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CONTAMINATION ASSESSMENT PLAN FOR ADDITIONAL SITE ASSESSMENT AT SITES
250 AND 1241 NS MAYPORT FL
6/1/2003
TETRA TECH NUS

Contamination Assessment Plan
for
Additional Site Assessment
at Sites 250 and 1241

Naval Station Mayport
Mayport, Florida



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

June 2003

**CONTAMINATION ASSESSMENT PLAN
FOR
ADDITIONAL SITE ASSESSMENT
AT SITES 250 AND 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:
Tetra Tech NUS, Inc.
661 Andersen Drive
Foster Plaza 7
Pittsburgh, Pennsylvania 15220**

**CONTRACT NUMBER N62467-94-D-0888
CONTRACT TASK ORDER 0303**

JUNE 2003

PREPARED UNDER THE SUPERVISION OF:



**MARK PETERSON, P.G.
TASK ORDER MANAGER
TETRA TECH NUS, INC.
JACKSONVILLE, FLORIDA**

APPROVED FOR SUBMITTAL BY:

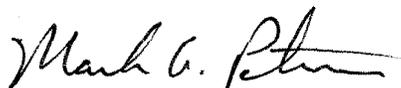


**DEBBIE WROBLEWSKI
PROGRAM MANAGER
TETRA TECH NUS, INC.
PITTSBURGH, PENNSYLVANIA**

PROFESSIONAL CERTIFICATION

Contamination Assessment Plan for Additional Site Assessment
Sites 250 and 1241
Naval Station Mayport, Mayport, Florida

This Contamination Assessment Plan for Additional Site Assessment 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.

June 19, 2003
Mark Peterson, P.G.
Florida License Number PG-1852

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ACRONYMS

AST	Aboveground Storage Tank
bls	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, and Xylenes
°C	Degrees Celsius
CAP	Contamination Assessment Plan
CLEAN	Comprehensive Long-term Environmental Action Navy
COCs	Constituents of Concern
CTO	Contract Task Order
DPT	Direct Push Technology
EDB	Ethylene Dibromide
FAC	Florida Administrative Code
FDEP	Florida Department of Environmental Protection
FID	Flame Ionization Detector
FL-PRO	Florida Petroleum Range Organics
FOL	Field Operations Leader
ft	Foot/Feet
GAG	Gasoline Analytical Group
GCTL	Groundwater Cleanup Target Level
IDW	Investigation Derived Waste
KAG	Kerosene Analytical Group
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NAVSTA	Naval Station
Navy	United States Navy
NTUs	Nephelometric Turbidity Units
OVA	Organic Vapor Analyzer
PAHs	Polynuclear Aromatic Hydrocarbons
ppm	Parts per Million
PVC	Polyvinyl Chloride
PWC	Public Works Center
QC	Quality Control
SARs	Site Assessment Reports
SCTL	Soil Cleanup Target Level
SOPs	Standard Operating Procedures
SOUTHNAVFACENGCOM	Southern Division, Naval Facilities Engineering Command

ACRONYMS (Continued)

TCR	Tank Closure Report
TOM	Task Order Manager
TRPH	Total Recoverable Petroleum Hydrocarbons
TtNUS	Tetra Tech NUS, Inc.
USEPA	United States Environmental Protection Agency
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds
VOHs	Volatile Organic Halocarbons

1.0 INTRODUCTION

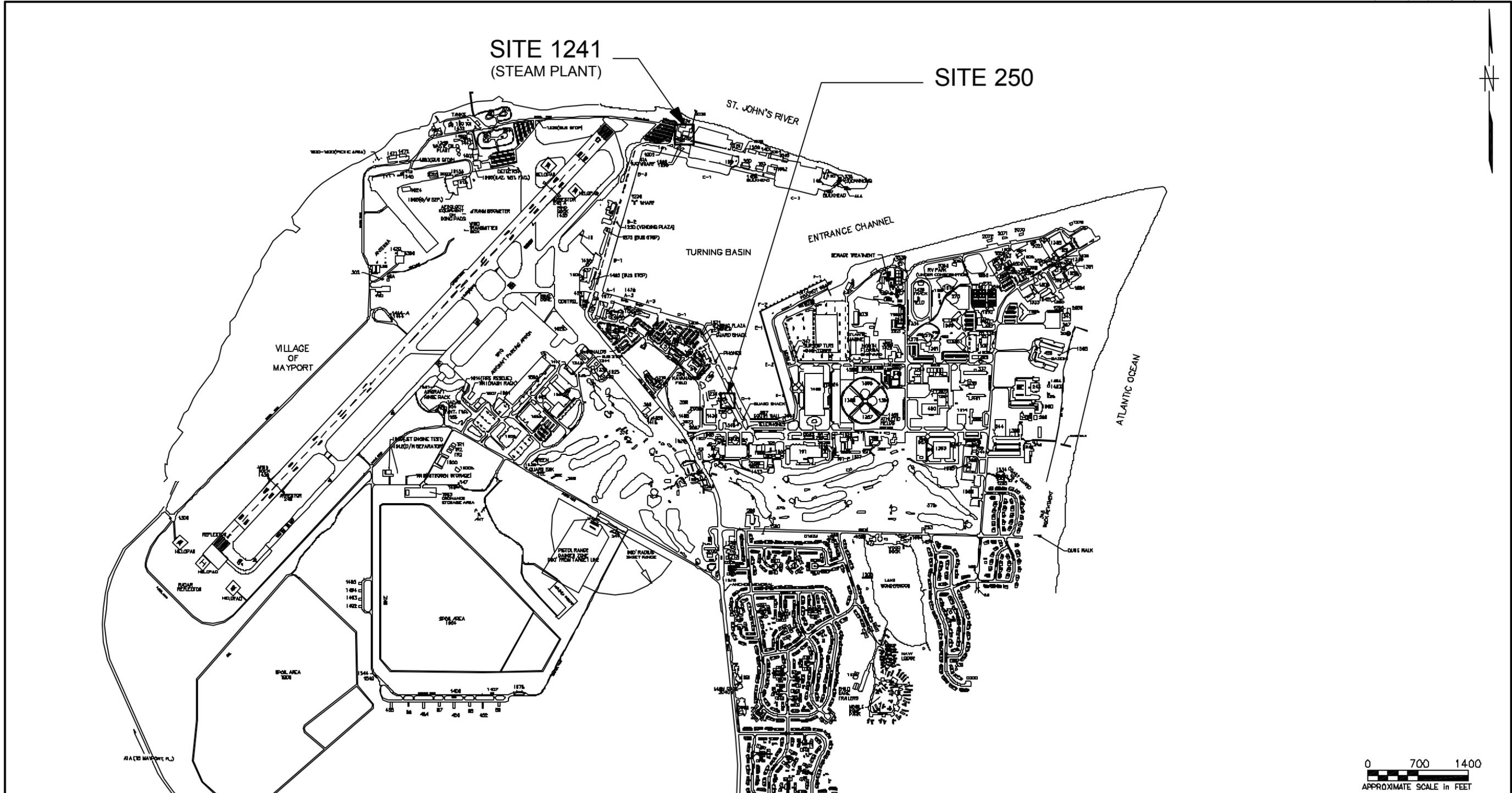
Tetra Tech NUS, Inc. (TtNUS) has prepared this Contamination Assessment Plan (CAP) for Site 250 and Site 1241 at Naval Station (NAVSTA) Mayport, Mayport, Florida. This CAP was prepared for the United States Navy (Navy) Southern Division, Naval Facilities Engineering Command (SOUTHNAVFACENGCOM) under Contract Task Order (CTO) 0303, for the Comprehensive Long-term Environmental Action Navy (CLEAN) III Contract Number N62467-94-D-0888.

The CAP provides the rationale and methodology for performing field activities to characterize soil and groundwater conditions at the referenced sites. The objective of the proposed field investigations is to determine the extent of soil and/or groundwater impacts by previous operations at the sites. The data collected during the Site 250 and Site 1241 investigations will be used to prepare separate Site Assessment Reports (SARs) and subsequent corrective action documents, if required, in accordance with Chapter 62-770.600, Florida Administrative Code (FAC). Both investigations will characterize site conditions from which to base future courses of action.

2.0 SITE DESCRIPTION

NAVSTA Mayport is located within the corporate limits of the City of Jacksonville, Duval County, Florida, and is approximately 12 miles to the east northeast of downtown Jacksonville and adjacent to the town of Mayport. 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.

Within NAVSTA Mayport are two areas of assessment known as Site 250 and Site 1241. Site 250 formerly maintained a 12,500-gallon, waste oil, underground storage tank (UST) and two 30,000-gallon fuel oil aboveground storage tanks (ASTs). Site 250 is located northeast of the intersection of Massey Avenue and Maine Street, behind the Jacksonville Electric Authority Building. Site 1241 (the steam plant) is located near the flight line, south of the intersection of Maine Street and Patrol Road. Figure 2-1 shows the locations of the sites.



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		SITE LOCATION MAP SITES 250 AND 1241 CONTAMINATION ASSESSMENT PLAN MAYPORT NAVAL STATION MAYPORT, FLORIDA		CONTRACT NO.	5863
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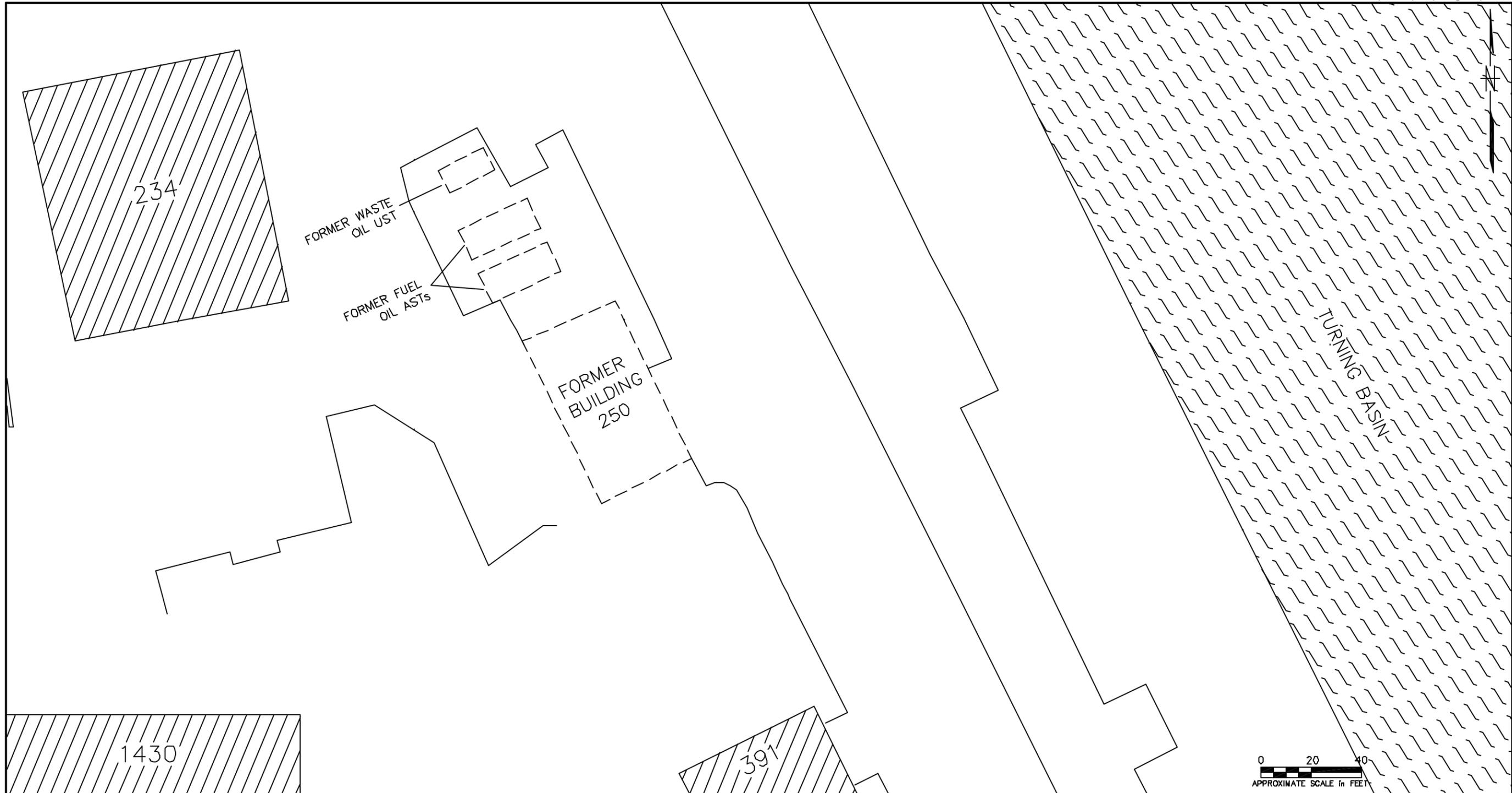
3.0 SITE HISTORY

3.1 SITE 250

Site 250 is currently an open grass and asphalt covered area located northeast of the intersection of Massey Avenue and Maine Street. The site is located less than 100 yards from the turning basin (Figure 3-1). Past field investigations included tank removals and limited site investigations. A 12,500-gallon UST was installed at Building 250 in 1980 as part of a storage basin for waste oils burned in a boiler that provided steam for the Naval Facility. During July 1998, Ellis Environmental Group removed the waste oil UST and assessed the tank pit.

Prior to the UST excavation, soil samples were collected on June 4, 1998, from a stained area in the pump pit. These samples were analyzed for total recoverable petroleum hydrocarbons (TRPH) using United States Environmental Protection Agency (USEPA) Method 418.1, eight Resource Conservation and Recovery Act metals using USEPA Method 6010, and volatile organic compounds (VOCs) [volatile organic halocarbons (VOHs) and volatile organic aromatics] using USEPA Methods 8010 and 8020 in an attempt to determine if the stained soil was to be characterized as hazardous waste. One additional soil sample was submitted July 10, 1998, for laboratory analysis using USEPA Method 8100 for polynuclear aromatic hydrocarbons (PAHs) and Toxicity Characteristic Leaching Procedure for lead. The location of this sample was not documented. Based on these analytical results, the soils were contaminated, but not considered hazardous waste. Of the samples analyzed, PAH constituents naphthalene [12 milligrams per kilogram (mg/kg)], 2-methylnaphthalene (26 mg/kg), and 1-methylnaphthalene (19 mg/kg) exceeded current soil cleanup target level (SCTL) leachability standards based on current criteria. The sample analyzed for TRPH exceeds the current SCTL value with a concentration of 28,000 mg/kg. All stained soil and impacted soils screened with an organic vapor analyzer (OVA) and found to have a value greater than 50 parts per million (ppm) were reportedly removed and backfilled with clean soil.

In March 1999, TtNUS completed a limited site investigation (TtNUS, 1999) of the former waste oil UST area using direct push technology (DPT). The Tank Closure Report (TCR) (Ellis, 1998) previously submitted for this tank was deemed to be inaccurate; therefore, the performance of an additional site assessment was requested by SOUTHNAVFACENGC. Soil was screened using an OVA equipped with a flame ion detector (FID) that recorded readings greater than 50 ppm or "excessively contaminated." Soil and groundwater samples were analyzed for waste oil parameters per Chapter 62-770, FAC, Table C. Based on the analytical results, three soil samples exceeded the SCTLs, with the greatest concentration of TRPH being 6,700 mg/kg. Groundwater was also identified as impacted by TRPH beyond the



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groundwater cleanup target level (GCTL) at a concentration of 11 milligrams per liter (mg/L). The impacted area is not defined; however, isolated sample points representing impacted areas extend approximately 30 feet (ft) north from the UST near Building 234, 20 ft west of the USTs, and approximately 10 ft east of the former USTs. No screening has been done south of the former tanks.

During August 1999, the Public Works Center (PWC), Norfolk screened the soil in the area surrounding two 10,000-gallon fuel oil ASTs. This screening also included a portion of the former waste oil pit area. Soil samples collected for laboratory analysis were analyzed for diesel range organics. Findings from the survey identified elevated concentrations presumably near Building 234. Sample identifications were not documented, but most sample boring locations are west and north of the former USTs near Building 234.

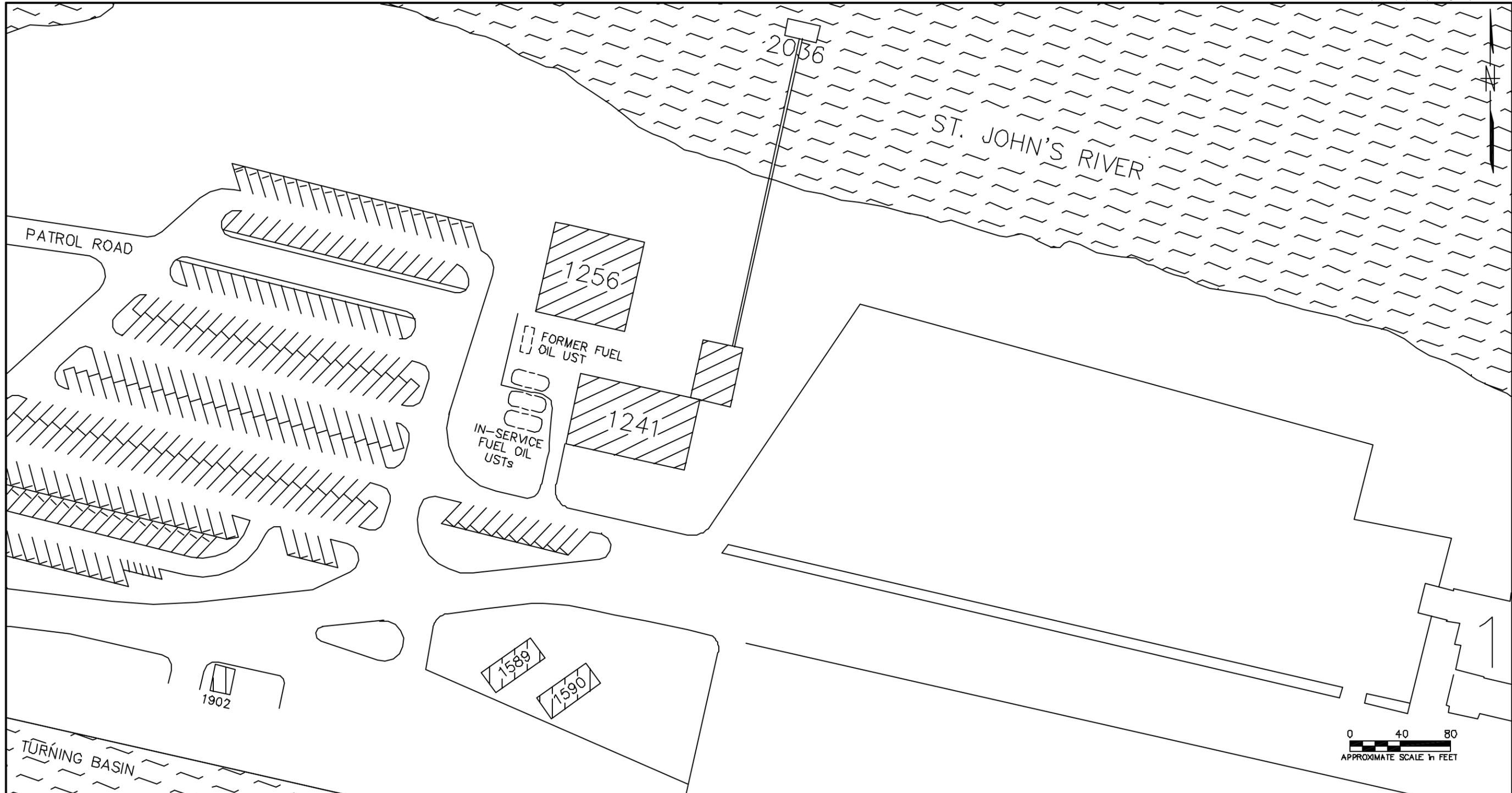
During December 2002, Ellis Environmental Group removed two 10,000-gallon fuel oil ASTs. No soil screening or site investigation was completed for these tanks.

3.2 SITE 1241

Site 1241 is the location of the operational steam plant for NAVSTA Mayport. A map of the site plan is provided as Figure 3-2. This site has been the focus of two TCRs (PWC, 1997 and Ellis, 2001) and the installation of three new USTs.

During August 1997, the Navy PWC, Pensacola, Florida was tasked by the PWC, Jacksonville, Florida to close a 10,000-gallon fuel oil UST. The UST was located near the entrance to the Steam Plant. Based on the information provided, the tank excavation site was void of impacts to the soil and groundwater, and no contamination was identified.

A TCR, dated March 2001 and prepared by Ellis Environmental Group, LC (Ellis, 2001), documents the removal of three 35,000-gallon heating oil USTs. The USTs were grouped within a single tank pit area and were located near the western side of Building 1241. Prior to the removal, 6 to 8 inches of free product were observed in the sump pits. Based on the TCR (Ellis, 2001), the leak originated at the fill ports and leaked into the sumps. Reportedly, there were no gauges on the USTs, and during tank filling operations, the USTs were overfilled and an unknown amount of product spilled into the sump area. The amount of product released is unknown. The sumps dimensions were 6 ft by 5 ft and 8.5 ft deep. The release occurred at the base of the sumps, approximately 8.5 ft below land surface (bls). The water table in this area is present at approximately 9 ft bls, slightly below the point of release. Given that the depth of the release was near the water table, soils associated with the capillary zone were impacted and soil in the vadose area remained clean. A total of 863 yards of impacted soil were removed for disposal. Once the



NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES	DRAWN BY	DATE		SITE PLAN SITE 1241 (STEAM PLANT) CONTAMINATION ASSESSMENT PLAN MAYPORT NAVAL STATION MAYPORT, FLORIDA		CONTRACT NO.	5863		
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tanks were removed, three new double walled 30,000-gallon USTs were installed in the same location and piped for the same use. Throughout the excavation and installation operations of the USTs, product was skimmed from the tank pit. The product was reportedly entering the excavation from the eastern side of the pit. The amount of product removed was not recorded.

4.0 OBJECTIVE AND SCOPE OF PROPOSED ASSESSMENT

The objective of the proposed assessment described in this work plan is as follows:

- Delineate plume of free product if present and determine the horizontal and vertical extent of soil and groundwater impacts.
- Complete a survey of tidal influences on monitoring well groundwater elevations.
- Complete a SAR in accordance with Chapter 62-770, FAC.

The investigations will meet the requirements of Chapter 62-770.600, FAC, for completion of a SAR. This shall include gathering information to support a “No Further Action” proposal, Natural Attenuation Monitoring Plan, or Remedial Action Plan as required.

The work in the following sections will be completed in accordance with the Florida Department of Environmental Protection’s (FDEP) Standard Operating Procedures (SOPs).

4.1 GROUNDWATER ELEVATION DETERMINATION

4.1.1 Groundwater Flow

Using DPT, piezometers will be installed at both sites to determine groundwater flow direction prior to the installation of monitoring wells. The top-of-casing for each piezometer will be surveyed by a TtNUS representative, and an arbitrary elevation benchmark will be assigned. Depth-to-water will be measured from the top-of-casing of the monitoring wells using an electronic water level indicator. The relative water table elevation at each location will be calculated by subtracting the depth-to-water measurement from the surveyed top-of-casing elevation, and a groundwater flow direction (potentiometric) map will be generated from the water table elevation data. This data will be used in determining future permanent well placement.

4.1.2 Tidal Survey

Both sites are presumed to be tidally influenced but tidal fluctuations at Site 1241 will be investigated once monitoring wells are installed. The tidal survey will consist of the collection of groundwater measurements over one high-low tide cycle. A data logger will be used to record the tide cycle.

4.2 SCREENING INVESTIGATION

For Sites 250 and 1241, TtNUS proposes using DPT techniques to collect the soil and groundwater samples. Soil samples will be visually screened by a TtNUS representative and screened for petroleum vapors using an OVA. Once screened the sample with the greatest potential for impact will be sent to an on-site mobile laboratory that will provide cursory analytical information. The last task of this phase of work will be collecting fix based laboratory samples.

4.2.1 Mobile Laboratory and OVA Screening

4.2.1.1 Site 250 Mobile Laboratory and OVA Screening

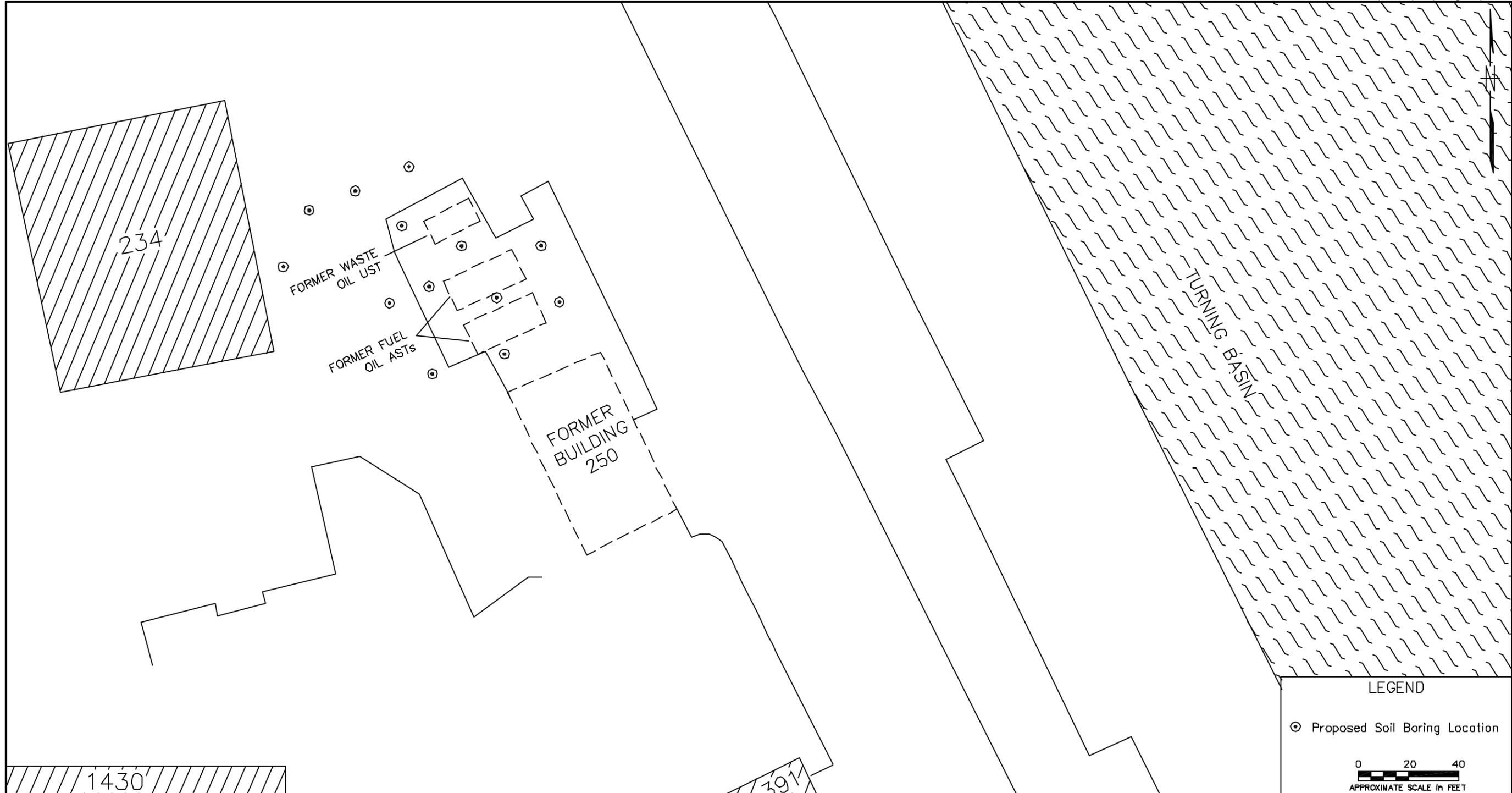
The investigation at Site 250 will be conducted in two phases. During the first phase, DPT will be used to advance soil boring and collect soil and groundwater samples for mobile laboratory analysis of the following constituents: benzene, toluene, ethylbenzene, and xylene (BTEX); 1-methylnaphthalene; 2-methylnaphthalene; naphthalene; and TRPH. Based on these results, soil samples will be collected for regulatory confirmation. At Site 250, evidence of TRPH and PAH constituents were identified in the soil, and TRPH was identified in the groundwater. A Site Plan showing the proposed DPT locations is presented as Figure 4-1. Sample locations will not be limited to but will initially focus on the area north and west of the former USTs, the location of documented releases. The sample locations are preliminary and may be altered during the field operations.

Soil samples will be collected beginning at approximately 1 ft bls and continuously to 1 to 2 ft above the saturated zone. Each sample will be visually inspected for evidence of petroleum staining or free product. Soil samples collected during this effort will be field screened using an OVA equipped with a FID. In the absence of OVA-FID response, a soil sample will be collected from approximately 1 ft above the water table for mobile laboratory screening. A soil-boring log will be maintained for each location and will include the OVA-FID data. Split samples from select locations will be submitted to the mobile laboratory for VOC analysis.

Groundwater samples will typically be collected from the upper 5 ft of the surficial aquifer and will be taken from the soil boring location. Reports document the groundwater elevation for Site 250 to range between 9 to 12 ft bls.

4.2.1.2 Site 1241 Mobile Laboratory and OVA Screening

At Site 1241, the site investigations will also be conducted in two phases. During the first phase, DPT will be used at both sites to advance soil borings and to collect soil and groundwater samples for mobile



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PROPOSED SOIL BORING LOCATIONS
SITE 250
CONTAMINATION ASSESSMENT PLAN
MAYPORT NAVAL STATION
MAYPORT, FLORIDA

LEGEND

⊙ Proposed Soil Boring Location

0 20 40
APPROXIMATE SCALE in FEET

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laboratory analysis of BTEX, 1-methylnaphthalene, 2-methylnaphthalene, and naphthalene. At Site 1241, free phase fuel oil was observed during a tank excavation. The mobile laboratory constituents selected included chemicals typical of a fuel oil release. A site plan showing proposed DPT location is presented as Figure 4-2. The sample locations are preliminary and may be altered during the field operations.

Soil samples will be collected beginning at approximately 1 ft bls and continuously 1 to 2 ft above the saturated zone. Each sample will be visually inspected for evidence of petroleum staining or free product. Soil samples collected during this effort will be field screened using an OVA equipped with a FID. In the absence of OVA-FID response, a soil sample will be collected from approximately 1 ft above the water table for mobile laboratory screening. A soil-boring log will be maintained for each location and will include the OVA-FID data. Split samples from select locations will be submitted to the mobile laboratory for VOC analysis.

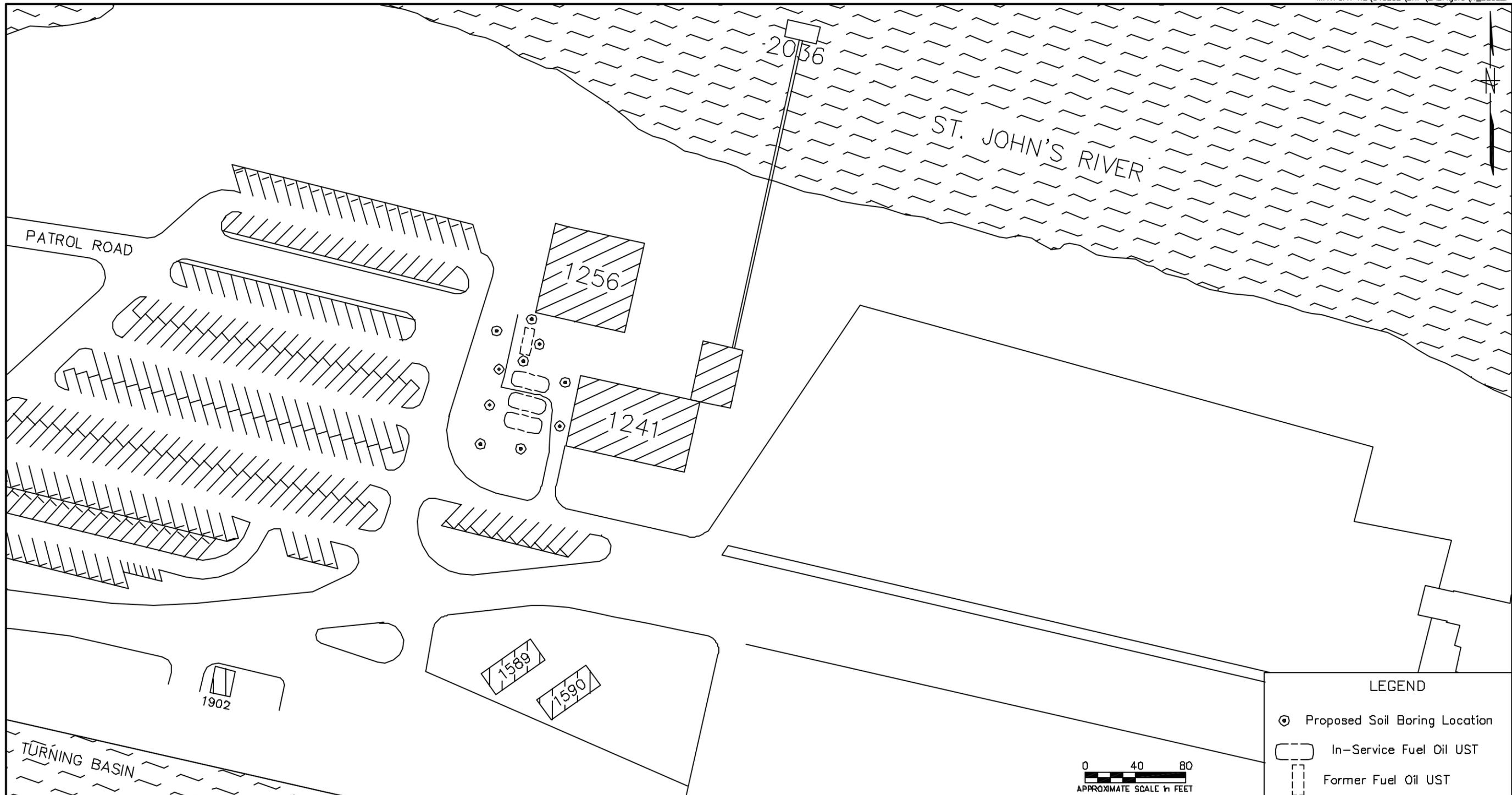
Groundwater samples will typically be collected from the upper 5 ft of the surficial aquifer and will be taken from the soil boring location. Reports document the groundwater elevation at Site 1241 to be approximately 9 ft bls.

In addition to collecting groundwater samples from the DPT probe and submitting the samples to a mobile laboratory, temporary wells will be installed at Site 1241 to facilitate a free product survey.

4.2.2 Fixed-Base Soil Samples

4.2.1.1 Site 250 Fixed-Base Soil Sampling

At the end of the first phase of activities, confirmatory soil samples will be collected and submitted to a fixed-base laboratory as required in Chapter 62-770, FAC. Multiple tanks (two ASTs and one UST) were located at Site 250 and for the purpose of this investigation, impacts from these tanks will be considered a sole source requiring three soil samples [Chapter 62-770.600(3)(e), FAC] to be collected from locations representing low, medium, and high field screening responses. These samples will be submitted to a fixed based laboratory. A soil and sediment sample log sheet will be maintained for each of these samples (Appendix A). These samples will be analyzed for the Gasoline Analytical Group (GAG) and Kerosene Analytical Group (KAG) group per FAC Chapter 62-770, Table B. The GAG and KAG analytical group were selected based on historical analytical results and the fact that no subsurface investigation have been conducted at the former fuel oil tanks area. The former location of the waste oil tank has been the focus for most of the previous work done at this site. Stained soil was removed during the tank removal and analytical results have documented the presence of PAH compounds and TRPH exceedences of the SCTLs and TRPH exceedences for the GCTLs. Previous soil samples have been



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							SCALE AS NOTED		PROPOSED SOIL BORING LOCATIONS SITE 1241 (STEAM PLANT) CONTAMINATION ASSESSMENT PLAN MAYPORT NAVAL STATION MAYPORT, FLORIDA		REV. 0

analyzed for hazardous waste characteristics per Chapter 62-770, FAC, Table C, and no characteristics of hazardous waste were identified.

4.2.1.2 Site 1241 Fixed-Base Soil Sampling

At the end of the first phase of activities, confirmatory soil samples will be collected and submitted to a fixed-base laboratory as required in Chapter 62-770, FAC. Site 1241 has reportedly only stored fuel oil in the former and current USTs located at the site. Multiple tanks (four USTs) have been located near the same area at Site 250. Impacts from this multi-tank area will be considered, for these investigation purposes, a sole source requiring three soil samples [Chapter 62-770.600(3)(e), FAC] to be collected from locations representing low, medium, and high field screening responses. A soil and sediment sample log sheet will be maintained for each of these samples (Appendix A). These samples will be analyzed for the Gasoline Analytical Group (GAG) and Kerosene Analytical Group (KAG) group per Chapter 62-770, FAC, Table B. The GAG and KAG analytical group were selected based on analytical data and the presence of a known fuel oil releases.

4.3 FREE PRODUCT SURVEY

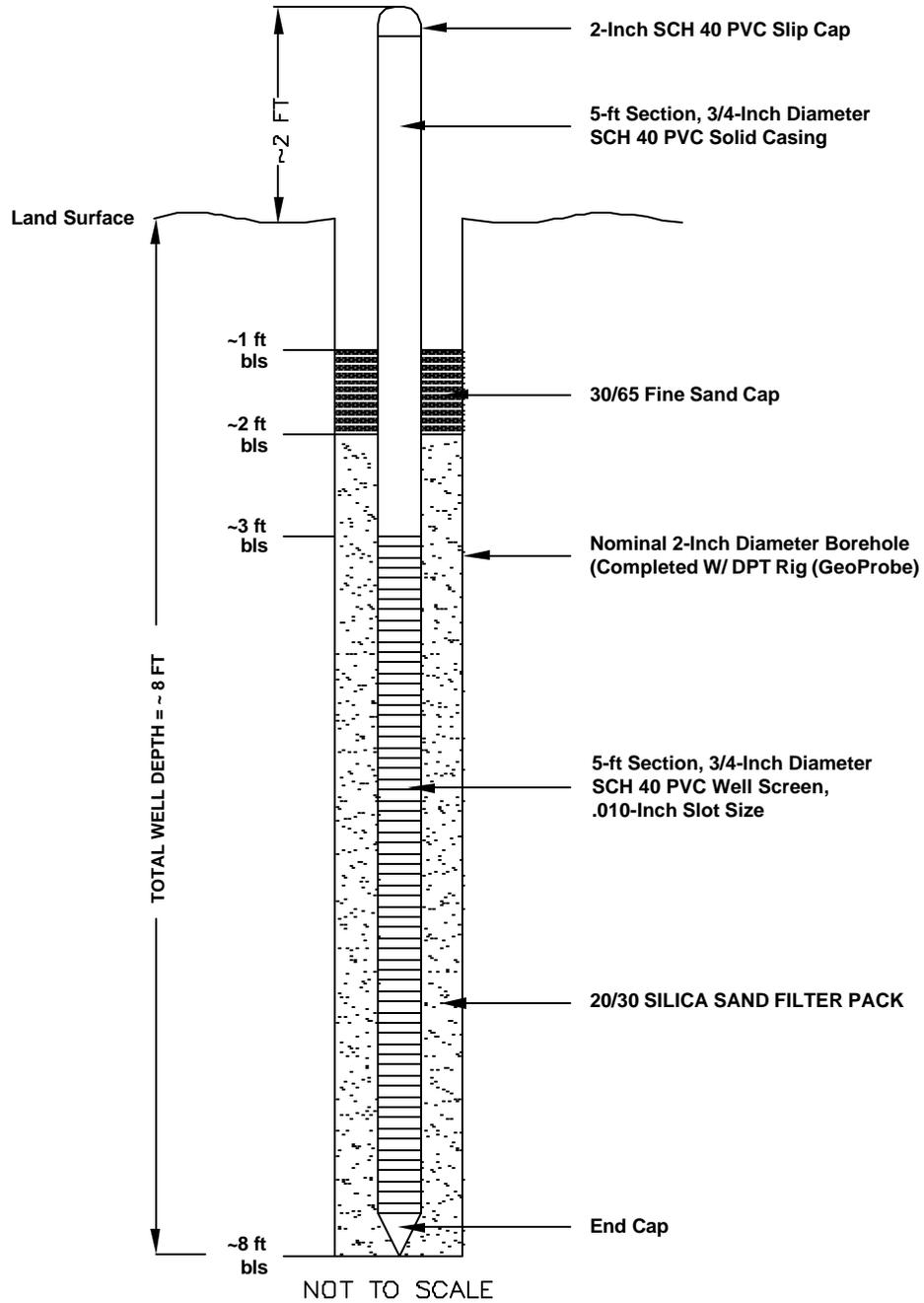
For Site 1241, free product is reported to be present along the eastern side of the current tank pit. Additional piezometers will be installed around the tank area during the DPT phase of operations to determine the extent of the free product. Results from this information will also be used in determining the installation location of the permanent 4-inch wells.

4.4 TEMPORARY WELL CONSTRUCTION

Temporary wells will only be installed at Site 1241 during the DPT phase of operations in an effort to horizontally delineate the free phase product plume, if present. The temporary wells will be constructed of 0.75-inch diameter Schedule 40 flush-joint polyvinyl chloride (PVC) risers and flush-joint 0.010-inch factory-slotted well screens (see Figure 4-3). Temporary wells were selected because the presence of product is not always evident during DPT operations. The temporary well will allow more time for free product to accumulate in the well and provide better site information to position the permanent wells. The temporary wells will be positioned to horizontally define the groundwater impacts.

4.5 GROUNDWATER INVESTIGATION

The second phase of the investigation will be based on results of the first phase and will involve the installation of up to 5 permanent monitoring wells per site for a total of 10 permanent monitoring wells. Following well installation and development, free product will be measured, if present, and groundwater



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TYPICAL TEMPORARY MONITORING WELL DESIGN
SITES 250 AND 1241
CONTAMINATION ASSESSMENT PLAN
NAVAL STATION MAYPORT
MAYPORT, FLORIDA

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samples will be collected from each of the new wells and previously existing monitoring wells (Site 1241) and delivered to a certified laboratory for analysis of the constituents of concern (COCs). The quantity and type of groundwater samples to be analyzed are provided in Table 4-1 for Site 250 and Table 4-2 for Site 1241.

A registered surveyor will survey the monitoring wells installed during the site assessment. Horizontal positioning will be measured and plotted for each permanent monitoring well in accordance with the Florida State Plane Coordinate System and the North American Datum of 1983. The top-of-casing elevation of each permanent monitoring well will be surveyed in accordance to the North American Vertical Datum of 1988 and referenced to site features (i.e., building corners, etc.).

Aquifer testing will not be necessary to determine aquifer characteristics, since extensive aquifer data for NAVSTA Mayport has been obtained and documented by the United States Geological Survey. This data will be referenced and used if appropriate. TtNUS will utilize existing information on potable wells to complete the potable well survey.

4.6 MONITORING WELL CONSTRUCTION, DEVELOPMENT, AND SAMPLING

The drilling subcontractor, prior to initiation of drilling activities, will obtain well installation permits as necessary. Permanent monitoring wells will be installed using hollow stem auger (HAS) drilling techniques. Monitoring wells will be constructed of 2-inch inside diameter (Site 250) and 4-inch diameter (Site 1241), Schedule 40, flush-joint PVC risers and flush-joint 0.010-inch factory-slotted well screens. Shallow monitoring well screen sections will be approximately 10 ft in length and positioned to intersect the water table. Deep wells will have 5-ft screens. After the borings are drilled to the desired depth, wells will be installed through the HSAs. A diagram showing typical well construction design is presented as Figure 4-4.

4.6.1 Site 250 Monitoring Wells

Four 2-inch diameter shallow wells and one 2-inch diameter deep monitoring well will be installed as necessary. The shallow wells will be positioned to provide information of the horizontal extent of impacts. The well screens will be placed within the water table such that about 3 ft of screen is exposed above the water table to allow for seasonal fluctuations and tidal fluctuations. The estimated total depth will be 16 ft bls. The deep well will be positioned to provide information on the vertical extent of impacts. A boring log, monitoring well sheet, and certificate of conformance will be maintained for each well installation (see Appendix A). Once installed, the monitoring wells will be developed per Navy specifications.

**Table 4-1
Fixed-Base Laboratory Sample Summary
Site 250**

Contamination Assessment Plan
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method ⁽¹⁾	Environmental Samples	IDW Samples ⁽²⁾	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER						
Volatile Organics	SW-846 USEPA 8260B	5	1	2	1	9
PAHs ⁽³⁾	SW-846 USEPA 8310	5	1	2	0	8
Lead, total	SW-846 USEPA 6010B	5	1	2	0	8
EDB	USEPA 504.1	5	1	2	0	8
TRPH	FL-PRO	5	1	2	0	8
SOIL						
Volatile Organics	SW-846 USEPA 8260B	3	1	2	0	6
PAHs ⁽³⁾	SW-846 USEPA 8310	3	1	2	0	6
TRPH	FL-PRO	3	1	2	0	6
Metals (Disposal) ⁽⁴⁾	SW846 USEPA 6010B	0	1	2	0	3

Notes:

⁽¹⁾ Method referenced reflects FDEP requirements.

⁽²⁾ Investigation derived waste (IDW) sample numbers are based upon disposing of 55-gallon drums (one composite sample per site) of soil. Groundwater analyticals will be used to determine the appropriate disposal method of the development and purge water. Soil analytical for volatile organics, PAHs, and TRPH (collected from environmental samples) will be used to characterize soil for proper disposal. In accordance with Chapter 62-713, FAC, additional discrete and composite samples will be collected for VOHs and metals, respectively, from the soil IDW generated in order to complete the soil characterization for proper disposal.

⁽³⁾ Includes 1-methylnaphthalene, 2-methylnaphthalene and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.

⁽⁴⁾ Total analyses for arsenic, cadmium, chromium, and lead.

EDB = ethylene dibromide

FL-PRO = Florida Petroleum Range Organics

**Table 4-2
Fixed-Base Laboratory Sample Summary
Site 1241**

Contamination Assessment Plan
Naval Station Mayport
Mayport, Florida

Analyte	Proposed Method ⁽¹⁾	Environmental Samples	IDW Samples ⁽²⁾	Equipment Blanks (Aqueous)	Trip Blanks (Aqueous)	Total Samples
GROUNDWATER						
Volatile Organics	SW-846 USEPA 8260B	5	1	2	1	9
PAHs ⁽³⁾	SW-846 USEPA 8310	5	1	2	0	8
Lead, total	SW-846 USEPA 6010B	5	1	2	0	8
EDB	USEPA 504.1	5	1	2	0	8
TRPH	FL-PRO	5	1	2	0	8
SOIL						
Volatile Organics	SW-846 USEPA 8260B	3	1	2	0	6
PAHs ⁽³⁾	SW-846 USEPA 8310	3	1	2	0	6
TRPH	FL-PRO	3	1	2	0	6
Metals (disposal) ⁽⁴⁾	SW846 USEPA 6010B	0	1	2	0	3

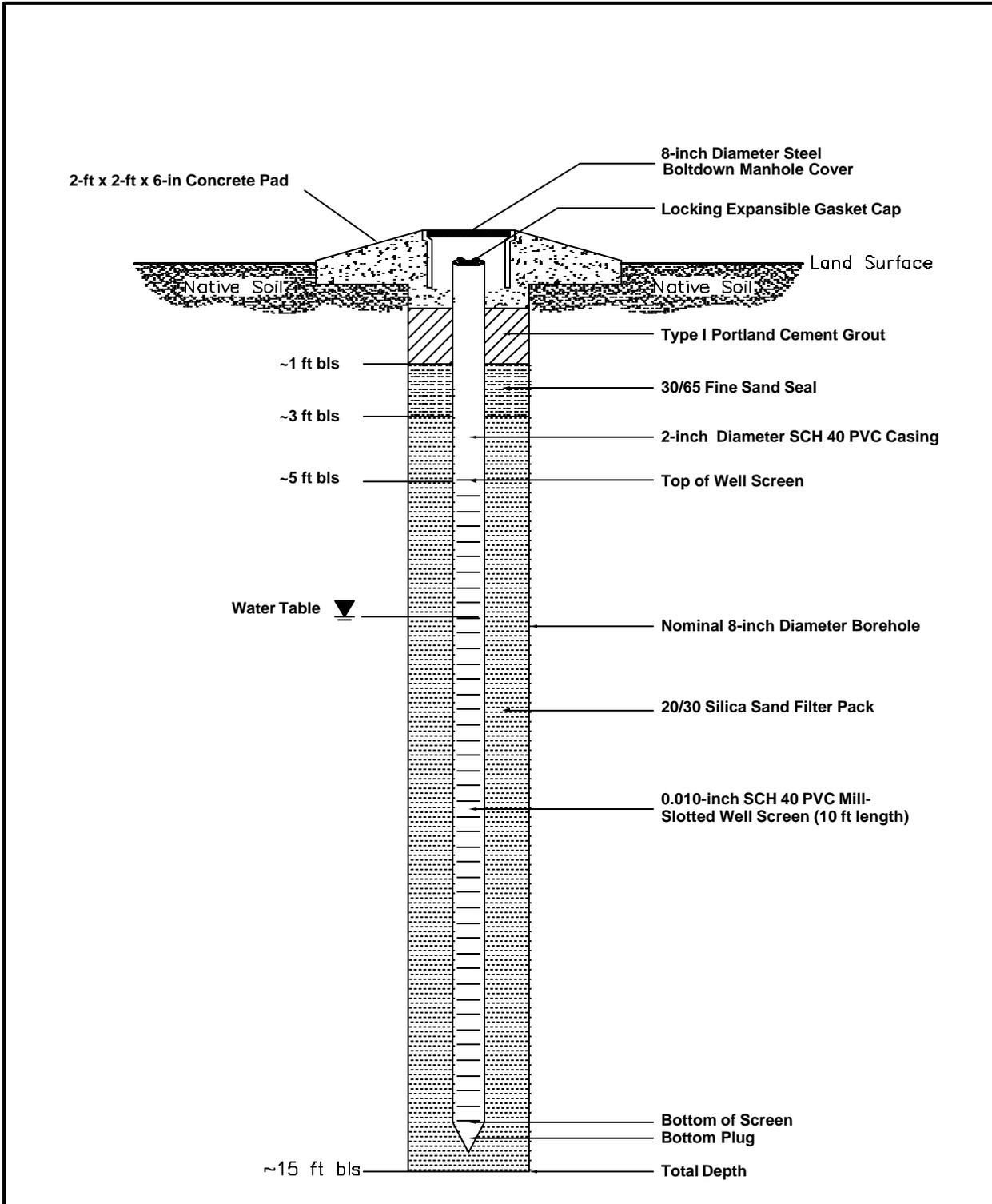
Notes:

⁽¹⁾ Method referenced reflects FDEP requirements.

⁽²⁾ Investigation derived waste (IDW) sample numbers are based upon disposing of 55-gallon drums (one composite sample per site) of soil. Groundwater analyticals will be used to determine the appropriate disposal method of the development and purge water. Soil analytical for volatiles, PAHs, and TRPH (collected from environmental samples) will be used to characterize soil for proper disposal. In accordance with Chapter 62-713, FAC, an additional discrete and composite sample will be collected for VOHs and metals, respectively; from the soil IDW generated in order to complete the soil characterization for proper disposal.

⁽³⁾ Includes 1-methylnaphthalene, 2-methylnaphthalene and 16 method-listed PAHs included in Table A of Chapter 62-770, FAC.

⁽⁴⁾ Total analyses for arsenic, cadmium, chromium, and lead.



DRAWN BY LLK	DATE 4/21/03		TYPICAL MONITORING WELL DESIGN SITES 250 AND 1241 CONTAMINATION ASSESSMENT PLAN NAVAL STATION MAYPORT MAYPORT, FLORIDA		CONTRACT NO. 5863	
CHECKED BY	DATE		APPROVED BY	DATE	APPROVED BY	DATE
COST/SCHED-AREA	SCALE NOT TO SCALE		DRAWING NO. FIGURE 4-4	REV. 0		

4.6.2 Site 1241 Monitoring Wells

It is believed that free product is present at Site 1241. For this reason four 4-inch diameter shallow monitoring wells and one 2-inch deep monitoring well will be installed. The 4-inch wells will allow for removal of free product during future phases of work as needed. The well screens will be positioned such that approximately 3 ft of screen is exposed above the water table to allow for seasonal fluctuations and tidal fluctuations. The deep well will provide information on the vertical extent of impacts and will be positioned at or down gradient from the source of impacts. Once installed, the monitoring wells will be developed per Navy specifications.

4.6.3 Monitoring Well Developing and Sampling

A boring log, monitoring well sheet, and certificate of conformance will be maintained for each permanent and temporary well installation (see Appendix A). Once installed, the wells will be developed per Navy specifications. The permanent monitoring wells will be developed no sooner than 24 hours after placement of grout to remove fine sediment from around the screened interval of the well. Permanent and temporary monitoring wells will be developed by bailing and purging or by pumping as determined by the field geologist. Field parameters (pH, temperature, turbidity, and specific conductance) will be measured at equally-spaced timed intervals during well development. Wells will be developed a maximum of one hour or until the field measurements become stable and the development water is visibly clear. Water quality stabilization will be determined using the following criteria:

- Temperature ± 0.2 degrees Celsius ($^{\circ}\text{C}$)
- pH ± 0.2 standard units
- Specific conductivity ± 5 percent of reading

Field development data will be maintained on a Monitoring Well Development Record (see Appendix A). No sooner than 24 hours after development, groundwater samples will be collected from monitoring wells in accordance with FDEP SOPs. Prior to obtaining samples, synoptic water levels and total well depths will be measured and recorded on a Groundwater Level Measurement Sheet (see Appendix A). A second round of water levels will be collected no sooner than one month later on the same data sheet.

The wells will be purged using a peristaltic pump using low flow quiescent purging techniques per FDEP SOPs. The data will be recorded on a Low Flow Purge Data Sheet (see Appendix A). Depending on the groundwater parameters, up to five well volumes may be purged. If wells are purged dry with less than three well volumes removed, the water level in the well will be allowed to recover enough to collect five field readings (pH, temperature, turbidity, dissolved oxygen, and specific conductance) prior to collecting a water sample. If the well does not purge dry using the low flow purging technique, groundwater

characteristics will be taken after each well volume of water is purged or at 2- to 10-minute intervals, depending on the flow rate. Stabilization will be defined according to the following scenarios:

I. When purging a well that has a partially submerged well screen, a minimum of one well volume will be purged prior to collecting measurements of field parameters listed below. If the well screen is fully submerged, then a minimum of one volume of the pump, associated tubing, and flow cell will be purged prior to collecting field parameters listed below. Purging will be considered complete when three consecutive measurements of the field parameters are within the desired limits as shown below.

- Temperature ± 0.2 °C
- pH ± 0.2 Standard Units
- Specific Conductivity ± 5 percent of reading
- Dissolved oxygen is not greater than 20 percent of saturation at the field measured temperature
- Turbidity is not greater than 20 Nephelometric Turbidity Units (NTUs)

II. When purging a well and Scenario I is impossible to achieve, three consecutive measurements of the following parameters are required:

- Dissolved oxygen ± 0.2 mg/L or 10 percent, whichever is greater
- Temperature ± 0.2 °C
- pH ± 0.2 Standard Units
- Specific Conductivity ± 5 percent of reading
- Turbidity ± 5 NTUs or 10 percent, whichever is greater

If stabilization is not achieved, five screen volumes must be removed prior to samples being collected in the appropriate sample containers. Samples to be analyzed for volatile constituents will be collected first and immediately sealed in 40-milliliter vials so that no headspace exists. Samples will be analyzed for compounds listed in Tables 4-1 and 4-2.

The analysis provided in Tables 4-1 and 4-2 are based on the GAG and KAG analytical groups listed by the FDEP in Chapter 62-770, Table B. Based on historical analytical results at Site 250 soil and groundwater impacts have been characterized as not hazardous and have documented the presence of naphthalene and TRPH. These impacts are typical petroleum based constituents that will be identified by the GAG and KAG analytical group analysis. At Site 1241, a fuel oil or “kerosene” type of petroleum release has occurred. The laboratory analyses selected for the GAG and KAG group are designed to

identify impacts from a fuel oil release. The data acquired during sampling at both sites will be recorded on a Groundwater Sample Log Sheet (Appendix A).

4.7 EQUIPMENT DECONTAMINATION

The equipment involved in well installation and well sampling activities will be decontaminated prior to and during the respective field activities in accordance with the FDEP SOPs.

4.8 WASTE HANDLING

Drill cuttings from the DPT screening survey, well installations, and water from the well development, purging, and sampling will be collected and containerized in Department of Transportation approved (17-E or 17-H) 55-gallon drums. Each drum will be sealed, labeled, and transported to a drum staging area, pending IDW analytical results. For this investigation, the confirmatory soil sample analytical data will be used to characterize the soil IDW for disposal. In addition, to satisfy the requirements of Chapter 62-713, FAC, one discrete and one composite soil sample will be collected from the drums of soil IDW. Tables 4-1 and 4-2 list and describe the sample requirements for the soil IDW samples. Groundwater analytical results from the mobile and fixed-base laboratories will be used for aqueous IDW disposal. The method of off-site disposal will be determined by these analytical results. IDW will be transported to the IDW staging area at NAVSTA Mayport pending disposal arrangements.

A lined decontamination pad will be constructed and used to collect the water from cleaning of drilling equipment. Decontamination materials generated during the site investigation will be containerized for proper disposal.

4.9 SAMPLE HANDLING

Sample handling includes the selection of sample containers, preservatives, allowable holding times, and analytical methods. In addition, sample identification, packaging, and shipping will be addressed. Sample handling procedures will be in accordance with the FDEP SOPs.

4.10 SAMPLE PACKAGING, SHIPPING, AND NOMENCLATURE

Samples will be packaged and shipped in accordance with FDEP SOPs. The Field Operations Leader (FOL) will be responsible for completing the following forms when samples are collected for shipping.

- Sample labels
- Chain-of-Custody labels

- Appropriate labels applied to shipping coolers
- Chain-of Custody forms
- Federal Express Air Bills

Each sample will be assigned a unique sample identification number. The unique label system established for this sampling event is as follows:

<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
General Site Name	Facility Number	Sample Identifier	Sequence Number

Where:

<u>1</u>	General Site Name	MPT
<u>2</u>	Facility Number	Building Number
<u>3</u>	Sample Identifier	DPT groundwater location number; monitoring well identification number and soil boring identification number
<u>4</u>	Sequence number	See below

TtNUS personnel will assign identification numbers to DPT locations, specifically for groundwater samples (e.g., DP01, etc.). They will also assign identification numbers to monitoring wells (e.g., 1S for first shallow well, 2S for second shallow well, etc.). Soil borings associated with this effort will begin at SB01 and continue numbering in a consecutive fashion (e.g., SB02, SB03, etc.).

For soil samples, the sequence number will be representative of the lower depth of the soil sample (e.g., a soil sample collected from the 1- to 3-ft interval of a soil boring will have a sequence number of 03, a sample from the 3- to 5-ft interval will have a sequence number of 05). For groundwater samples collected with the DPT equipment, the sequence number will be representative of the lower depth of the groundwater sample (e.g., a groundwater sample collected from the 6- to 10-ft interval would have a sequence number of 10). Groundwater samples collected from permanent monitoring wells will have a sequence number beginning at 01 and continuing consecutively, based on the sampling round. This assumes that if permanent wells are located during the screening effort, the samples collected for field screening will have a sequence number 01 and the samples collected during the second phase of this investigation will have the sequence number 02.

For example, a groundwater sample collected from shallow monitoring well number 8 at Site 1241 during the first groundwater sampling round would have the following nomenclature:

MPT-1241-MW8S-01

A soil sample collected at Site 250 from the 3- to 5-ft interval at boring SB02 would have the following nomenclature:

MPT-250-SB02-05

4.11 SAMPLE CUSTODY

The chain-of-custody begins with the release of the empty sample bottles from the laboratory and must be documented and maintained from that point forward. To maintain custody of the sample bottles or samples, they must be in someone's physical possession, in a locked room or vehicle, or sealed with an intact custody seal. When the possession of the bottles or samples is transferred from one person to another it will be documented in the field logbook and on the chain-of-custody.

4.12 QUALITY CONTROL (QC) SAMPLES

In addition to periodic calibration of field equipment and appropriate documentation on a field calibration sheet (see Appendix A), QC samples will be collected or generated during environmental sampling activities. QC samples will be collected in accordance with the requirements established during the Plan of Action negotiations.

Trip Blanks – Trip blank(s) are required if the samples will be analyzed for VOCs. Trip blanks are prepared by the laboratory providing the VOC vials and are prepared by filling the preserved vials with analyte-free water.

Equipment/Field Blanks – Equipment/Field blanks are required for sampling equipment used during the investigation. Equipment blank frequency is 5 percent of samples taken (excluding QC samples).

4.13 SITE MANAGEMENT AND BASE SUPPORT

TtNUS will perform this project with support from the Navy. This section of the CAP describes the project contacts, support personnel, project milestones, and time frames of all major events.

Throughout the duration of the investigation activities, work at NAVSTA Mayport will be coordinated through SOUTHNAVFACENGCOM, FDEP, and NAVSTA Mayport personnel. The primary contacts are as follows:

1. SOUTHNAVFACENGCOM
Ms. Beverly Washington
(843) 820-5581

2. FDEP
Mr. Jim Cason
(850) 921-4230
3. NAVSTA Mayport Facilities
Mr. Scott Dombrosky
(904) 542-3558, extension 4322

NAVSTA Mayport personnel will provide the following support functions:

- Assist TtNUS in locating underground utilities prior to the commencement of drilling operations.
- Provide existing engineering plans, drawings, diagrams, files, etc. to facilitate evaluation of the sites under investigation.
- Provide all historical data, background geological and hydrogeological information, and initial site investigation documents.

NAVSTA Mayport personnel will aid in arranging the following:

- Personnel identification badges, vehicle passes, and/or entry permits.
- A secure staging area (approximately 2,000 square ft) for storing equipment and supplies.
- A supply (e.g., fire hydrant, stand pipe, etc.) of large quantities of potable water for equipment cleaning, sampling, etc.
- As required, provide escorts for contract personnel working in secured areas.

The project will be staffed with personnel from the TtNUS' Jacksonville, Florida office. During field activities, TtNUS will provide an FOL who is familiar with the scope of work to be completed and requirements of working at NAVSTA Mayport. Additionally, TtNUS will supply one DPT rig with mobile laboratory, one HSA drill rig, and a TtNUS field crew to supervise drilling activities and sample the groundwater monitoring wells.

Mr. Mark Peterson is the Task Order Manager (TOM) for CTO 0303 and will be the primary point of contact for the Station and the FOL. He is responsible for cost and schedule control as well as technical performance. Mr. Peterson will provide senior level review and oversight during field activities.

4.13.1 Contingency Plan

In the event of problems that may be encountered during site activities, the SOUTHNAVFACENGCOM point of contact will be notified immediately, followed by the TtNUS TOM, and the NAVSTA Mayport point of contact. The TOM will determine a course of action designed not to interfere with the schedule or budget. Contingency plans will be approved through the SOUTHNAVFACENGCOM point of contact before being enacted.

5.0 PROPOSED LABORATORY ANALYSIS

During the field-screening portion of this assessment, a mobile laboratory will analyze soil and groundwater samples for BTEX, naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene at both sites. In addition to these constituents, a screening method for TRPH will also be analyzed at Site 250. The additional method is required due to the historical presence of TRPH released by the former waste oil tank. The method used by the mobile laboratory provides comparable data as the FL-PRO method for TRPH.

A fixed-base laboratory will be used to analyze soil and groundwater samples for constituents identified in Table 4-1 and Table 4-2. Soil samples will be analyzed for the following COCs, which include volatile organics, 1-methylnaphthalene, 2-methylnaphthalene, TRPH, and the 16 method listed PAHs included in Table B of Chapter 62-770, FAC. Groundwater samples from the monitoring wells will be analyzed for volatile organics; 1-methylnaphthalene; 2-methylnaphthalene; 1,2-dichloroethane; the 16 method listed PAHs included in Table B of Chapter 62-770, FAC; and the other priority pollutant VOHs, including total lead, EDB, and TRPH.

To comply with Chapter 62-713, FAC, a fixed-base laboratory will analyze additional soil IDW samples for VOHs and total metals (arsenic, cadmium, chromium, and lead). This data, combined with the soil confirmatory data will be used to characterize the soil IDW for proper disposal.

6.0 PROPOSED SCHEDULE

Field activities, including DPT soil and groundwater screening, monitoring well installation and development, sampling, surveying, aquifer testing, and IDW management at Site 250 and Site 1241 are proposed to begin in August 2003. The field investigation is anticipated to take four months and report preparation work is anticipated to take about eight months once the notice to proceed is given. The following are the anticipated number of days to complete each task:

Sites 250 and 1241

FIELD INVESTIGATION

- Utility Clearances 7 days
- DPT and Mobile Lab Mobilization 1 day each
- DPT and Mobile Lab Investigation 7 days
- Drilling Coordination and Mobilization 2 days
- Monitoring Well Installation and Development 7 days
- Monitoring Well Sampling 4 days
- Off-site Laboratory Analyses/Validation 30 days
- Surveying and Coordination 3 days
- IDW Management/Disposal and Coordination 3 days

REPORT PREPARATION

- Prepare Draft- Final SAR (Site 250) 30 days
- Prepare Draft- Final SAR (Site 1241) 30 days
- Navy Review of Draft - Final SAR (Site 250) 30 days
- Navy Review of Draft - Final SAR (Site 1241) 30 days
- Prepare Final SAR – (Site 250) 10 days
- Prepare Final SAR – (Site 1241) 10 days
- Submit Final SAR – (Site 250) 10 days
- Submit Final SAR – (Site 1241) 10 days

REFERENCES

Ellis (Ellis Environmental Group, LC), 1998. *Removal of Waste Oil Storage Tank at Building 250*. July.

Ellis, 2001. *Tank Closure Assessment report, Removal and Replacement of Heating Oil Tanks, Building 1241*. Prepared for the Department of the Navy, Navy Facilities Engineering command, Combined Acquisition Office, Jacksonville Region, Jacksonville, Florida. March.

Ellis, 2002. *Closure Report for the Removal of Aboveground Storage Tanks 250 No. 1 and No. 2 from Naval Station Mayport, Florida*. December.

FDEP (Florida Department of Environmental Protection), 1999. *Chapter 62-770, Florida Administrative Code (FAC)*. August.

FDEP, 2002. *Standard Operating Procedures, DEP-SOP-001/01*. January.

PWC (Public Works Center), 1997. *Closure Assessment Report Underground Storage Tank Building 1241, Naval Station Mayport, Florida*. December.

PWC, 1999. *Field Notes Building 250*. August.

TtNUS (Tetra Tech NUS, Inc.), 1999. *Site Assessment Report for UST Site 250, Naval Station Mayport, Florida*. Prepared for Southern Division, Naval Facilities Engineering Command, North Charleston, South Carolina. March.

APPENDIX A

FIELD FORMS



MONITORING WELL SHEET

PROJECT: NAVSTA Mayport DRILLING Co.: _____ BORING No.: _____
 PROJECT No.: N5863 DRILLER: _____ DATE COMPLETED: _____
 SITE: Tank Site 250/1241 DRILLING METHOD: _____ NORTHING: _____
 GEOLOGIST: _____ DEV. METHOD: _____ EASTING: _____

<p>Ground Elevation = _____ Datum: _____</p> <p style="text-align: center;">Not to Scale</p>	Elevation / Depth of Top of Riser: _____ / _____
	Elevation / Height of Top of Surface Casing: _____ / _____
	I.D. of Surface Casing: _____
	Type of Surface Casing: <u>Steel</u>
	Type of Surface Seal: _____
	I.D. of Riser: _____
	Type of Riser: <u>PVC</u>
	Borehole Diameter: _____
	Elevation / Depth Top of Rock: _____ / _____
	Type of Backfill: _____
	Elevation / Depth of Seal: _____ / _____
	Type of Seal: <u>30/65 Sand</u>
	Elevation / Depth of Top of Filter Pack: _____ / _____
	Elevation / Depth of Top of Screen: _____ / _____
	Type of Screen: <u>PVC</u>
Slot Size x Length: _____	
I.D. of Screen: _____	
Type of Filter Pack: <u>20/30 Sand</u>	
Elevation / Depth of Bottom of Screen: _____ / _____	
Elevation / Depth of Bottom of Filter Pack: _____ / _____	
Type of Backfill Below Well: _____	
Elevation / Total Depth of Borehole: _____ / _____	



Project Site Name: NAVSTA Mayport - Site 250/1241 Sample ID No.: _____
 Project No.: N5863 Sample Location: _____
 Domestic Well Data Sampled By: _____
 Monitoring Well Data C.O.C. No.: _____
 Other Well Type: _____ Type of Sample:
 QA Sample Type: _____ Low Concentration
 High Concentration

SAMPLING DATA								
Date:	Color	pH	S.C.	Temp.	Turbidity	DO	Salinity	Other
Time:	Visual	Standard	mS/cm	°C	NTU	mg/l	%	
Method: Low Flow Peristaltic								

PURGE DATA	
Date:	SEE LOW FLOW PURGE DATA SHEET
Method: Low Flow Peristaltic	
Monitor Reading (ppm):	
Well Casing Diameter:	
Well Casing Material:	
Total Well Depth (TD):	
Static Water Level (WL):	
One Casing Volume(gal/L):	
Start Purge (hrs):	
End Purge (hrs):	
Total Purge Time (min):	
Total Vol. Purged (gal/L):	

SAMPLE COLLECTION INFORMATION				
Analysis	Preservative	Container Requirements	Laboratory	Collected

OBSERVATIONS / NOTES

Laboratory:

phone:
fax:

Circle if Applicable:		Signature(s):
MS/MSD	Duplicate ID No.:	

