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CONTROL NO. 01

CONTRACT NO	CONTRACT TASK ORDER NO	ACTIVITY LOCATION
N62472-99-D-0032	0084	Naval Station Newport – Portsmouth, RI

PROJECT TITLE:
Tank Farm Remediation

FROM:	DATE
Foster Wheeler Environmental Corp.: Program QC Manager Thomas Kelly	August 19, 2002
TO	DATE
B. Helland (E-Copy)	August 19, 2002

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ITEM NO.	SUBMITTAL DESCRIPTION	PREPARED/ SUBMITTED BY	APPROVED	DISAPPROVED	REMARKS
1	SD-08, Statements; Draft Site Investigation Work Plan for Tank Farm 4 Closure	Thomas Kelly			

MISC\96-184 DOC

U.S. NAVY ENGINEERING FIELD ACTIVITY NORTHEAST
REMEDIAL ACTION CONTRACT (RAC)
CONTRACT NO. N62472-99-D-0032
CONTRACT TASK ORDER NO. 0084

DRAFT SITE INVESTIGATION WORK PLAN FOR TANK FARM 4 CLOSURE

NAVAL STATION NEWPORT PORTSMOUTH, RHODE ISLAND

August 19, 2002

Prepared by

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Revision	Date	Prepared By	Approved By	Pages Affected
0	8/19/02	J. McIntosh	S. Leach	All

ND02-071
8/19/02

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ABBREVIATIONS AND ACRONYMS

BOLs	bills of lading
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
COC	contaminant of concern
CTO	Contract Task Order
cy	cubic yard
DESC	Defense Energy Support Center
EFA NE	Engineering Field Activity Northeast
IAS	Initial Assessment Study
IRP	Installation Restoration Program
lf	lineal feet
MS	matrix spike
MSD	matrix spike duplicate
NACIP	Navy Assessment and Control of Installation Pollutants
NTR	Navy Technical Representative
ppm	parts per million
RAC	Remedial Action Contract
RCRA	Resource Conservation and Recovery Act
RIDEM	Rhode Island Department of Environmental Management
SVOCs	semivolatile organic compounds
TPH	total petroleum hydrocarbons
USEPA	U.S. Environmental Protection Agency
UST	underground storage tank
VOCs	volatile organic compounds

1.0 INTRODUCTION

Foster Wheeler Environmental Corporation (Foster Wheeler) has prepared this Draft Site Investigation Work Plan on behalf of Engineering Field Activity Northeast (EFA NE) under Remedial Action Contract (RAC) N62472-99-D-0032, Contract Task Order 0084 (CTO 0084). This plan describes investigative and field operations to be conducted at Tank Farm 4 at the Naval Station Newport, Portsmouth, Rhode Island (see Figure 1-1), in support of achieving site closure under RIDEM UST regulations.

This plan includes descriptions of excavation, field screening, sampling, and backfilling operations and seeks to address the requirements of *Rhode Island Department of Environmental Management Regulations for Underground Storage Facilities Used for Petroleum Producers and Hazardous Materials* (RIDEM UST) relative to underground storage tank (UST) closure. The former practice of burying tank bottom sludge in trenches, which is the scope of this investigation, satisfies the definition of a "release" under these regulations. Therefore, field operations will be conducted in accordance with RIDEM UST regulations. Field operations are tentatively scheduled to begin in February 2003.

2.0 SITE BACKGROUND INFORMATION

2.1 Naval Station and Tank Farm 4 Site Location

The Naval Station is located in the Towns of Newport, Middletown, and Portsmouth, Rhode Island. Tank Farm 4 was located in the north-central portion of the Naval Station (see Figure 2-1). This area is surrounded by the Navy's Defense Highway to the northwest, Greene's Lane to the northeast, woodlands and residential areas to the southeast, and a Norman's Brook to the southwest.

The site was comprised of 90 acres and consisted of twelve USTs that were numbered 37 through 48 (see Figure 2-1). Each UST had a capacity of 60,000 barrels, which is equivalent to 2.52 million gallons of standard petroleum. The tanks were made of pre-stressed reinforced concrete. The tank roof and walls were approximately 12-inches thick and the floor was approximately 24-inches thick (Halliburton NUS, 1995).

2.2 Environmental Setting

The topography of the area consists of a gradual slope to the west/southwest towards Narragansett Bay. The site contains tall grass, trees, and dense brush that have overgrown the areas where the twelve USTs previously existed. For more detailed information on site geology, groundwater, UST construction, and previous investigations, interested readers are referred to *Preliminary Closure Assessment Report of Tank Farms 4 and 5 at Naval Education and Training Center Newport, Rhode Island*, submitted by Halliburton NUS Corporation, June, 1995.

To summarize, the soil surrounding the demolished USTs is fill material consisting of gravel, crushed bedrock, and coarse to fine grained soils that was placed during and after tank construction. Tank construction and placement included blasting and excavating 10-30 ft of bedrock (Halliburton NUS, 1995) to create a cradle for the tank structure. The diameter of each UST was approximately 119 ft. Each tank was approximately 36 ft high from the footing to the roof and may have continued 10 to 30 ft below the soil surface (Halliburton NUS, 1995). Soil thickness at the site varies and is approximately 45-ft thick and groundwater flows in a west to southwest direction towards Narragansett Bay.

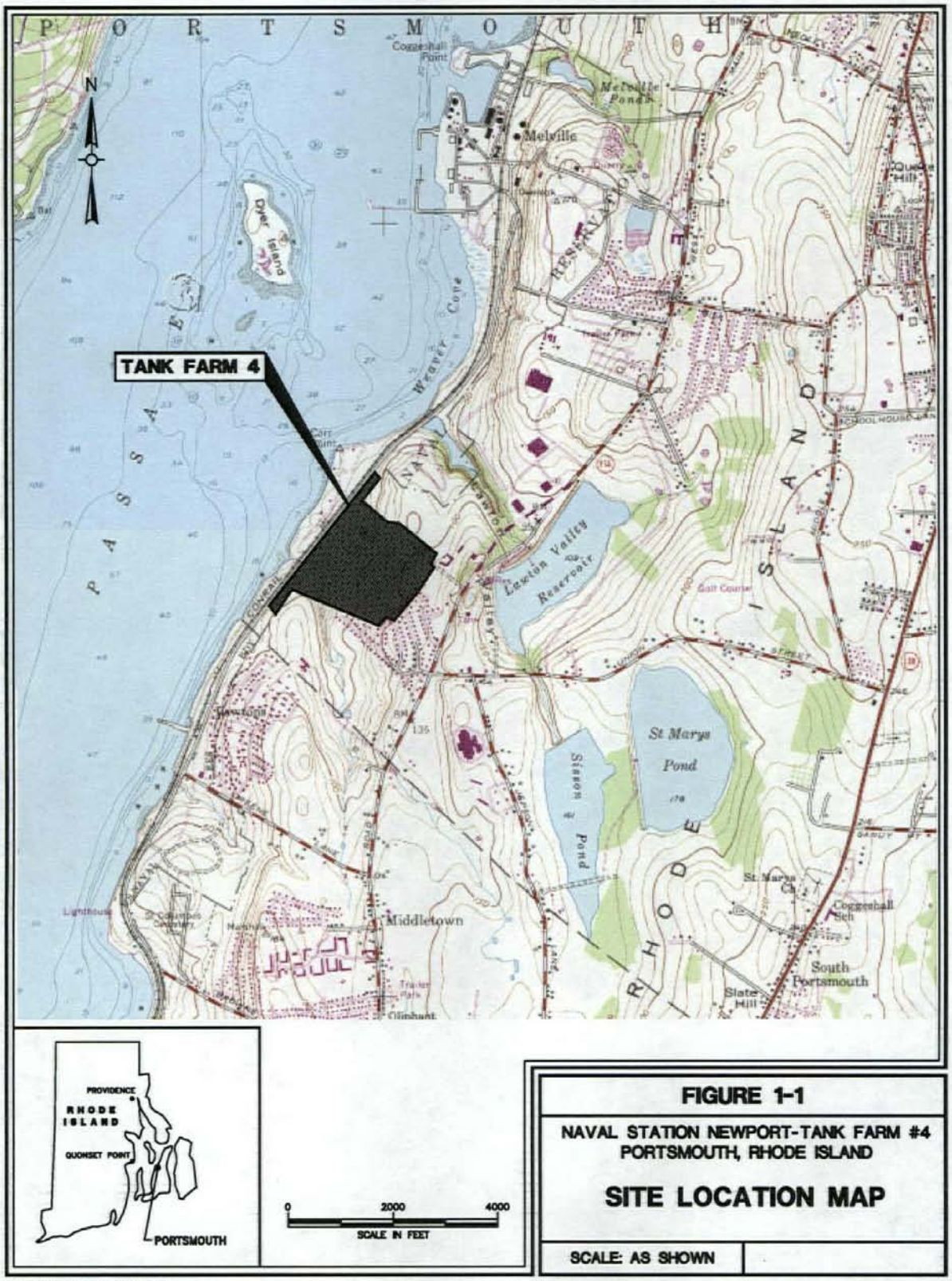

FIGURE 1-1

NAVAL STATION NEWPORT-TANK FARM #4
PORTSMOUTH, RHODE ISLAND

SITE LOCATION MAP

SCALE: AS SHOWN

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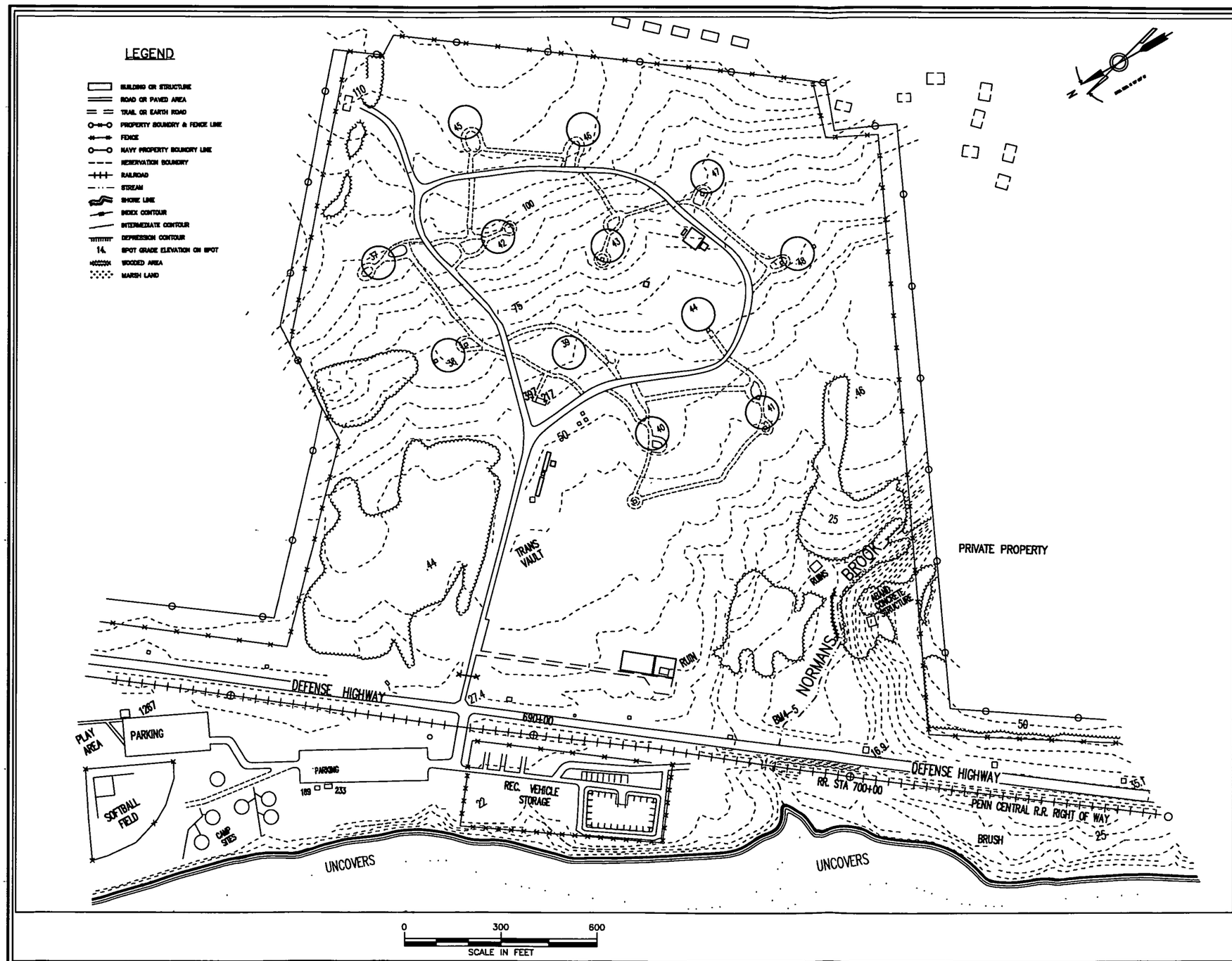

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FIGURE 2-1

NAVAL STATION NEWPORT-TANK FARM #4
PORTSMOUTH, RHODE ISLAND

SITE MAP

SCALE: AS SHOWN

2.3 Operational History

From 1941 through 1974 (dates are approximated), Tank Farm 4 was used for storage of heavy fuel oil. From 1974-1976 (approximately), the tanks were leased to Northeast Petroleum Company formerly of Tiverton, RI and were used to store No. 2 fuel oil (Pers. Comm, 2002). Tank cleaning operations of Tank Farms 1-5 were conducted when the tanks stored heavy fuel oil. During the cleaning operations, it was reported that tank bottom sludge generated from cleaning activities was buried on-site in unlined trenches located in the vicinity of the tank being cleaned.

A site walk was conducted on July 17, 2002, and included a former Navy and Defense Energy Support Center (DESC) employee who was responsible for tank farm operation and maintenance from 1969 through 1990. The employee stated that during cleaning operations, tank bottom sludge from tanks at Tank Farm 4 was pumped to UST 41 because it was the designated slop tank for Tank Farm 4. The water and oil in the slop tank was allowed to gravity separate and the emulsion was then pumped to an on-site oil/water separator. Oil was collected, drummed, and disposed of off-site and the treated water was discharged. A thin water layer was maintained at the base of each tank to prevent oil loss to the environment (Pers. Comm., 2002). The employee recalled that burying tank bottom sludge in trenches was not practiced at Tank Farm 4 at any time during his employment.

2.4 Previous Investigations

From October through December of 1994, Halliburton conducted soil probing to a depth of approximately 4-6 and 6-8 ft below ground surface around the perimeters of USTs #37-48. The samples were field screened for TPH using Ensys Petro Risc kits (Halliburton NUS, 1995). The samples containing the highest screened TPH values were sent off-site for TPH analysis using USEPA Method 8015B. Twenty-four soil samples were collected from the perimeter of the twelve USTs for off-site analysis. For all samples, the TPH concentrations were ND at the respective reporting limits.

Halliburton NUS Corporation also installed subsurface soil borings around the perimeters of USTs #37-48. The borings were advanced 30 to 43.5 ft below the ground surface. Subsurface soil samples were collected from the borings and analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), total petroleum hydrocarbons (TPH), and eight RCRA metals. Each boring was completed as a groundwater monitoring well and groundwater samples were collected and analyzed for VOCs, SVOCs, and RCRA metals. For details of the sampling protocols and to review analytical data corresponding to these samples, interested readers are referred to *Preliminary Closure Assessment Report of Tank Farms 4 and 5 at Naval Education and Training Center, Rhode Island* (Halliburton NUS, 1995).

2.5 Purpose and General Description of Site Investigation

This site investigation will seek to resolve the conflicting information regarding the practice of burying tank bottom sludge in the vicinity of the twelve former Tank Farm 4 USTs. An investigation consisting of test pit excavation will be conducted about the perimeter of each of the twelve former USTs to attempt to locate the trenches that reportedly received tank bottom sludge.

Soil samples will be collected from each test pit and will be field screened for TPH using Petroflag kits. Approximately 10% of the Petroflag samples will be sent to an off-site laboratory for analyses. A field screening TPH concentration exceeding 1,000 ppm may result in confirmation of the results by TPH analysis off-site. The field screening TPH concentration of 1,000 ppm is considered conservative because the RIDEM UST Method 1 Industrial/Commercial TPH Direct Exposure Criterion for soil is 2,500 ppm.

If the confirmatory sample TPH concentrations exceed 2,500 ppm, additional excavation will occur and confirmatory sample will be collected again. Upon confirmation that soil in the excavated trenches around each tank does not exceed the RIDEM UST Method 1 Industrial/Commercial TPH Direct Exposure Criteria, backfilling and compaction of trenches will occur. Further site restoration activities are not anticipated.

3.0 REGULATORY AUTHORITY

As identified in a letter dated July 17, 2002 from the Environmental Restoration Division of the U.S. Navy to the USEPA and RIDEM, the reported practice of burying tank bottom sludge in the ground meets the definition of a release as identified *RIDEM Regulations for Underground Storage Facilities Used for Petroleum Products and Hazardous Materials* (DEM-DWM-UST05-93, Section 7.66). The definition follows:

> *"Release means any spilling, leaking, pumping, pouring, injecting, emitting, escaping, leaching, or disposing of any material stored in an underground storage tank system into groundwater, surface water, or subsurface soils."*

In 1980, the Navy developed the Navy Assessment and Control of Installation Pollutants (NACIP) Program, which later became the Installation Restoration Program (IRP), to identify and control environmental contaminants from past use and disposal of hazardous substances at Naval Installations.

As part of NACIP, an Initial Assessment Study (IAS) was completed in 1983. Petroleum was the only contaminant of concern (COC) identified but was exempt from CERCLA 101 authority because petroleum is not defined as a hazardous substance. Because a regulatory program addressing petroleum releases was not developed at that time, the Navy elected to address Tank Farm 4 under the NACIP (IRP) and Tank Farm 4 was included in the 1992 Federal Facilities Agreement.

Various states, including Rhode Island, have developed regulatory programs to address petroleum releases. In fact, tank farms located in Brunswick, ME and Portsmouth, RI as well as South Weymouth, MA are being addressed under state authority. The Navy proposes to address site investigations and eventual closure of Tank Farm 4 under RIDEM authority. This site investigation seeks to satisfy the requirements of the RIDEM UST Program.

Upon completion of the activities identified within this plan, a Site Investigation Report will be prepared in accordance with RIDEM UST Regulations, Section 14.09. The Site Investigation Report will be submitted to RIDEM upon completion.

3.1 Future Land Use

Historically, this area has been used for industrial/commercial purposes. The proposed future use scenario is also industrial/commercial (non-residential) as the facility has been proposed as a golf course site, a restricted recreational use area.

3.2 Site Remediation Goals

Because petroleum was previously identified as the only site COC and because the proposed future land use is a golf course, the RIDEM UST Method 1 Industrial/Commercial Direct Exposure Criteria for TPH in soil of 2,500 ppm is the site remediation goal.

4.0 SITE INVESTIGATION APPROACH

This section identifies the investigation approach and describes the equipment to be used during site investigation, test pit dimensions and locations, field screening methodology, sample collection approach, off-site analysis, if warranted, backfilling operations, and final site closure requirements.

4.1 Mobilization

In February 2003, Foster Wheeler will mobilize the following to the site: a conventional long-reach excavator, a loader, two off road dump trucks, polyethylene sheeting, TPH petroflag screening kits, sampling equipment, and field personnel. If adequate facilities that can be used as a site office currently exist near the site, Foster Wheeler may opt to use these facilities as a site office. Otherwise, Foster Wheeler will mobilize to the site an office trailer and will supply electricity to it through the mobilization of a generator or through utility stub-ups that will be provided by the Navy. Foster Wheeler will establish phone service and sanitary facilities at the site.

Before any intrusive activities begin, Foster Wheeler field personnel will notify Dig Safe Mark-Out service to identify the location of subsurface utilities. Foster Wheeler will coordinate with the Navy Technical Representative (NTR) to obtain excavation permits that may be required by the Navy for excavation operations at the Naval Station Newport, Portsmouth, RI.

4.2 Pre-Investigative Survey

Because the USTs were previously demolished, a field survey will be conducted to locate the former centers of each UST, which will be used as a reference location. From the former UST centers, the former UST perimeters will be located. The test pits will be staked outside the former UST perimeters. Foster Wheeler will subcontract this survey work to a RI licensed surveyor.

4.3 Clearing and Grubbing

The site has re-vegetated significantly since the completion of tank demolition. The majority of vegetation near the former tank sites consists of scrub growth, with a few small trees. Prior to test pitting, a bulldozer will be used to remove small shrubs and trees and to flatten vegetation to facilitate access to the sites where test pits will be excavated. The cleared and grubbed material will be staged and eventually disposed of off-site or reused on-site if the material is needed by the Naval Station Newport, Portsmouth, RI.

4.4 Investigation Approach

Foster Wheeler plans to excavate test pits in an up gradient to down gradient manner to prevent potential contaminant migration due to site investigation. As previously identified, ground water moves in a west to southwesterly direction, see Figure 2-1. Therefore, the planned test pit excavation will begin with those USTs located on the east side of the site (#45, #46, #37, #42, #47). Excavation is planned to

proceed in a westerly direction (#43, #38, #39, #44, #48, #40) until UST #41, the slop tank, is reached. This approach may change as a result of actual site conditions at the time of excavation.

4.4.1 Test Pits

Eight test pits (trenches) will be excavated and positioned equidistantly around the perimeter of each former UST location. As previously mentioned, the diameter of each UST was roughly 119 ft so test pits will be spaced roughly at 40 ft intervals around each UST. Each test pit will be approximately 40-ft long, 5-ft wide, and 3-ft deep.

The assumption is that if tank bottom sludge disposal trenches were used in the past, they would be oriented parallel to the perimeter of the USTs. Therefore, the test pits to be excavated will be oriented perpendicular to each UST's former perimeter to increase the likelihood of intersecting a disposal trench, if any exist. Figure 4-1 shows the conceptual orientation of the trenches about each UST, the test pit dimensions, and the location of confirmatory samples that may be collected if results of laboratory analysis exceeds 2,500 ppm and additional contaminated material is excavated from a trench. The excavated soil will be stockpiled as described in Section 4.4.4.

4.4.2 Field Screening for TPH

Using Petroflag kits as a screening guide, field personnel will collect approximately three (3) samples from the base of each trench. Sample 1 will be collected at the headwall of the trench, close to the former UST perimeter. Sample 2 will be collected in the center of the trench 20-ft from the location where the first sample was collected and sample 3 will be collected at the trench 40-ft mark at the end of the trench. In the event that stained soil is observed, an additional field screening sample will be collected from the stained soil. Approximately three field-screening samples will be collected per trench.

If a field screening sample(s) indicates TPH concentrations in excess of 1,000 ppm, confirmatory samples will be collected for off-site analysis. The field screening value of 1,000 ppm is considered conservative because the Rhode Island Method 1 Industrial/Commercial TPH Direct Exposure Criteria is 2,500 ppm. If contaminated material is excavated from a trench, confirmatory samples will be collected at 20-ft intervals from the base of the trench as well as at mid-depth of each of the trench sidewalls. Figure 4-1 shows the confirmatory sampling scheme should Petroflag screening indicate the necessity of collecting confirmatory samples. Confirmatory sample collection and analysis is identified in Section 4.4.3.

To validate the calibration of the Petroflag kits, 10% of the samples collected will be split and sent to an off-site laboratory for analyses. The samples used for Petroflag kit validation will be collected randomly albeit at the early stages of the excavation portion of the project to obtain confidence in the correlation between the Petroflag kit data and the fixed laboratory data. A random 10% of the samples will be used for this validation. Section 4.4.3 describes the analytical methods.

4.4.3 Validation and Confirmatory Sample Analysis and Analytical Methods

Validation and confirmatory samples that are collected to be sent off-site will be analyzed for TPH using USEPA Method 600 418.1 modified. One confirmatory sample will be collected from the base of each trench at the location where the screening sample was collected and two samples will be collected from each of the trench sidewalls (see inset of Figure 4-1). Assuming a trench length of 40-ft, three (3) samples will be collected from the trench base 0 lf, 20 lf, and 40 lf from the former UST perimeter. A total of six (6) samples will be collected from the trench sidewalls (2 sidewall samples will be collected in the vicinity of each base sample location).

Locations where the confirmatory sample analytical results exceed a TPH concentration of 2,500 ppm will require further excavation. If all confirmatory samples exceed a TPH concentration of 2,500 ppm, the test pit (trench) will be excavated by an additional 2 feet in width (1 foot on each side of the trench) and 2-ft in depth (at the trench base). If any of the confirmatory samples contain TPH concentrations greater than 2,500 ppm, an additional 2-ft of soil will be removed from the trench base and an additional 2 feet will be excavated in width (1 foot on each side of the trench). In addition, an additional 2-ft of material will be removed from the trench base and 1-ft will be removed from each sidewall 10 lineal feet (lf) in each direction from the sample location. The excavated soil will be stockpiled with soil previously excavated from the area.

After the additional excavation, Petroflag screening will be used to determine if the contaminated material has been removed. Soil excavation will continue until Petroflag results are less than 2,500 ppm. Confirmatory samples will then be re-collected and analyzed for TPH to determine if the soil excavation has successfully removed the TPH concentrations exceeding 2,500 ppm. Expansion of trench area by additional excavation will continue, as required by confirmatory sample results, until the residual TPH concentrations in the trench soil are less than 2,500 ppm.

When the confirmatory sample analytical results determine that the residual TPH concentration does not exceed 2,500 ppm, the trenches will be backfilled.

4.4.4 Staging Excavated Soil

Excavated soil removed during each trench excavation is estimated to be approximately 22 cubic yards (cy). It will be stockpiled near the trench excavation area on 30 mil polyethylene sheeting and covered with polyethylene sheeting at the end of daily operations and during rainfall events. If the material is determined to exceed the site remediation goal of 2,500 ppm, it will be transferred into site roll-offs for containment or directly loaded into dump trucks and disposed of off-site.

If the soil TPH concentrations do not exceed the soil remediation goal, it will be used as backfill for the trench where it was excavated.

4.4.5 Backfilling

After confirmatory sample analytical results determine that trench soil TPH concentrations are less than 2,500 ppm, the trenches will be backfilled. If confirmatory analytical data indicates TPH concentrations less then 2,500 ppm, the soil that was excavated will be used as backfill because it does not contain TPH concentrations that exceed the Rhode Island Method 1 Industrial/Commercial TPH Direct Exposure Criteria of 2,500 ppm. In the event that confirmatory sample TPH concentrations exceeded 2,500 ppm and the soil was disposed of off-site, certified clean imported fill will be used to backfill the trenches. The trenches will be bucket-compacted. No restoration activities are anticipated. The site will be allowed to revegetate naturally.

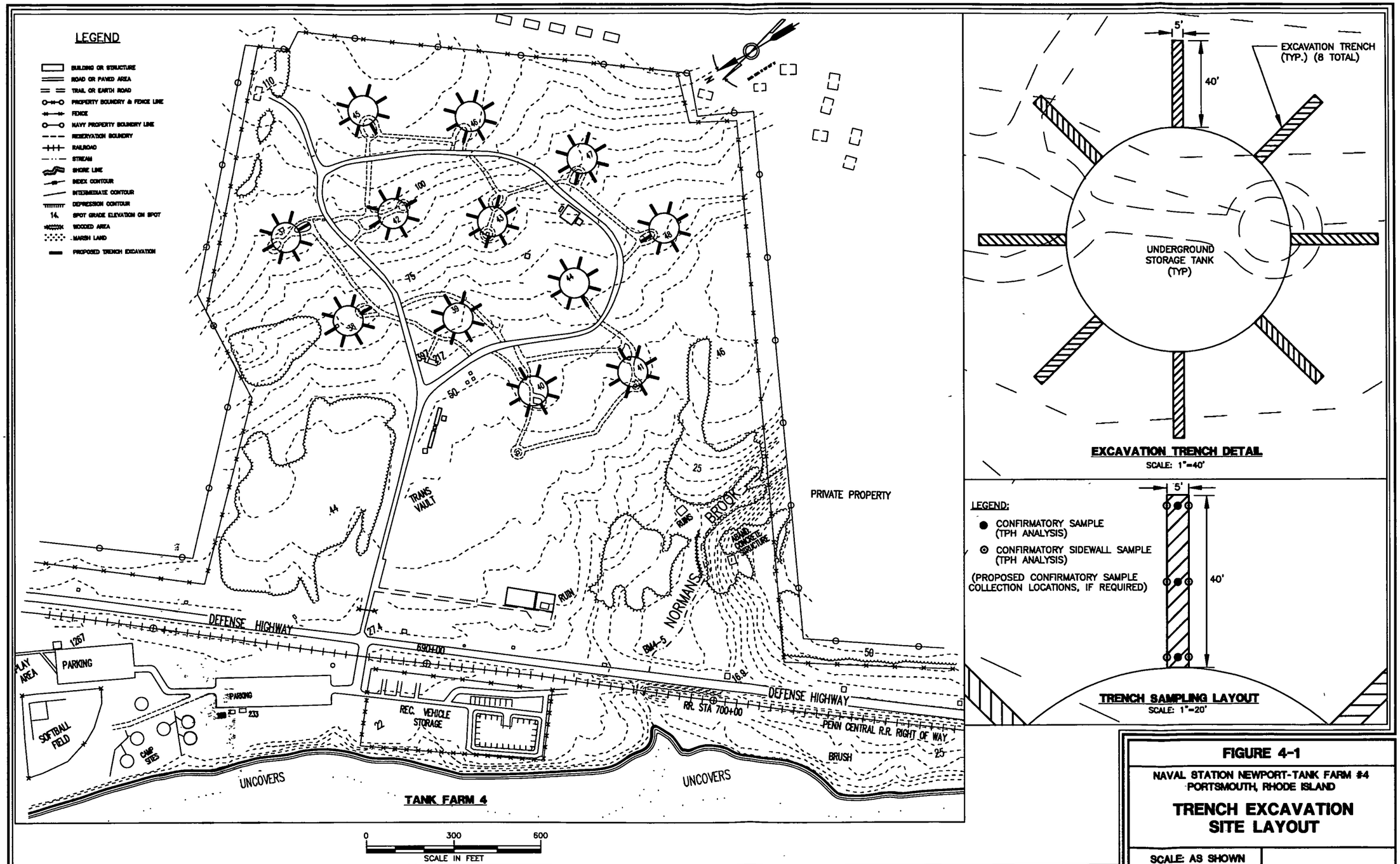

FIGURE 4-1

NAVAL STATION NEWPORT-TANK FARM #4
PORTSMOUTH, RHODE ISLAND

TRENCH EXCAVATION SITE LAYOUT

SCALE: AS SHOWN

CAD FILE: 0841_A002.DWG

5.0 SAMPLE MANAGEMENT

The sample identification system to be used during this investigation will assign a unique sample identifier to each sample collected. Data management will be consistent with this sample identification system. The protocols for assigning field sample numbers are described below. Each sample collected will have its own identifier, which will apply for the duration of the project. The sample identifier will consist of an alpha-numeric code that will identify the site designation, sample type, sample number, and QC sample designation (if applicable). The QC sample identifier will also consist of an alpha-numeric code that will identify the QC sample designation, sampling date, and sample number (if applicable). Note: All sample identifiers and their corresponding locations will be carefully logged in the field notebook and may be identified on figures or drawings.

TF4	Tank Farm 4
UST	Underground Storage Tank
37-48	USTs 37-41
T1-8	Trench #
0	Test Pit Trench Sample Closest to UST
20	Test Pit Trench Sample 20-lf from UST
40	Test Pit Trench Sample 40-lf from UST
N,S,E,W	Location of Sidewall Sample

Sample types:	B	Soil Base Sample
	S	Soil Sidewall
	DR	Decontamination Rinsate Sample
	PP	PPE Sample
QC sample designations:	TB	Trip Blank
	ER	Equipment Rinsate
	FB	Field Blank
	D	Duplicate Sample
	MS/MSD	Matrix Spike/Matrix Spike Duplicate
Sampling Depth	3	3-ft sampling depth

Examples: **Soil Sample from Tank Farm 4, UST 48, Trench 3, Trench Base, Distance relative to UST**

Identifier: TF4-UST48-T3-B-0

Descriptions
TF4 = Tank Farm 4
UST48= UST 48
T3 = Trench 3
B = Soil Base Sample
0 = Sample location closest to UST

Soil Sample from Tank Farm 4, UST 37, Trench 5, Sidewall Sample Location, Distance relative to UST

Identifier: TF4-UST37-T5-SE-20

Descriptions TF4-Tank Farm 4
UST37 = UST 37
T5 = Trench 5
SE = Soil Sidewall Sample on East Wall
20 = Sample location 20 lf from UST

Soil Sample from Tank Farm 4, UST 44, Trench 2, Soil Base Sample Location, 40 lf from UST, Duplicate Sample

Identifier: TF4-UST44-T2-B-40-D

Descriptions TF4-Tank Farm 4
UST44 = UST 44
T2 = Trench 2
B= Soil Base Sample
40 = Sample location 40 lf from UST
D = Duplicate Sample

Trip Blank Collected on February 28, 2003: TB-02/28/03

Equipment Rinsate Collected on March 3, 2003: ER-03/03/03

MS/MSD: indicate on chain of custody form under remarks section

Field personnel will complete sample labels using indelible ink. Labels will include the project identification, sample identification, date and time of collection, sampler's initials, sample matrix, type of sample (grab or composite), analyses to be performed, and preservative used (if applicable)

5.1 Sample Chain of Custody

To maintain and document sample possession, chain of custody records will be kept. These procedures are necessary to ensure sample integrity from the collection time through data reporting. The chain of custody protocol provides the ability to trace sample possession and handling. A sample is considered under custody if it is/was:

- In a person's possession;
- In a person's view after being in possession;
- In a person's possession and locked up; or
- In a designated secure area.

Personnel collecting samples are responsible for sample care and integrity until the samples are properly transferred or dispatched. The number of people handling a sample will be kept to a minimum.

The sampler(s) will initially complete the chain of custody records which shall accompany the samples at all times. The following information shall be indicated on the chain of custody record:

- Project identification;
- Signature of samplers;

- Sample identification, sample matrix, date and time of collection, grab or composite sample designation, number of containers corresponding to that sample identification, analyses required, remarks or sample location (if applicable), and preservation method(s);
- Signature of the individual relinquishing the samples; and
- Name of the individual(s) receiving the samples and air bill number, if applicable.

The chain of custody preparer will then check the sample label and chain of custody record for accuracy and completeness.

5.2 Sampling Equipment Decontamination Procedures

Disposable and non-disposable sampling equipment may be used. All non-disposible sampling equipment will be decontaminated prior to collecting each sample. The following sequence will be used:

- Remove all visible contaminants using laboratory detergent and potable water;
- Rinse with potable water;
- Rinse with deionized water; and
- Rinse with methanol followed by hexane for organic sampling equipment.

Decontamination fluids generated will be collected and stored on site in RI approved 55-gallon closed top drums for later disposal.

5.3 Sampling Wastestream Disposal

Waste generated during site activities will be sampled in order to characterize the waste for disposal. Anticipated wastestreams include decontamination rinsate, liquid waste from Petroflag, and soil potentially contaminated with TPH. Sampling equipment, latex gloves, glass jars, sampling scoops, and Petroflag vials and glassware will be combined and disposed with any contamianted soil, or if no contaminated soil is encountered, drummed. For liquid waste, a drum thief will be slowly lowered into the drum and the contents will be placed into the appropriate labeled sample bottle. The drum thief will ensure that the sample is taken over the entire depth of the drum. The sample will be analyzed to satisfy the requirements of the chosen disposal facilty accepting the waste.

A composite sample will be taken of contaminated soil and sampling wastes as described in Section 6.0. Due to the low levels of contamination and minimal exposure, PPE will be considered non-contaminated waste and will be disposed of with the site debris.

5.4 Sample QA/QC

For every 20 confirmatory samples collected, one field duplicate sample, one matrix spike (MS) sample, and one matrix spike duplicate (MSD) sample will be collected and analyzed for the appropriate criteria. For every 20 confirmatory samples collected, one equipment rinsate sample will be collected and analyzed for the appropriate criteria.

Appropriate QA/QC procedures will be implemented throughout the sampling and analyses programs. The sampling and analyses programs will be performed in accordance with the Navy Installation Restoration Chemical Data Quality Manual (September 1999), to ensure attainment of project objectives and to ensure the chemical data meets the Navy quality control requirements. A laboratory that has approval by NFESC will perform all water, soil, and debris sample laboratory analysis. All laboratory certifications are required to remain current throughout the duration of the project. All QA/QC samples will be indicated as such on the chain of custody. Foster Wheeler will perform a QA/QC screening on laboratory data to ensure against bias and error.

Table 5-1
Summary of Analytical Sampling Programs

Sampling Task/Matrix	Analysis	Possible Analytical Method(s)	Sample Quantities					
			Field Samples	Duplicates	MS	MSD	Eqpt Rinsate	Total
Anticipated Waste Characterization Sampling*								
Liquid-1 sample	SVOCs	SW846 8270C	2	-	-	-		2
	PCBs	SW846 8082	2	-	-	-		2
	Ignitability	SW846 1010 or 1020	2	-	-	-		2
	pH	EPA 120.1	2	-	-	-		2
	Reactivity	SW846	2	-	-	-		2
	VOCs	SW846 8260	2	-	-	-		2
	RCRA 8 Metals	SW846 6010/7000	2	-	-	-		2
Subtotal								**14**
Confirmatory Sampling •								
Trench Base Soil Sample	TPH	EPA 600 418.1	12♦	1	1	1	1	16
Trench Sidewall Soil Sample	TPH	EPA 600 418.1	24♦	2	2	2	2	32
Subtotal								**48**
Petroflag Validation Sampling								
Soil Samples	TPH	EPA 600 418 1	30	2	2	2	2	38
Subtotal								**38**
TOTAL								**100**

* Subject to change based on the requirements of the disposal facility
♦ Listed quantity assumes a total of four trench pits require confirmatory sampling
• Holding time of samples analyzed for TPH is 28 days.

6.0 WASTE MANAGEMENT AND DISPOSAL

Soil with TPH concentrations that exceed 2,500 ppm will be excavated and staged on polyethylene sheeting adjacent to the test pit (trench) and will be covered with polyethylene sheeting at the end of daily operations and during rainfall events. A composite sample will be taken of contaminated soil and sampling wastes at the frequency required by the selected facility (typically 1 sample per 500 tons). The sample will be placed in an appropriate labeled sample container. The sample will be analyzed to satisfy the requirements of the chosen disposal facilty accepting the waste. Foster Wheeler is anticipating that the wastestreams to be disposed of off-site will be sampled for ignitability, SVOCs, PCBs, pH, reactivity, VOCs, and RCRA 8 Metals, see Table 5-1.

After the material has been sampled and deemed acceptable by the chosen disposal facility, the material will be placed in lined trucks. The material will be covered to prevent soil spillage onto roadways and the trucks will be placarded appropriately. Bills of lading (BOLs) will be completed and will accompany the transport of the materials from the site to the disposal facility.

Field personnel conducting hauling and trucking operations will ensure that no material adheres to the sides or tires of the transport trucks. If material is observed, it will be removed before the trucks leave the site by dry-brushing.

7.0 DEMOBILIZATION

Foster Wheeler will demobilize equipment, personal, and support facilities from the site after completion of required field operations identified in this plan.

8.0 FINAL REPORT PREPARATION AND SUBMITTAL

Foster Wheeler will prepare and submit a draft as well as a final Site Investigation Report that satisfies the requirements of Section 14.09 of the RIDEM UST Regulations. The report will describe how the operations described in this plan were conducted and will include confirmatory sample analytical data, wastestream characterization analytical data, wastestream BOLs and weight slips, and other documentation supporting the activities described herein and conducted during field operation implementation.

9.0 REFERENCES

State of Rhode Island Regulations for Underground Storage Facilities Used for Petroleum Producers and Hazardous Materials (RIDEM UST), Department of Environmental Management (DEM-DWM-UST05-93), December 30, 1993.

Preliminary Closure Assessment Report of Tank Farms 4 and 5 at Naval Education and Training Center Newport, Rhode Island, Halliburton NUS Corporation, June 1995.

Lambert, D., Personal Communication, July 17, 2002. Site walk of Tank Farm 4.

State of Rhode Island and Providence Plantations Rules and Regulations for the Investigation and Remediation of Hazardous Material Releases (Remediation Regulations: DEM-DSR-01-93), Department of Environmental Management, Division of Site Remediation, March 31, 1993, Amended August 1993.