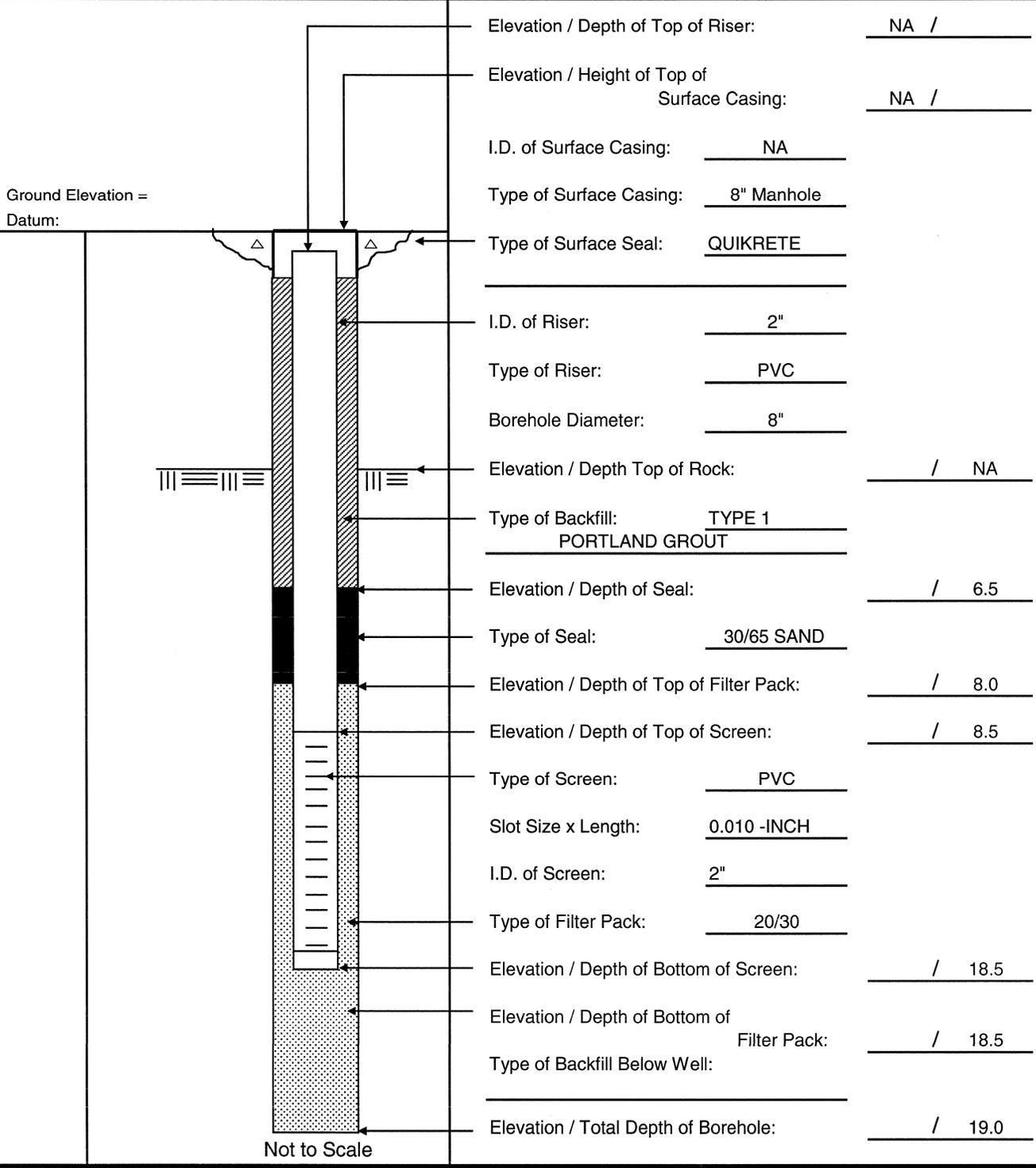
|   |  |                              |
|---|--|------------------------------|
|   | Elevation / Depth of Top of Riser:           | <u>NA /</u>                  |
|   | Elevation / Height of Top of Surface Casing: | <u>NA /</u>                  |
|   | I.D. of Surface Casing:                      | <u>NA</u>                    |
|   | Type of Surface Casing:                      | <u>8" Manhole</u>            |
|   | Type of Surface Seal:                        | <u>QUIKRETE</u>              |
|   | I.D. of Riser:                               | <u>2"</u>                    |
|   | Type of Riser:                               | <u>PVC</u>                   |
|   | Borehole Diameter:                           | <u>8"</u>                    |
|   | Elevation / Depth Top of Rock:               | <u>/ NA</u>                  |
|   | Type of Backfill:                            | <u>TYPE 1 PORTLAND GROUT</u> |
|   | Elevation / Depth of Seal:                   | <u>/ 6.5</u>                 |
|   | Type of Seal:                                | <u>30/65 SAND</u>            |
|   | Elevation / Depth of Top of Filter Pack:     | <u>/ 8.0</u>                 |
|   | Elevation / Depth of Top of Screen:          | <u>/ 8.5</u>                 |
|   | Type of Screen:                              | <u>PVC</u>                   |
| Slot Size x Length:                         | <u>0.010 -INCH</u>                           |                              |
| I.D. of Screen:                             | <u>2"</u>                                    |                              |
| Type of Filter Pack:                        | <u>20/30</u>                                 |                              |
| Elevation / Depth of Bottom of Screen:      | <u>/ 18.5</u>                                |                              |
| Elevation / Depth of Bottom of Filter Pack: | <u>/ 18.5</u>                                |                              |
| Type of Backfill Below Well:                | <u></u>                                      |                              |
| Elevation / Total Depth of Borehole:        | <u>/ 19.0</u>                                |                              |

Not to Scale



**SHALLOW MONITORING WELL SHEET**

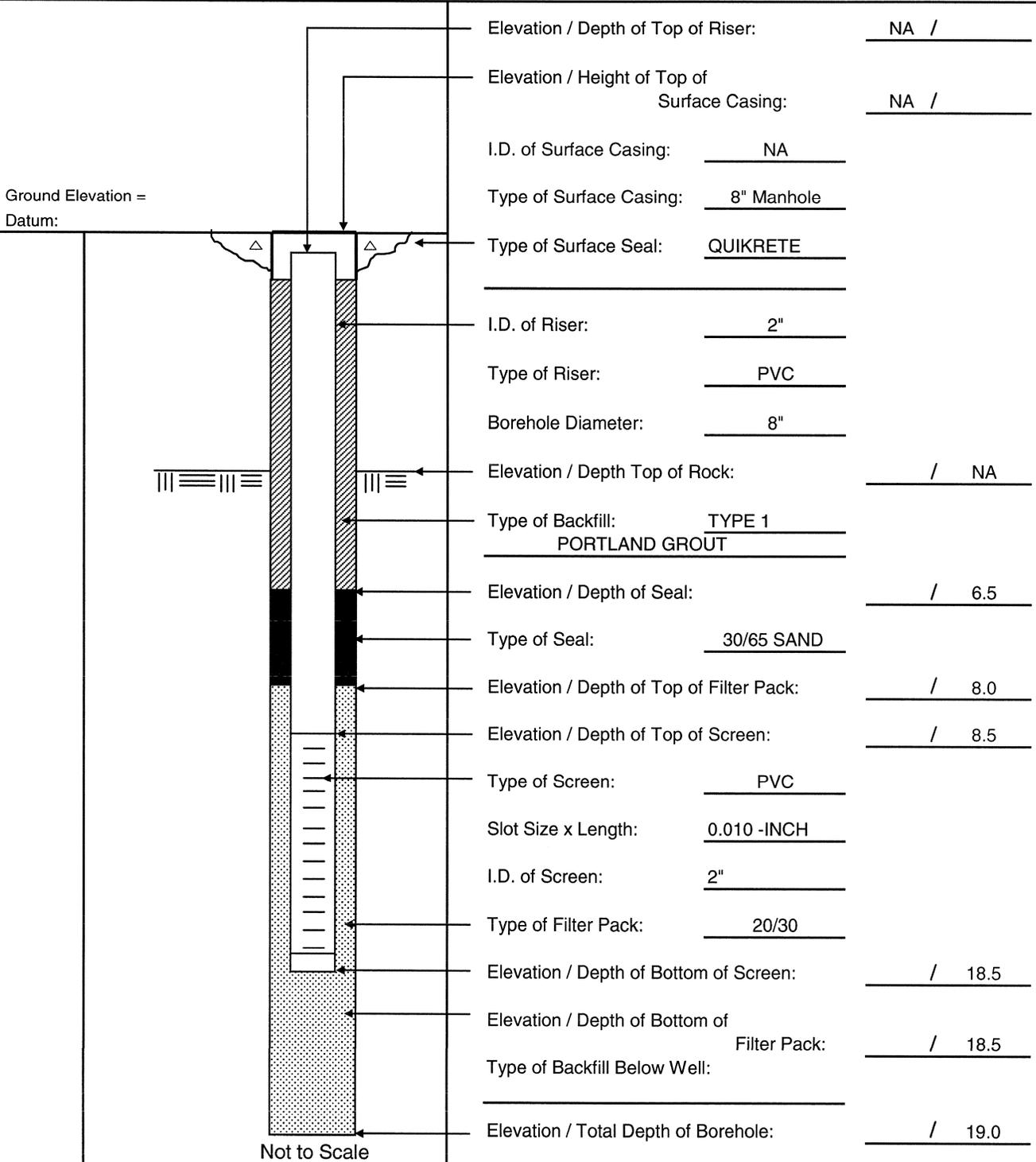
PROJECT: CTO 303 DRILLING Co.: Partridge Well Drilling BORING No.: MW2  
 PROJECT No.: N5863 DRILLER: Alan Kelly DATE COMPLETED: 08/21/03  
 SITE: Site 1241 DRILLING METHOD: H.S.A. NORTHING: 2205366.72  
 GEOLOGIST: David Siekfen DEV. METHOD: Submersible EASTING: 526060.91





**SHALLOW MONITORING WELL SHEET**

PROJECT: CTO 303 DRILLING Co.: Partridge Well Drilling BORING No.: MW3  
 PROJECT No.: N5863 DRILLER: Alan Kelly DATE COMPLETED: 08/22/03  
 SITE: Site 1241 DRILLING METHOD: H.S.A. NORTHING: 2205361.56  
 GEOLOGIST: David Siekfen DEV. METHOD: Submersible EASTING: 525984.35





**SHALLOW MONITORING WELL SHEET**

PROJECT: CTO 303 DRILLING Co.: Partridge Well Drilling BORING No.: MW4  
 PROJECT No.: N5863 DRILLER: Alan Kelly DATE COMPLETED: 08/21/03  
 SITE: Site 1241 DRILLING METHOD: H.S.A. NORTHING: 2205444.44  
 GEOLOGIST: David Siekfen DEV. METHOD: Submersible EASTING: 526023.79

|   |  |                              |
|---|--|------------------------------|
|   | Elevation / Depth of Top of Riser:           | <u>NA /</u>                  |
|   | Elevation / Height of Top of Surface Casing: | <u>NA /</u>                  |
|   | I.D. of Surface Casing:                      | <u>NA</u>                    |
|   | Type of Surface Casing:                      | <u>8" Manhole</u>            |
|   | Type of Surface Seal:                        | <u>QUIKRETE</u>              |
|   | I.D. of Riser:                               | <u>2"</u>                    |
|   | Type of Riser:                               | <u>PVC</u>                   |
|   | Borehole Diameter:                           | <u>8"</u>                    |
|   | Elevation / Depth Top of Rock:               | <u>/ NA</u>                  |
|   | Type of Backfill:                            | <u>TYPE 1 PORTLAND GROUT</u> |
|   | Elevation / Depth of Seal:                   | <u>/ 6.5</u>                 |
|   | Type of Seal:                                | <u>30/65 SAND</u>            |
|   | Elevation / Depth of Top of Filter Pack:     | <u>/ 8.0</u>                 |
|   | Elevation / Depth of Top of Screen:          | <u>/ 8.5</u>                 |
|   | Type of Screen:                              | <u>PVC</u>                   |
| Slot Size x Length:                         | <u>0.010 -INCH</u>                           |                              |
| I.D. of Screen:                             | <u>2"</u>                                    |                              |
| Type of Filter Pack:                        | <u>20/30</u>                                 |                              |
| Elevation / Depth of Bottom of Screen:      | <u>/ 18.5</u>                                |                              |
| Elevation / Depth of Bottom of Filter Pack: | <u>/ 18.5</u>                                |                              |
| Type of Backfill Below Well:                | <u></u>                                      |                              |
| Elevation / Total Depth of Borehole:        | <u>/ 19.0</u>                                |                              |

Not to Scale



**SHALLOW MONITORING WELL SHEET**

PROJECT: CTO 303 DRILLING Co.: Partridge Well Drilling BORING No.: MW6  
 PROJECT No.: N5863 DRILLER: Alan Kelly DATE COMPLETED: 08/15/03  
 SITE: Site 1241 DRILLING METHOD: H.S.A. NORTHING: 2205403.77  
 GEOLOGIST: David Siekfen DEV. METHOD: Submersible EASTING: 526008.34

|   |  |                                |
|---|--|--------------------------------|
|   | Elevation / Depth of Top of Riser:           | <u>NA /</u>                    |
|   | Elevation / Height of Top of Surface Casing: | <u>NA /</u>                    |
|   | I.D. of Surface Casing:                      | <u>NA</u>                      |
|   | Type of Surface Casing:                      | <u>8" Manhole</u>              |
|   | Type of Surface Seal:                        | <u>QUIKRETE over bentonite</u> |
|   | I.D. of Riser:                               | <u>.75"</u>                    |
|   | Type of Riser:                               | <u>PVC</u>                     |
|   | Borehole Diameter:                           | <u>1.5"</u>                    |
|   | Elevation / Depth Top of Rock:               | <u>/ NA</u>                    |
|   | Type of Backfill:                            | <u>TYPE 1 30/65 SAND</u>       |
|   | Elevation / Depth of Seal:                   | <u>/ 8.0</u>                   |
|   | Type of Seal:                                | <u>30/65 SAND</u>              |
|   | Elevation / Depth of Top of Filter Pack:     | <u>/ 9.5</u>                   |
|   | Elevation / Depth of Top of Screen:          | <u>/ 10.0</u>                  |
|   | Type of Screen:                              | <u>PVC</u>                     |
| Slot Size x Length:                         | <u>0.010 -INCH</u>                           |                                |
| I.D. of Screen:                             | <u>2"</u>                                    |                                |
| Type of Filter Pack:                        | <u>20/30</u>                                 |                                |
| Elevation / Depth of Bottom of Screen:      | <u>/ 15.0</u>                                |                                |
| Elevation / Depth of Bottom of Filter Pack: | <u>/ 15.0</u>                                |                                |
| Type of Backfill Below Well:                | <u></u>                                      |                                |
| Elevation / Total Depth of Borehole:        | <u>/ 15.5</u>                                |                                |

Not to Scale

**APPENDIX D**  
**CONSTRUCTION DIAGRAMS**



# BORING LOG

PROJECT NAME: CTO 303/ Site 1241 BORING NUMBER: MPT-1241-MW1  
 PROJECT NUMBER: N5863 DATE: 08.21.03  
 DRILLING COMPANY: Partridge Well Drilling GEOLOGIST: David Siefken  
 DRILLING RIG: Truck Mounted Rig DRILLER: Alan Kelly

| Sample No. and Type or RQD | Depth (Ft.) or Run No. | Blows / 6" or RQD (%) | Sample Recovery / Sample Length | Lithology Change (Depth/Ft.) or Screened Interval | MATERIAL DESCRIPTION                            |       |                         | U<br>S<br>C<br>S<br>* | Remarks     | PID/FID Reading (ppm) |            |            |              |  |
|----------------------------|------------------------|-----------------------|---------------------------------|---|---|-------|-------------------------|-----------------------|-------------|-----------------------|------------|------------|--------------|--|
|                            |                        |                       |                                 |   | Soil Density/ Consistency or Rock Hardness      | Color | Material Classification |                       |             | Sample                | Sampler BZ | Borehole** | Driller BZ** |  |
|                            | 0-6"                   |                       |                                 | 11'   | asphalt and lime rock                           |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | loose, light brown, fine to medium sand, -      |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | with shell hash                                 |       |                         |                       |             |                       |            |            |              |  |
|                            | 5'                     |                       |                                 |   |   |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | loose, light brown, fine to medium sand, -      |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | with shell hash                                 |       |                         |                       |             |                       |            |            |              |  |
|                            | 10'                    |                       |                                 |   |   |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | loose, light brown, fine sand, -with shell hash |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   |   |       |                         |                       | water level |                       |            |            |              |  |
|                            |                        |                       |                                 |   | compact, light gray and light brown, fine       |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | sand, - with shell hash                         |       |                         |                       |             |                       |            |            |              |  |
|                            | 15'                    |                       |                                 |   | compact, olive color begins, very fine sand     |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   | compact, olive, very fine, sand                 |       |                         |                       |             |                       |            |            |              |  |
|                            | 18.5                   |                       |                                 |   |   |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |             |                       |            |            |              |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |             |                       |            |            |              |  |

\* When rock coring, enter rock brokeness.

\*\* Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: \_\_\_\_\_

Drilling Area Background (ppm):

Converted to Well: Yes \_\_\_\_\_ No \_\_\_\_\_ Well I.D. #: \_\_\_\_\_



# BORING LOG

PROJECT NAME: CTO 303/ Site 1241 BORING NUMBER: MPT-1241-MW2  
 PROJECT NUMBER: N5863 DATE: 08.21.03  
 DRILLING COMPANY: Partridge Well Drilling GEOLOGIST: David Siefken  
 DRILLING RIG: Truck Mounted Rig DRILLER: Alan Kelly

| Sample No. and Type or RQD | Depth (Ft.) or Run No. | Blows / 6" or RQD (%) | Sample Recovery / Sample Length | Lithology Change (Depth/Ft.) or Screened Interval | MATERIAL DESCRIPTION                      |       |                         | U<br>S<br>C<br>S<br>* | Remarks | PID/FID Reading (ppm)                          |            |            |              |  |  |  |  |  |  |
|----------------------------|------------------------|-----------------------|---------------------------------|---|---|-------|-------------------------|-----------------------|---------|--|------------|------------|--------------|--|--|--|--|--|--|
|                            |                        |                       |                                 |   | Soil Density/Consistency or Rock Hardness | Color | Material Classification |                       |         | Sample   | Sampler BZ | Borehole** | Driller BZ** |  |  |  |  |  |  |
|                            | 0-6"                   |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | asphalt over lime rock                         |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | loose, light brown, fine to medium sand,-      |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | with shell hash                                |            |            |              |  |  |  |  |  |  |
|                            | 5'                     |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | loose, light brown, fine to medium sand,-      |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | with shell hash                                |            |            |              |  |  |  |  |  |  |
|                            | 10'                    |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | loose, light brown, fine sand,-with shell hash |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   | 11'                                       |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | water level                                    |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | compact, light gray and light brown, fine      |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | sand, - with shell hash                        |            |            |              |  |  |  |  |  |  |
|                            | 15'                    |                       |                                 |   |   |       |                         |                       |         | compact, olive color begins, very fine sand    |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         | compact, olive, very fine, sand                |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            | 18.5                   |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |
|                            |                        |                       |                                 |   |   |       |                         |                       |         |  |            |            |              |  |  |  |  |  |  |

\* When rock coring, enter rock brokenness.

\*\* Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated response read.

Remarks: \_\_\_\_\_

Drilling Area Background (ppm):

Converted to Well: Yes \_\_\_\_\_ No \_\_\_\_\_ Well I.D. #: \_\_\_\_\_







# BORING LOG

PROJECT NAME: CTO 303/ Site 1241 BORING NUMBER: MPT-1241-MW5D  
 PROJECT NUMBER: N5863 DATE: 08.21.03  
 DRILLING COMPANY: Partridge Well Drilling GEOLOGIST: David Siefken  
 DRILLING RIG: Truck Mounted Rig DRILLER: Alan Kelly

| Sample No. and Type or RQD | Depth (Ft.) or Run No. | Blows / 6" or RQD (%) | Sample Recovery / Sample Length | Lithology Change (Depth/Ft.) or Screened Interval | MATERIAL DESCRIPTION                       |       |                         | U<br>S<br>C<br>S<br>* | Remarks   | PID/FID Reading (ppm) |            |                 |              |
|----------------------------|------------------------|-----------------------|---------------------------------|---|--|-------|-------------------------|-----------------------|---|-----------------------|------------|-----------------|--------------|
|                            |                        |                       |                                 |   | Soil Density/ Consistency or Rock Hardness | Color | Material Classification |                       |   | Sample                | Sampler BZ | Borehole**      | Driller BZ** |
|                            | 0-6"                   |                       |                                 |   |  |       |                         |                       | grass, fine to medium, white sand, and organic material |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | loose, light brown, fine to medium sand, -              |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | with shell hash   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | loose, light brown, fine to medium sand, -              |                       |            |                 |              |
|                            | 10'                    |                       |                                 |   |  |       |                         |                       | with shell hash   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | compact, light gray and light brown, fine               |                       |            | 11' water level |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | sand, - with shell hash                                 |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | compact, olive color begins, very fine sand             |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | compact, olive, very fine, sand                         |                       |            |                 |              |
|                            | 20'                    |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | olive, very fine, sandy clay                            |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            | 30'                    |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | olive, very fine, sandy clay                            |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       | clay content increasing with depth                      |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            | 40'                    |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |
|                            |                        |                       |                                 |   |  |       |                         |                       |   |                       |            |                 |              |

\* When rock coring, enter rock brokeness.

\*\* Include monitor reading in 6 foot intervals @ borehole. Increase reading frequency if elevated reponse read.

Remarks: \_\_\_\_\_

Drilling Area Background (ppm):

Converted to Well: Yes \_\_\_\_\_ No \_\_\_\_\_ Well I.D. #: \_\_\_\_\_





**APPENDIX E**  
**GROUNDWATER FIELD SAMPLING DATA SHEETS**













# Florida Department of Environmental Protection GROUNDWATER SAMPLING LOG

|                              |  |
|------------------------------|--|
| SITE NAME: <u>Site 124d</u>  | SITE LOCATION: <u>Site 1241 NS MDT</u> |
| WELL NO: <u>MDT-1241-MW1</u> | SAMPLE ID: <u>MDT-1241-MW1</u>         |
| DATE: <u>10-8-03</u>         |  |

## PURGING DATA

|  |                                  |  |   |
|--|----------------------------------|--|---|
| WELL DIAMETER (in): <u>2</u>   | TOTAL WELL DEPTH (ft): <u>17</u> | STATIC DEPTH TO WATER (ft): <u>10.07</u> | WELL CAPACITY (gal/ft): <u>&lt; 450</u> |
| 1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =<br>= ( <u>      </u> - <u>      </u> ) X <u>      </u> = <u>      </u> |                                  |  |   |
| PURGE METHOD: <u>Peristaltic</u>   |                                  | PURGE INITIATED AT: <u>1155</u>          | PURGE ENDED AT: <u>1250</u>             |
|  |                                  |  | TOTAL VOL. PURGED (gal): <u>221</u>     |

| TIME        | VOLUME PURGED (gal) | CUMUL. VOLUME PURGED (gal) | PURGE RATE (gpm) | DEPTH TO WATER (ft) | pH          | TEMP. (°C)   | COND. (µmhos) | DISSOLVED OXYGEN (mg/L) | TURBIDITY (NTUs) | COLOR     | ODOR        |
|-------------|---------------------|----------------------------|------------------|---------------------|-------------|--------------|---------------|-------------------------|------------------|-----------|-------------|
| <u>1155</u> | <u>—</u>            |                            | <u>400</u>       |                     |             |              |               |                         |                  |           |             |
| <u>1230</u> |                     |                            |                  | <u>10.09</u>        | <u>7.12</u> | <u>28.96</u> | <u>0.584</u>  | <u>0.76</u>             | <u>4.0</u>       | <u>CL</u> | <u>None</u> |
| <u>1235</u> |                     |                            |                  | <u>10.11</u>        | <u>7.12</u> | <u>28.97</u> | <u>0.628</u>  | <u>0.66</u>             | <u>3.7</u>       | <u>CL</u> | <u>"</u>    |
| <u>1240</u> |                     |                            |                  | <u>10.4</u>         | <u>7.02</u> | <u>29.01</u> | <u>0.626</u>  | <u>2.11</u>             | <u>2.1</u>       | <u>CL</u> | <u>"</u>    |
| <u>1245</u> |                     |                            |                  | <u>10.11</u>        | <u>7.12</u> | <u>29.02</u> | <u>0.628</u>  | <u>2.27</u>             | <u>1.8</u>       | <u>CL</u> | <u>None</u> |
| <u>1250</u> |                     |                            |                  | <u>10.11</u>        | <u>7.12</u> | <u>29.03</u> | <u>0.629</u>  | <u>2.36</u>             | <u>1.1</u>       | <u>CL</u> | <u>"</u>    |
| <u>1300</u> |                     |                            |                  |                     |             |              |               |                         |                  |           |             |
|             |                     |                            |                  |                     |             |              |               |                         |                  |           |             |
|             |                     |                            |                  |                     |             |              |               |                         |                  |           |             |
|             |                     |                            |                  |                     |             |              |               |                         |                  |           |             |
|             |                     |                            |                  |                     |             |              |               |                         |                  |           |             |

WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88

## SAMPLING DATA

|  |   |
|--|---|
| SAMPLED BY (PRINT) / AFFILIATION: <u>DAVE SIEFKEN, TTNUS</u>   | SAMPLER(S) SIGNATURE(S): <u>[Signature]</u>             |
| SAMPLING METHOD(S): <u>LOW FLOW</u>                            | SAMPLING INITIATED AT: <u>1300</u>                      |
| SAMPLING ENDED AT: <u>1315</u>                                 |   |
| FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/> N | FIELD-FILTERED: Y <input checked="" type="checkbox"/> N |
| DUPLICATE: Y <input checked="" type="checkbox"/> N             |   |

| SAMPLE CONTAINER SPECIFICATION |               |               | SAMPLE PRESERVATION |                                  |          | INTENDED ANALYSIS AND/OR METHOD |
|--------------------------------|---------------|---------------|---------------------|----------------------------------|----------|---------------------------------|
| NO.                            | MATERIAL CODE | VOLUME        | PRESERVATIVE USED   | TOTAL VOLUME ADDED IN FIELD (mL) | FINAL pH |                                 |
| <u>2</u>                       | <u>G</u>      | <u>40 ml</u>  | <u>HCL</u>          | <u>40 ml</u>                     |          | <u>8260 B UIC</u>               |
| <u>1</u>                       | <u>G</u>      | <u>1 l</u>    | <u>—</u>            | <u>1 l</u>                       |          | <u>8270 PAH</u>                 |
| <u>2</u>                       | <u>G</u>      | <u>1 l</u>    | <u>H2SO4</u>        | <u>1 l</u>                       |          | <u>TRPA - FL PRO</u>            |
| <u>2</u>                       | <u>G</u>      | <u>40 ml</u>  | <u>—</u>            | <u>40 ml</u>                     |          | <u>504.1</u>                    |
| <u>1</u>                       | <u>P</u>      | <u>250 ml</u> | <u>HNO3</u>         | <u>250 ml</u>                    |          | <u>Pb level</u>                 |
|                                |               |               |                     |                                  |          |                                 |
|                                |               |               |                     |                                  |          |                                 |
|                                |               |               |                     |                                  |          |                                 |
|                                |               |               |                     |                                  |          |                                 |
|                                |               |               |                     |                                  |          |                                 |









1225

## Florida Department of Environmental Protection GROUNDWATER SAMPLING LOG

|                 |                        |
|-----------------|------------------------|
| SITE NAME: 1241 | SITE LOCATION: NS MPT  |
| WELL NO: MW 6D  | SAMPLE ID: MPT-1241-6D |
| DATE: 10-9-03   |                        |

### PURGING DATA

| WELL DIAMETER (in): 2  | TOTAL WELL DEPTH (ft): 38.2 | STATIC DEPTH TO WATER (ft): 9.81 | WELL CAPACITY (gal/ft): 31 l |                               |      |            |               |                         |                  |           |        |
|--|-----------------------------|----------------------------------|------------------------------|-------------------------------|------|------------|---------------|-------------------------|------------------|-----------|--------|
| 1 WELL VOLUME (gal) = (TOTAL WELL DEPTH - DEPTH TO WATER) X WELL CAPACITY =  |                             |                                  |                              |                               |      |            |               |                         |                  |           |        |
| = (                    -                    ) X                    =   |                             |                                  |                              |                               |      |            |               |                         |                  |           |        |
| PURGE METHOD: Peristaltic  |                             | PURGE INITIATED AT: 1140         | PURGE ENDED AT: 1220         | TOTAL VOL. PURGED (gal): 18 l |      |            |               |                         |                  |           |        |
| TIME   | VOLUME PURGED (gal)         | CUMUL. VOLUME PURGED (gal)       | PURGE RATE (gpm)             | DEPTH TO WATER (ft)           | pH   | TEMP. (°C) | COND. (µmhos) | DISSOLVED OXYGEN (mg/L) | TURBIDITY (NTUs) | COLOR     | ODOR   |
| 1140   | -                           |                                  |                              |                               |      |            |               |                         |                  |           |        |
| 1200   |                             |                                  | 400 l                        | 9.58                          | 7.84 | 27.27      | 5623          | 0.23                    | 3.7              | LT-Yellow | Sulfur |
| 1205   |                             |                                  |                              | 9.54                          | 7.82 | 25.51      | 5.573         | 0.18                    | 2.8              | "         | "      |
| 1210   |                             |                                  |                              | 9.53                          | 7.82 | 25.70      | 5.381         | 0.16                    | 2.1              |           |        |
| 1215   |                             |                                  |                              | 9.53                          | 7.82 | 25.76      | 5.300         | 0.12                    | 1.8              |           | Sulfur |
| 1220   |                             | 18 l                             |                              | 9.53                          | 7.81 | 25.79      | 5.297         | 0.09                    | 1.9              | "         | "      |
| 1225   | Sample                      |                                  |                              |                               |      |            |               |                         |                  |           |        |
| WELL CAPACITY (Gallons per Foot): 0.75" = 0.02; 1" = 0.04; 1.25" = 0.06; 2" = 0.16; 3" = 0.37; 4" = 0.65; 5" = 1.02; 6" = 1.47; 12" = 5.88 |                             |                                  |                              |                               |      |            |               |                         |                  |           |        |

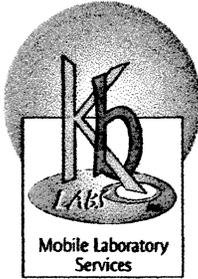
### SAMPLING DATA

| SAMPLED BY (PRINT)/AFFILIATION: DAVID SIEFREN / Trnus        |               |            |   | SAMPLER(S) SIGNATURE(S): <i>DS</i> |          |  |        |
|--|---------------|------------|---|------------------------------------|----------|--|--------|
| SAMPLING METHOD(S): Low Flow                                 |               |            |   | SAMPLING INITIATED AT: 1225        |          | SAMPLING ENDED AT: 1140  |        |
| FIELD DECONTAMINATION: Y <input checked="" type="checkbox"/> |               |            | FIELD-FILTERED: Y <input checked="" type="checkbox"/> |                                    |          | DUPLICATE: Y <input type="checkbox"/> N <input type="checkbox"/> |        |
| SAMPLE CONTAINER SPECIFICATION                               |               |            | SAMPLE PRESERVATION                                   |                                    |          | INTENDED ANALYSIS AND/OR METHOD                                  |        |
| NO.  | MATERIAL CODE | VOLUME (l) | PRESERVATIVE USED                                     | TOTAL VOLUME ADDED IN FIELD (mL)   | FINAL pH |  |        |
| 2  | G             | 40         | HCL   | 40                                 |          | 8260 B   | UOC    |
| 1  | G             | 1000       | -   | 1000                               |          | 8270   | PAH    |
| 2  | G             | 1000       | H2SO4   | 1000                               |          | TRP4   | FL-PRO |
| 2  | G             | 40         | -   | 40                                 |          | 504.1  | EOB    |
| 1  | P             | 250        | HNO3  | 250                                |          | 6010   | Pb     |
|  |               |            |   |                                    |          |  |        |
|  |               |            |   |                                    |          |  |        |
|  |               |            |   |                                    |          |  |        |
|  |               |            |   |                                    |          |  |        |





**APPENDIX F**  
**MOBILE LABORATORY ANALYTICAL RESULTS**



**KB LABS, INC.**  
6821 Southwest Archer Road  
Gainesville, Florida 32608  
Telephone (352) 367-0073  
Fax (352) 367-0074  
Email: [info@kbmobilelabs.com](mailto:info@kbmobilelabs.com)

August 21, 2003

Mark Peterson  
Tetra Tech NUS  
8640 Philips Highway, Suite 16  
Jacksonville, FL 32256

**RE: NS Mayport CTO#303, Mayport, Florida - Final Data Report  
KB Labs Project # 03-68**

Dear Mr. Peterson:

Enclosed is the final report of the on-site analysis performed by KB Labs, Inc. at the above referenced site. Samples were collected and analyzed from August 11 to 14, 2003. Included are a brief project narrative, data report narrative, tables listing quality control results, final analytical results, and sample chain-of-custody form. This information will also be sent electronically. Including this cover page, the Final Report includes twenty-four pages.

KB Labs' mobile laboratories have been inspected by the FDOH Bureau of Laboratories and are NELAP Certified as of April 1, 2003. Our personnel, methodology, proficiency testing, and quality assurance requirements complied with the guidelines of Chapter 64E-1 of the Florida Administrative Code and with the consensus standards adopted at the National Environmental Laboratory Accreditation Conference (NELAC). Data for the site referenced above were determined in accordance with published procedures under Test Methods for Evaluating Solid Waste (EPA SW-846, Update III Revised May 1997). Unless otherwise indicated on the quality control narrative accompanying the data report, the quality assurance and quality control procedures performed in conjunction with analysis of groundwater samples demonstrated that the reported data met our standards for accuracy and precision under NELAC Standards.

If you have any questions, please do not hesitate to call me or Kelly Bergdoll, President of KB Labs, at (352) 367-0073.

Sincerely,

KB Labs, Inc.

Todd Romero  
Director of Operations

*"KB Labs is a small, woman-owned business enterprise."*

000001

# KB LABS, INC.

## PROJECT NARRATIVE

|                      |                   |                                 |                |                           |               |
|----------------------|-------------------|---------------------------------|----------------|---------------------------|---------------|
| <b>Client:</b>       | Tetra Tech NUS    | <b>Driller/Sampler:</b>         | TtNUS          | <b>Analyst:</b>           | Yael Hoogland |
| <b>Site:</b>         | NS Mayport CTO303 | <b>KB Labs Project Manager:</b> | Kelly Bergdoll | <b>KB Labs Project #:</b> | 03-68         |
| <b>Onsite Dates:</b> | 08/11/03-08/14/03 | <b>Client Project Manager:</b>  | Mark Peterson  | <b>Matrix:</b>            | Water/Soil    |

### Project Scope

From August 11 to 14, 2003, a total of 34 water samples and 31 soil samples from Sites 250 and 1241 located at NS Mayport, Mayport, FL were analyzed on-site by KB Labs, Inc. for Tetra Tech NUS. The samples were analyzed for benzene, toluene, ethylbenzene, xylenes, naphthalene, 1-&2-methylnaphthalene, and TPH.

### NELAP Certification

KB Mobile Labs Unit KB1: FDOH NELAP Certification Number E82815

### Analytical Procedure

**Volatiles:** All water samples were analyzed using SW846 Method 5030/8260 for waters. Ten (10) milliliters (mL) of water were purged with helium and the volatile organic compounds (VOCs) were collected on a solid-phase adsorption trap. The adsorption trap was heated and back-purged with helium and the components were separated by capillary column gas chromatography and measured with a mass spectrometer (GC/MS) operated in the electron impact full-scan mode. The individual VOCs in the samples were measured against corresponding VOC standards.

The soil samples were analyzed using SW846 Method 5030/8260. One (1) gram (g) of soil sample was added to 10 mL of laboratory reagent water, heated and analyzed like a water sample as described above.

**TPH:** An estimate of the petroleum content of a sample is calculated on samples that contain distinct petroleum patterns. Chromatograms with petroleum patterns have numerous non-target analytes with spectra associated with hydrocarbons. The chromatograms also contain a feature associated with petroleum hydrocarbon mixtures called the unresolved complex mixture (UCM). The UCM contains hydrocarbons too numerous to separate which forms a "hump" in the chromatogram.

In order to estimate the hydrocarbon content of a sample the chromatogram is integrated at the baseline and a total area count is obtained. The total area count is then corrected for areas contributed by the internal standards and surrogates. The

000002

corrected area count is then used to calculate a concentration using the response factor for toluene-d8.

Unless otherwise indicated, soil data is calculated based on the matrix received (i.e. wet weight basis).

**Analytical Results**

Laboratory results were provided to the client on an as-completed or next-day basis. Final results of the on-site analyses are provided in a hardcopy report. The data produced and reported in the field has been reviewed and approved for this final report by the Director of Operations for KB Labs.

**Quality Control (QC) Data**

Surrogate Recoveries – Table 1 lists the daily analytical sequence and percent recovery results for surrogate compounds, which were added to all analyses. Four (4) surrogate compounds were added to each analysis in order to continually monitor general method performance.

VOC Spike Recoveries – Table 2 lists the percent recovery results for matrix spike and laboratory control samples. A known amount of each target compound was added to selected field samples and to laboratory reagent water in order to monitor the performance of each of the target compounds in the actual matrix and in laboratory reagent water.

Method Blanks – Daily analysis of laboratory reagent water samples was performed in order to monitor the cleanliness of the analytical system.

Signature:  Date: 8/22/07

Title: Director of Operations

# KB LABS, INC.

## DATA REPORT NARRATIVE

|                      |                   |                                 |                |                           |               |
|----------------------|-------------------|---------------------------------|----------------|---------------------------|---------------|
| <b>Client:</b>       | Tetra Tech NUS    | <b>Driller/Sampler:</b>         | TtNUS          | <b>Analyst:</b>           | Yael Hoogland |
| <b>Site:</b>         | NS Mayport CTO303 | <b>KB Labs Project Manager:</b> | Kelly Bergdoll | <b>KB Labs Project #:</b> | 03-68         |
| <b>Onsite Dates:</b> | 08/11/03-08/14/03 | <b>Client Project Manager:</b>  | Mark Peterson  | <b>Matrix:</b>            | Water/Soil    |

1. All samples have been reviewed and, if required, updated in the Final Data Report for rounding and significant figures.
2. All sample results for 1-methylnaphthalene and 2-methylnaphthalene were transposed in the Preliminary Field Results.

Signature: \_\_\_\_\_



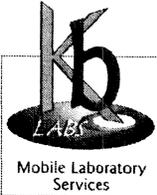
Title: Director of Operations

Date: \_\_\_\_\_

8/22/03

**KB LABS, INC.**  
**Final Data Report**  
**NS Mayport CTO 303 Site 1241**  
**Mayport, FL**  
**Project Number 03-68**

**Prepared for : Tetra Tech NUS**

|  | Sample ID | Sample ID | Sample ID | Sample ID   | Sample ID   | Sample ID   | Sample ID  | Sample ID  | Sample ID  | Sample ID   | Sample ID   |
|---|-----------|-----------|-----------|-------------|-------------|-------------|------------|------------|------------|-------------|-------------|
|   | MW XI     | X-2       | X-3       | PZ-1 (SB-1) | PZ-2 (SB-2) | PZ-3 (SB-3) | SB4        | SB5        | SB6        | SB7         | SB8         |
| <b>Analysis Date:</b>   | 8/11/2003 | 8/12/2003 | 8/12/2003 | 8/12/2003   | 8/12/2003   | 8/12/2003   | 8/13/2003  | 8/13/2003  | 8/13/2003  | 8/13/2003   | 8/13/2003   |
| <b>Matrix:</b>  | Water     | Water     | Water     | Water       | Water       | Water       | Water      | Water      | Water      | Water       | Water       |
| <b>Dilution:</b>  | 1         | 1         | 1         | 1           | 1           | 1           | 1          | 10         | 1          | 1           | 1 & 5       |
| MTBE  | <5.0      | <5.0      | <5.0      | <5.0        | <5.0        | <5.0        | <5.0       | <50        | <5.0       | <5.0        | <5.0        |
| Benzene   | <1.0      | <1.0      | <1.0      | <1.0        | <1.0        | <1.0        | <1.0       | <10        | <1.0       | <1.0        | <1.0        |
| Toluene   | <1.0      | <1.0      | <1.0      | <1.0        | <1.0        | <1.0        | <1.0       | <10        | <1.0       | <1.0        | <1.0        |
| Ethylbenzene  | <1.0      | <1.0      | <1.0      | <1.0        | <1.0        | <1.0        | <1.0       | <b>13</b>  | <1.0       | <b>3.2</b>  | <1.0        |
| m&p-Xylene  | <1.0      | <1.0      | <1.0      | <1.0        | <1.0        | <1.0        | <1.0       | <10        | <1.0       | <1.0        | <1.0        |
| o-Xylene  | <1.0      | <1.0      | <1.0      | <1.0        | <1.0        | <1.0        | <1.0       | <10        | <1.0       | <1.0        | <1.0        |
| Naphthalene   | <5.0      | <5.0      | <5.0      | <5.0        | <5.0        | <5.0        | <5.0       | <b>140</b> | <5.0       | <b>38.2</b> | <5.0        |
| 2-Methylnaphthalene   | <5.0      | <5.0      | <5.0      | <5.0        | <5.0        | <5.0        | <5.0       | <b>130</b> | <b>5.2</b> | <b>88.8</b> | <5.0        |
| 1-Methylnaphthalene   | <5.0      | <5.0      | <5.0      | <5.0        | <5.0        | <5.0        | <5.0       | <b>130</b> | <b>5.1</b> | <b>93.6</b> | <5.0        |
| TPH   | NR        | NR        | NR        | NR          | NR          | NR          | <b>1.7</b> | <b>14</b>  | ND         | <b>1.9</b>  | <b>0.52</b> |

Volatiles Units: Waters are ug/L and soils are mg/kg.

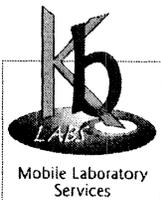
TPH Units: Waters are mg/L and soils are mg/kg.

ND: No Volatile TPH Peaks Detected

NR: Volatile TPH Scan Not Requested

**KB LABS, INC.**  
**Final Data Report**  
**NS Mayport CTO 303 Site 1241**  
**Mayport, FL**  
**Project Number 03-68**

**Prepared for : Tetra Tech NUS**

|  | Sample ID   | Sample ID   | Sample ID | Sample ID | Sample ID | Sample ID |
|---|-----------|-----------|-----------|-----------|-----------|-------------|-------------|-----------|-----------|-----------|-----------|
|   | SB9       | SB10      | SB11      | SB12      | SB13      | PZ-2 (SB-2) | PZ-3 (SB-3) | SB4 5'    | SB5 9'    | SB6 1'    | SB7 9'    |
| <b>Analysis Date:</b>   | 8/13/2003 | 8/13/2003 | 8/14/2003 | 8/14/2003 | 8/14/2003 | 8/11/2003   | 8/11/2003   | 8/13/2003 | 8/13/2003 | 8/13/2003 | 8/13/2003 |
| <b>Matrix:</b>  | Water     | Water     | Water     | Water     | Water     | Soil        | Soil        | Soil      | Soil      | Soil      | Soil      |
| <b>Dilution:</b>  | 1         | 1         | 1         | 1         | 1         | 1           | 1           | 1         | 1         | 1         | 1         |
| MTBE  | <5.0      | <5.0      | <5.0      | <5.0      | <5.0      | <.050       | <.050       | <.050     | <.050     | <.050     | <.050     |
| Benzene   | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <.0070      | <.0070      | <.0070    | <.0070    | <.0070    | <.0070    |
| Toluene   | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <.010       | <.010       | <.010     | <.010     | <.010     | <.010     |
| Ethylbenzene  | <1.0      | <1.0      | 3.6       | <1.0      | <1.0      | <.010       | <.010       | <.010     | <.010     | <.010     | <.010     |
| m&p-Xylene  | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <.010       | <.010       | <.010     | <.010     | <.010     | <.010     |
| o-Xylene  | <1.0      | <1.0      | <1.0      | <1.0      | <1.0      | <.010       | <.010       | <.010     | <.010     | <.010     | <.010     |
| Naphthalene   | <5.0      | <5.0      | <5.0      | 23.5      | <5.0      | <.050       | <.050       | <.050     | <.050     | <.050     | <.050     |
| 2-Methylnaphthalene   | <5.0      | <5.0      | <5.0      | 25.7      | <5.0      | <.050       | <.050       | <.050     | <.050     | <.050     | 0.11      |
| 1-Methylnaphthalene   | <5.0      | <5.0      | 8.1       | 14.7      | <5.0      | <.050       | <.050       | <.050     | <.050     | <.050     | 0.11      |
| TPH   | 0.60      | ND        | 13        | 3.1       | ND        | NR          | NR          | NR        | NR        | NR        | NR        |

Volatiles Units: Waters are ug/L and soils are mg/kg.

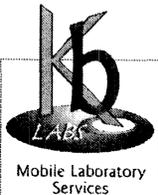
TPH Units: Waters are mg/L and soils are mg/kg.

ND: No Volatile TPH Peaks Detected

NR: Volatile TPH Scan Not Requested

**KB LABS, INC.**  
**Final Data Report**  
**NS Mayport CTO 303 Site 1241**  
**Mayport, FL**  
**Project Number 03-68**

**Prepared for : Tetra Tech NUS**

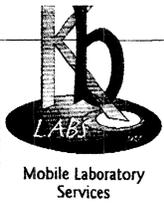
|  | Sample ID |
|---|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|   | SB8 9'    | SB9 1'    | SB10 9'   | SB11 9'   | SB12 9'   | SB13 9'   |           |           |           |           |           |
| <b>Analysis Date:</b>   | 8/13/2003 | 8/13/2003 | 8/13/2003 | 8/14/2003 | 8/14/2003 | 8/14/2003 |           |           |           |           |           |
| <b>Matrix:</b>  | Soil      | Soil      | Soil      | Soil      | Soil      | Soil      |           |           |           |           |           |
| <b>Dilution:</b>  | 1         | 1         | 1         | 1         | 1         | 1         |           |           |           |           |           |
| MTBE  | <.050     | <.050     | <.050     | <.050     | <.050     | <.050     |           |           |           |           |           |
| Benzene   | <.0070    | <.0070    | <.0070    | <.0070    | <.0070    | <.0070    |           |           |           |           |           |
| Toluene   | <.010     | <.010     | <.010     | <.010     | <.010     | <.010     |           |           |           |           |           |
| Ethylbenzene  | <.010     | <.010     | <.010     | <.010     | <.010     | <.010     |           |           |           |           |           |
| m&p-Xylene  | <.010     | <.010     | <.010     | <.010     | <.010     | <.010     |           |           |           |           |           |
| o-Xylene  | <.010     | <.010     | <.010     | <.010     | <.010     | <.010     |           |           |           |           |           |
| Naphthalene   | <.050     | <.050     | <.050     | <.050     | <.050     | <.050     |           |           |           |           |           |
| 2-Methylnaphthalene   | <.050     | <.050     | <.050     | <.050     | <.050     | <.050     |           |           |           |           |           |
| 1-Methylnaphthalene   | <.050     | <.050     | <.050     | <.050     | <.050     | <.050     |           |           |           |           |           |
| TPH   | NR        | NR        | NR        | NR        | NR        | NR        |           |           |           |           |           |

Volatiles Units: Waters are ug/L and soils are mg/kg.

TPH Units: Waters are mg/L and soils are mg/kg.

ND: No Volatile TPH Peaks Detected

NR: Volatile TPH Scan Not Requested



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 Gainesville, FL 32608  
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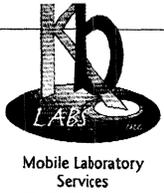
# CHAIN-OF-CUSTODY RECORD

**MOBILE UNIT #**  
 KB 1

| CLIENT NAME   |              | PROJECT NAME & ADDRESS          |                          |      |            |                        |                        | SAMPLE MATRIX   | NUMBER OF CONTAINERS | IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS | PRESERVATION    |  |
|---|--------------|---------------------------------|--------------------------|------|------------|------------------------|------------------------|---|----------------------|---|-----------------|--|
| Tetra Tech  |              | SITE 1241<br>Mayport 070303 JAX |                          |      |            |                        |                        |   |                      |   |                 |  |
| SAMPLERS  |              | CONTACT PERSON                  |                          |      |            | BATCH # (Lab Use Only) |                        | VOLATILES   |                      |   | COMMENT         |  |
|   |              | D Jone                          |                          |      |            |                        |                        |   |                      |   |                 |  |
| SAMPLE FIELD ID \ NUMBER  | DATE SAMPLED | TIME SAMPLED                    | COMP.                    | GRAB | DATE REC'D | TIME REC'D             | STATION LOCATION / No. |   |                      |   |                 |  |
| MW XI   | 081103       | 1235                            |                          | ✓    | 081103     | 1305                   |                        | GW  | 2                    | ✓   | Site 1241 pH6   |  |
| <del>P2-2</del> PZ-2  |              | 1145                            |                          | ✓    |            | 1305                   |                        | S   | 1                    | ✓   | Site 1241 1.03g |  |
| <del>P2-3</del> PZ-2  |              | 1241                            |                          | ✓    |            | 1305                   |                        | S   | 1                    | ✓   | Site 1241 0.99g |  |
| <div style="position: absolute; left: -100px; top: 50px; transform: rotate(-90deg); font-size: small;">           (w) JAX 08/12/03         </div> |              |                                 |                          |      |            |                        |                        |   |                      |   |                 |  |
| Prelined Containers Relinquished by: (Signature)  |              | Date / Time                     | Received by: (Signature) |      |            |                        | Date / Time            | <b>Remarks and Observations</b><br>15ml 1/4 H <sub>2</sub> O Client requested non preserve sample vials.<br><br>pg 1 of 2 |                      |   |                 |  |
| [Signature]<br>Relinquished by: (Signature)   |              | 08/11/03                        | [Signature] R Jone       |      |            |                        |                        |   |                      |   |                 |  |
| [Signature]<br>Relinquished by: (Signature)   |              |                                 | [Signature]              |      |            |                        | 08/11/03               |   |                      |   |                 |  |

**Matrix Types**    S Soil    SW Surface Water    GW Ground Water    SG Soil Gas

000019



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 Gainesville, FL 32608  
 TEL (352) 367-0073  
 FAX (352) 367-0074

# CHAIN-OF-CUSTODY RECORD

**MOBILE UNIT #**  
 KB1

| CLIENT NAME               |              | PROJECT NAME & ADDRESS                                   |       |      |            |            |                        |    | SAMPLE MATRIX | NUMBER OF CONTAINERS | IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS | VOLATILES | PRESERVATION |     |
|---------------------------|--------------|--|-------|------|------------|------------|------------------------|----|---------------|----------------------|---|-----------|--------------|-----|
| Tetra Tech                |              | Maysport <sup>076503</sup> Site 1241 <del>Site 250</del> |       |      |            |            |                        |    |               |                      |   |           |              |     |
| SAMPLERS                  |              | CONTACT PERSON   |       |      |            |            | BATCH # (Lab Use Only) |    |               |                      |   |           | COMMENT      |     |
| SAMPLE FIELD ID. \ NUMBER | DATE SAMPLED | TIME SAMPLED   | COMP. | GRAB | DATE REC'D | TIME REC'D | STATION LOCATION / No. |    |               |                      |   |           |              |     |
| X-2                       | 08/20/03     | N.R.   |       | ✓    | 08/20/03   | 1050       |                        | GW | 1             | ✓                    |   |           |              | PH6 |
| X-3                       | ↓            | ↓  |       | ✓    | ↓          | 1110       |                        | GW | 2             | ✓                    |   |           |              | PH6 |
| PZ-1                      | ↓            | ↓  |       | ✓    | ↓          | ↓          |                        | ↓  | ↓             | ↓                    |   |           |              | PH6 |
| PZ-2                      | ↓            | ↓  |       | ✓    | ↓          | ↓          |                        | ↓  | ↓             | ↓                    |   |           |              | PH6 |
| PZ-3                      | ↓            | ↓  |       | ✓    | ↓          | 1110       |                        | ↓  | ↓             | ↓                    |   |           |              | PH6 |
| JSH                       |              |  |       |      |            |            |                        |    |               |                      |   |           |              |     |

|  |             |                          |             |                          |
|--|-------------|--------------------------|-------------|--------------------------|
| Precleaned Containers Relinquished by: (Signature) | Date / Time | Received by: (Signature) | Date / Time | Remarks and Observations |
| Relinquished by: (Signature)                       | Date / Time | Received by: (Signature) | Date / Time |                          |

20 samples  
 N.R. = Not Recorded by Client. Pg 2 of 2

**Matrix Types** S Soil SW Surface Water GW Ground Water SG Soil Gas



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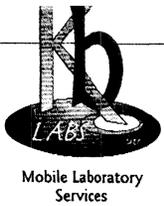
# CHAIN-OF-CUSTODY RECORD

MOBILE UNIT #  
**KB1**

| CLIENT NAME             |              | PROJECT NAME & ADDRESS              |       |      |            |                        |                        | SAMPLE MATRIX | NUMBER OF CONTAINERS | IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS | PRESERVATION |
|-------------------------|--------------|-------------------------------------|-------|------|------------|------------------------|------------------------|---------------|----------------------|---|--------------|
| Telratech               |              | Meypart <sup>77-250</sup> Site 1241 |       |      |            |                        |                        |               |                      |   |              |
| SAMPLERS                |              | CONTACT PERSON                      |       |      |            | BATCH # (Lab Use Only) |                        | VOLATILES     |                      |   |              |
| Partridge               |              | Dave                                |       |      |            |                        |                        |               |                      |   | VOLATILES    |
| SAMPLE FIELD ID. NUMBER | DATE SAMPLED | TIME SAMPLED                        | COMP. | GRAB | DATE REC'D | TIME REC'D             | STATION LOCATION / No. | VOLATILES     |                      | COMMENT   |              |
| SB41-5'                 | 081303       | 0935                                |       |      | 081303     | 0940                   |                        |               |                      |   | S 1          |
| SB4                     |              | 0955                                |       |      |            | 1000                   |                        | GW 2          | ✓                    | PH 6  |              |
| SB5-9'                  |              | 1015                                |       |      |            | 1030                   |                        | S 1           | ✓                    | 1.04 g  |              |
| SB5                     |              | 1040                                |       |      |            | 1040                   |                        | GW 2          | ✓                    | PH 6  |              |
| SB6-1'                  |              | 1045                                |       |      |            | 1250                   |                        | S 1           | ✓                    | 1.00 g  |              |
| SB6                     |              | 1245                                |       |      |            | 1250                   |                        | GW 2          | ✓                    | PH 6  |              |
| SB7-4'                  |              | 1300                                |       |      |            | 1340                   |                        | S 1           | ✓                    | <del>1.02 g</del>                                 |              |
| SB7                     |              | 1315                                |       |      |            | 1340                   |                        | GW 2          | ✓                    | PH 6  |              |
| SB8-9'                  |              | 1425                                |       |      |            | 1445                   |                        | S 1           | ✓                    | 1.00 g  |              |
| SB8                     |              | 1445                                |       |      |            | 1445                   |                        | GW 2          | ✓                    | PH 6  |              |
| SB9-8 1'                |              | 1520                                |       |      |            | 1530                   |                        | S 1           | ✓                    | 1.06 g  |              |
| SB9                     |              | 1530                                |       |      |            | 1530                   |                        | GW 2          | ✓                    | PH 6  |              |
| SB10 9'                 |              | 1625                                |       |      |            | 1635                   |                        | S 1           | ✓                    | 1.06  |              |
| SB10                    |              | 1635                                |       |      |            | 1635                   |                        | GW 2          | ✓                    | PH 6  |              |

|  |             |                          |             |   |
|--|-------------|--------------------------|-------------|---|
| Precleaned Containers Relinquished by: (Signature)<br> | Date / Time | Received by: (Signature) | Date / Time | Remarks and Observations<br>10 samples<br>8g by 1 |
| Relinquished by: (Signature)<br>                       | Date / Time | Received by: (Signature) | Date / Time |   |

Matrix Types    S Soil    SW Surface Water    GW Ground Water    SG Soil Gas



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# CHAIN-OF-CUSTODY RECORD

**MOBILE UNIT #**  
 KB1

| CLIENT NAME                                      |              | PROJECT NAME & ADDRESS |                          |      |                        |             | SAMPLE MATRIX            | NUMBER OF CONTAINERS | IDENTIFY PARAMETERS DESIRED AND NO. OF CONTAINERS | PRESERVATION |
|--|--------------|------------------------|--------------------------|------|------------------------|-------------|--------------------------|----------------------|---|--------------|
| TetnaTech  |              | Maysport Jax Site 1241 |                          |      |                        |             |                          |                      |   |              |
| SAMPLERS   |              | CONTACT PERSON         |                          |      | BATCH # (Lab Use Only) |             | VOLATILES                |                      |   | COMMENT      |
| Kartledge  |              | Dane                   |                          |      |                        |             |                          |                      |   |              |
| SAMPLE FIELD ID. \ NUMBER                        | DATE SAMPLED | TIME SAMPLED           | COMP.                    | GRAB | DATE REC'D             | TIME REC'D  | STATION LOCATION / No.   |                      |   |              |
| SB 11 91   | 081403       | 0915                   |                          |      | 081403                 | 0930        |                          |                      |   | 0.99g        |
| SB 11  |              | 0920                   |                          |      |                        | 0930        |                          |                      |   | PHC          |
| SB 12 91   |              | 1015                   |                          |      |                        | 1045        |                          |                      |   | 1.05g        |
| SB 12  |              | 1040                   |                          |      |                        | 1045        |                          |                      |   | PHC          |
| SB 13 91   |              | 1050                   |                          |      |                        | 051         |                          |                      |   | 11.00g       |
| SB 13  |              | 1240                   |                          |      |                        | 1247        |                          |                      |   | PHC          |
| /  |              |                        |                          |      |                        |             |                          |                      |   |              |
| Prelined Containers Relinquished by: (Signature) |              | Date / Time            | Received by: (Signature) |      |                        | Date / Time | Remarks and Observations |                      |   |              |
| Relinquished by: (Signature)                     |              | Date / Time            | Received by: (Signature) |      |                        | Date / Time |                          |                      |   |              |

Matrix Types    S Soil    SW Surface Water    GW Ground Water    SG Soil Gas

000024

**APPENDIX G**  
**FIXED-BASE LABORATORY ANALYTICAL RESULTS**

CLIENT : Tetra Tech NUS  
ADDRESS: Foster Plaza 7  
661 Andersen Dr.  
Pittsburg, PA 15220-2745

INVOICE # : JAX33668  
DATE SUBMITTED : August 15, 2003  
DATE REPORTED : August 27, 2003

CLIENT #: BR006

ATTENTION: Mr. D. Siefkend  
REFERENCE: 5863  
CTO303 SITE 1241

P.O. # : N5863-P3412(SS)

**INVOICE**

| DESCRIPTION                               | PRICE        | QTY | AMOUNT           |
|---|--------------|-----|------------------|
| SW-846 Method 8260 (Volatile Aromatics)   | \$ 50.00     | X 3 | \$ 150.00        |
| SW-846 Method 8260 (Volatile Halocarbons) | \$ 50.00     | X 3 | \$ 150.00        |
| 8270 (PAH's by Selected Ion Monitoring)   | \$ 100.00    | X 3 | \$ 300.00        |
| FL Method FLPRO (Petrol Residual Org.)    | \$ 85.00     | X 3 | \$ 255.00        |
| ENCO WETS 31 (Percent Solids)             | \$ 0.00      | X 3 | \$ 0.00          |
|   | <b>TOTAL</b> |     | <b>\$ 855.00</b> |

**Please remit payment to :**  
Environmental Conservation Laboratories, Inc.  
9500 Satellite Blvd., Suite 190  
Orlando, FL 32837-8466

**TERMS: NET 30 DAYS**

Past Due Balances are subject to a 1.5% per month service charge.

**CLIENT :** Tetra Tech NUS  
**ADDRESS:** 8640 Philips Highway  
Suite 16  
Jacksonville, FL 32256

**REPORT # :** JAX33668  
**DATE SUBMITTED:** August 15, 2003  
**DATE REPORTED :** August 27, 2003

**PAGE 1 OF 19**

**ATTENTION:** Mr. D. Siefkend

**SAMPLE IDENTIFICATION**

Samples submitted and  
identified by client as:

**REFERENCE:** CTO303 SITE 1241

5863

08/14/03

JAX33668-1 : MPT-1241-SB 7 (9) @ 12:45  
JAX33668-2 : MPT-1241-SB 12 (9) @ 10:15  
JAX33668-3 : MPT-1241-SB 11 (9) @ 09:15

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

Note: Analytical values are reported on a dry weight basis.

**PROJECT MANAGER**

\_\_\_\_\_  
Christopher K. Devore

ENCO LABORATORIES

REPORT # : JAX33668  
 DATE REPORTED: August 27, 2003  
 REFERENCE : CTO303 SITE 1241  
 PROJECT NAME : 5863

PAGE 2 OF 19

RESULTS OF ANALYSIS

EPA METHOD 8260 -  
VOLATILE ORGANICS

MPT-1241-SB 7 (9)

Units

|                         |          |       |
|-------------------------|----------|-------|
| Methyl tert-butyl ether | 1.0 U D1 | ug/Kg |
| Benzene                 | 1.0 U D1 | ug/Kg |
| Toluene                 | 2.8 D1   | ug/Kg |
| Chlorobenzene           | 1.0 U D1 | ug/Kg |
| Ethylbenzene            | 1.0 U D1 | ug/Kg |
| m-Xylene & p-Xylene     | 2.0 I D1 | ug/Kg |
| o-Xylene                | 1.0 U D1 | ug/Kg |
| 1,3-Dichlorobenzene     | 1.0 U D1 | ug/Kg |
| 1,4-Dichlorobenzene     | 1.0 U D1 | ug/Kg |
| 1,2-Dichlorobenzene     | 1.0 U D1 | ug/Kg |

Surrogate:

% RECOV

LIMITS

|                      |                |        |
|----------------------|----------------|--------|
| Dibromofluoromethane | 128            | 61-128 |
| D8-Toluene           | 102            | 77-119 |
| Bromofluorobenzene   | 91             | 60-130 |
| Date Prepared        | 08/15/03 17:00 |        |
| Date Analyzed        | 08/27/03 13:26 |        |

U = Compound was analyzed for but not detected to the level shown.

D1 = Analyte value determined from a 1:1.02 dilution.

I = Analyte detected; value is between the Method Detection Level (MDL) and the Method Quantitation Level (MQL).

ENCO LABORATORIES

REPORT # : JAX33668  
 DATE REPORTED: August 27, 2003  
 REFERENCE : CTO303 SITE 1241  
 PROJECT NAME : 5863

PAGE 3 OF 19

RESULTS OF ANALYSIS

EPA METHOD 8260 -  
VOLATILE ORGANICS

MPT-1241-SB 7 (9)

Units

|                           |          |       |
|---------------------------|----------|-------|
| Dichlorodifluoromethane   | 2.0 U D1 | ug/Kg |
| Chloromethane             | 1.0 U D1 | ug/Kg |
| Vinyl Chloride            | 1.0 U D1 | ug/Kg |
| Bromomethane              | 1.0 U D1 | ug/Kg |
| Chloroethane              | 1.0 U D1 | ug/Kg |
| Trichlorofluoromethane    | 1.0 U D1 | ug/Kg |
| 1,1-Dichloroethene        | 1.0 U D1 | ug/Kg |
| Methylene Chloride        | 11 U D1  | ug/Kg |
| t-1,2-Dichloroethene      | 1.0 U D1 | ug/Kg |
| 1,1-Dichloroethane        | 1.0 U D1 | ug/Kg |
| c-1,2-Dichloroethene      | 1.0 U D1 | ug/Kg |
| Chloroform                | 1.0 U D1 | ug/Kg |
| 1,1,1-Trichloroethane     | 1.0 U D1 | ug/Kg |
| Carbon tetrachloride      | 1.0 U D1 | ug/Kg |
| 1,2-Dichloroethane        | 1.0 U D1 | ug/Kg |
| Trichloroethene           | 1.0 U D1 | ug/Kg |
| 1,2-Dichloropropane       | 1.0 U D1 | ug/Kg |
| Bromodichloromethane      | 1.0 U D1 | ug/Kg |
| c-1,3-Dichloropropene     | 1.0 U D1 | ug/Kg |
| t-1,3-Dichloropropene     | 1.0 U D1 | ug/Kg |
| 1,1,2-Trichloroethane     | 1.0 U D1 | ug/Kg |
| Tetrachloroethene         | 3.3 U D1 | ug/Kg |
| Dibromochloromethane      | 1.0 U D1 | ug/Kg |
| Chlorobenzene             | 1.0 U D1 | ug/Kg |
| Bromoform                 | 1.0 U D1 | ug/Kg |
| 1,1,2,2-Tetrachloroethane | 1.0 U D1 | ug/Kg |
| 1,3-Dichlorobenzene       | 1.0 U D1 | ug/Kg |
| 1,4-Dichlorobenzene       | 1.0 U D1 | ug/Kg |
| 1,2-Dichlorobenzene       | 1.0 U D1 | ug/Kg |

Surrogate:

% RECOV

LIMITS

|                      |                |        |
|----------------------|----------------|--------|
| Dibromofluoromethane | 128            | 61-128 |
| D8-Toluene           | 102            | 77-119 |
| Bromofluorobenzene   | 91             | 60-130 |
| Date Prepared        | 08/15/03 17:00 |        |
| Date Analyzed        | 08/27/03 13:26 |        |

U = Compound was analyzed for but not detected to the level shown.  
 D1 = Analyte value determined from a 1:1.02 dilution.

ENCO LABORATORIES

REPORT # : JAX33668  
 DATE REPORTED: August 27, 2003  
 REFERENCE : CTO303 SITE 1241  
 PROJECT NAME : 5863

PAGE 4 OF 19

RESULTS OF ANALYSIS

EPA METHOD 8270 -  
PAH Compounds by SIM

MPT-1241-SB 7 (9)

Units

|                          |         |       |
|--------------------------|---------|-------|
| Naphthalene              | 35 U D2 | ug/Kg |
| 2-Methylnaphthalene      | 35 U D2 | ug/Kg |
| 1-Methylnaphthalene      | 35 U D2 | ug/Kg |
| Acenaphthylene           | 35 U D2 | ug/Kg |
| Acenaphthene             | 35 U D2 | ug/Kg |
| Fluorene                 | 35 U D2 | ug/Kg |
| Phenanthrene             | 35 U D2 | ug/Kg |
| Anthracene               | 35 U D2 | ug/Kg |
| Fluoranthene             | 35 U D2 | ug/Kg |
| Pyrene                   | 35 U D2 | ug/Kg |
| Chrysene                 | 35 U D2 | ug/Kg |
| Benzo (a) anthracene     | 35 U D2 | ug/Kg |
| Benzo (b) fluoranthene   | 35 U D2 | ug/Kg |
| Benzo (k) fluoranthene   | 35 U D2 | ug/Kg |
| Benzo (a) pyrene         | 35 U D2 | ug/Kg |
| Indeno (1,2,3-cd) pyrene | 35 U D2 | ug/Kg |
| Dibenzo (a,h) anthracene | 35 U D2 | ug/Kg |
| Benzo (g,h,i) perylene   | 35 U D2 | ug/Kg |

Surrogate:

% RECOV

LIMITS

|               |                |        |
|---------------|----------------|--------|
| p-Terphenyl   | 112            | 19-162 |
| Date Prepared | 08/20/03       |        |
| Date Analyzed | 08/22/03 16:44 |        |

U = Compound was analyzed for but not detected to the level shown.  
 D2 = Analyte value determined from a 1:10 dilution.

ENCO LABORATORIES

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RESULTS OF ANALYSIS

| <u>Miscellaneous</u>                                | <u>METHOD</u> | <u>MPT-1241-SB 7 (9)</u> | <u>Units</u>  |
|---|---------------|--------------------------|---------------|
| Percent Solids                                      | WETS/31       | 94                       | %             |
| Date Prepared                                       |               | 08/17/03 21:00           |               |
| Date Analyzed                                       |               | 08/18/03 13:00           |               |
| <br>  |               |                          |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-SB 7 (9)</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 11                       | mg/Kg         |
| <br>  |               |                          |               |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>           | <u>LIMITS</u> |
| o-Terphenyl   |               | 85                       | 51-148        |
| Nonatriacontane                                     |               | 89                       | 36-152        |
| Date Prepared                                       |               | 08/18/03                 |               |
| Date Analyzed                                       |               | 08/20/03 22:18           |               |

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REPORT # : JAX33668  
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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
 VOLATILE ORGANICS

|                         | <u>MPT-1241-SB 12 (9)</u> | <u>Units</u>  |
|-------------------------|---------------------------|---------------|
| Methyl tert-butyl ether | 1.0 U D3                  | ug/Kg         |
| Benzene                 | 1.0 U D3                  | ug/Kg         |
| Toluene                 | 2.7 D3                    | ug/Kg         |
| Chlorobenzene           | 1.0 U D3                  | ug/Kg         |
| Ethylbenzene            | 1.0 U D3                  | ug/Kg         |
| m-Xylene & p-Xylene     | 2.0 U D3                  | ug/Kg         |
| o-Xylene                | 1.0 U D3                  | ug/Kg         |
| 1,3-Dichlorobenzene     | 1.0 U D3                  | ug/Kg         |
| 1,4-Dichlorobenzene     | 1.0 U D3                  | ug/Kg         |
| 1,2-Dichlorobenzene     | 1.0 U D3                  | ug/Kg         |
| <u>Surrogate:</u>       | <u>% RECOV</u>            | <u>LIMITS</u> |
| Dibromofluoromethane    | 136                       | 61-128        |
| D8-Toluene              | 107                       | 77-119        |
| Bromofluorobenzene      | 100                       | 60-130        |
| Date Prepared           | 08/15/03 17:00            |               |
| Date Analyzed           | 08/27/03 14:02            |               |

U = Compound was analyzed for but not detected to the level shown.  
 D3 = Analyte value determined from a 1:1.01 dilution.

ENCO LABORATORIES

REPORT # : JAX33668  
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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
 VOLATILE ORGANICS

|                           | <u>MPT-1241-SB 12 (9)</u> |   |    | <u>Units</u> |
|---------------------------|---------------------------|---|----|--------------|
| Dichlorodifluoromethane   | 2.0                       | U | D3 | ug/Kg        |
| Chloromethane             | 1.0                       | U | D3 | ug/Kg        |
| Vinyl Chloride            | 1.0                       | U | D3 | ug/Kg        |
| Bromomethane              | 1.0                       | U | D3 | ug/Kg        |
| Chloroethane              | 1.0                       | U | D3 | ug/Kg        |
| Trichlorofluoromethane    | 1.0                       | U | D3 | ug/Kg        |
| 1,1-Dichloroethene        | 1.0                       | U | D3 | ug/Kg        |
| Methylene Chloride        | 11                        | U | D3 | ug/Kg        |
| t-1,2-Dichloroethene      | 1.0                       | U | D3 | ug/Kg        |
| 1,1-Dichloroethane        | 1.0                       | U | D3 | ug/Kg        |
| c-1,2-Dichloroethene      | 1.0                       | U | D3 | ug/Kg        |
| Chloroform                | 1.0                       | U | D3 | ug/Kg        |
| 1,1,1-Trichloroethane     | 1.0                       | U | D3 | ug/Kg        |
| Carbon tetrachloride      | 1.0                       | U | D3 | ug/Kg        |
| 1,2-Dichloroethane        | 1.0                       | U | D3 | ug/Kg        |
| Trichloroethene           | 1.0                       | U | D3 | ug/Kg        |
| 1,2-Dichloropropane       | 1.0                       | U | D3 | ug/Kg        |
| Bromodichloromethane      | 1.0                       | U | D3 | ug/Kg        |
| c-1,3-Dichloropropene     | 1.0                       | U | D3 | ug/Kg        |
| t-1,3-Dichloropropene     | 1.0                       | U | D3 | ug/Kg        |
| 1,1,2-Trichloroethane     | 1.0                       | U | D3 | ug/Kg        |
| Tetrachloroethene         | 3.0                       | U | D3 | ug/Kg        |
| Dibromochloromethane      | 1.0                       | U | D3 | ug/Kg        |
| Chlorobenzene             | 1.0                       | U | D3 | ug/Kg        |
| Bromoform                 | 1.0                       | U | D3 | ug/Kg        |
| 1,1,2,2-Tetrachloroethane | 1.0                       | U | D3 | ug/Kg        |
| 1,3-Dichlorobenzene       | 1.0                       | U | D3 | ug/Kg        |
| 1,4-Dichlorobenzene       | 1.0                       | U | D3 | ug/Kg        |
| 1,2-Dichlorobenzene       | 1.0                       | U | D3 | ug/Kg        |

Surrogate:

|                      | <u>% RECOV</u> | <u>LIMITS</u> |
|----------------------|----------------|---------------|
| Dibromofluoromethane | 136            | 61-128        |
| D8-Toluene           | 107            | 77-119        |
| Bromofluorobenzene   | 100            | 60-130        |
| Date Prepared        | 08/15/03 17:00 |               |
| Date Analyzed        | 08/27/03 14:02 |               |

U = Compound was analyzed for but not detected to the level shown.  
 D3 = Analyte value determined from a 1:1.01 dilution.

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RESULTS OF ANALYSIS

EPA METHOD 8270 -  
 PAH Compounds by SIM

|                          | <u>MPT-1241-SB 12 (9)</u> | <u>Units</u>  |
|--------------------------|---------------------------|---------------|
| Naphthalene              | 37 U D2                   | ug/Kg         |
| 2-Methylnaphthalene      | 37 U D2                   | ug/Kg         |
| 1-Methylnaphthalene      | 37 U D2                   | ug/Kg         |
| Acenaphthylene           | 37 U D2                   | ug/Kg         |
| Acenaphthene             | 37 U D2                   | ug/Kg         |
| Fluorene                 | 37 U D2                   | ug/Kg         |
| Phenanthrene             | 37 U D2                   | ug/Kg         |
| Anthracene               | 37 U D2                   | ug/Kg         |
| Fluoranthene             | 37 U D2                   | ug/Kg         |
| Pyrene                   | 37 U D2                   | ug/Kg         |
| Chrysene                 | 37 U D2                   | ug/Kg         |
| Benzo (a) anthracene     | 37 U D2                   | ug/Kg         |
| Benzo (b) fluoranthene   | 37 U D2                   | ug/Kg         |
| Benzo (k) fluoranthene   | 37 U D2                   | ug/Kg         |
| Benzo (a) pyrene         | 37 U D2                   | ug/Kg         |
| Indeno (1,2,3-cd) pyrene | 37 U D2                   | ug/Kg         |
| Dibenzo (a,h) anthracene | 37 U D2                   | ug/Kg         |
| Benzo (g,h,i) perylene   | 37 U D2                   | ug/Kg         |
| <u>Surrogate:</u>        | <u>% RECOV</u>            | <u>LIMITS</u> |
| p-Terphenyl              | 118                       | 19-162        |
| Date Prepared            | 08/20/03                  |               |
| Date Analyzed            | 08/22/03 17:08            |               |

U = Compound was analyzed for but not detected to the level shown.  
 D2 = Analyte value determined from a 1:10 dilution.

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RESULTS OF ANALYSIS

| <u>Miscellaneous</u>                                | <u>METHOD</u> | <u>MPT-1241-SB 12 (9)</u> | <u>Units</u>  |
|---|---------------|---------------------------|---------------|
| Percent Solids                                      | WETS/31       | 90                        | %             |
| Date Prepared                                       |               | 08/17/03 21:00            |               |
| Date Analyzed                                       |               | 08/18/03 13:00            |               |
| <br>  |               |                           |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-SB 12 (9)</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 100                       | mg/Kg         |
| <br>  |               |                           |               |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>            | <u>LIMITS</u> |
| o-Terphenyl   |               | 77                        | 51-148        |
| Nonatriacontane                                     |               | 92                        | 36-152        |
| Date Prepared                                       |               | 08/18/03                  |               |
| Date Analyzed                                       |               | 08/21/03 10:35            |               |

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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
VOLATILE ORGANICS

|                         | <u>MPT-1241-SB 11 (9)</u> | <u>Units</u>  |
|-------------------------|---------------------------|---------------|
| Methyl tert-butyl ether | 1.0 U D3                  | ug/Kg         |
| Benzene                 | 1.0 U D3                  | ug/Kg         |
| Toluene                 | 2.2 D3                    | ug/Kg         |
| Chlorobenzene           | 1.0 U D3                  | ug/Kg         |
| Ethylbenzene            | 1.0 U D3                  | ug/Kg         |
| m-Xylene & p-Xylene     | 2.0 U D3                  | ug/Kg         |
| o-Xylene                | 1.0 U D3                  | ug/Kg         |
| 1,3-Dichlorobenzene     | 1.0 U D3                  | ug/Kg         |
| 1,4-Dichlorobenzene     | 1.0 U D3                  | ug/Kg         |
| 1,2-Dichlorobenzene     | 1.0 U D3                  | ug/Kg         |
| <u>Surrogate:</u>       | <u>% RECOV</u>            | <u>LIMITS</u> |
| Dibromofluoromethane    | 140                       | 61-128        |
| D8-Toluene              | 108                       | 77-119        |
| Bromofluorobenzene      | 95                        | 60-130        |
| Date Prepared           | 08/15/03 17:00            |               |
| Date Analyzed           | 08/27/03 14:39            |               |

U = Compound was analyzed for but not detected to the level shown.  
D3 = Analyte value determined from a 1:1.01 dilution.

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EPA METHOD 8260 -  
VOLATILE ORGANICS

|                           | <u>MPT-1241-SB 11 (9)</u> | <u>Units</u>  |
|---------------------------|---------------------------|---------------|
| Dichlorodifluoromethane   | 2.0 U D3                  | ug/Kg         |
| Chloromethane             | 1.0 U D3                  | ug/Kg         |
| Vinyl Chloride            | 1.0 U D3                  | ug/Kg         |
| Bromomethane              | 1.0 U D3                  | ug/Kg         |
| Chloroethane              | 1.0 U D3                  | ug/Kg         |
| Trichlorofluoromethane    | 1.0 U D3                  | ug/Kg         |
| 1,1-Dichloroethene        | 1.0 U D3                  | ug/Kg         |
| Methylene Chloride        | 10 U D3                   | ug/Kg         |
| t-1,2-Dichloroethene      | 1.0 U D3                  | ug/Kg         |
| 1,1-Dichloroethane        | 1.0 U D3                  | ug/Kg         |
| c-1,2-Dichloroethene      | 1.0 U D3                  | ug/Kg         |
| Chloroform                | 1.0 U D3                  | ug/Kg         |
| 1,1,1-Trichloroethane     | 1.0 U D3                  | ug/Kg         |
| Carbon tetrachloride      | 1.0 U D3                  | ug/Kg         |
| 1,2-Dichloroethane        | 1.0 U D3                  | ug/Kg         |
| Trichloroethene           | 1.0 U D3                  | ug/Kg         |
| 1,2-Dichloropropane       | 1.0 U D3                  | ug/Kg         |
| Bromodichloromethane      | 1.0 U D3                  | ug/Kg         |
| c-1,3-Dichloropropene     | 1.0 U D3                  | ug/Kg         |
| t-1,3-Dichloropropene     | 1.0 U D3                  | ug/Kg         |
| 1,1,2-Trichloroethane     | 1.0 U D3                  | ug/Kg         |
| Tetrachloroethene         | 3.0 U D3                  | ug/Kg         |
| Dibromochloromethane      | 1.0 U D3                  | ug/Kg         |
| Chlorobenzene             | 1.0 U D3                  | ug/Kg         |
| Bromoform                 | 1.0 U D3                  | ug/Kg         |
| 1,1,2,2-Tetrachloroethane | 1.0 U D3                  | ug/Kg         |
| 1,3-Dichlorobenzene       | 1.0 U D3                  | ug/Kg         |
| 1,4-Dichlorobenzene       | 1.0 U D3                  | ug/Kg         |
| 1,2-Dichlorobenzene       | 1.0 U D3                  | ug/Kg         |
| <u>Surrogate:</u>         | <u>% RECOV</u>            | <u>LIMITS</u> |
| Dibromofluoromethane      | 140                       | 61-128        |
| D8-Toluene                | 108                       | 77-119        |
| Bromofluorobenzene        | 95                        | 60-130        |
| Date Prepared             | 08/15/03 17:00            |               |
| Date Analyzed             | 08/27/03 14:39            |               |

U = Compound was analyzed for but not detected to the level shown.  
 D3 = Analyte value determined from a 1:1.01 dilution.

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RESULTS OF ANALYSIS

EPA METHOD 8270 -  
PAH Compounds by SIM

MPT-1241-SB 11 (9)

Units

|                          |         |       |
|--------------------------|---------|-------|
| Naphthalene              | 34 U D2 | ug/Kg |
| 2-Methylnaphthalene      | 34 U D2 | ug/Kg |
| 1-Methylnaphthalene      | 34 U D2 | ug/Kg |
| Acenaphthylene           | 34 U D2 | ug/Kg |
| Acenaphthene             | 34 U D2 | ug/Kg |
| Fluorene                 | 34 U D2 | ug/Kg |
| Phenanthrene             | 34 U D2 | ug/Kg |
| Anthracene               | 34 U D2 | ug/Kg |
| Fluoranthene             | 34 U D2 | ug/Kg |
| Pyrene                   | 34 U D2 | ug/Kg |
| Chrysene                 | 34 U D2 | ug/Kg |
| Benzo (a) anthracene     | 34 U D2 | ug/Kg |
| Benzo (b) fluoranthene   | 34 U D2 | ug/Kg |
| Benzo (k) fluoranthene   | 34 U D2 | ug/Kg |
| Benzo (a) pyrene         | 34 U D2 | ug/Kg |
| Indeno (1,2,3-cd) pyrene | 34 U D2 | ug/Kg |
| Dibenzo (a,h) anthracene | 34 U D2 | ug/Kg |
| Benzo (g,h,i) perylene   | 34 U D2 | ug/Kg |

Surrogate:

% RECOV

LIMITS

|               |                |        |
|---------------|----------------|--------|
| p-Terphenyl   | 124            | 19-162 |
| Date Prepared | 08/20/03       |        |
| Date Analyzed | 08/22/03 17:32 |        |

U = Compound was analyzed for but not detected to the level shown.  
 D2 = Analyte value determined from a 1:10 dilution.

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RESULTS OF ANALYSIS

| <u>Miscellaneous</u>                                | <u>METHOD</u> | <u>MPT-1241-SB 11 (9)</u> | <u>Units</u>  |
|---|---------------|---------------------------|---------------|
| Percent Solids                                      | WETS/31       | 98                        | %             |
| Date Prepared                                       |               | 08/17/03 21:00            |               |
| Date Analyzed                                       |               | 08/18/03 13:00            |               |
| <br>  |               |                           |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-SB 11 (9)</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 6.7 U                     | mg/Kg         |
| <br>  |               |                           |               |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>            | <u>LIMITS</u> |
| o-Terphenyl   |               | 79                        | 51-148        |
| Nonatriacontane                                     |               | 89                        | 36-152        |
| Date Prepared                                       |               | 08/18/03                  |               |
| Date Analyzed                                       |               | 08/20/03 22:59            |               |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
VOLATILE ORGANICS

|                         | <u>LAB BLANK</u> | <u>Units</u>  |
|-------------------------|------------------|---------------|
| Methyl tert-butyl ether | 1.0 U            | ug/Kg         |
| Benzene                 | 1.0 U            | ug/Kg         |
| Toluene                 | 1.0 U            | ug/Kg         |
| Chlorobenzene           | 1.0 U            | ug/Kg         |
| Ethylbenzene            | 1.0 U            | ug/Kg         |
| m-Xylene & p-Xylene     | 2.0 U            | ug/Kg         |
| o-Xylene                | 1.0 U            | ug/Kg         |
| 1,3-Dichlorobenzene     | 1.0 U            | ug/Kg         |
| 1,4-Dichlorobenzene     | 1.0 U            | ug/Kg         |
| 1,2-Dichlorobenzene     | 1.0 U            | ug/Kg         |
| <u>Surrogate:</u>       | <u>% RECOV</u>   | <u>LIMITS</u> |
| Dibromofluoromethane    | 117              | 61-128        |
| D8-Toluene              | 100              | 77-119        |
| Bromofluorobenzene      | 82               | 60-130        |
| Date Analyzed           | 08/27/03 12:14   |               |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX33668  
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RESULTS OF ANALYSIS

EPA METHOD 8260 -  
VOLATILE ORGANICS

|                           | <u>LAB BLANK</u>      | <u>Units</u>         |
|---------------------------|-----------------------|----------------------|
| Dichlorodifluoromethane   | 2.0 U                 | ug/Kg                |
| Chloromethane             | 1.0 U                 | ug/Kg                |
| Vinyl Chloride            | 1.0 U                 | ug/Kg                |
| Bromomethane              | 1.0 U                 | ug/Kg                |
| Chloroethane              | 1.0 U                 | ug/Kg                |
| Trichlorofluoromethane    | 1.0 U                 | ug/Kg                |
| 1,1-Dichloroethene        | 1.0 U                 | ug/Kg                |
| Methylene Chloride        | 10 U                  | ug/Kg                |
| t-1,2-Dichloroethene      | 1.0 U                 | ug/Kg                |
| 1,1-Dichloroethane        | 1.0 U                 | ug/Kg                |
| c-1,2-Dichloroethene      | 1.0 U                 | ug/Kg                |
| Chloroform                | 1.0 U                 | ug/Kg                |
| 1,1,1-Trichloroethane     | 1.0 U                 | ug/Kg                |
| Carbon tetrachloride      | 1.0 U                 | ug/Kg                |
| 1,2-Dichloroethane        | 1.0 U                 | ug/Kg                |
| Trichloroethene           | 1.0 U                 | ug/Kg                |
| 1,2-Dichloropropane       | 1.0 U                 | ug/Kg                |
| Bromodichloromethane      | 1.0 U                 | ug/Kg                |
| c-1,3-Dichloropropene     | 1.0 U                 | ug/Kg                |
| t-1,3-Dichloropropene     | 1.0 U                 | ug/Kg                |
| 1,1,2-Trichloroethane     | 1.0 U                 | ug/Kg                |
| Tetrachloroethene         | 3.0 U                 | ug/Kg                |
| Dibromochloromethane      | 1.0 U                 | ug/Kg                |
| Chlorobenzene             | 1.0 U                 | ug/Kg                |
| Bromoform                 | 1.0 U                 | ug/Kg                |
| 1,1,2,2-Tetrachloroethane | 1.0 U                 | ug/Kg                |
| 1,3-Dichlorobenzene       | 1.0 U                 | ug/Kg                |
| 1,4-Dichlorobenzene       | 1.0 U                 | ug/Kg                |
| 1,2-Dichlorobenzene       | 1.0 U                 | ug/Kg                |
| <b><u>Surrogate:</u></b>  | <b><u>% RECOV</u></b> | <b><u>LIMITS</u></b> |
| Dibromofluoromethane      | 117                   | 61-128               |
| D8-Toluene                | 100                   | 77-119               |
| Bromofluorobenzene        | 82                    | 60-130               |
| Date Analyzed             | 08/27/03 12:14        |                      |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX33668  
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RESULTS OF ANALYSIS

EPA METHOD 8270 -  
PAH Compounds by SIM

|                          | <u>LAB BLANK</u> | <u>Units</u> |
|--------------------------|------------------|--------------|
| Naphthalene              | 3.3 U            | ug/Kg        |
| 2-Methylnaphthalene      | 3.3 U            | ug/Kg        |
| 1-Methylnaphthalene      | 3.3 U            | ug/Kg        |
| Acenaphthylene           | 3.3 U            | ug/Kg        |
| Acenaphthene             | 3.3 U            | ug/Kg        |
| Fluorene                 | 3.3 U            | ug/Kg        |
| Phenanthrene             | 3.3 U            | ug/Kg        |
| Anthracene               | 3.3 U            | ug/Kg        |
| Fluoranthene             | 3.3 U            | ug/Kg        |
| Pyrene                   | 3.3 U            | ug/Kg        |
| Chrysene                 | 3.3 U            | ug/Kg        |
| Benzo (a) anthracene     | 3.3 U            | ug/Kg        |
| Benzo (b) fluoranthene   | 3.3 U            | ug/Kg        |
| Benzo (k) fluoranthene   | 3.3 U            | ug/Kg        |
| Benzo (a) pyrene         | 3.3 U            | ug/Kg        |
| Indeno (1,2,3-cd) pyrene | 3.3 U            | ug/Kg        |
| Dibenzo (a,h) anthracene | 3.3 U            | ug/Kg        |
| Benzo (g,h,i) perylene   | 3.3 U            | ug/Kg        |

| <u>Surrogate:</u> | <u>% RECOV</u> | <u>LIMITS</u> |
|-------------------|----------------|---------------|
| p-Terphenyl       | 78             | 19-162        |
| Date Prepared     | 08/20/03       |               |
| Date Analyzed     | 08/22/03 13:56 |               |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

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DATE REPORTED: August 27, 2003  
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PROJECT NAME : 5863

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RESULTS OF ANALYSIS

EPA METHOD FLPRO -  
PETROL. RESIDUAL ORG.

Hydrocarbons (C8-C40)

LAB BLANK

6.6 U

Units

mg/Kg

Surrogate:

o-Terphenyl  
Nonatriacontane  
Date Prepared  
Date Analyzed

% RECOV

78  
87  
08/18/03  
08/20/03 19:31

LIMITS

51-148  
36-152

U = Compound was analyzed for but not detected to the level shown.

**ENCO LABORATORIES**

**REPORT #** : JAX33668  
**DATE REPORTED:** August 27, 2003  
**REFERENCE** : CTO303 SITE 1241  
**PROJECT NAME** : 5863

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**LABORATORY CERTIFICATIONS**

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

ENCO LABORATORIES

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QUALITY CONTROL DATA

| <u>Parameter</u>             | <u>% RECOVERY<br/>MS/MSD/LCS</u> | <u>ACCEPT<br/>LIMITS</u> | <u>% RPD<br/>MS/MSD</u> | <u>ACCEPT<br/>LIMITS</u> |
|------------------------------|----------------------------------|--------------------------|-------------------------|--------------------------|
| <u>EPA Method 8260</u>       |                                  |                          |                         |                          |
| 1,1-Dichloroethene           | 57/ 58/ 67                       | 19-161                   | 2                       | 19                       |
| Benzene                      | 96/ 92/ 95                       | 60-129                   | 4                       | 23                       |
| Trichloroethene              | 101/103/ 90                      | 56-132                   | 2                       | 17                       |
| Toluene                      | 99/ 88/104                       | 53-129                   | 12                      | 22                       |
| Chlorobenzene                | 114/107/122                      | 61-136                   | 6                       | 24                       |
| 1,1-Dichloroethene           | 57/ 58/ 67                       | 19-161                   | 2                       | 19                       |
| Benzene                      | 96/ 92/ 95                       | 60-129                   | 4                       | 23                       |
| Trichloroethene              | 101/103/ 90                      | 56-132                   | 2                       | 17                       |
| Toluene                      | 99/ 88/104                       | 53-129                   | 12                      | 22                       |
| Chlorobenzene                | 114/107/122                      | 61-136                   | 6                       | 24                       |
| <u>EPA Method 8270</u>       |                                  |                          |                         |                          |
| Naphthalene                  | 105/100/ 76                      | 20-131                   | 5                       | 29                       |
| Acenaphthene                 | 115/100/ 79                      | 24-132                   | 14                      | 23                       |
| Benzo(a)pyrene               | 120/115/ 96                      | 34-140                   | 4                       | 28                       |
| Benzo(g,h,i)perylene         | * / * /119                       | 31-152                   | *                       | 21                       |
| <u>PETROL. RESIDUAL ORG.</u> |                                  |                          |                         |                          |
| Hydrocarbons (C8-C40)        | 65/ 78/ 61                       | 62-204                   | 18                      | 25                       |

< = Less Than  
 MS = Matrix Spike  
 MSD = Matrix Spike Duplicate  
 LCS = Laboratory Control Standard  
 RPD = Relative Percent Difference  
 \* = MS/MSD/RPD unavailable due to high original sample concentration.

**APPENDIX H**

**GROUNDWATER ANALYTICAL REPORTS OF  
PERMANENT MONITORING WELL SAMPLES**

**CLIENT :** Tetra Tech NUS  
**ADDRESS:** Foster Plaza 7  
661 Andersen Dr.  
Pittsburg, PA 15220-2745

**INVOICE # :** JAX34771  
**DATE SUBMITTED :** October 8, 2003  
**DATE REPORTED :** October 24, 2003

**CLIENT #:** BR006

**ATTENTION:** Mr. M. Peterson  
**REFERENCE:** 5863 SITE 1241

**P.O. # :** N5863-P3412(SS)

**INVOICE**

| DESCRIPTION                             | PRICE        | QTY | AMOUNT            |
|---|--------------|-----|-------------------|
| SW-846 Method 8260 (Volatile Organics)  | \$ 85.00     | X 4 | \$ 340.00         |
| 8270 (PAH's by Selected Ion Monitoring) | \$ 100.00    | X 4 | \$ 400.00         |
| EPA Method 504 (Ethylene Dibromide)     | \$ 40.00     | X 4 | \$ 160.00         |
| FL Method FLPRO (Petrol Residual Org.)  | \$ 85.00     | X 4 | \$ 340.00         |
| Lead                                    | \$ 15.00     | X 4 | \$ 60.00          |
|   | <b>TOTAL</b> |     | <b>\$ 1300.00</b> |

**Please remit payment to :**  
Environmental Conservation Laboratories, Inc.  
9500 Satellite Blvd., Suite 190  
Orlando, FL 32837-8466

**TERMS: NET 30 DAYS**

Past Due Balances are subject to a 1.5% per month service charge.

CLIENT : Tetra Tech NUS  
ADDRESS: 8640 Philips Highway  
Suite 16  
Jacksonville, FL 32256

REPORT # : JAX34771  
DATE SUBMITTED: October 8, 2003  
DATE REPORTED : October 24, 2003

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ATTENTION: Mr. M. Peterson

**SAMPLE IDENTIFICATION**

Samples submitted and  
identified by client as:

REFERENCE: 5863 SITE 1241

10/08/03

JAX34771-1 : MPT-1241-MW1 @ 13:00  
JAX34771-2 : MPT-11-MW1 @ 12:10 ← MW-X1  
JAX34771-3 : MPT-1241-MW2 @ 13:50  
JAX34771-4 : MPT-1241-MW3 @ 13:25

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

PROJECT MANAGER

\_\_\_\_\_  
Christopher K. Devore

ENCO LABORATORIES

REPORT # : JAX34771

DATE REPORTED: October 24, 2003

REFERENCE : 5863 SITE 1241

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RESULTS OF ANALYSIS

| <u>EPA METHOD 8260 -<br/>VOLATILE ORGANICS</u> | <u>MPT-1241-MW1</u> | <u>MW-X1<br/>MPT-11-MW1</u> | <u>Units</u> |
|--|---------------------|-----------------------------|--------------|
| Dichlorodifluoromethane                        | 2.0 U               | 2.0 U                       | ug/L         |
| Chloromethane                                  | 1.0 U               | 1.0 U                       | ug/L         |
| Vinyl Chloride                                 | 1.0 U               | 1.0 U                       | ug/L         |
| Bromomethane                                   | 2.0 U               | 2.0 U                       | ug/L         |
| Chloroethane                                   | 2.0 U               | 2.0 U                       | ug/L         |
| Trichlorofluoromethane                         | 1.0 U               | 1.0 U                       | ug/L         |
| 1,1-Dichloroethene                             | 1.0 U               | 1.0 U                       | ug/L         |
| Acetone  | 50 U                | 50 U                        | ug/L         |
| Carbon Disulfide                               | 50 U                | 50 U                        | ug/L         |
| Methylene Chloride                             | 5.0 U               | 5.0 U                       | ug/L         |
| t-1,2-Dichloroethene                           | 1.0 U               | 1.0 U                       | ug/L         |
| Methyl tert-butyl ether                        | 1.0 U               | 1.0 U                       | ug/L         |
| 1,1-Dichloroethane                             | 1.0 U               | 1.0 U                       | ug/L         |
| 2,2-Dichloropropane                            | 2.0 U               | 2.0 U                       | ug/L         |
| c-1,2-Dichloroethene                           | 1.0 U               | 1.0 U                       | ug/L         |
| 2-Butanone                                     | 20 U                | 20 U                        | ug/L         |
| Chloroform                                     | 1.0 U               | 1.0 U                       | ug/L         |
| 1,1,1-Trichloroethane                          | 1.0 U               | 1.0 U                       | ug/L         |
| Carbon tetrachloride                           | 1.0 U               | 1.0 U                       | ug/L         |
| 1,1-Dichloropropene                            | 1.0 U               | 1.0 U                       | ug/L         |
| Benzene  | 1.0 U               | 1.0 U                       | ug/L         |
| 1,2-Dichloroethane                             | 1.0 U               | 1.0 U                       | ug/L         |
| Trichloroethene                                | 1.0 U               | 1.0 U                       | ug/L         |
| 1,2-Dichloropropane                            | 1.0 U               | 1.0 U                       | ug/L         |
| Dibromomethane                                 | 1.0 U               | 1.0 U                       | ug/L         |
| Bromodichloromethane                           | 1.0 U               | 1.0 U                       | ug/L         |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

| EPA METHOD 8260 (cont.) -<br>VOLATILE ORGANICS | <u>MPT-1241-MW1</u> | MW-X1<br><u>MPT-11-MW1</u> | <u>Units</u> |
|--|---------------------|----------------------------|--------------|
| 2-Chloroethyl vinyl ether                      | 6.0 U               | 6.0 U                      | ug/L         |
| c-1,3-Dichloropropene                          | 1.0 U               | 1.0 U                      | ug/L         |
| 4-Methyl-2-pentanone                           | 20 U                | 20 U                       | ug/L         |
| Toluene  | 1.0 U               | 1.0 U                      | ug/L         |
| t-1,3-Dichloropropene                          | 1.0 U               | 1.0 U                      | ug/L         |
| 1,1,2-Trichloroethane                          | 1.0 U               | 1.0 U                      | ug/L         |
| Tetrachloroethene                              | 3.0 U               | 3.0 U                      | ug/L         |
| 1,3-Dichloropropane                            | 1.0 U               | 1.0 U                      | ug/L         |
| 2-Hexanone                                     | 20 U                | 20 U                       | ug/L         |
| Dibromochloromethane                           | 1.0 U               | 1.0 U                      | ug/L         |
| 1,2-Dibromoethane                              | 1.0 U               | 1.0 U                      | ug/L         |
| Chlorobenzene                                  | 1.0 U               | 1.0 U                      | ug/L         |
| 1,1,1,2-Tetrachloroethane                      | 1.0 U               | 1.0 U                      | ug/L         |
| Ethylbenzene                                   | 1.0 U               | 1.0 U                      | ug/L         |
| m-Xylene & p-Xylene                            | 2.0 U               | 2.0 U                      | ug/L         |
| o-Xylene                                       | 1.0 U               | 1.0 U                      | ug/L         |
| Styrene  | 1.0 U               | 1.0 U                      | ug/L         |
| Bromoform                                      | 1.0 U               | 1.0 U                      | ug/L         |
| Isopropylbenzene                               | 1.0 U               | 1.0 U                      | ug/L         |
| 1,1,2,2-Tetrachloroethane                      | 1.0 U               | 1.0 U                      | ug/L         |
| Bromobenzene                                   | 1.0 U               | 1.0 U                      | ug/L         |
| 1,2,3-Trichlorobenzene                         | 1.0 U               | 1.0 U                      | ug/L         |
| n-Propylbenzene                                | 1.0 U               | 1.0 U                      | ug/L         |
| 2-Chlorotoluene                                | 1.0 U               | 1.0 U                      | ug/L         |
| 1,3,5-Trimethylbenzene                         | 1.0 U               | 1.0 U                      | ug/L         |
| 4-Chlorotoluene                                | 1.0 U               | 1.0 U                      | ug/L         |

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RESULTS OF ANALYSIS

| EPA METHOD 8260 (cont.) -<br>VOLATILE ORGANICS | MW-X1          |                | Units         |
|--|----------------|----------------|---------------|
|  | MPT-1241-MW1   | MPT-11-MW1     |               |
| tert-Butylbenzene                              | 1.0 U          | 1.0 U          | ug/L          |
| 1,2,4-Trimethylbenzene                         | 1.0 U          | 1.0 U          | ug/L          |
| s-Butylbenzene                                 | 1.0 U          | 1.0 U          | ug/L          |
| 1,3-Dichlorobenzene                            | 1.0 U          | 1.0 U          | ug/L          |
| p-Isopropyltoluene                             | 1.0 U          | 1.0 U          | ug/L          |
| 1,4-Dichlorobenzene                            | 1.0 U          | 1.0 U          | ug/L          |
| n-Butylbenzene                                 | 1.0 U          | 1.0 U          | ug/L          |
| 1,2-Dichlorobenzene                            | 1.0 U          | 1.0 U          | ug/L          |
| 1,2-Dibromo-3-chloropropane                    | 1.0 U          | 1.0 U          | ug/L          |
| 1,2,4-Trichlorobenzene                         | 1.0 U          | 1.0 U          | ug/L          |
| Hexachlorobutadiene                            | 1.0 U          | 1.0 U          | ug/L          |
| Naphthalene                                    | 2.0 U          | 2.0 U          | ug/L          |
| 1,2,3-Trichloropropane                         | 1.0 U          | 1.0 U          | ug/L          |
| Bromochloromethane                             | 1.0 U          | 1.0 U          | ug/L          |
| <b>Surrogate:</b>                              | <b>% RECOV</b> | <b>% RECOV</b> | <b>LIMITS</b> |
| Dibromofluoromethane                           | 93             | 94             | 67-139        |
| D8-Toluene                                     | 100            | 100            | 80-115        |
| Bromofluorobenzene                             | 99             | 94             | 66-131        |
| Date Analyzed                                  | 10/22/03 13:58 | 10/22/03 14:34 |               |

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RESULTS OF ANALYSIS

| EPA METHOD 8270 -<br>PAH Compounds by SIM | MW-X1          |                | Units         |
|---|----------------|----------------|---------------|
|   | MPT-1241-MW1   | MPT-11-MW1     |               |
| Naphthalene                               | 0.10 U         | 0.10 U         | ug/L          |
| 2-Methylnaphthalene                       | 0.10 U         | 0.10 U         | ug/L          |
| 1-Methylnaphthalene                       | 0.10 U         | 0.10 U         | ug/L          |
| Acenaphthylene                            | 0.10 U         | 0.10 U         | ug/L          |
| Acenaphthene                              | 0.10 U         | 0.10 U         | ug/L          |
| Fluorene                                  | 0.10 U         | 0.10 U         | ug/L          |
| Phenanthrene                              | 0.10 U         | 0.10 U         | ug/L          |
| Anthracene                                | 0.10 U         | 0.10 U         | ug/L          |
| Fluoranthene                              | 0.10 U         | 0.10 U         | ug/L          |
| Pyrene                                    | 0.10 U         | 0.10 U         | ug/L          |
| Chrysene                                  | 0.10 U         | 0.10 U         | ug/L          |
| Benzo (a) anthracene                      | 0.10 U         | 0.10 U         | ug/L          |
| Benzo (b) fluoranthene                    | 0.10 U         | 0.10 U         | ug/L          |
| Benzo (k) fluoranthene                    | 0.10 U         | 0.10 U         | ug/L          |
| Benzo (a) pyrene                          | 0.10 U         | 0.10 U         | ug/L          |
| Indeno (1,2,3-cd) pyrene                  | 0.10 U         | 0.10 U         | ug/L          |
| Dibenzo (a,h) anthracene                  | 0.10 U         | 0.10 U         | ug/L          |
| Benzo (g,h,i) perylene                    | 0.10 U         | 0.10 U         | ug/L          |
| <b>Surrogate:</b>                         | <b>% RECOV</b> | <b>% RECOV</b> | <b>LIMITS</b> |
| p-Terphenyl                               | 62             | 68             | 20-148        |
| Date Prepared                             | 10/09/03       | 10/09/03       |               |
| Date Analyzed                             | 10/10/03 16:42 | 10/10/03 17:05 |               |

| EPA METHOD 504 -<br>ETHYLENE DIBROMIDE | MW-X1          |                | Units |
|--|----------------|----------------|-------|
|  | MPT-1241-MW1   | MPT-11-MW1     |       |
| Ethylene Dibromide                     | 0.020 U        | 0.020 U        | ug/L  |
| Date Prepared                          | 10/09/03       | 10/09/03       |       |
| Date Analyzed                          | 10/09/03 19:12 | 10/09/03 19:30 |       |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

| <u>TOTAL METALS</u>                                 | <u>METHOD</u> | <u>MPT-1241-MW1</u> | MW-X1<br><u>MPT-11-MW1</u> | <u>Units</u>  |
|---|---------------|---------------------|----------------------------|---------------|
| Lead  | 6010          | 0.010 U             | 0.010 U                    | mg/L          |
| Date Analyzed                                       |               | 10/17/03 17:09      | 10/17/03 17:30             |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-MW1</u> | MW-X1<br><u>MPT-11-MW1</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 0.20 U              | 0.20 U                     | mg/L          |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>      | <u>% RECOV</u>             | <u>LIMITS</u> |
| o-Terphenyl   |               | 67                  | 61                         | 38-133        |
| Nonatriacontane                                     |               | 61                  | 48                         | 20-127        |
| Date Prepared                                       |               | 10/10/03            | 10/10/03                   |               |
| Date Analyzed                                       |               | 10/13/03 22:36      | 10/13/03 22:48             |               |

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RESULTS OF ANALYSIS

**EPA METHOD 8260 -  
VOLATILE ORGANICS**

|                         | <u>MPT-1241-MW2</u> | <u>MPT-1241-MW3</u> | <u>Units</u> |
|-------------------------|---------------------|---------------------|--------------|
| Dichlorodifluoromethane | 2.0 U               | 2.0 U               | ug/L         |
| Chloromethane           | 1.0 U               | 1.0 U               | ug/L         |
| Vinyl Chloride          | 1.0 U               | 1.0 U               | ug/L         |
| Bromomethane            | 2.0 U               | 2.0 U               | ug/L         |
| Chloroethane            | 2.0 U               | 2.0 U               | ug/L         |
| Trichlorofluoromethane  | 1.0 U               | 1.0 U               | ug/L         |
| 1,1-Dichloroethene      | 1.0 U               | 1.0 U               | ug/L         |
| Acetone                 | 50 U                | 50 U                | ug/L         |
| Carbon Disulfide        | 50 U                | 50 U                | ug/L         |
| Methylene Chloride      | 5.0 U               | 5.0 U               | ug/L         |
| t-1,2-Dichloroethene    | 1.0 U               | 1.0 U               | ug/L         |
| Methyl tert-butyl ether | 1.0 U               | 1.0 U               | ug/L         |
| 1,1-Dichloroethane      | 1.0 U               | 1.0 U               | ug/L         |
| 2,2-Dichloropropane     | 2.0 U               | 2.0 U               | ug/L         |
| c-1,2-Dichloroethene    | 1.0 U               | 1.0 U               | ug/L         |
| 2-Butanone              | 20 U                | 20 U                | ug/L         |
| Chloroform              | 1.0 U               | 1.0 U               | ug/L         |
| 1,1,1-Trichloroethane   | 1.0 U               | 1.0 U               | ug/L         |
| Carbon tetrachloride    | 1.0 U               | 1.0 U               | ug/L         |
| 1,1-Dichloropropene     | 1.0 U               | 1.0 U               | ug/L         |
| Benzene                 | 1.0 U               | 1.0 U               | ug/L         |
| 1,2-Dichloroethane      | 1.0 U               | 1.0 U               | ug/L         |
| Trichloroethene         | 1.0 U               | 1.0 U               | ug/L         |
| 1,2-Dichloropropane     | 1.0 U               | 1.0 U               | ug/L         |
| Dibromomethane          | 1.0 U               | 1.0 U               | ug/L         |
| Bromodichloromethane    | 1.0 U               | 1.0 U               | ug/L         |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

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RESULTS OF ANALYSIS

EPA METHOD 8260 (cont.) -  
VOLATILE ORGANICS

|                           | <u>MPT-1241-MW2</u> | <u>MPT-1241-MW3</u> | <u>Units</u> |
|---------------------------|---------------------|---------------------|--------------|
| 2-Chloroethyl vinyl ether | 6.0 U               | 6.0 U               | ug/L         |
| c-1,3-Dichloropropene     | 1.0 U               | 1.0 U               | ug/L         |
| 4-Methyl-2-pentanone      | 20 U                | 20 U                | ug/L         |
| Toluene                   | 1.0 U               | 1.0 U               | ug/L         |
| t-1,3-Dichloropropene     | 1.0 U               | 1.0 U               | ug/L         |
| 1,1,2-Trichloroethane     | 1.0 U               | 1.0 U               | ug/L         |
| Tetrachloroethene         | 3.0 U               | 3.0 U               | ug/L         |
| 1,3-Dichloropropane       | 1.0 U               | 1.0 U               | ug/L         |
| 2-Hexanone                | 20 U                | 20 U                | ug/L         |
| Dibromochloromethane      | 1.0 U               | 1.0 U               | ug/L         |
| 1,2-Dibromoethane         | 1.0 U               | 1.0 U               | ug/L         |
| Chlorobenzene             | 1.0 U               | 1.0 U               | ug/L         |
| 1,1,1,2-Tetrachloroethane | 1.0 U               | 1.0 U               | ug/L         |
| Ethylbenzene              | 1.0 U               | 1.0 U               | ug/L         |
| m-Xylene & p-Xylene       | 2.0 U               | 2.0 U               | ug/L         |
| o-Xylene                  | 1.0 U               | 1.0 U               | ug/L         |
| Styrene                   | 1.0 U               | 1.0 U               | ug/L         |
| Bromoform                 | 1.0 U               | 1.0 U               | ug/L         |
| Isopropylbenzene          | 1.0 U               | 1.0 U               | ug/L         |
| 1,1,2,2-Tetrachloroethane | 1.0 U               | 1.0 U               | ug/L         |
| Bromobenzene              | 1.0 U               | 1.0 U               | ug/L         |
| 1,2,3-Trichlorobenzene    | 1.0 U               | 1.0 U               | ug/L         |
| n-Propylbenzene           | 1.0 U               | 1.0 U               | ug/L         |
| 2-Chlorotoluene           | 1.0 U               | 1.0 U               | ug/L         |
| 1,3,5-Trimethylbenzene    | 1.0 U               | 1.0 U               | ug/L         |
| 4-Chlorotoluene           | 1.0 U               | 1.0 U               | ug/L         |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX34771  
 DATE REPORTED: October 24, 2003  
 REFERENCE : 5863 SITE 1241

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RESULTS OF ANALYSIS

EPA METHOD 8260 (cont.) -  
 VOLATILE ORGANICS

|                             | <u>MPT-1241-MW2</u>   | <u>MPT-1241-MW3</u>   | <u>Units</u>         |
|-----------------------------|-----------------------|-----------------------|----------------------|
| tert-Butylbenzene           | 1.0 U                 | 1.0 U                 | ug/L                 |
| 1,2,4-Trimethylbenzene      | 1.0 U                 | 1.0 U                 | ug/L                 |
| s-Butylbenzene              | 1.0 U                 | 1.0 U                 | ug/L                 |
| 1,3-Dichlorobenzene         | 1.0 U                 | 1.0 U                 | ug/L                 |
| p-Isopropyltoluene          | 1.0 U                 | 1.0 U                 | ug/L                 |
| 1,4-Dichlorobenzene         | 1.0 U                 | 1.0 U                 | ug/L                 |
| n-Butylbenzene              | 1.0 U                 | 1.0 U                 | ug/L                 |
| 1,2-Dichlorobenzene         | 1.0 U                 | 1.0 U                 | ug/L                 |
| 1,2-Dibromo-3-chloropropane | 1.0 U                 | 1.0 U                 | ug/L                 |
| 1,2,4-Trichlorobenzene      | 1.0 U                 | 1.0 U                 | ug/L                 |
| Hexachlorobutadiene         | 1.0 U                 | 1.0 U                 | ug/L                 |
| Naphthalene                 | 2.0 U                 | 2.0 U                 | ug/L                 |
| 1,2,3-Trichloropropane      | 1.0 U                 | 1.0 U                 | ug/L                 |
| Bromochloromethane          | 1.0 U                 | 1.0 U                 | ug/L                 |
| <b><u>Surrogate:</u></b>    | <b><u>% RECOV</u></b> | <b><u>% RECOV</u></b> | <b><u>LIMITS</u></b> |
| Dibromofluoromethane        | 94                    | 98                    | 67-139               |
| D8-Toluene                  | 96                    | 100                   | 80-115               |
| Bromofluorobenzene          | 96                    | 95                    | 66-131               |
| Date Analyzed               | 10/22/03 15:11        | 10/22/03 15:48        |                      |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES  
 REPORT # : JAX34771  
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 REFERENCE : 5863 SITE 1241

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RESULTS OF ANALYSIS

**EPA METHOD 8270 -  
 PAH Compounds by SIM**

|                          | <u>MPT-1241-MW2</u> | <u>MPT-1241-MW3</u> | <u>Units</u> |
|--------------------------|---------------------|---------------------|--------------|
| Naphthalene              | 0.10 U              | 0.10 U              | ug/L         |
| 2-Methylnaphthalene      | 0.10 U              | 0.10 U              | ug/L         |
| 1-Methylnaphthalene      | 0.10 U              | 0.10 U              | ug/L         |
| Acenaphthylene           | 0.10 U              | 0.10 U              | ug/L         |
| Acenaphthene             | 0.10 U              | 0.10 U              | ug/L         |
| Fluorene                 | 0.10 U              | 0.10 U              | ug/L         |
| Phenanthrene             | 0.10 U              | 0.10 U              | ug/L         |
| Anthracene               | 0.10 U              | 0.10 U              | ug/L         |
| Fluoranthene             | 0.10 U              | <b>0.63</b>         | ug/L         |
| Pyrene                   | 0.10 U              | <b>0.38</b>         | ug/L         |
| Chrysene                 | 0.10 U              | 0.10 U              | ug/L         |
| Benzo (a) anthracene     | 0.10 U              | 0.10 U              | ug/L         |
| Benzo (b) fluoranthene   | 0.10 U              | 0.10 U              | ug/L         |
| Benzo (k) fluoranthene   | 0.10 U              | 0.10 U              | ug/L         |
| Benzo (a) pyrene         | 0.10 U              | 0.10 U              | ug/L         |
| Indeno (1,2,3-cd) pyrene | 0.10 U              | 0.10 U              | ug/L         |
| Dibenzo (a,h) anthracene | 0.10 U              | 0.10 U              | ug/L         |
| Benzo (g,h,i) perylene   | 0.10 U              | 0.10 U              | ug/L         |

| <u>Surrogate:</u> | <u>% RECOV</u> | <u>% RECOV</u> | <u>LIMITS</u> |
|-------------------|----------------|----------------|---------------|
| p-Terphenyl       | 68             | 74             | 20-148        |
| Date Prepared     | 10/09/03       | 10/09/03       |               |
| Date Analyzed     | 10/10/03 17:29 | 10/10/03 17:52 |               |

**EPA METHOD 504 -  
 ETHYLENE DIBROMIDE**

|                    | <u>MPT-1241-MW2</u> | <u>MPT-1241-MW3</u> | <u>Units</u> |
|--------------------|---------------------|---------------------|--------------|
| Ethylene Dibromide | 0.020 U             | 0.020 U             | ug/L         |
| Date Prepared      | 10/09/03            | 10/09/03            |              |
| Date Analyzed      | 10/09/03 19:48      | 10/09/03 20:07      |              |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

| <u>TOTAL METALS</u>                                 | <u>METHOD</u> | <u>MPT-1241-MW2</u> | <u>MPT-1241-MW3</u> | <u>Units</u>  |
|---|---------------|---------------------|---------------------|---------------|
| Lead  | 6010          | 0.010 U             | 0.010 U             | mg/L          |
| Date Analyzed                                       |               | 10/17/03 17:37      | 10/17/03 17:44      |               |
| <br>  |               |                     |                     |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-MW2</u> | <u>MPT-1241-MW3</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 0.33                | 0.20 U              | mg/L          |
| <br>  |               |                     |                     |               |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>      | <u>% RECOV</u>      | <u>LIMITS</u> |
| o-Terphenyl   |               | 80                  | 78                  | 38-133        |
| Nonatriacontane                                     |               | 63                  | 62                  | 20-127        |
| Date Prepared                                       |               | 10/10/03            | 10/10/03            |               |
| Date Analyzed                                       |               | 10/13/03 23:00      | 10/13/03 23:12      |               |

U = Compound was analyzed for but not detected to the level shown.

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**RESULTS OF ANALYSIS****EPA METHOD 8260 -  
VOLATILE ORGANICS**

|                         | <u>LAB BLANK</u> | <u>Units</u> |
|-------------------------|------------------|--------------|
| Dichlorodifluoromethane | 2.0 U            | ug/L         |
| Chloromethane           | 1.0 U            | ug/L         |
| Vinyl Chloride          | 1.0 U            | ug/L         |
| Bromomethane            | 2.0 U            | ug/L         |
| Chloroethane            | 2.0 U            | ug/L         |
| Trichlorofluoromethane  | 1.0 U            | ug/L         |
| 1,1-Dichloroethene      | 1.0 U            | ug/L         |
| Acetone                 | 50 U             | ug/L         |
| Carbon Disulfide        | 50 U             | ug/L         |
| Methylene Chloride      | 5.0 U            | ug/L         |
| t-1,2-Dichloroethene    | 1.0 U            | ug/L         |
| Methyl tert-butyl ether | 1.0 U            | ug/L         |
| 1,1-Dichloroethane      | 1.0 U            | ug/L         |
| 2,2-Dichloropropane     | 2.0 U            | ug/L         |
| c-1,2-Dichloroethene    | 1.0 U            | ug/L         |
| 2-Butanone              | 20 U             | ug/L         |
| Chloroform              | 1.0 U            | ug/L         |
| 1,1,1-Trichloroethane   | 1.0 U            | ug/L         |
| Carbon tetrachloride    | 1.0 U            | ug/L         |
| 1,1-Dichloropropene     | 1.0 U            | ug/L         |
| Benzene                 | 1.0 U            | ug/L         |
| 1,2-Dichloroethane      | 1.0 U            | ug/L         |
| Trichloroethene         | 1.0 U            | ug/L         |
| 1,2-Dichloropropane     | 1.0 U            | ug/L         |
| Dibromomethane          | 1.0 U            | ug/L         |
| Bromodichloromethane    | 1.0 U            | ug/L         |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

EPA METHOD 8260 (cont.) -  
VOLATILE ORGANICS

|                           | <u>LAB BLANK</u> | <u>Units</u> |
|---------------------------|------------------|--------------|
| 2-Chloroethyl vinyl ether | 6.0 U            | ug/L         |
| c-1,3-Dichloropropene     | 1.0 U            | ug/L         |
| 4-Methyl-2-pentanone      | 20 U             | ug/L         |
| Toluene                   | 1.0 U            | ug/L         |
| t-1,3-Dichloropropene     | 1.0 U            | ug/L         |
| 1,1,2-Trichloroethane     | 1.0 U            | ug/L         |
| Tetrachloroethene         | 3.0 U            | ug/L         |
| 1,3-Dichloropropane       | 1.0 U            | ug/L         |
| 2-Hexanone                | 20 U             | ug/L         |
| Dibromochloromethane      | 1.0 U            | ug/L         |
| 1,2-Dibromoethane         | 1.0 U            | ug/L         |
| Chlorobenzene             | 1.0 U            | ug/L         |
| 1,1,1,2-Tetrachloroethane | 1.0 U            | ug/L         |
| Ethylbenzene              | 1.0 U            | ug/L         |
| m-Xylene & p-Xylene       | 2.0 U            | ug/L         |
| o-Xylene                  | 1.0 U            | ug/L         |
| Styrene                   | 1.0 U            | ug/L         |
| Bromoform                 | 1.0 U            | ug/L         |
| Isopropylbenzene          | 1.0 U            | ug/L         |
| 1,1,2,2-Tetrachloroethane | 1.0 U            | ug/L         |
| Bromobenzene              | 1.0 U            | ug/L         |
| 1,2,3-Trichlorobenzene    | 1.0 U            | ug/L         |
| n-Propylbenzene           | 1.0 U            | ug/L         |
| 2-Chlorotoluene           | 1.0 U            | ug/L         |
| 1,3,5-Trimethylbenzene    | 1.0 U            | ug/L         |
| 4-Chlorotoluene           | 1.0 U            | ug/L         |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

EPA METHOD 8260 (cont.) -  
VOLATILE ORGANICS

|                             | <u>LAB BLANK</u>      | <u>Units</u>         |
|-----------------------------|-----------------------|----------------------|
| tert-Butylbenzene           | 1.0 U                 | ug/L                 |
| 1,2,4-Trimethylbenzene      | 1.0 U                 | ug/L                 |
| s-Butylbenzene              | 1.0 U                 | ug/L                 |
| 1,3-Dichlorobenzene         | 1.0 U                 | ug/L                 |
| p-Isopropyltoluene          | 1.0 U                 | ug/L                 |
| 1,4-Dichlorobenzene         | 1.0 U                 | ug/L                 |
| n-Butylbenzene              | 1.0 U                 | ug/L                 |
| 1,2-Dichlorobenzene         | 1.0 U                 | ug/L                 |
| 1,2-Dibromo-3-chloropropane | 1.0 U                 | ug/L                 |
| 1,2,4-Trichlorobenzene      | 1.0 U                 | ug/L                 |
| Hexachlorobutadiene         | 1.0 U                 | ug/L                 |
| Naphthalene                 | 2.0 U                 | ug/L                 |
| 1,2,3-Trichloropropane      | 1.0 U                 | ug/L                 |
| Bromochloromethane          | 1.0 U                 | ug/L                 |
| <b><u>Surrogate:</u></b>    | <b><u>% RECOV</u></b> | <b><u>LIMITS</u></b> |
| Dibromofluoromethane        | 97                    | 67-139               |
| D8-Toluene                  | 99                    | 80-115               |
| Bromofluorobenzene          | 96                    | 66-131               |
| Date Analyzed               | 10/22/03 13:21        |                      |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

EPA METHOD 8270 -  
PAH Compounds by SIM

|                        | <u>LAB BLANK</u> | <u>Units</u> |
|------------------------|------------------|--------------|
| Naphthalene            | 0.10 U           | ug/L         |
| 2-Methylnaphthalene    | 0.10 U           | ug/L         |
| 1-Methylnaphthalene    | 0.10 U           | ug/L         |
| Acenaphthylene         | 0.10 U           | ug/L         |
| Acenaphthene           | 0.10 U           | ug/L         |
| Fluorene               | 0.10 U           | ug/L         |
| Phenanthrene           | 0.10 U           | ug/L         |
| Anthracene             | 0.10 U           | ug/L         |
| Fluoranthene           | 0.10 U           | ug/L         |
| Pyrene                 | 0.10 U           | ug/L         |
| Chrysene               | 0.10 U           | ug/L         |
| Benzo(a)anthracene     | 0.10 U           | ug/L         |
| Benzo(b)fluoranthene   | 0.10 U           | ug/L         |
| Benzo(k)fluoranthene   | 0.10 U           | ug/L         |
| Benzo(a)pyrene         | 0.10 U           | ug/L         |
| Indeno(1,2,3-cd)pyrene | 0.10 U           | ug/L         |
| Dibenzo(a,h)anthracene | 0.10 U           | ug/L         |
| Benzo(g,h,i)perylene   | 0.10 U           | ug/L         |

Surrogate:

|               | <u>% RECOV</u> | <u>LIMITS</u> |
|---------------|----------------|---------------|
| p-Terphenyl   | 56             | 20-148        |
| Date Prepared | 10/09/03       |               |
| Date Analyzed | 10/10/03 15:09 |               |

EPA METHOD 504 -  
ETHYLENE DIBROMIDE

|                    | <u>LAB BLANK</u> | <u>Units</u> |
|--------------------|------------------|--------------|
| Ethylene Dibromide | 0.020 U          | ug/L         |
| Date Prepared      | 10/09/03         |              |
| Date Analyzed      | 10/09/03 17:22   |              |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

| <u>TOTAL METALS</u>                                 | <u>METHOD</u> | <u>LAB BLANK</u> | <u>Units</u>  |
|---|---------------|------------------|---------------|
| Lead  | 6010          | 0.010 U          | mg/L          |
| Date Analyzed                                       |               | 10/17/03 16:55   |               |
| <br>  |               |                  |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>LAB BLANK</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 0.20 U           | mg/L          |
| <br>  |               |                  |               |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>   | <u>LIMITS</u> |
| o-Terphenyl   |               | 74               | 38-133        |
| Nonatriacontane                                     |               | 56               | 20-127        |
| Date Prepared                                       |               | 10/10/03         |               |
| Date Analyzed                                       |               | 10/13/03 22:01   |               |

U = Compound was analyzed for but not detected to the level shown.

**ENCO LABORATORIES**

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**LABORATORY CERTIFICATIONS**

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

ENCO LABORATORIES

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QUALITY CONTROL DATA

| <u>Parameter</u>             | <u>% RECOVERY<br/>MS/MSD/LCS</u> | <u>ACCEPT<br/>LIMITS</u> | <u>% RPD<br/>MS/MSD</u> | <u>ACCEPT<br/>LIMITS</u> |
|------------------------------|----------------------------------|--------------------------|-------------------------|--------------------------|
| <u>EPA Method 8260</u>       |                                  |                          |                         |                          |
| 1,1-Dichloroethene           | 73/ 72/ 70                       | 40-155                   | 1                       | 30                       |
| Benzene                      | 114/114/112                      | 70-131                   | <1                      | 23                       |
| Trichloroethene              | 89/ 90/ 89                       | 68-128                   | 1                       | 10                       |
| Toluene                      | 103/107/100                      | 84-116                   | 4                       | 12                       |
| Chlorobenzene                | 105/106/106                      | 88-123                   | <1                      | 11                       |
| <u>EPA Method 8270</u>       |                                  |                          |                         |                          |
| Naphthalene                  | 60/ 56/ 56                       | 30-112                   | 7                       | 28                       |
| Acenaphthene                 | 72/ 70/ 68                       | 28-113                   | 3                       | 32                       |
| Benzo(a)pyrene               | 87/ 88/ 88                       | 39-148                   | 1                       | 38                       |
| Benzo(g,h,i)perylene         | 86/ 84/ 90                       | 20-130                   | 2                       | 43                       |
| <u>EPA Method 504</u>        |                                  |                          |                         |                          |
| Ethylene Dibromide           | 84/ 83/ 77                       | 57-130                   | 1                       | 18                       |
| Dibromochloropropane         | 91/ 96/ 78                       | 60-130                   | 5                       | 20                       |
| <u>TOTAL METALS</u>          |                                  |                          |                         |                          |
| Lead, 6010                   | 105/103/107                      | 68-126                   | 2                       | 19                       |
| <u>PETROL. RESIDUAL ORG.</u> |                                  |                          |                         |                          |
| Hydrocarbons (C8-C40)        | 69/ 67/ 62                       | 51-163                   | 3                       | 27                       |

< = Less Than  
 MS = Matrix Spike  
 MSD = Matrix Spike Duplicate  
 LCS = Laboratory Control Standard  
 RPD = Relative Percent Difference

**CLIENT :** Tetra Tech NUS  
**ADDRESS:** Foster Plaza 7  
661 Andersen Dr.  
Pittsburg, PA 15220-2745

**INVOICE # :** JAX34806  
**DATE SUBMITTED :** October 9, 2003  
**DATE REPORTED :** October 23, 2003

**CLIENT #:** BR006

**ATTENTION:** Mr. M. Peterson  
**REFERENCE:** CTO303 SITE 1241

**P.O. # :** N5863-P3412(SS)

**INVOICE**

| DESCRIPTION                             | PRICE        | QTY | AMOUNT           |
|---|--------------|-----|------------------|
| SW-846 Method 8260 (Volatile Organics)  | \$ 0.00      | X 3 | \$ 0.00          |
| SW-846 Method 8260 (Volatile Aromatics) | \$ 85.00     | X 3 | \$ 255.00        |
| 8270 (PAH's by Selected Ion Monitoring) | \$ 100.00    | X 3 | \$ 300.00        |
| EPA Method 504 (Ethylene Dibromide)     | \$ 40.00     | X 3 | \$ 120.00        |
| FL Method FLPRO (Petrol Residual Org.)  | \$ 85.00     | X 3 | \$ 255.00        |
| Lead                                    | \$ 15.00     | X 3 | \$ 45.00         |
|   | <b>TOTAL</b> |     | <b>\$ 975.00</b> |

**Please remit payment to :**  
Environmental Conservation Laboratories, Inc.  
9500 Satellite Blvd., Suite 190  
Orlando, FL 32837-8466

**TERMS: NET 30 DAYS**

Past Due Balances are subject to a 1.5% per month service charge.

CLIENT : Tetra Tech NUS  
ADDRESS: 8640 Philips Highway  
Suite 16  
Jacksonville, FL 32256

REPORT # : JAX34806  
DATE SUBMITTED: October 9, 2003  
DATE REPORTED : October 23, 2003

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ATTENTION: Mr. M. Peterson

#### SAMPLE IDENTIFICATION

Samples submitted and  
identified by client as:

REFERENCE: CTO303 SITE 1241

10/09/03

JAX34806-1 : MPT-1241-MW<sup>5D</sup>~~6D~~ @ 12:25  
JAX34806-2 : MPT-1241-MW~~76~~ @ 12:40  
JAX34806-3 : MPT-1241-MW4 @ 13:35

Unless otherwise noted in an attached project narrative, all samples were received in acceptable condition and processed in accordance with the referenced methods/procedures. This data has been produced in accordance with NELAC Standards (July, 1999). This report shall not be reproduced except in full, without the written approval of the laboratory. Results for these procedures apply only to the samples as submitted.

PROJECT MANAGER

\_\_\_\_\_  
Christopher K. Devore

ENCO LABORATORIES

REPORT # : JAX34806  
 DATE REPORTED: October 23, 2003  
 REFERENCE : CTO303 SITE 1241

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RESULTS OF ANALYSIS

| <u>EPA METHOD 8260 -<br/>VOLATILE ORGANICS</u> | <u>5D<br/>MPT-1241-MW6D</u> | <u>6<br/>MPT-1241-MW5</u> | <u>Units</u> |
|--|-----------------------------|---------------------------|--------------|
| Dichlorodifluoromethane                        | 2.0 U                       | 2.0 U                     | ug/L         |
| Chloromethane                                  | 1.0 U                       | 1.0 U                     | ug/L         |
| Vinyl Chloride                                 | 1.0 U                       | 1.0 U                     | ug/L         |
| Bromomethane                                   | 2.0 U                       | 2.0 U                     | ug/L         |
| Chloroethane                                   | 2.0 U                       | 2.0 U                     | ug/L         |
| Trichlorofluoromethane                         | 1.0 U                       | 1.0 U                     | ug/L         |
| 1,1-Dichloroethene                             | 1.0 U                       | 1.0 U                     | ug/L         |
| Acetone  | 50 U                        | 50 U                      | ug/L         |
| Carbon Disulfide                               | 50 U                        | 50 U                      | ug/L         |
| Methylene Chloride                             | 5.0 U                       | 5.0 U                     | ug/L         |
| t-1,2-Dichloroethene                           | 1.0 U                       | 1.0 U                     | ug/L         |
| Methyl tert-butyl ether                        | 1.0 U                       | 1.0 U                     | ug/L         |
| 1,1-Dichloroethane                             | 1.0 U                       | 1.0 U                     | ug/L         |
| 2,2-Dichloropropane                            | 2.0 U                       | 2.0 U                     | ug/L         |
| c-1,2-Dichloroethene                           | 1.0 U                       | 1.0 U                     | ug/L         |
| 2-Butanone                                     | 20 U                        | 20 U                      | ug/L         |
| Chloroform                                     | 1.0 U                       | 1.0 U                     | ug/L         |
| 1,1,1-Trichloroethane                          | 1.0 U                       | 1.0 U                     | ug/L         |
| Carbon tetrachloride                           | 1.0 U                       | 1.0 U                     | ug/L         |
| 1,1-Dichloropropene                            | 1.0 U                       | 1.0 U                     | ug/L         |
| Benzene  | 1.0 U                       | 1.0 U                     | ug/L         |
| 1,2-Dichloroethane                             | 1.0 U                       | 1.0 U                     | ug/L         |
| Trichloroethene                                | 1.0 U                       | 1.0 U                     | ug/L         |
| 1,2-Dichloropropane                            | 1.0 U                       | 1.0 U                     | ug/L         |
| Dibromomethane                                 | 1.0 U                       | 1.0 U                     | ug/L         |
| Bromodichloromethane                           | 1.0 U                       | 1.0 U                     | ug/L         |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX34806  
 DATE REPORTED: October 23, 2003  
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RESULTS OF ANALYSIS

| EPA METHOD 8260 (cont.) -<br>VOLATILE ORGANICS | <sup>5D</sup><br>MPT-1241-MW6D | <sup>6</sup><br>MPT-1241-MW8 | Units |
|--|--------------------------------|------------------------------|-------|
| 2-Chloroethyl vinyl ether                      | 6.0 U                          | 6.0 U                        | ug/L  |
| c-1,3-Dichloropropene                          | 1.0 U                          | 1.0 U                        | ug/L  |
| 4-Methyl-2-pentanone                           | 20 U                           | 20 U                         | ug/L  |
| Toluene  | 1.0 U                          | 1.0 U                        | ug/L  |
| t-1,3-Dichloropropene                          | 1.0 U                          | 1.0 U                        | ug/L  |
| 1,1,2-Trichloroethane                          | 1.0 U                          | 1.0 U                        | ug/L  |
| Tetrachloroethene                              | 3.0 U                          | 3.0 U                        | ug/L  |
| 1,3-Dichloropropane                            | 1.0 U                          | 1.0 U                        | ug/L  |
| 2-Hexanone                                     | 20 U                           | 20 U                         | ug/L  |
| Dibromochloromethane                           | 1.0 U                          | 1.0 U                        | ug/L  |
| 1,2-Dibromoethane                              | 1.0 U                          | 1.0 U                        | ug/L  |
| Chlorobenzene                                  | 1.0 U                          | 1.0 U                        | ug/L  |
| 1,1,1,2-Tetrachloroethane                      | 1.0 U                          | 1.0 U                        | ug/L  |
| Ethylbenzene                                   | 1.0 U                          | 1.0 U                        | ug/L  |
| m-Xylene & p-Xylene                            | 2.0 U                          | 2.0 U                        | ug/L  |
| o-Xylene                                       | 1.0 U                          | 1.0 U                        | ug/L  |
| Styrene  | 1.0 U                          | 1.0 U                        | ug/L  |
| Bromoform                                      | 1.0 U                          | 1.0 U                        | ug/L  |
| Isopropylbenzene                               | 1.0 U                          | 1.0 U                        | ug/L  |
| 1,1,2,2-Tetrachloroethane                      | 1.0 U                          | 1.0 U                        | ug/L  |
| Bromobenzene                                   | 1.0 U                          | 1.0 U                        | ug/L  |
| 1,2,3-Trichlorobenzene                         | 1.0 U                          | 1.0 U                        | ug/L  |
| n-Propylbenzene                                | 1.0 U                          | 1.0 U                        | ug/L  |
| 2-Chlorotoluene                                | 1.0 U                          | 1.0 U                        | ug/L  |
| 1,3,5-Trimethylbenzene                         | 1.0 U                          | 1.0 U                        | ug/L  |
| 4-Chlorotoluene                                | 1.0 U                          | 1.0 U                        | ug/L  |

U = Compound was analyzed for but not detected to the level shown.

ENCO LABORATORIES

REPORT # : JAX34806  
 DATE REPORTED: October 23, 2003  
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RESULTS OF ANALYSIS

| EPA METHOD 8260 (cont.) -<br>VOLATILE ORGANICS | <sup>5P</sup><br>MPT-1241-MW6D | <sup>6</sup><br>MPT-1241-MW5 | Units         |
|--|--------------------------------|------------------------------|---------------|
| tert-Butylbenzene                              | 1.0 U                          | 1.0 U                        | ug/L          |
| 1,2,4-Trimethylbenzene                         | 1.0 U                          | 1.0 U                        | ug/L          |
| s-Butylbenzene                                 | 1.0 U                          | 1.0 U                        | ug/L          |
| 1,3-Dichlorobenzene                            | 1.0 U                          | 1.0 U                        | ug/L          |
| p-Isopropyltoluene                             | 1.0 U                          | 1.0 U                        | ug/L          |
| 1,4-Dichlorobenzene                            | 1.0 U                          | 1.0 U                        | ug/L          |
| n-Butylbenzene                                 | 1.0 U                          | 1.0 U                        | ug/L          |
| 1,2-Dichlorobenzene                            | 1.0 U                          | 1.0 U                        | ug/L          |
| 1,2-Dibromo-3-chloropropane                    | 1.0 U                          | 1.0 U                        | ug/L          |
| 1,2,4-Trichlorobenzene                         | 1.0 U                          | 1.0 U                        | ug/L          |
| Hexachlorobutadiene                            | 1.0 U                          | 1.0 U                        | ug/L          |
| Naphthalene                                    | 2.0 U                          | 3.8                          | ug/L          |
| 1,2,3-Trichloropropane                         | 1.0 U                          | 1.0 U                        | ug/L          |
| Bromochloromethane                             | 1.0 U                          | 1.0 U                        | ug/L          |
| <b>Surrogate:</b>                              | <b>% RECOV</b>                 | <b>% RECOV</b>               | <b>LIMITS</b> |
| Dibromofluoromethane                           | 101                            | 101                          | 67-139        |
| D8-Toluene                                     | 104                            | 97                           | 80-115        |
| Bromofluorobenzene                             | 93                             | 101                          | 66-131        |
| Date Analyzed                                  | 10/22/03 19:28                 | 10/22/03 20:05               |               |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

EPA METHOD 8270 -  
PAH Compounds by SIM

|                          | <sup>5D</sup><br><u>MPT-1241-MW6D</u> | <sup>6</sup><br><u>MPT-1241-MW5</u> | <u>Units</u>  |
|--------------------------|---------------------------------------|-------------------------------------|---------------|
| Naphthalene              | 0.10 U                                | 1.2                                 | ug/L          |
| 2-Methylnaphthalene      | 0.10 U                                | 2.0                                 | ug/L          |
| 1-Methylnaphthalene      | 0.10 U                                | 0.41                                | ug/L          |
| Acenaphthylene           | 0.10 U                                | 0.13                                | ug/L          |
| Acenaphthene             | 0.10 U                                | 0.85                                | ug/L          |
| Fluorene                 | 0.10 U                                | 1.2                                 | ug/L          |
| Phenanthrene             | 0.10 U                                | 1.0                                 | ug/L          |
| Anthracene               | 0.10 U                                | 0.10 U                              | ug/L          |
| Fluoranthene             | 0.10 U                                | 0.10 U                              | ug/L          |
| Pyrene                   | 0.10 U                                | 0.10 U                              | ug/L          |
| Chrysene                 | 0.10 U                                | 0.10 U                              | ug/L          |
| Benzo (a) anthracene     | 0.10 U                                | 0.10 U                              | ug/L          |
| Benzo (b) fluoranthene   | 0.10 U                                | 0.10 U                              | ug/L          |
| Benzo (k) fluoranthene   | 0.10 U                                | 0.10 U                              | ug/L          |
| Benzo (a) pyrene         | 0.10 U                                | 0.10 U                              | ug/L          |
| Indeno (1,2,3-cd) pyrene | 0.10 U                                | 0.10 U                              | ug/L          |
| Dibenzo (a,h) anthracene | 0.10 U                                | 0.10 U                              | ug/L          |
| Benzo (g,h,i) perylene   | 0.10 U                                | 0.10 U                              | ug/L          |
| <u>Surrogate:</u>        | <u>% RECOV</u>                        | <u>% RECOV</u>                      | <u>LIMITS</u> |
| p-Terphenyl              | 101                                   | 89                                  | 20-148        |
| Date Prepared            | 10/13/03                              | 10/13/03                            |               |
| Date Analyzed            | 10/15/03 12:15                        | 10/15/03 12:39                      |               |

EPA METHOD 504 -  
ETHYLENE DIBROMIDE

|                    | <u>MPT-1241-MW6D</u> | <u>MPT-1241-MW5</u> | <u>Units</u> |
|--------------------|----------------------|---------------------|--------------|
| Ethylene Dibromide | 0.020 U              | 0.020 U             | ug/L         |
| Date Prepared      | 10/10/03             | 10/10/03            |              |
| Date Analyzed      | 10/13/03 12:22       | 10/13/03 12:40      |              |

U = Compound was analyzed for but not detected to the level shown.

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RESULTS OF ANALYSIS

| <u>TOTAL METALS</u>                                 | <u>METHOD</u> | <u>MPT-1241-MW<sup>5D</sup>6D</u> | <u>MPT-1241-MW<sup>6</sup>5</u> | <u>Units</u>  |
|---|---------------|-----------------------------------|---------------------------------|---------------|
| Lead  | 6010          | 0.010 U                           | 0.010 U                         | mg/L          |
| Date Analyzed                                       |               | 10/17/03 18:55                    | 10/17/03 19:02                  |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-MW6D</u>              | <u>MPT-1241-MW5</u>             | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 0.20 U                            | 3.9                             | mg/L          |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>                    | <u>% RECOV</u>                  | <u>LIMITS</u> |
| o-Terphenyl   |               | 72                                | 73                              | 38-133        |
| Nonatriacontane                                     |               | 60                                | 54                              | 20-127        |
| Date Prepared                                       |               | 10/10/03                          | 10/10/03                        |               |
| Date Analyzed                                       |               | 10/14/03 02:00                    | 10/14/03 02:12                  |               |

U = Compound was analyzed for but not detected to the level shown.

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EPA METHOD 8260 -  
VOLATILE ORGANICS

|                         | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u> |
|-------------------------|---------------------|------------------|--------------|
| Dichlorodifluoromethane | 2.0 U               | 2.0 U            | ug/L         |
| Chloromethane           | 1.0 U               | 1.0 U            | ug/L         |
| Vinyl Chloride          | 1.0 U               | 1.0 U            | ug/L         |
| Bromomethane            | 2.0 U               | 2.0 U            | ug/L         |
| Chloroethane            | 2.0 U               | 2.0 U            | ug/L         |
| Trichlorofluoromethane  | 1.0 U               | 1.0 U            | ug/L         |
| 1,1-Dichloroethene      | 1.0 U               | 1.0 U            | ug/L         |
| Acetone                 | 50 U                | 50 U             | ug/L         |
| Carbon Disulfide        | 50 U                | 50 U             | ug/L         |
| Methylene Chloride      | 5.0 U               | 5.0 U            | ug/L         |
| t-1,2-Dichloroethene    | 1.0 U               | 1.0 U            | ug/L         |
| Methyl tert-butyl ether | 1.0 U               | 1.0 U            | ug/L         |
| 1,1-Dichloroethane      | 1.0 U               | 1.0 U            | ug/L         |
| 2,2-Dichloropropane     | 2.0 U               | 2.0 U            | ug/L         |
| c-1,2-Dichloroethene    | 1.0 U               | 1.0 U            | ug/L         |
| 2-Butanone              | 20 U                | 20 U             | ug/L         |
| Chloroform              | 1.0 U               | 1.0 U            | ug/L         |
| 1,1,1-Trichloroethane   | 1.0 U               | 1.0 U            | ug/L         |
| Carbon tetrachloride    | 1.0 U               | 1.0 U            | ug/L         |
| 1,1-Dichloropropene     | 1.0 U               | 1.0 U            | ug/L         |
| Benzene                 | 1.0 U               | 1.0 U            | ug/L         |
| 1,2-Dichloroethane      | 1.0 U               | 1.0 U            | ug/L         |
| Trichloroethene         | 1.0 U               | 1.0 U            | ug/L         |
| 1,2-Dichloropropane     | 1.0 U               | 1.0 U            | ug/L         |
| Dibromomethane          | 1.0 U               | 1.0 U            | ug/L         |
| Bromodichloromethane    | 1.0 U               | 1.0 U            | ug/L         |

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RESULTS OF ANALYSIS

EPA METHOD 8260 (cont.) -  
 VOLATILE ORGANICS

|                           | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u> |
|---------------------------|---------------------|------------------|--------------|
| 2-Chloroethyl vinyl ether | 6.0 U               | 6.0 U            | ug/L         |
| c-1,3-Dichloropropene     | 1.0 U               | 1.0 U            | ug/L         |
| 4-Methyl-2-pentanone      | 20 U                | 20 U             | ug/L         |
| Toluene                   | 1.0 U               | 1.0 U            | ug/L         |
| t-1,3-Dichloropropene     | 1.0 U               | 1.0 U            | ug/L         |
| 1,1,2-Trichloroethane     | 1.0 U               | 1.0 U            | ug/L         |
| Tetrachloroethene         | 3.0 U               | 3.0 U            | ug/L         |
| 1,3-Dichloropropane       | 1.0 U               | 1.0 U            | ug/L         |
| 2-Hexanone                | 20 U                | 20 U             | ug/L         |
| Dibromochloromethane      | 1.0 U               | 1.0 U            | ug/L         |
| 1,2-Dibromoethane         | 1.0 U               | 1.0 U            | ug/L         |
| Chlorobenzene             | 1.0 U               | 1.0 U            | ug/L         |
| 1,1,1,2-Tetrachloroethane | 1.0 U               | 1.0 U            | ug/L         |
| Ethylbenzene              | 1.0 U               | 1.0 U            | ug/L         |
| m-Xylene & p-Xylene       | 2.0 U               | 2.0 U            | ug/L         |
| o-Xylene                  | 1.0 U               | 1.0 U            | ug/L         |
| Styrene                   | 1.0 U               | 1.0 U            | ug/L         |
| Bromoform                 | 1.0 U               | 1.0 U            | ug/L         |
| Isopropylbenzene          | 1.0 U               | 1.0 U            | ug/L         |
| 1,1,2,2-Tetrachloroethane | 1.0 U               | 1.0 U            | ug/L         |
| Bromobenzene              | 1.0 U               | 1.0 U            | ug/L         |
| 1,2,3-Trichlorobenzene    | 1.0 U               | 1.0 U            | ug/L         |
| n-Propylbenzene           | 1.0 U               | 1.0 U            | ug/L         |
| 2-Chlorotoluene           | 1.0 U               | 1.0 U            | ug/L         |
| 1,3,5-Trimethylbenzene    | 1.0 U               | 1.0 U            | ug/L         |
| 4-Chlorotoluene           | 1.0 U               | 1.0 U            | ug/L         |

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EPA METHOD 8260 (cont.) -  
VOLATILE ORGANICS

|                             | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u>  |
|-----------------------------|---------------------|------------------|---------------|
| tert-Butylbenzene           | 1.0 U               | 1.0 U            | ug/L          |
| 1,2,4-Trimethylbenzene      | 1.0 U               | 1.0 U            | ug/L          |
| s-Butylbenzene              | 1.0 U               | 1.0 U            | ug/L          |
| 1,3-Dichlorobenzene         | 1.0 U               | 1.0 U            | ug/L          |
| p-Isopropyltoluene          | 1.0 U               | 1.0 U            | ug/L          |
| 1,4-Dichlorobenzene         | 1.0 U               | 1.0 U            | ug/L          |
| n-Butylbenzene              | 1.0 U               | 1.0 U            | ug/L          |
| 1,2-Dichlorobenzene         | 1.0 U               | 1.0 U            | ug/L          |
| 1,2-Dibromo-3-chloropropane | 1.0 U               | 1.0 U            | ug/L          |
| 1,2,4-Trichlorobenzene      | 1.0 U               | 1.0 U            | ug/L          |
| Hexachlorobutadiene         | 1.0 U               | 1.0 U            | ug/L          |
| Naphthalene                 | 2.0 U               | 2.0 U            | ug/L          |
| 1,2,3-Trichloropropane      | 1.0 U               | 1.0 U            | ug/L          |
| Bromochloromethane          | 1.0 U               | 1.0 U            | ug/L          |
| <u>Surrogate:</u>           | <u>% RECOV</u>      | <u>% RECOV</u>   | <u>LIMITS</u> |
| Dibromofluoromethane        | 94                  | 97               | 67-139        |
| D8-Toluene                  | 102                 | 99               | 80-115        |
| Bromofluorobenzene          | 95                  | 96               | 66-131        |
| Date Analyzed               | 10/22/03 20:42      | 10/22/03 13:21   |               |

U = Compound was analyzed for but not detected to the level shown.

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**EPA METHOD 8270 -  
 PAH Compounds by SIM**

|                        | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u> |
|------------------------|---------------------|------------------|--------------|
| Naphthalene            | 0.10 U              | 0.10 U           | ug/L         |
| 2-Methylnaphthalene    | 0.10 U              | 0.10 U           | ug/L         |
| 1-Methylnaphthalene    | 0.10 U              | 0.10 U           | ug/L         |
| Acenaphthylene         | 0.10 U              | 0.10 U           | ug/L         |
| Acenaphthene           | 0.26                | 0.10 U           | ug/L         |
| Fluorene               | 0.10 U              | 0.10 U           | ug/L         |
| Phenanthrene           | 0.10 U              | 0.10 U           | ug/L         |
| Anthracene             | 0.10 U              | 0.10 U           | ug/L         |
| Fluoranthene           | 0.10 U              | 0.10 U           | ug/L         |
| Pyrene                 | 0.10 U              | 0.10 U           | ug/L         |
| Chrysene               | 0.10 U              | 0.10 U           | ug/L         |
| Benzo(a)anthracene     | 0.10 U              | 0.10 U           | ug/L         |
| Benzo(b)fluoranthene   | 0.10 U              | 0.10 U           | ug/L         |
| Benzo(k)fluoranthene   | 0.10 U              | 0.10 U           | ug/L         |
| Benzo(a)pyrene         | 0.10 U              | 0.10 U           | ug/L         |
| Indeno(1,2,3-cd)pyrene | 0.10 U              | 0.10 U           | ug/L         |
| Dibenzo(a,h)anthracene | 0.10 U              | 0.10 U           | ug/L         |
| Benzo(g,h,i)perylene   | 0.10 U              | 0.10 U           | ug/L         |

| <u>Surrogate:</u> | <u>% RECOV</u> | <u>% RECOV</u> | <u>LIMITS</u> |
|-------------------|----------------|----------------|---------------|
| p-Terphenyl       | 131            | 109            | 20-148        |
| Date Prepared     | 10/13/03       | 10/13/03       |               |
| Date Analyzed     | 10/15/03 13:02 | 10/15/03 11:06 |               |

**EPA METHOD 504 -  
 ETHYLENE DIBROMIDE**

|                    | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u> |
|--------------------|---------------------|------------------|--------------|
| Ethylene Dibromide | 0.020 U             | 0.020 U          | ug/L         |
| Date Prepared      | 10/10/03            | 10/10/03         |              |
| Date Analyzed      | 10/13/03 12:59      | 10/13/03 11:45   |              |

U = Compound was analyzed for but not detected to the level shown.

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| <u>TOTAL METALS</u>                                 | <u>METHOD</u> | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u>  |
|---|---------------|---------------------|------------------|---------------|
| Lead  | 6010          | 0.010 U             | 0.010 U          | mg/L          |
| Date Analyzed                                       |               | 10/17/03 18:33      | 10/17/03 17:59   |               |
| <br>  |               |                     |                  |               |
| <u>EPA METHOD FLPRO -<br/>PETROL. RESIDUAL ORG.</u> |               | <u>MPT-1241-MW4</u> | <u>LAB BLANK</u> | <u>Units</u>  |
| Hydrocarbons (C8-C40)                               |               | 0.35                | 0.20 U           | mg/L          |
| <br>  |               |                     |                  |               |
| <u>Surrogate:</u>                                   |               | <u>% RECOV</u>      | <u>% RECOV</u>   | <u>LIMITS</u> |
| o-Terphenyl   |               | 69                  | 74               | 38-133        |
| Nonatriacontane                                     |               | 56                  | 56               | 20-127        |
| Date Prepared                                       |               | 10/10/03            | 10/10/03         |               |
| Date Analyzed                                       |               | 10/14/03 02:24      | 10/13/03 22:01   |               |

U = Compound was analyzed for but not detected to the level shown.

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**REPORT #** : JAX34806  
**DATE REPORTED:** October 23, 2003  
**REFERENCE** : CTO303 SITE 1241

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**LABORATORY CERTIFICATIONS**

Laboratory Certification: NELAC:E82277

All analyses reported with this project were analyzed by the facility indicated unless identified below.

ENCO LABORATORIES

REPORT # : JAX34806  
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QUALITY CONTROL DATA

| <u>Parameter</u>             | <u>% RECOVERY<br/>MS/MSD/LCS</u> | <u>ACCEPT<br/>LIMITS</u> | <u>% RPD<br/>MS/MSD</u> | <u>ACCEPT<br/>LIMITS</u> |
|------------------------------|----------------------------------|--------------------------|-------------------------|--------------------------|
| <u>EPA Method 8260</u>       |                                  |                          |                         |                          |
| 1,1-Dichloroethene           | 73/ 72/ 70                       | 40-155                   | 1                       | 30                       |
| Benzene                      | 114/114/112                      | 70-131                   | <1                      | 23                       |
| Trichloroethene              | 89/ 90/ 89                       | 68-128                   | 1                       | 10                       |
| Toluene                      | 103/107/100                      | 84-116                   | 4                       | 12                       |
| Chlorobenzene                | 105/106/106                      | 88-123                   | <1                      | 11                       |
| <u>EPA Method 8270</u>       |                                  |                          |                         |                          |
| Naphthalene                  | 60/ 56/ 34                       | 30-112                   | 7                       | 28                       |
| Acenaphthene                 | 72/ 70/ 56                       | 28-113                   | 3                       | 32                       |
| Benzo(a)pyrene               | 87/ 88/ 80                       | 39-148                   | 1                       | 38                       |
| Benzo(g,h,i)perylene         | 86/ 84/ 54                       | 20-130                   | 2                       | 43                       |
| <u>EPA Method 504</u>        |                                  |                          |                         |                          |
| Ethylene Dibromide           | 84/ 83/ 74                       | 57-130                   | 1                       | 18                       |
| Dibromochloropropane         | 91/ 96/ 80                       | 60-130                   | 5                       | 20                       |
| <u>TOTAL METALS</u>          |                                  |                          |                         |                          |
| Lead, 6010                   | 101/100/106                      | 68-126                   | <1                      | 19                       |
| <u>PETROL. RESIDUAL ORG.</u> |                                  |                          |                         |                          |
| Hydrocarbons (C8-C40)        | 69/ 67/ 62                       | 51-163                   | 3                       | 27                       |

< = Less Than  
 MS = Matrix Spike  
 MSD = Matrix Spike Duplicate  
 LCS = Laboratory Control Standard  
 RPD = Relative Percent Difference

**KATAHDIN ANALYTICAL SERVICES**  
**Report of Analytical Results**

Client: Tetra Tech NUS, Inc  
 Project: CTO303 NAS MAYPORT  
 PO No:  
 Sample Date: 11/24/03  
 Received Date: 11/26/03  
 Extraction Date: 12/01/03  
 Analysis Date: 12/12/03  
 Report Date: 12/18/2003  
 Matrix: WATER  
 % Solids: NA

Lab ID: WT3025-2RA  
 Client ID: MPT-1241-MW4  
 SDG: WT3025  
 Extracted by: LS  
 Extraction Method: SW846 3510  
 Analyst: JCG  
 Analysis Method: SW846 M8270C  
 Lab Prep Batch: WG4862  
 Units: ug/L

| CAS#       | Compound                | Flags | Results | DF  | PQL  | Adj.PQL | Adj.MDL |
|------------|-------------------------|-------|---------|-----|------|---------|---------|
| 91-20-3    | Naphthalene             | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.048   |
| 91-57-6    | 2-Methylnaphthalene     | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.078   |
| 208-96-8   | Acenaphthylene          | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.048   |
| 83-32-9    | Acenaphthene            | J     | 0.15    | 1.0 | 0.20 | 0.20    | 0.078   |
| 86-73-7    | Fluorene                | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.058   |
| 85-01-8    | Phenanthrene            | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.078   |
| 120-12-7   | Anthracene              | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.078   |
| 206-44-0   | Fluoranthene            | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.11    |
| 129-00-0   | Pyrene                  | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.087   |
| 56-55-3    | Benzo(a)anthracene      | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.12    |
| 218-01-9   | Chrysene                | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.068   |
| 205-99-2   | Benzo(b)fluoranthene    | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.087   |
| 207-08-9   | Benzo(k)fluoranthene    | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.078   |
| 50-32-8    | Benzo(a)pyrene          | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.087   |
| 193-39-5   | Indeno(1,2,3-cd)pyrene  | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.097   |
| 53-70-3    | Dibenzo(a,h)anthracene  | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.14    |
| 191-24-2   | Benzo(g,h,i)perylene    | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.078   |
| 90-12-0    | 1-Methylnaphthalene     | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.078   |
| 7297-45-2  | 2-Methylnaphthalene-d10 |       | 72%     |     |      |         |         |
| 81103-79-9 | Fluorene-d10            |       | 78%     |     |      |         |         |
| 1718-52-1  | Pyrene-d10              |       | 95%     |     |      |         |         |

**KATAHDIN ANALYTICAL SERVICES**  
Report of Analytical Results

Client: Tetra Tech NUS, Inc  
Project: CTO303 NAS MAYPORT  
PO No:  
Sample Date: 11/24/03  
Received Date: 11/26/03  
Extraction Date: 12/01/03  
Analysis Date: 12/04/03  
Report Date: 12/16/2003  
Matrix: WATER  
% Solids: NA

Lab ID: WT3025-2  
Client ID: MPT-1241-MW4  
SDG: WT3025  
Extracted by: LS  
Extraction Method: SW846 3510  
Analyst: SAW  
Analysis Method: SW846 M8100  
Lab Prep Batch: WG4863  
Units: ug/L

| CAS# | Compound                 | Flags | Results | DF  | PQL | Adj.PQL | Adj.MDL |
|------|--------------------------|-------|---------|-----|-----|---------|---------|
|      | Petroleum Range Organics |       | 750     | 1.0 | 500 | 500     | 270     |
|      | n-Triacontane-D62        |       | 89%     |     |     |         |         |
|      | O-Terphenyl              |       | * 71%   |     |     |         |         |

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**KATAHDIN ANALYTICAL SERVICES**  
Report of Analytical Results

Client: Tetra Tech NUS, Inc  
 Project: CTO303 NAS MAYPORT  
 PO No:  
 Sample Date: 11/24/03  
 Received Date: 11/26/03  
 Extraction Date: 12/01/03  
 Analysis Date: 12/11/03  
 Report Date: 12/18/2003  
 Matrix: WATER  
 % Solids: NA

Lab ID: WT3025-1  
 Client ID: MPT-1241-MW6  
 SDG: WT3025  
 Extracted by: LS  
 Extraction Method: SW846 3510  
 Analyst: JCG  
 Analysis Method: SW846 M8270C  
 Lab Prep Batch: WG4862  
 Units: ug/L

| CAS#       | Compound                | Flags | Results | DF  | PQL  | Adj.PQL | Adj.MDL |
|------------|-------------------------|-------|---------|-----|------|---------|---------|
| 91-20-3    | Naphthalene             |       | 0.85    | 1.0 | 0.20 | 0.20    | 0.048   |
| 91-57-6    | 2-Methylnaphthalene     |       | 1.9     | 1.0 | 0.20 | 0.20    | 0.077   |
| 208-96-8   | Acenaphthylene          | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.048   |
| 83-32-9    | Acenaphthene            |       | 0.59    | 1.0 | 0.20 | 0.20    | 0.077   |
| 86-73-7    | Fluorene                |       | 1.3     | 1.0 | 0.20 | 0.20    | 0.058   |
| 85-01-8    | Phenanthrene            |       | 0.45    | 1.0 | 0.20 | 0.20    | 0.077   |
| 120-12-7   | Anthracene              | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.077   |
| 206-44-0   | Fluoranthene            | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.10    |
| 129-00-0   | Pyrene                  | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.086   |
| 56-55-3    | Benzo(a)anthracene      | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.12    |
| 218-01-9   | Chrysene                | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.067   |
| 205-99-2   | Benzo(b)fluoranthene    | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.086   |
| 207-08-9   | Benzo(k)fluoranthene    | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.077   |
| 50-32-8    | Benzo(a)pyrene          | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.086   |
| 193-39-5   | Indeno(1,2,3-cd)pyrene  | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.096   |
| 53-70-3    | Dibenzo(a,h)anthracene  | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.14    |
| 191-24-2   | Benzo(g,h,i)perylene    | U     | 0.20    | 1.0 | 0.20 | 0.20    | 0.077   |
| 90-12-0    | 1-Methylnaphthalene     |       | 0.49    | 1.0 | 0.20 | 0.20    | 0.077   |
| 7297-45-2  | 2-Methylnaphthalene-d10 |       | 73%     |     |      |         |         |
| 81103-79-9 | Fluorene-d10            |       | 79%     |     |      |         |         |
| 1718-52-1  | Pyrene-d10              |       | 122%    |     |      |         |         |

KATAHDIN ANALYTICAL SERVICES  
Report of Analytical Results

Client: Tetra Tech NUS, Inc  
Project: CTO303 NAS MAYPORT  
PO No:  
Sample Date: 11/24/03  
Received Date: 11/26/03  
Extraction Date: 12/01/03  
Analysis Date: 12/04/03  
Report Date: 12/16/2003  
Matrix: WATER  
% Solids: NA

Lab ID: WT3025-1  
Client ID: MPT-1241-MW6  
SDG: WT3025  
Extracted by: LS  
Extraction Method: SW846 3510  
Analyst: SAW  
Analysis Method: SW846 M8100  
Lab Prep Batch: WG4863  
Units: ug/L

| CAS# | Compound                 | Flags | Results | DF  | PQL | Adj.PQL | Adj.MDL |
|------|--------------------------|-------|---------|-----|-----|---------|---------|
|      | Petroleum Range Organics |       | 1900    | 1.0 | 500 | 500     | 270     |
|      | n-Triacontane-D62        |       | 76%     |     |     |         |         |
|      | O-Terphenyl              |       | * 60%   |     |     |         |         |

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