

# Tank 42 Closure Assessment Report Tank Farm 4

Naval Education and Training Center  
Newport, Rhode Island



Northern Division  
Naval Facilities Engineering Command  
Contract Number N62472-90-D-1298  
Contract Task Order 196

October 1997



**Brown & Root Environmental**

A Division of Halliburton NUS Corporation

48

**TANK 42 CLOSURE ASSESSMENT REPORT  
TANK FARM 4**

**NAVAL EDUCATION AND TRAINING CENTER  
NEWPORT, RHODE ISLAND**

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

**Submitted to:  
Northern Division  
Environmental Branch, Code 1812BJH  
10 Industrial Highway, Mail Stop #82  
Lester, Pennsylvania 19113-2090**

**Submitted by:  
Brown & Root Environmental  
600 Clark Avenue, Suite 3  
King of Prussia, Pennsylvania 19046-1433**

**CONTRACT NUMBER N62472-90-D-1298  
"CLEAN" Contract Task Order No. 196**

**October 1997**

**PREPARED BY:**

  
\_\_\_\_\_  
**JAMES R. FORRELLI, P.E.  
PROJECT MANAGER  
BROWN & ROOT ENVIRONMENTAL  
WILMINGTON, MASSACHUSETTS**

**APPROVED BY:**

  
\_\_\_\_\_  
**JOHN TREPANOWSKI, P.E.  
PROGRAM MANAGER  
BROWN & ROOT ENVIRONMENTAL  
KING OF PRUSSIA, PENNSYLVANIA**

## TABLE OF CONTENTS

<u>SECTION</u>		<u>PAGE</u>
<b>1.0</b>	<b>SITE BACKGROUND</b> .....	<b>1-1</b>
1.1	INTRODUCTION .....	1-1
1.2	LOCATION .....	1-2
1.3	SITE DESCRIPTION .....	1-2
1.4	SITE HISTORY .....	1-2
1.5	PREVIOUS INVESTIGATIONS .....	1-6
1.6	SUMMARY OF TANK 42 CONSTRUCTION .....	1-6
1.7	UNDERGROUND UTILITIES .....	1-7
1.8	GEOLOGY .....	1-7
<b>2.0</b>	<b>CLOSURE ACTIONS</b> .....	<b>2-1</b>
2.1	MOBILIZATION .....	2-1
2.2	SOILS EXCAVATION .....	2-2
2.3	TANK CONTENTS REMOVAL AND STORAGE .....	2-2
2.4	TANK CLEANING .....	2-2
2.5	PIPING, EQUIPMENT, AND DEBRIS REMOVAL .....	2-3
2.6	TANK CLOSURE .....	2-3
<b>3.0</b>	<b>TANK CONDITION</b> .....	<b>3-1</b>
3.1	STRUCTURAL INSPECTION .....	3-1
3.2	CLOSURE INSPECTION .....	3-1
3.3	PIPING INSPECTION .....	3-2
3.4	PUMP CHAMBER INSPECTION .....	3-2
3.5	TANK BALLAST MONITORING INSPECTION .....	3-3
<b>4.0</b>	<b>DESCRIPTION OF SOIL CONDITIONS SURROUNDING TANK 42</b> .....	<b>4-1</b>
<b>5.0</b>	<b>SOIL SAMPLE ANALYTICAL DATA SUMMARY</b> .....	<b>5-1</b>
5.1	VOLATILE ORGANIC COMPOUNDS (VOCs) .....	5-1
5.2	SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) .....	5-5
5.3	RCRA METALS .....	5-5
5.4	TOTAL PETROLEUM HYDROCARBONS (TPH) .....	5-5
<b>6.0</b>	<b>SITE GROUNDWATER DESCRIPTION</b> .....	<b>6-1</b>
6.1	VOLATILE ORGANIC COMPOUNDS (VOCs) .....	6-1
6.2	SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs) .....	6-1
6.3	RCRA METALS .....	6-3
<b>7.0</b>	<b>ANALYTICAL SAMPLE COLLECTION AND HANDLING</b> .....	<b>7-1</b>
<b>8.0</b>	<b>SITE WELLHEAD PROTECTION STATUS</b> .....	<b>8-1</b>
<b>9.0</b>	<b>SITE GROUNDWATER CLASSIFICATION AND USE</b> .....	<b>9-1</b>

**TABLE OF CONTENTS (C ntinued)**

<u>SECTION</u>	<u>PAGE</u>
10.0 POTENTIAL RECEPTORS .....	10-1
11.0 FINDINGS AND CONCLUSIONS .....	11-1
11.1 FINDINGS .....	11-1
11.2 CONCLUSIONS .....	11-3

**REFERENCES**

**APPENDICES**

A	Permanent Closure Application for Underground Storage Facilities
B	Data for Tank Contents
C	Sludge Disposal Manifests
D	Degreaser/Vendor Information
E	Bills of Lading (Debris Disposal)
F	Structural Inspection
G	Boring Logs
H	Soil and Groundwater Analytical Results
I	Chain-of-Custody Forms

**TABLES**

<u>NUMBER</u>	<u>PAGE</u>
5-1 Positive Contaminant Detections in Soil and Groundwater .....	5-2

**FIGURES**

<u>NUMBER</u>	<u>PAGE</u>
1-1 NETC Location .....	1-3
1-2 Tank Farm 4 Location .....	1-4
1-3 Tank Farm 4 .....	1-5
5-1 Tank 42 Data Sheet .....	5-4
6-1 Tank Farm 4 Groundwater Contours .....	6-2

## 1.0 SITE BACKGROUND

### 1.1 INTRODUCTION

Brown & Root Environmental (B&R Environmental), a division of Halliburton NUS Corporation (HNUS), prepared this Tank 42 Closure Assessment (Assessment) Report summarizing the investigation and closure activities conducted at Tank 42, located in Tank Farm 4 at the Naval Education and Training Center (NETC) in Newport, Rhode Island. Closure activities at Tank 42 were carried out by OHM Remediation Services Corporation (OHM) and Foster Wheeler Environmental Corporation (Foster Wheeler) under contract to the Navy. This Assessment has been written by B&R Environmental to satisfy the Rhode Island Department of Environmental Management (RIDEM) Regulation DEM-DWM-UST05-93 Section 15.10, as detailed by the July 1992 RIDEM guidance document entitled: Department of Environmental Management UST Closure Assessment Guidelines. This report was prepared at the request of the United States Navy, Northern Division (NORTHDIV) of the Naval Facilities Engineering Command (NAVFAC) under Contract Task Order (CTO) Number 196 of the Comprehensive Long-Term Environmental Action Navy (CLEAN) Contract Number N62472-90-D-1298.

The primary objective of this Assessment is to provide sufficient evidence to conclude whether or not a leak or release has occurred from Tank 42 and to provide documentation necessary to complete a permanent underground storage tank (UST) closure, consistent with RIDEM regulations. The Assessment objectives were met by providing the field screening and laboratory analyses data of the soil and groundwater samples collected adjacent to Tank 42 and using these data to determine if oil stored in Tank 42 has impacted the environment.

B&R Environmental (as Halliburton NUS Corporation) conducted a preliminary assessment of Tank Farm 4 between October 1994 and March 1995, to evaluate the impacts of past site activities on soil and groundwater in the immediate vicinity of selected on-site facilities, including 12 large USTs. That information serves as the supporting documentation necessary to complete permanent closures of the 12 USTs evaluated in the assessment, and provides general information about Tank Farm 4 for this report.

This section presents background information concerning Tank 42, including site location, site description, site history, and construction details of structures pertinent to this investigation. A summary of the site geology is also presented in this section. Finally, the technical approach and the investigation and analytical methods are discussed.

## 1.2 LOCATION

Tank 42 (Navy Identification Number - NETC TN042; RIDEM Identification Number FACID-214TN0-42) is located in Tank Farm 4 of NETC Newport, which is located in the City of Newport, and the Towns of Middletown and Portsmouth, Rhode Island, approximately 25 miles southeast of Providence (Figure 1-1). Tank Farm 4 is situated at the northern portion of NETC-Newport, in Portsmouth (Figure 1-2). Tank 42 is located in the northeast portion of Tank Farm 4 (Figure 1-3).

Tank Farm 4 is bordered by the Defense Highway to the north/northwest; Norman's Brook to the southwest; residential property to the southeast; and undeveloped woodlands to the north/northeast.

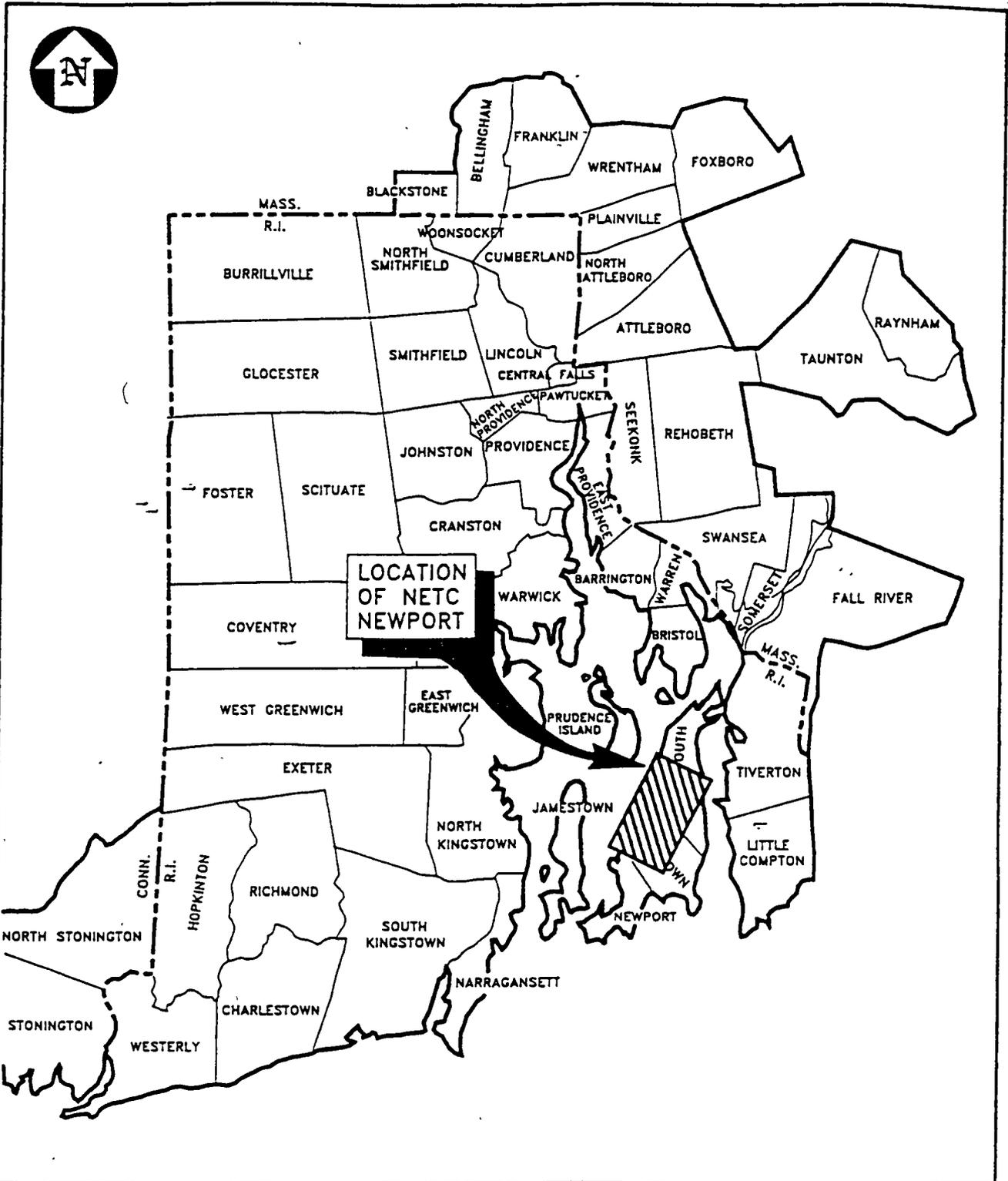
## 1.3 SITE DESCRIPTION

Tank Farm 4 is accessed from Defense Highway; it occupies approximately 90 acres and contains 12 USTs, numbered 37 through 48. These tanks were used to store virgin heavy fuel oil (No. 6 bunker oil). Several tanks were reportedly also used to store No. 2 heating oil during the mid-1970s. Access to Tank Farm 4 is unrestricted. An unsecured gate is drawn across the entrance. No perimeter fencing is installed at the site. A paved road leads into the farm, passing between the tanks in a loop.

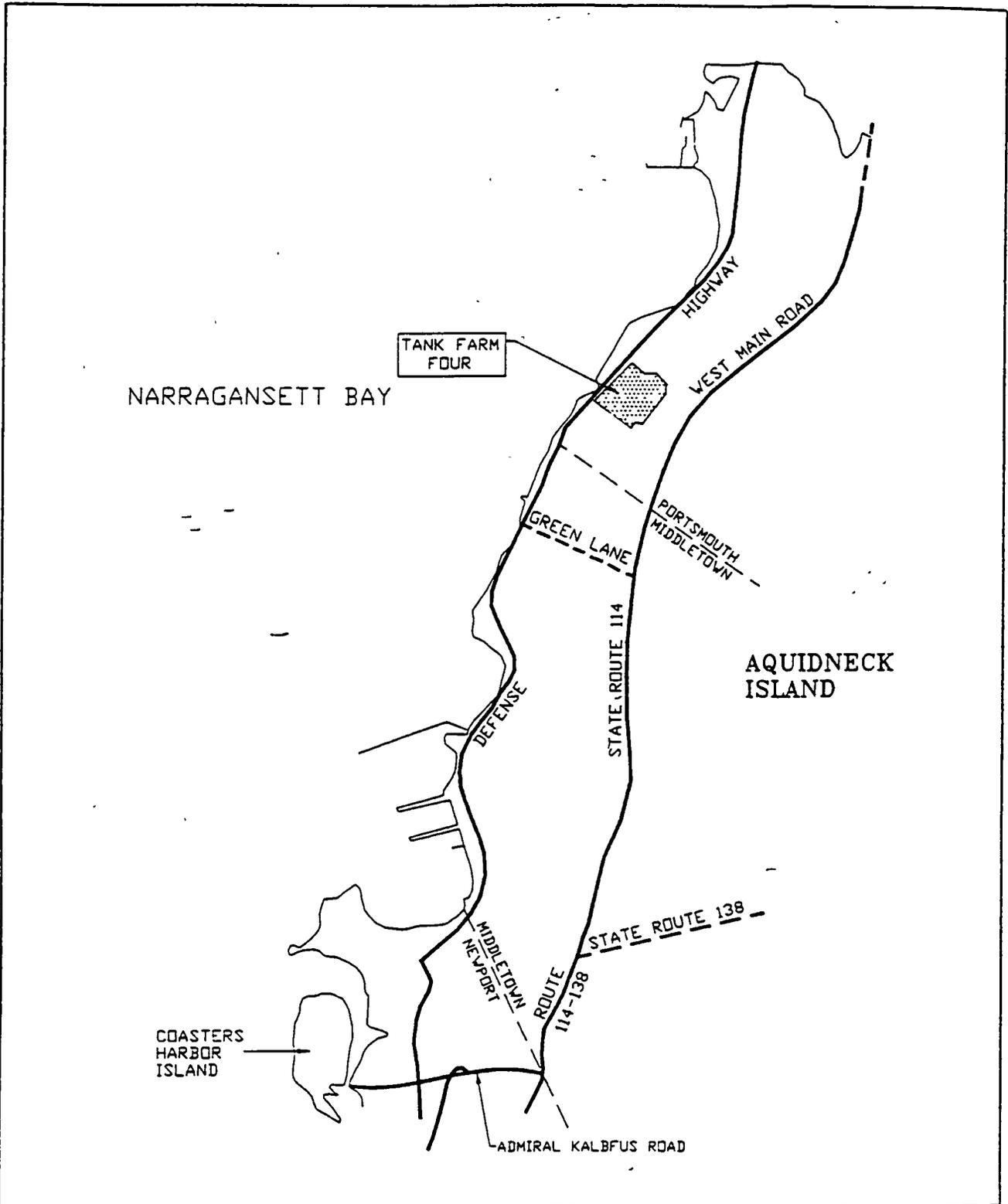
On-site structures include the remnants of a building, a decommissioned electrical substation, and an abandoned oil-water separator. Ground elevations across Tank Farm 4 range between 46 feet and 111 feet above mean low water level (mlw). Topography gradually slopes to the west/southwest, toward Narragansett Bay. The central portion of the farm is vegetated with tall grass, dense brush, and trees. Dense brush and woodlands cover the perimeter areas of the farm. Brush at each tank has been cleared from monitoring well locations.

## 1.4 SITE HISTORY

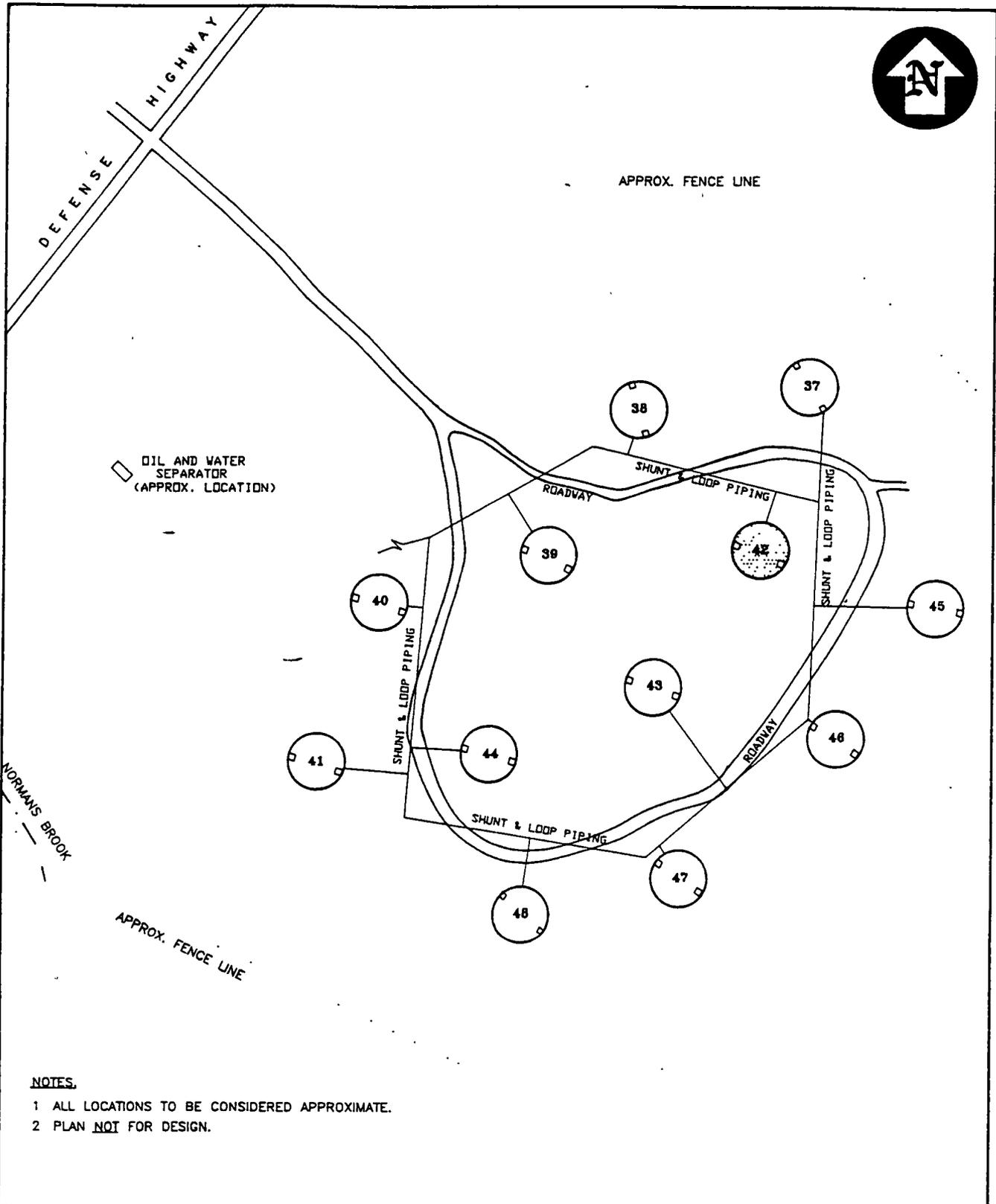
In 1941, the U.S. Navy began construction of five tank farms at NETC to store fuel oils and other petroleum products (TRC 1993b) to supply warships.



NETC LOCATION		FIGURE 1-1	
NETC - NEWPORT, RI		 <b>Brown &amp; Root Environmental</b>	
TANK 42 CLOSURE ASSESSMENT REPORT			
DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	J. FORRELLI	DATE:	21 NOV 95
SCALE:		PROJECT NO.:	4643 CTO #196:
		55 Jonepin Road Wilmington, MA 01887 (508)658-7899	



TANK FARM 4 LOCATION		FIGURE 1-2	
NETC - NEWPORT, RI		 <b>Brown &amp; Root Environmental</b>	
TANK 42 CLOSURE ASSESSMENT REPORT			
DRAWN BY:	R.G. DEWSNAP	REV.:	0
CHECKED BY:	J. FORRELLI	DATE:	21 NOV 95
SCALE:	APPROX. 4800 FT.	PROJECT NO.:	4643 CTD #196:
		55 Joseph Road Wilmington, MA 01887 (508)658-7899	



**NOTES.**

- 1 ALL LOCATIONS TO BE CONSIDERED APPROXIMATE.
- 2 PLAN NOT FOR DESIGN.

<b>TANK FARM 4</b>		<b>FIGURE 1-3</b>	
<b>NETC - NEWPORT, RI</b>			
<b>TANK 42 CLOSURE ASSESSMENT REPORT</b>		<b>Brown &amp; Root Environmental</b>	
<small>DRAWN BY:</small> R. DEWSNAP	<small>REV.:</small> 0	<small>55 Jonspin Road    Wilmington, MA 01887    (508)658-7899</small>	
<small>CHECKED BY:</small> J FORRELLI	<small>DATE:</small> 07 DEC 95		
<small>SCALE:</small> 1"=300 FT. (APPROX.)	<small>PROJECT NO.:</small> 4643 CTO #196		

Tank Farm 4 was used to store fuel oil from World War II until it was abandoned in the 1970s. For a brief period, from 1974 to 1978, three to four unidentified tanks were reportedly leased to Northeast Petroleum (HNUS 1995a) to store No. 2 heating oil. At the end of the lease period, Northeast did not require the storage capacity and terminated the lease agreement. Northeast reportedly cleaned the tanks. Tank Farm 4 was not used for petroleum storage thereafter.

As a result of amendments to underground petroleum storage facilities regulations enacted by the State of Rhode Island in 1992, tanks used to store virgin product also became subject to closure requirements. The Navy has filed an application with RIDEM to permanently close the tanks at Tank Farm 4 (see Appendix A).

## **1.5 PREVIOUS INVESTIGATIONS**

B&R Environmental (as Halliburton NUS Corporation) conducted a preliminary assessment of Tank Farm 4 between October 1994 and March 1995, to evaluate the impacts of past site activities on soil and groundwater in the immediate vicinity of selected on-site facilities, including 12 large USTs. This assessment report was the first investigation focusing on potential impacts to soil and groundwater from releases from the on-site USTs.

Previous investigations conducted at Tank Farm 4 from 1982 to 1992 focused on the reported disposal of tank bottom sludges at the tank farms. Prior investigations are mentioned here for historical information purposes only.

An Initial Assessment Study (IAS) was conducted by Envirodyne Engineers, Inc. in 1982 and 1983 (TRC 1993a). Loureiro Engineering Associates conducted a Confirmation Study (CS) between 1983 and 1986. Results of the CS led to the conduct of a Phase I Remedial Investigation (RI) as part of the Department of Defense Installation Restoration (IR) Program (TRC 1993b). The RI included multi-media environmental sampling and analysis.

## **1.6 SUMMARY OF TANK 42 CONSTRUCTION**

Tank 42 has a capacity of 60,000 barrels (standard petroleum), or approximately 2.52 million gallons. This tank was constructed in place, of reinforced concrete. Concrete in tank walls and the roof is a nominal 12-inches thick, while the tank floor is a nominal 14-inches thick. Floor and wall joints were caulked at the time of construction. The outside diameter of the tank is 119 feet; the side measures 36 feet from the bottom of the footing to the top of the roof.

The Tank 42 construction sequence began by stripping the soil overburden, and then blasting and excavating between 10 and 30 feet of bedrock to create a steep walled bedrock "socket" in which the tank was built. The tank bottom was then placed 10 to 30 feet below the original bedrock surface as described in the following paragraph. Following tank completion, the annular space between the tank wall and the bedrock was backfilled with crushed bedrock and other locally derived materials. Coarse to fine-grained materials were used, resulting in a general graded backfill with coarse bedrock "lumps" at the bottom, and finer (3/4-inch-diameter) bedrock at the top. Interbeds of silt, sand, and open work gravels were also present in the backfill. After backfill operations were completed, the tank top was covered with up to 4 feet of similar fill material (Maguire & Assoc. 1944).

The tank floor lies on a flat bedrock surface that has been leveled by filling depressions with cement. A 12-inch-diameter reinforced concrete perforated drain pipe is embedded in gravel surrounding the base of each tank. Groundwater that infiltrates the pipe can be pumped out of the system, thus managing the water table elevation and limiting buoyant forces on the tank. The drain system is termed a "ring drain."

#### **1.7 UNDERGROUND UTILITIES**

Underground utilities reportedly consist of water, electricity, and telephone service. The exact location of utility networks could not be confirmed by base Digsafe services. Also, the existence of the telephone network shown on base planning maps could not be confirmed.

The telephone and electric lines to Tank 42 are insulated for direct burial (not in conduits) and are reportedly buried 6 to 7 feet below ground surface (HNUS 1995a). Consequently, these utilities would be located approximately 12 to 15 feet above the water table (as measured in November 1994) and therefore would not act as a preferential contaminant migration pathway.

#### **1.8 GEOLOGY**

The NETC site, including Tank Farm 4, is located in the southeastern portion of Narragansett Basin. The basin is underlain by Pennsylvanian age non-marine sedimentary and metamorphic rocks, including the Rhode Island Formation. Bedrock at the site is reported to be a weathered shale; phyllites were also observed at borehole refusals. Overburden materials consist of unconsolidated glacial sediments ranging from gravel to silt, as well as glacial till. Soil thickness at the tank farm is highly variable, and is estimated to be no more than 45 feet thick. Soil descriptions from Preliminary Closure Assessment investigations indicate the presence of extensive fill materials in the vicinity of the tanks because of the widespread disturbance of native soils during tank construction.

## 2.0 CLOSURE ACTIONS

OHM was retained by the Navy to conduct tank closure activities at Tank Farm 5 and Tank Farm 4. Tank Farm 5 tank cleaning activities were begun by OHM in 1994 and were completed in 1995. At Tank Farm 4 OHM performed Tank 42 cleaning activities from September 1995 through December 1996, however the Tank 42 pump chamber was not cleaned before OHM demobilized from the site. In 1996 and 1997 Foster Wheeler completed Tank Farm 4 cleaning activities, including the Tank 42 pump chamber cleaning and closure.

B&R Environmental provided on-site oversight services to the Navy at Tank Farm 4 and Tank Farm 5 in 1994 and 1995 while OHM carried out the tank closure activities. In addition, B&R Environmental conducted a ballast monitoring inspection at Tank 42 in January 1996. B&R Environmental did not provide on-site oversight services to the Navy during the Foster Wheeler activities at Tank Farm 4.

### 2.1 MOBILIZATION

Following the submittal of all pre-construction documents, OHM commenced mobilization activities at Tank Farm 5 on August 15, 1994, and at Tank Farm 4 on August 28, 1995. Consistent with the tank closure work plans and specifications, a support zone was set up, the site was cleared and grubbed, and temporary fencing was erected to encompass each tank work area.

Tank-specific closure activities began on September 18, 1995, by excavating and exposing a portion of the tank lid. Two entry ports (7 feet by 9 feet, and 9 feet by 13 feet) were subsequently cut and removed from each tank lid to provide access to the tank interior for personnel and equipment. Tank access lid excavation and access port cutting activities were completed by October 5, 1995. Subsequent to tank lid excavation activities, the soil cover for the pump chamber associated with each tank was excavated and the chamber's lid was exposed.

Tank gauging was conducted by B&R Environmental (as Halliburton NUS Corporation) on March 3, 1995 (B&R Environmental 1995). For tank gauging activities, the total overall depth of liquids in each tank was measured, liquid phases assumed to be oil/water/sludge were identified, and an attempt was made to determine the thickness, or depth, of each phase of material. Volume estimates for Tank 42 are presented below.

<u>PHASE</u>	<u>VOLUME (gallons)</u>
Oil	51,078
Water	493,489
Sludge	1,572
<hr/>	
Total	546,138

A sample of the sludge layer was analyzed for off-site disposal characterization purposes. The analytical results for the sludge layer are included in Appendix B.

## **2.2 SOILS EXCAVATION**

During excavation activities conducted to expose the tank lid and pump chamber, all soils were visually observed and screened using a photoionization detector (PID). OHM's soil management plan for Tank Farm 5 activities states that all soils exhibiting PID readings of less than 10 ppm should be considered non-impacted and would be reused on site. None of the excavated soils registered PID readings greater than 10 ppm so they were reused in accordance with OHM's soil management plan.

## **2.3 TANK CONTENTS REMOVAL AND STORAGE**

Tank contents removal activities began on November 23, 1994 and were completed by March 14, 1995. All liquid phases were pumped from the tank directly into Tanks 46 and 37. All wastewater generated during the tank cleaning were also pumped to Tanks 46 and 37, including groundwater generated by ring drain pumping operations, and wash water generated during tank and equipment cleaning operations. Additionally, to further improve pumpability for the tank sludges, approximately 6000 gallons of fuel oil was transferred directly into Tank 42 twice during this period. Some sludge proved too thick to be pumped into the other tanks and was loaded into drums for off-site disposal. Refer to Appendix C for disposal manifests.

## **2.4 TANK CLEANING**

Tank 42 interior surface cleaning operations commenced on November 1, 1995 and were completed on December 7, 1995. The cleaning method employed consisted of washing the treated surfaces with high pressure hot water using a diluted water-based industrial degreaser/cleaner solution. Pertinent features of the cleaning units selected for use include operating temperatures up to 240 degrees

Fahrenheit and operating nozzle pressures up to 3000 psi. Degreaser/cleaner vendor information may be found in Appendix D. The Tank 42 pump chamber was cleaned later by Foster Wheeler using the same methods.

## **2.5 PIPING, EQUIPMENT, AND DEBRIS REMOVAL**

During tank surface cleaning operations, all piping and equipment were dismantled and decontaminated with high pressure hot water. All decontaminated, salvageable materials were turned over to the NETC scrap yard for recycling or reuse. All other debris, including spent PPE from tank cleaning, was disposed of off site at the Waste Management Inc., Turnkey Landfill facility located in Rochester, New Hampshire. Bills of lading for recent shipments to the facility are included in Appendix E.

## **2.6 TANK CLOSURE**

On December 6, 1995, prior to tank inspection (see Section 3.2) and after the pipes were cleaned and dismantled, blind flanges were installed at all pipe entrances into the tank. Three pipe entrances were identified and blind flanged. These entrances are identified as follows:

- One 16-inch line extending from the bottom of the pump chamber into the bottom of the tank.
- One 6-inch line extending from the bottom of the pump chamber into the bottom of the tank.
- One 10-inch line extending from the top of the pump chamber into the top of the tank.

All blind flanges are installed on the tank's exterior side, within the pump chamber. Tank ballasting with potable water provided by the NETC water system was initiated on December 12, 1995. Final tank-specific site restoration activities and closure of the tank's access ports were completed by Foster Wheeler in 1996.

## **3.0 TANK CONDITION**

### **3.1 STRUCTURAL INSPECTION**

On November 28, 1995, Peter Veneto of Stone and Webster Corporation inspected the tank's interior to assess the structural integrity of the tank. During the inspection, Mr. Veneto identified several small cracks (less than 1/8 inch wide) on the tank floor but they required no repair. Small hairline cracks were also noticed on the tank wall and were also not considered significant. No other structural defects were identified. Documentation regarding Mr. Veneto's inspection and conclusions may be found in Appendix F.

### **3.2 CLOSURE INSPECTION**

Tank 42 was formally inspected on December 7, 1995. Participating in the inspection were:

#### **RIDEM**

Eric Beck - Division of Waste Management  
Dan Russell - Division of Waste Management

#### **NETC**

Ray Roberge - Code 40E, Environmental  
Denis MacDougall, Brown and Root Environmental - Project Engineer/Consultant

#### **OHM Corporation**

Mike Taillon - Site Foreman  
Chris Sylvia - Project Engineer  
James White, Stone and Webster Corp. - Project QA/QC

During the inspection, all participants entered the tank's interior and viewed the cleaned surfaces. At the post-inspection meeting, all participants agreed that the interior surface cleaning results were satisfactory.

### **3.3 PIPING INSPECTION**

On November 30, 1995, an inspection was conducted for all pipe runs extending into the tank's interior from the pump chamber. Three pipe runs, each approximately ten feet long, were identified and inspected. The piping was inspected for cleanliness and the condition of each pipe run was noted.

Participating in the inspection were:

Denis MacDougall, Brown and Root Environmental - Project Engineer/Consultant  
James White, Stone and Webster Corp. - Project QA/QC

Inspection observations were as follows:

- One 10-inch pipe, located at top of chamber was identified and inspected. The pipe interior was clean and in good condition. No scaling, cracks, or holes were observed.
- One 16-inch pipe located at bottom of chamber was identified and inspected. The pipe interior was clean and in good condition. No scaling, cracks, or holes were observed.
- One 6-inch pipe located at bottom of chamber was identified and inspected. The pipe interior was clean and in good condition. No scaling, cracks, or holes were observed.

### **3.4 PUMP CHAMBER INSPECTION**

According to Mr. Mark Gouveia of Foster Wheeler, the pump chamber final inspection was conducted on March 23, 1997 (Foster Wheeler 1996). Mr. Gouveia reported that the pump chamber was inspected for cleanness and overall condition of the walls and floors. Participating in the inspection were:

Mark Gouveia, Foster Wheeler - Site Engineer  
Roger Beauregard, Foster Wheeler - Site QA/QC  
Jon Cary, Foster Wheeler - Site Manager

It was reported that the pump chamber was clean and in good condition.

### 3.5 TANK BALLAST MONITORING INSPECTION

Tank ballast monitoring was conducted on January 5, 1996 by the Oversight Project Engineer, Denis MacDougall of B&R Environmental. Inspection observations were as follows:

Visual observation of the tank ballast water surface revealed no indication of an oil layer.

Visual observation of a grab sample collected from the ballast water surface revealed a slight indication of oil floating on the surface. A slight oil sheen was observed on the surface of the sample.

The presence of a hydrocarbon sheen was positively identified utilizing an "ORS Environmental Equipment Interface Probe" capable of measuring oil layers less than 1/16 inch thick. The probe indicated a positive reading for hydrocarbons at the immediate surface. The thickness of the hydrocarbon sheen was not measurable.

Tank ballast water and groundwater elevations were also recorded. The tank ballast water elevation from the tank lip to the water surface was 19.83 feet. The groundwater levels of the surrounding wells were as follows: MW-411 (35.18 feet), MW-407 (28.59 feet), MW-123 (27.86 feet), and MW-413 (30.35 feet). These measurements show the water level in the tank to be approximately ten feet above the current groundwater conditions. This level is in conformance with an OHM and Navy decision to ballast the tanks to historical, rather than current, groundwater elevations since the water table in January is lower than it would be at other times of the year.

#### 4.0 DESCRIPTION OF SOIL CONDITIONS SURROUNDING TANK 42

Drilling activities conducted as part of the Preliminary Closure Assessment were completed at Tank 42 on November 16, 1994 (HNUS 1995b). At soil boring B-42, located approximately 5 feet from the tank, continuous split-barrel sampling was conducted from 26 feet below the ground surface (bgs) to refusal, at approximately 39 feet. The boring was completed as groundwater monitoring well MW-123.

A review of the boring log indicates that the unconsolidated material surrounding Tank 42 is comprised of fill. The fill primarily consists of sandy gravel with small percentages of silt and sand. Coarse gravel with sand from 36.00 to 38.75 feet bgs was heavily impacted with oil. Records indicate that bedrock was blasted and excavated during construction of the tank farm, and that the base of the UST lies below the grade of the undisturbed bedrock surface.

The upper 26 feet of the boring was not examined. Soil sampling was initiated at 26 feet, based on information suggesting that the water table was approximately 30 feet bgs. It was presumed that petroleum releases above the water table would migrate vertically downward and be detected in soil and possibly groundwater.

A generalized description of the subsurface follows. The interval from 26.00 to 38.75 feet bgs was predominantly comprised of coarse gravels with variable amounts of silt and sand. Few fine gravels were reported on the boring log. In boring B42, there was little variation in the fill materials vertically. The gravel layer was underlain by metamorphic rock at approximately 39 feet bgs. Tan to grey rock with an oxidized layer was encountered at refusal. Due to the highly altered condition of the rock, identification of the parent rock type was difficult. Bedrock reportedly consisted of grey, highly weathered to competent, slightly metamorphosed shale with quartz lenses. Tank Farm 4-B-42 was not advanced into bedrock. Boring logs and soil descriptions are presented in Appendix G.

## 5.0 SOIL SAMPLE ANALYTICAL DATA SUMMARY

Consistent with the usage of Tank 42 as storage for virgin No. 6 fuel oil, the Preliminary Closure Assessment investigation at this UST focused on evaluating soils and groundwater for the presence of petroleum components. Soil samples were visually inspected for the presence of petroleum, screened for the presence of petroleum with PIDs and flame ionization detectors (FIDs) (as well as an Ensys Petro Risc petroleum field-screening immunoassay kit), and subjected to laboratory analysis. Visibly stained soils were not field screened for TPH (using the immunoassay method) because the TPH concentration would exceed the 100 ppm standard, the highest concentration of TPH that could be detected by the screening analysis.

The following section describes the analytical data findings of the investigation activities conducted at this location. Subsurface soils were collected and sent to laboratories to be analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), total petroleum hydrocarbon (TPH) extractables, and eight RCRA metals.

From boring B-42, two subsurface soil samples were selected for laboratory analysis. Samples B423234 and B423638 were collected from depths of 32 to 34 feet bgs, and 36 to 38 feet bgs, respectively. Both samples consisted of gravel with variable amounts of sand and a trace percentage of silt. The MW-123 groundwater sample was collected from the midpoint of the well screen, approximately 36 feet bgs. Immiscible oil droplets were observed during groundwater sample collection.

Positive laboratory analytical results are reported in Table 5-1 and presented on Figure 5-1. The averaged value of duplicate samples is reported in the summary table. In instances when samples were reanalyzed, the maximum detected concentration of each compound or metal is reported. Laboratory analytical results are presented in Appendix H. Analytical results for groundwater are discussed in greater detail in Section 6.0. Chain-of-custody forms are presented in Appendix I.

### 5.1 VOLATILE ORGANIC COMPOUNDS (VOCs)

No volatile organic compounds exceeded detection limits in subsurface soil samples B423234 or B423638.

**TABLE 5-1  
POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER  
TANK 42 CLOSURE ASSESSMENT REPORT  
NETC - NEWPORT, RHODE ISLAND**

MEDIUM	BORING NO. OR WELL NO.	DEPTH OR SCREEN INTERVAL	CONTAMINANT	CONCENTRATION	REGULATORY STANDARD(S)	EXCEEDS STANDARD(S) (YES/NO)
Soil	B42	32-34	Bis(2-ethylhexyl)phthalate	93 $\mu\text{g}/\text{kg}$	None	N/A
Soil	B42	32-34	Arsenic	31.5 mg/kg	None	N/A
Soil	B42	32-34	Barium	6.0 mg/kg	None	N/A
Soil	B42	32-34	Cadmium	4.7 mg/kg	None	N/A
Soil	B42	32-34	Chromium	15.9 mg/kg	None	N/A
Soil	B42	32-34	Lead	10.6 mg/kg	150 ppm (3) 400 ppm (4)	No
Soil	B42	36-38	Pyrene	440 $\mu\text{g}/\text{kg}$	None	N/A
Soil	B42	36-38	Arsenic	11.4 mg/kg	None	N/A
Soil	B42	36-38	Barium	6.4 mg/kg	None	N/A
Soil	B42	36-38	Cadmium	2.8 mg/kg	None	N/A
Soil	B37	36-38	Chromium	16.0 mg/kg	None	N/A
Soil	B37	36-38	Lead	6.6 mg/kg	150 ppm (3) 400 ppm (4)	No
Soil	B37	36-38	TPH-Bunker Oil	5700 mg/kg	None	Yes
Groundwater	MW123	33-38	Arsenic	33.0 $\mu\text{g}/\text{L}$	50 $\mu\text{g}/\text{L}$ (1), (2), (5)	No
Groundwater	MW123	33-38	Chromium	25.8 $\mu\text{g}/\text{L}$	100 $\mu\text{g}/\text{L}$ (1) & (2) 50 $\mu\text{g}/\text{L}$ (5)	No
Groundwater	MW123	33-38	Lead	16.0 $\mu\text{g}/\text{L}$	15 $\mu\text{g}/\text{L}$ (1) & (2) 50 $\mu\text{g}/\text{L}$ (5)	Yes (1) & (2) No (5)

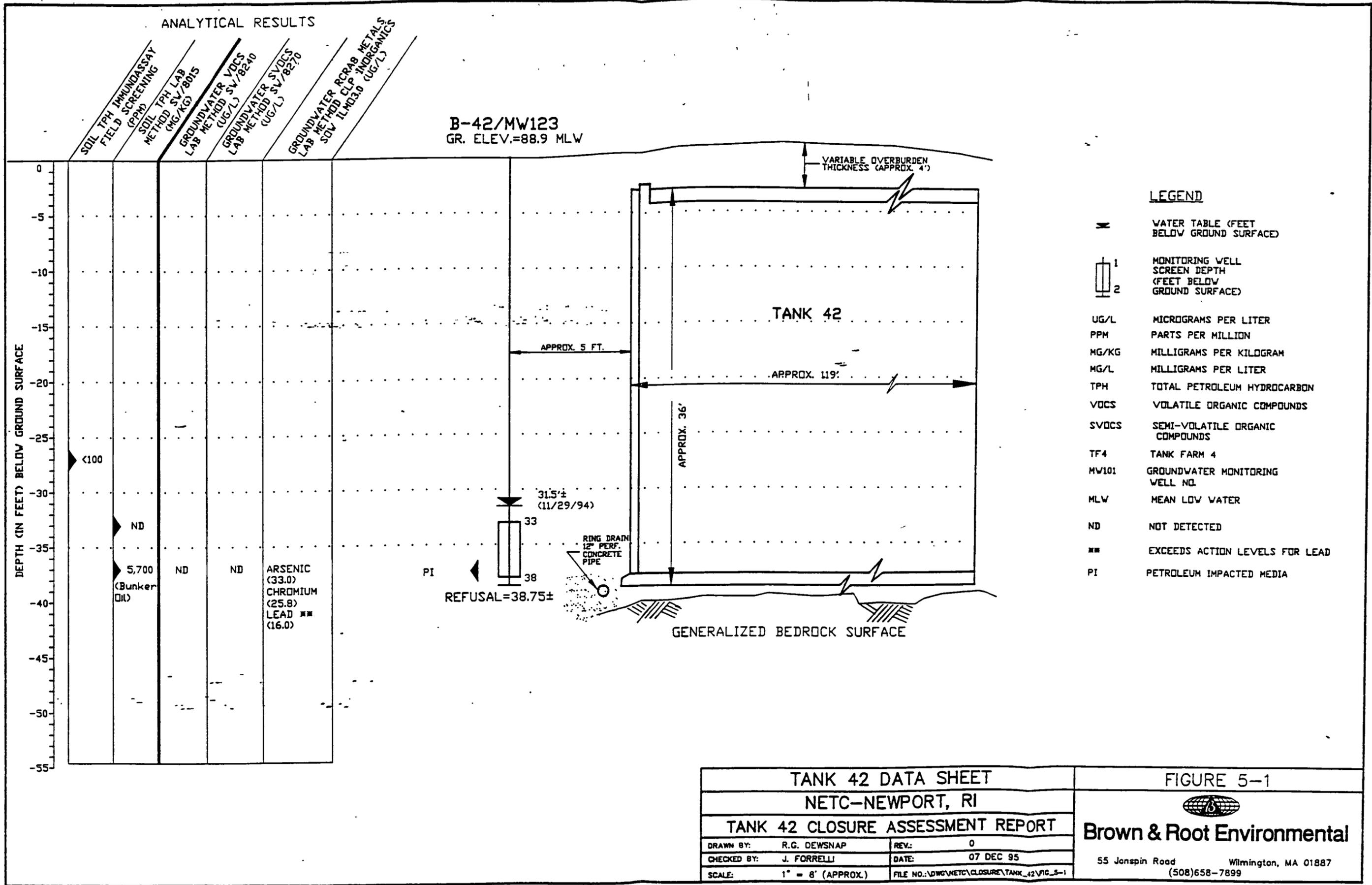
**TABLE 5-1 (CONTINUED)  
 POSITIVE CONTAMINANT DETECTIONS IN SOIL AND GROUNDWATER  
 TANK 42 CLOSURE ASSESSMENT REPORT  
 NEWPORT, RHODE ISLAND  
 PAGE 2**

**Legend:**

ppm-parts per million  
 $\mu\text{g/L}$ -micrograms per liter  
 mg/kg-milligrams per kilogram  
 $\mu\text{g/kg}$ -micrograms per kilogram  
 N/A-Not Applicable

**Notes:**

- 1) U.S. EPA Drinking Water Regulations and Health Advisories, EPA 822-R-94-001, May 1994.
  - 2) State of Rhode Island Department of Environmental Management, Rules No. 12-100-006, Rule and Regulations for Groundwater Quality, Section 10, July 1993.
  - 3) Rhode Island Department of Health - Environmental Lead Program, [R23-24.6-PB], Rules and Regulations for Lead Poisoning Prevention, February 1992 (with amendments).
  - 4) OSWER Directive 9355.4-12- Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities.
  - 5) 40 CFR Part 264 - Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, Subpart F, Sections 264.92 - 264.94, July 1991.
- MW-123 was installed in boring location B42.  
 Sample values were averaged with applicable duplicates.  
 In cases where samples were reanalyzed, the maximum detected concentration is reported.  
 For comparative purposes only, mg/kg unit designations and ppm unit designations were considered to be equivalent.  
 For comparative purposes only, Regulatory Standard unit designations have been converted to the unit of the detected substance.  
 Regulatory Standards are typically expressed in milligrams per liter (mg/l).



## 5.2 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)

Bis(2-ethylhexyl)phthalate (BEHP) was found in sample B423234, and pyrene was detected in sample B423638, at concentrations of 93 micrograms per kilogram ( $\mu\text{g}/\text{kg}$ ) and 440  $\mu\text{g}/\text{kg}$ , respectively. Phthalates are typically used as plasticizers in the manufacturing of PVC and other plastics (Howard 1989; Sittig 1981), including plastics used in analytical laboratories. Pyrene is a polynuclear aromatic hydrocarbon (PAH), typically derived from coal tar (Shreve and Brink 1987; Sittig 1981; Morrison and Boyd 1983) and as a residual of incomplete burning of fossil fuels. These compounds are also constituents of heavy oils (Dragun 1988).

## 5.3 RCRA METALS

Arsenic, barium, cadmium, chromium, and lead were detected in both of the subsurface soil samples collected from B-42. Sample concentrations ranging from 2.8 milligrams per kilogram ( $\text{mg}/\text{kg}$ ) to 31.5  $\text{mg}/\text{kg}$  were reported. The source of these metals has not been evaluated.

## 5.4 TOTAL PETROLEUM HYDROCARBONS (TPH)

TPH was not detected in subsurface soil sample B423234 by laboratory analysis. Laboratory analysis of sample B423638 resulted in a TPH detection of 5700  $\text{mg}/\text{kg}$ , and the pattern was identified as bunker oil.

Subsurface soil sample B422628 was field screened for TPH using an immunoassay method. The sample was collected from 26 to 28 feet bgs. The sample concentration was less than 100 ppm (Figure 5-1).

## 6.0 SITE GROUNDWATER DESCRIPTION

Water levels in Tank Farm 4 monitoring wells were measured to a hundredth-of-a-foot accuracy using an electronic measuring device. The relative elevation of each monitoring well was determined by a land surveyor registered in the State of Rhode Island, and the depth of the water table was established using measurements made from November 2 to 29, 1994. From these data, groundwater flow direction was characterized and a water table map (Figure 6-1) was created for Tank Farm 4. Groundwater generally flows west-southwest toward Narragansett Bay and is slightly affected by Norman's Brook.

MW-123 is approximately 5 feet from the perimeter of Tank 42 and was installed slightly crossgradient to it (Figure 6-1). It is assumed that petroleum resulting from a release would accumulate in the ring drain. A well installed in the ring drain would therefore serve as a monitoring point for a release of petroleum product from the tank. The MW-123 well screen was set 33 to 38 feet bgs to correspond with the estimated depth of the ring drain (Figure 5-1). Based on available information, the ring drain typically extends from the bedrock surface to a point approximately 1 to 2 feet above the tank bottom. At B42, refusal was interpreted as the bedrock surface. Therefore, the ring drain was estimated to be approximately 37 feet bgs. Ring drain materials were not positively identified during the borehole advancement. The well construction log is presented in Appendix G.

The depth to the water table was 31.42 feet bgs on November 29, 1994 (Figure 6-1). Seasonal and precipitation effects on groundwater levels were not evaluated at the site. Therefore, this single measurement may not be representative of the actual groundwater table.

Groundwater samples were collected from MW-123 and were analyzed for VOCs, SVOCs, and the eight RCRA metals. The results of these analyses are summarized below and presented in Table 5-1 and Appendix H.

### 6.1 VOLATILE ORGANIC COMPOUNDS (VOCs)

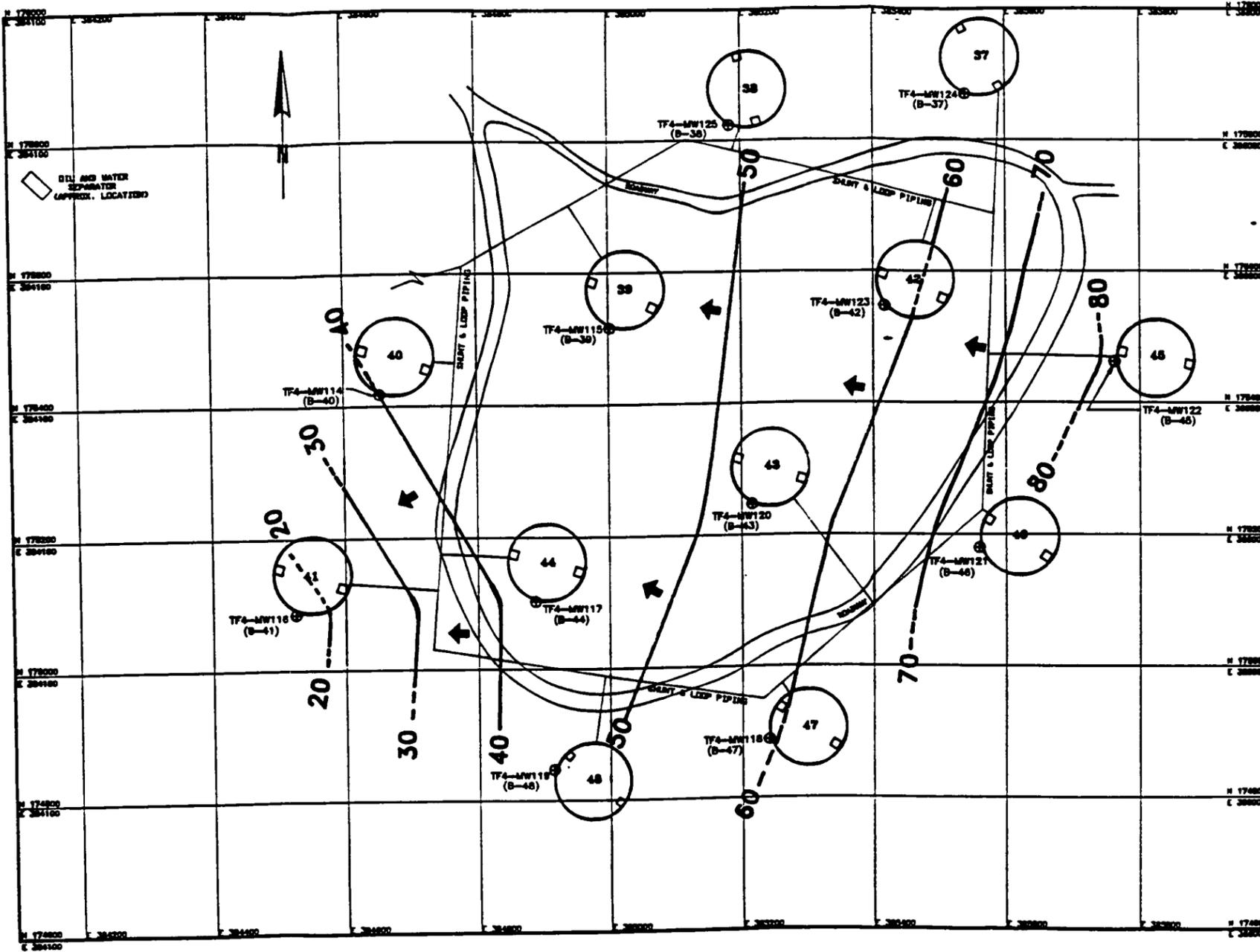
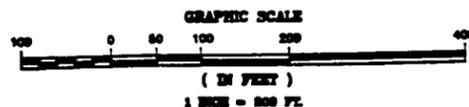
No analytes exceeded detection limits in the groundwater sample collected from MW-123.

### 6.2 SEMI-VOLATILE ORGANIC COMPOUNDS (SVOCs)

No analytes exceeded detection limits in the groundwater sample collected from MW-123.

**LEGEND**

-  UNDERGROUND STORAGE TANK
- TF4-MW117 MONITORING WELL NUMBER AND LOCATION
- (B-44) BORING NUMBER
-  APPROXIMATE GROUNDWATER FLOW DIRECTION
-  GROUNDWATER CONTOUR LINE
-  APPROXIMATE GROUNDWATER CONTOUR LINE



**TANK FARM 4**

- NOTES:**
- 1) VERTICAL DATUM BASED ON LOCAL MEAN LOW WATER.
  - 2) HORIZONTAL DATUM BASED ON STATE OF RHODE ISLAND GRID COORDINATE SYSTEM (MAD 1983).
  - 3) BASE MAP BY LOUIS FEDERICI & ASSOCIATES, 235 PROMENADE STREET, PROVIDENCE, RI.
  - 4) TANKS, ROADWAY, AND SHUNT & LOOP PIPING LOCATIONS FROM AVAILABLE PLANS AND ARE TO BE CONSIDERED APPROXIMATE.
  - 5) MONITORING WELL LOCATIONS FROM ACTUAL FIELD SURVEY.

<b>TANK FARM 4 GROUNDWATER CONTOURS</b>		
<b>NETC-NEWPORT, RI</b>		
<b>TANK 42 CLOSURE ASSESSMENT REPORT</b>		
DRAWN BY:	R.G. DEWSNAP	REV.: 0
CHECKED BY:	J. FORRELLI	DATE: 21 NOV 95
SCALE:	1" = 200'	FILE NO.: \DWG\NETC\CLOSURE\TANK_42\FIG_6-1

**FIGURE 6-1**



**Brown & Root Environmental**

55 Jonspin Road      Wilmington, MA 01887  
(508)658-7899

### 6.3 RCRA METALS

Arsenic, chromium, and lead were detected in the groundwater sample collected from MW-123. Metal concentrations ranged from 16 to 33 micrograms per liter ( $\mu\text{g/L}$ ). The source of these metals has not been evaluated.

## 7.0 ANALYTICAL SAMPLE COLLECTION AND HANDLING

Soil and groundwater samples were collected and analyzed according to Naval Facilities Engineering Service Center (NFESC) requirements. All environmental samples collected as part of the Preliminary Closure Assessment investigation, including QC samples, were stored and shipped in accordance with the chain-of-custody procedures outlined in the CTO 143 project Quality Assurance/Quality Control Plan (September 1994).

Sample chain-of-custody forms are presented in Appendix I. Sample analyses were conducted by Ceimic Laboratories of Narragansett, Rhode Island. Ceimic is a NFESC-approved laboratory. SW 846 U.S. EPA-approved analytical methods were used for laboratory analyses; volatile organic compounds were analyzed by method SW-846 8240; semi-volatile organic compounds were analyzed by SW-846 8270; RCRA metals were analyzed by CLP method ILMO30; and TPH was analyzed by SW-846 8015. Analytical results are presented in Appendix H.

## 8.0 SITE WELLHEAD PROTECTION STATUS

Tank 42 is not within a designated wellhead protection area.

## 9.0 SITE GROUNDWATER CLASSIFICATION AND USE

The groundwater beneath Tank 42 is classified by RIDEM as GA Non-attainment (GA-NA). Groundwater classified GA is suitable for public or private drinking water use without treatment; GA-NA areas are areas that have pollutant concentrations greater than the groundwater quality standards for the GA classification. The Navy and RIDEM are currently discussing reclassifying the area to GB. Groundwater classified as GB may not be suitable as drinking water without treatment due to known or presumed degradation.

Tank Farm 4 and all land hydraulically downgradient of the tank farm is owned by the federal government. A review of Newport Water Department records by HNUS in March 1995 indicated that no private or public potable water wells are located on or in the vicinity of the site.

## 10.0 POTENTIAL RECEPTORS

The potential receptor of a release from Tank 42 is Narragansett Bay. Tank Farm 4 groundwater generally flows west-southwest toward Narragansett Bay and shallow groundwater in the southern portion of the site may flow toward Norman's Brook. Petroleum dissolved in and migrating with groundwater may discharge to both of these surface waters. No private wells or basements that could be affected by a release from Tank 42 are known to exist (see Section 9.0).

## 11.0 FINDINGS AND CONCLUSIONS

### 11.1 FINDINGS

Tank 42 has been emptied of its contents, cleaned, and has passed both the Navy structural integrity inspection and RIDEM post-closure inspection for completeness of oil removal. Following the inspections, the tank was ballasted with clean water.

Petroleum-impacted soils were observed during advancement of soil boring at B-42 from a depth of 26 feet to refusal at 39 feet.

Petroleum-saturated soils were observed in the soil boring and immiscible oil droplets were observed in groundwater samples. Subsequent analyses of soil samples indicated the petroleum was a No. 6 fuel oil.

Groundwater samples collected from the monitoring well adjacent to Tank 42, which is screened within petroleum-saturated soils, exhibited no detections of fuel-related SVOCs. This indicates that groundwater is probably not a significant transport mechanism for heavy fuel oil at this location.

Laboratory analytical results of site soil and groundwater collected immediately adjacent to Tank 42 were evaluated with respect to one or more of the following regulatory standards in effect as of December 1995:

- Rhode Island Department of Health Lead Poisoning Prevention Standard.
- U.S. EPA Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities.
- U.S. EPA Safe Drinking Water Act (SDWA) Maximum Contaminant Levels (MCLs).
- Rhode Island Department of Environmental Management (RIDEM) Groundwater Quality Standards and Preventative Action Limits.
- RCRA Groundwater Protection Standard.

As of December 1995 regulatory standards had not been proposed or established for bis(2-ethylhexyl)phthalate or pyrene in soil. Similarly, there were no known standards for arsenic, barium, cadmium, and chromium in soil.

The Rhode Island Department of Health "lead-free" standard (1992) for soil was used in evaluating the detected lead result in subsurface soil samples B423234 and B423638. This standard, 150 milligrams per kilogram (mg/kg), is designed to protect children in residential settings. Because anticipated future land use of Tank Farm 4 is not for residential purposes, this standard is used for comparative purposes only.

The U.S. EPA guidance (1994a) for CERCLA Sites and RCRA Corrective Action Facilities was also used to evaluate the detected lead result. This directive recommends a 400 ppm screening level for lead in soil designated for residential land use. For the reason stipulated above, this guidance is also used for comparative purposes only.

The B423234 and B423638 soil lead concentrations (10.6 mg/kg and 6.6 mg/kg) do not exceed either of these standards.

As of December 1995, the RIDEM had not established an action level for TPH in soil for non-sensitive environments. The Tank Farm 4 property may not represent a sensitive environment because no wetlands are identified on the property; no water supply wells are located downgradient of the farm; and marine areas are located more than 1,000 feet from the farm, beyond the area likely to be impacted by a release. A detection of 5700 mg/kg TPH was noted in subsurface soil sample B423638.

The groundwater at the site is not used for potable purposes, and as such, is not subject to the provisions of the SDWA. However, lacking appropriate and relevant regulatory requirements for this medium, the SDWA MCLs for chemicals detected in groundwater were used for comparison. Groundwater beneath Tank Farm 4 has been assigned a "GA-NA" classification by RIDEM (see Section 9.0). Therefore the GA groundwater standards were used to evaluate the MW-123 groundwater sampling results.

The arsenic, chromium, and lead concentrations in the MW-123 groundwater sample were evaluated with respect to MCLs and RIDEM groundwater standards (RIDEM 1993; U.S. EPA 1994b). The federal and State of Rhode Island regulatory standard for arsenic in groundwater is 50  $\mu\text{g/L}$ . In the MW-123 groundwater sample, arsenic was detected at a concentration of 33  $\mu\text{g/L}$ . This concentration does not exceed either of the standards. The federal and State of Rhode Island regulatory standard for chromium in groundwater is 100  $\mu\text{g/L}$ . In the MW-123 groundwater sample, chromium was detected

at a concentration of 25.8  $\mu\text{g/L}$ . This concentration does not exceed either of the standards. The federal and State of Rhode Island regulatory standard for lead in groundwater is 15  $\mu\text{g/L}$ . In the MW-123 groundwater sample, lead was detected at a concentration of 16  $\mu\text{g/L}$ . This concentration exceeds both of the standards.

The arsenic, chromium, and lead concentrations in groundwater were also compared to RCRA groundwater protection standards (U.S. EPA 1991). Each standard, 50  $\mu\text{g/L}$ , is designed to ensure that hazardous constituents detected in the groundwater from a regulated unit do not exceed specified concentration limits. The concentrations of arsenic, chromium, and lead in the MW-123 groundwater sample do not exceed RCRA groundwater protection standards.

## 11.2 CONCLUSIONS

Based on an evaluation of the above data, a petroleum release, identified as No. 6 fuel oil, has occurred at Tank 42. The presence of petroleum-saturated soil at depth, from 37.00 to 38.75 feet bgs adjacent to the tank, and immiscible oil droplets in groundwater samples in the vicinity of the tank, indicate that leaks of fuel oil from the tank have likely occurred.

The absence of fuel-related compounds in groundwater adjacent to Tank 42 indicates that groundwater is probably not a significant migration pathway for heavy fuel oil compounds released from the tank.

**REFERENCES**

## REFERENCES

- Dragun, J. 1988. The Soil Chemistry of Hazardous Materials. Maryland: Hazardous Materials Control Research Institute, pp. 398-411.
- Foster Wheeler Environmental Corporation, 1997. Facsimile transmittal from Mark Gouveia (Foster Wheeler) to Denis MacDougall (B&R Environmental), re: Tank 42 Pump Chamber Inspection. April 12, 1997.
- Halliburton NUS Corporation, 1995a. Telephone conversation between Walter Martin (HNUS Corp.) and Bob Martin (NETC-DFSP, Newport, RI), RE: Tank Gauging and Utility Depths, CTO 143. February 3, 0850 hrs.
- Halliburton NUS Corporation, 1995b. "Preliminary Closure Assessment Report of Tank Farms 4 and 5, Naval Education and Training Center, Newport, Rhode Island", March 1995.
- Howard, P.H. 1989. Handbook of Environmental Fate and Exposure Data for Organic Chemicals, Volume 1. Michigan: Lewis Publishers, Inc., pp. 279-285.
- Morrison, R.T. and Boyd, R.N. 1983. Organic Chemistry, Fourth Edition. Boston: Allyn and Bacon, Inc. pp. 1231-32; 1267-1272.
- Rhode Island Department of Environmental Management. 1993. "Rules and Regulations for Groundwater Quality", Rule No. 12-100-006. July.
- Rhode Island Department of Health. 1992. "Rules and Regulations for Lead Poisoning Prevention, [R 23-24.6-PB]." February.
- Shreve, R.N. and Brink, J.A. 1977. Chemical Process Industries, Fourth Edition. New York: McGraw-Hill Book Co., pp. 65-80.
- Sittig, M. 1981. Handbook of Toxic and Hazardous Chemicals. New Jersey: Noyes Publications, pp. 562-565.
- TRC Environmental Corporation. 1993a. Remedial Design Work Plan, Groundwater Treatment, Tanks 53 and 56 at Tank Farm 5, NETC-Newport, Rhode Island.
- TRC Environmental Corporation. 1993b. Design Analysis for 35% Design Development Submission Groundwater Treatment, Tank 53 and 56 at Tank Farm 5, NETC-Newport, Rhode Island.
- U.S. EPA. 1991. "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities." 40 Federal Register 264, Subpart F, pp. 169-170, July 1.
- U.S. EPA. 1994a. Revised Interim Soil Lead Guidance for CERCLA Sites and RCRA Corrective Action Facilities, Office of Solid Waste and Emergency Response, Directive 9355.4-12.
- U.S. EPA. 1994b. "Drinking Water Regulations and Health Advisories", EPA 822-R-94-001. May.

**APPENDIX A**

**PERMANENT CLOSURE APPLICATION FOR UNDERGROUND STORAGE FACILITIES**

PERMANENT CLOSURE APPLICATION FOR UNDERGROUND STORAGE FACILITIES

A: Date of application: 2/18/94

B: UST Facility I.D.: 15007

(Note: If the tank(s) listed below are not registered with DEM, a registration fee of \$50.00 per tank must be submitted along with this application.)

C: Proposed date of tank closure: September 94  
(Reminder: This date must be confirmed by phone with DEM at least 3 business days in advance of the closure.)

D: Facility Name: Tank Farm 4 (Area III)  
Street Address: NETC PWD Bldg 1, 1 Simonpietri Dr  
City/Town: Newport RI 02841

E: Tank Owner: W.H. Rigby, Capt, CEC, USN  
Street Address: NETC PWD Bldg 1, 1 Simonpietri Dr  
City/Town/State: Newport RI 02841  
Contact Person: Dave Dorocz  
Telephone Number: 841-3735

F: Property Owner: same  
Street Address: \_\_\_\_\_  
City/Town/State: \_\_\_\_\_

G: FIRM/CONTRACTOR TO PERFORM TANK CLOSURE WORK

Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Contact Person: \_\_\_\_\_  
Phone Number: \_\_\_\_\_

H: FIRM/CONSULTANT TO PERFORM TANK CLOSURE ASSESSMENT (check one)

Professional Engineer     Certified Professional Geologist

Other; A statement of qualifications must be submitted with this application.

Name: Halliburton NUS Corp  
Address: 187 Ballardvale St Wilmington MA 01887  
Contact Person: John Trepanovski  
Phone Number: 508-658-7889

I: DESCRIPTION OF TANKS TO BE CLOSED

TANK NO.	AGE	DATE LAST USED	VOLUME	CONSTRUCTION MATERIAL	STORED MATERIAL
037	48	79	2,500,000	Concrete	#6 Fuel Oil
038	48	79	" "	" "	" "
039	48	79	" "	" "	" "
040	48	79	" "	" "	" "
041	48	79	" "	" "	" "
042	48	79	" "	" "	" "
043	48	79	" "	" "	" "

(If there are more tanks being closed please list on an attachment)

J: FEES:

Closure: NUMBER OF TANKS 7 X \$75.00 PER TANK = 525.00  
 Registration: NUMBER OF TANKS \_\_\_\_\_ X \$50.00 PER TANK = \_\_\_\_\_

K. Have these tanks ever held non-petroleum, hazardous materials?

\_\_\_\_\_ YES  NO

If yes, then list materials: \_\_\_\_\_

L. After the closure(s) have been completed on the aforementioned tanks, will there be any underground storage tanks remaining in existence at this facility? \_\_\_\_\_ YES  NO

Will any new UST(s) be installed on the site?  
 \_\_\_\_\_ YES  NO

CLOSURE PROCEDURE (select one):

1.  Visual inspection of tank interior  
~~Precision-test~~ and fill with inert material water.  
 (Section 15.12). sample monitoring well in tank ring drain.

Material used for filling tank: water

NOTE: APPROVED PRECISION TEST METHOD MUST BE CONDUCTED BY A LICENSED TESTER AND RESULTS MUST BE SUBMITTED TO DEM PRIOR TO FILLING THE TANK IN PLACE.

2. \_\_\_\_\_ Excavate, clean, and dispose (Section 15.11)

a. Specify method of tank cleaning: \_\_\_\_\_

b. Specify method for disposing of tank sludges or wastes generated by cleaning process. List name of waste hauler: \_\_\_\_\_

c. Specify whether cleaning will take place...  
onsite  off-site \_\_\_\_\_

i. If offsite, indicate location of final tank cleaning:  
Firm/Address: \_\_\_\_\_

ii. Indicate firm which will transport tank(s) to site indicated in c(i) above:  
Firm/Address: \_\_\_\_\_

NOTE: FIRMS TRANSPORTING TANK SLUDGE AND WASTE OR TANKS WHICH REQUIRE FURTHER CLEANING MUST BE PERMITTED BY DEM (DIVISION OF AIR AND HAZARDOUS MATERIALS) AS HAZARDOUS WASTE TRANSPORTERS.

d. Will tank(s) be ...

rendered unfit for use and disposed of \_\_\_\_\_ or reused \_\_\_\_\_?

NOTE: REUSE OF A TANK IN THE GROUND REQUIRES COMPLIANCE WITH SECTION 12.03 OF STATE UST REGULATIONS.

Location for final tank(s) disposal:

If tank is to be reused, specify:

Proposed use: \_\_\_\_\_

Name/address of intended user: \_\_\_\_\_

SUPPLEMENT TO THE PERMANENT CLOSURE APPLICATION FOR USTs

This supplement must accompany all Permanent Closure Applications for US (as revised 2/93 and earlier) received by the Rhode Island Department of Environmental Management on or after August 25, 1993.

FACILITY NAME: Tank Farm 4 (Area III)

FACILITY ADDRESS: NETC PWD Bldg 1  
1 Simonpietri Dr  
Newport RI 02841

PROPOSED CLOSURE DATE: September 94

FACILITY REGISTRATION #: 15007

\*Please note that the UST registration fee has increased to \$50.00 per tank. Payment of all unregistered tanks must be submitted with this application.

1. Has a check in the total amount of \$50.00 per unregistered tank been submitted with this application? N/A
2. In the space provided below, please draw an informal sketch of the location of each UST to be permanently closed. Number each tank to coincide with the tank numbers on your UST registration form.  
(see attached site plan)

3. Describe the method to be used to empty the tank(s) prior to excavation. \_\_\_\_\_

4. Describe the method to be used to remove the tank from excavation. N/A

5. Describe the method(s) to be used to properly and safely vent the tank(s) and properly make openings in the tank(s). \_\_\_\_\_

\*NOTE: Appropriate venting must be carried out both before the cutting of any tank and before off-site transport of any tank which has not been completely cleaned per Rule 15.11(c) of the UST Regs.

6. Describe the instruments used to verify that the tank(s) have been properly vented. \_\_\_\_\_

7. Describe how any residues remaining in the tank(s) will be managed. \_\_\_\_\_

CERTIFICATION BY TANK OWNER

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

NAME OF OWNER: (please print) W.H. Rigby, Capt, CEC, USN  
SIGNATURE: [Signature]  
TITLE: Director for Public Works  
ADDRESS: NETC PWD Bldg 1, 1 Simonpetri Dr Newport RI 02841  
TELEPHONE: 841-3841

NOTIFICATION OF LOCAL FIRE DEPARTMENT

The authorized signature of the local fire department below indicates that the local fire officials have been notified that you are planning to close an underground storage tank at the above location. YOU MUST ALSO NOTIFY THE LOCAL FIRE DEPARTMENT OF THE EXACT CLOSURE DATE AFTER YOU HAVE CONFIRMED THIS DATE WITH DEM.

[Signature] 02-17-94  
Authorized Local Fire Date  
Department Representative

NETC FIRE DEPT. (401) 841-2225  
Name Of Local Fire Department Telephone Number

This signature does not serve as notice to the town, does not guarantee town approval, and does not relieve you of your obligations to other applicable town officials. Any violation, deficiency or requirement which may have been overlooked is also subject to correction under the provision of any applicable code.

-----  
DEM  
DIVISION OF BUSINESS AFFAIRS USE ONLY  
A. NO. OF TANKS \_\_\_\_\_ X 75.00 = \_\_\_\_\_  
B. NO. OF TANKS \_\_\_\_\_ X 50.00 = \_\_\_\_\_  
TOTAL FEE = \_\_\_\_\_ (A) + \_\_\_\_\_ (B) = \_\_\_\_\_  
FULL PAYMENT RECEIVED ON \_\_\_\_\_ (DATE)

**APPENDIX B**  
**DATA FOR TANK CONTENTS**



# R.I. Analytical

Specialists in Environmental Services

## CERTIFICATE OF ANALYSIS

OHM Remediation Services Corp.  
Attn: Mr. Jim White  
98 Defense Highway  
Middletown, RI 02842

DATE RECEIVED: 12/07/95  
DATE REPORTED: 12/11/95  
P.O. #:   
INVOICE #: H7654

---

**SAMPLE DESCRIPTION:** One (1) sludge/oil sample from Tank #42  
labelled T42A dated 12/7/95

---

Subject sample has been analyzed by our laboratory with the  
attached results.

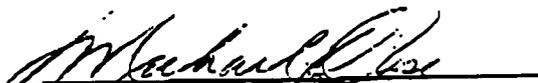
Reference: TCLP Procedure, Federal Register, Vol. 55, No. 126,  
Friday, June 29, 1990.

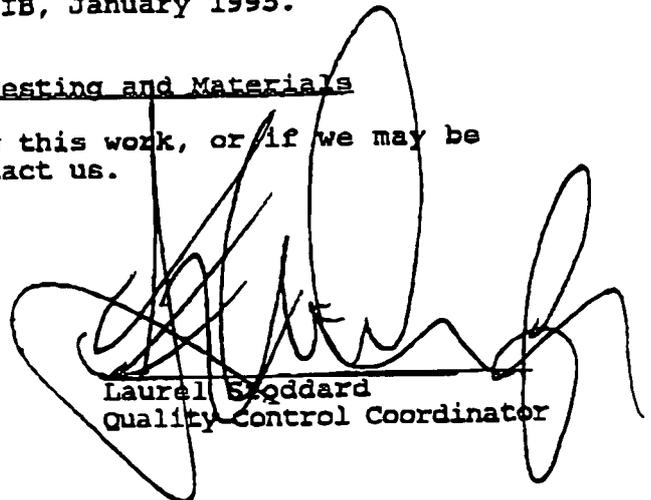
Test Methods for Evaluating Solid Waste, Physical/  
Chemical Methods, U.S. EPA, SW-846, November 1986,  
3rd edition, Update IIB, January 1995.

American Society for Testing and Materials

If you have any question regarding this work, or if we may be  
of further assistance, please contact us.

Approved by:

  
Michael S. Rose  
Laboratory Manager

  
Laurel Stoddard  
Quality Control Coordinator

ohm:kah

**CERTIFICATE OF ANALYSIS**

**OHM Remediation Services Corp.**  
**Date Received: 12/07/95**  
**Date Reported: 12/11/95**

**Invoice #: H7654**  
**P.O. #:**

---

PARAMETER	RESULTS	DETECTION LIMIT
pH (SU)	9.4	-----
Bulk Water and Sediment (%)	~100	-----
Total Halogenation (%)	ND	0.10
Sulfur (%)	1.1	0.1
Heat of Combustion (btu/lb)	14,568	-----
Flash Point (C/C)	>200 °F	-----
Characteristics of Reactivity		
Cyanide	ND	13.3
Sulfide	ND	33.3
Polychlorinated Biphenyls:		
Aroclor 1016	ND	5.0
Aroclor 1221	ND	5.0
Ar clor 1232	ND	5.0
Aroclor 1242	ND	5.0
Ar clor 1248	ND	5.0
Aroclor 1254	ND	5.0
Aroclor 1260	ND	5.0

**Results reported in mg/kg unless otherwise noted.**

**R.I. ANALYTICAL LABORATORIES, INC.**

**CERTIFICATE OF ANALYSIS**

OHM Remediation Services Corp.  
Date Received: 12/07/95  
Date Reported: 12/11/95

Invoice #: H7654  
P.O. #:

---

PARAMETER	RESULTS	DETECTION LIMIT
Toxicity Characteristic Leaching Procedure:		
Metals:		
Ars nic	ND	0.20
Barium	ND	0.20
Cadmium	ND	0.010
Chromium	ND	0.03
Lead	0.05	0.04
Mercury	ND	0.0005
Selenium	ND	0.20
Silver	ND	0.02
V latile Organic Compounds:		
vinyl chloride	ND	0.100
1,1-dichloroethylene	ND	0.100
1,2-dichloroethane	ND	0.100
chloroform	ND	0.100
carbon tetrachloride	ND	0.100
trichloroethylene	ND	0.100
benzene	ND	0.100
tetrachloroethylene	ND	0.100
chl robenzene	ND	0.100
1,4-dichlorobenzene	ND	0.100
methyl ethyl ketone	ND	1.00

Results reported in mg/l

R.I. ANALYTICAL LABORATORIES, INC.

**CERTIFICATE OF ANALYSIS**

OHM Remediation Services Corp.  
Date Received: 12/07/95  
Date Reported: 12/11/95

Invoice #: H7654  
P.O. #:

PARAMETER	RESULTS	DETECTION LIMIT
Toxicity Characteristic Leaching Procedure:		
Semi-Volatile Organic Compounds:		
1,4-dichlorobenzene	ND	0.020
2,4-dinitrotoluene	ND	0.020
hexachlorobenzene	ND	0.020
hexachlorobutadiene	ND	0.020
hexachloroethane	ND	0.020
nitrobenzene	ND	0.020
pentachlorophenol	ND	0.020
2,4,6-trichlorophenol	ND	0.020
2,4,5-trichlorophenol	ND	0.020
2-methylphenol	ND	0.020
3-methylphenol	ND	0.020
4-methylphenol	ND	0.020
pyridine	ND	0.020
Pesticides:		
Lindane	ND	0.001
Heptachlor	ND	0.001
Endrin	ND	0.005
Methoxychlor	ND	0.005
Chlordane	ND	0.05
Toxaphene	ND	
Herbicides:		
2,4-D	ND	0.40
Silvex	ND	0.40

Results reported in mg/l

**R.I. ANALYTICAL LABORATORIES, INC.**

**APPENDIX C**

**SLUDGE DISPOSAL MANIFESTS**

**DNR**  
**MICHIGAN DEPARTMENT**  
**OF NATURAL RESOURCES**

DO NOT WRITE IN THIS SPACE.  
ATT.  DIS.  REJ.  PR.

Failure to file is punishable under section 299 648 MCL or Section 10 of Act 136, PA 1989

Please print or type.

Form Approved OMB No. 2050-0039 Expires 9-30-94

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator's USEPA ID No <b>R I 1 1 7 0 0 2 4 2 4 3</b>		Manifest Document No. <b>20823</b>		2. Page 1 of 1		Information in the shaded areas is not required by Federal law.			
3. Generator's Name and Mailing Address <b>Naval Education &amp; Training Ctr. Code 40E, 1 Simon Pietri Dr. Newport, RI 02841</b>						A. State Manifest Document Number <b>MI 3543463</b>					
4. Generator's Phone (401) 841-3735						B. State Generator's ID <b>SAME</b>					
5. Transporter 1 Company Name <b>Freehold Cartage, Inc.</b>				6. US EPA ID Number <b>NI J D 0 5 4 1 2 6 1 6 4</b>		C. State Transporter's ID <b>MI 7694 VW</b>					
7. Transporter 2 Company Name				8. US EPA ID Number		D. Transporter's Phone (908) 462-1001					
9. Designated Facility Name and Site Address <b>City Environmental, Inc. 1550 Harper Avenue Detroit, MI 48211</b>						E. State Transporter's ID					
10. US EPA ID Number <b>MI J D 0 5 4 6 8 3 4 7 9</b>						F. Transporter's Phone					
11. US DOT Description (including Proper Shipping Name, Hazard Class, and HM ID NUMBER)						12. Containers No. Type		13. Total Quantity	14. Unit M/V/L	15. Waste No. N/H	
a. <b>Non Hazardous Solid Not DOT, Not RCRA Regulated</b>						<b>085 DM</b>		<b>314000</b>	<b>P</b>	<b>0 2 5 L N</b>	
b.											
c.											
d.											
J. Additional Descriptions for Materials Listed Above a. <b>oil/mud 14707L</b> b. <b>3 dr in overpaks from Tank Farm 4 &amp; 5</b>						K. Handling Codes for Wastes Listed Above a. / / / b. / c. / d. /					
15. Special Handling Instructions and Additional Information <b>Emergency Contact: Tom Joyner (800) 562-2953</b>											
16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.  If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.											
Printed/Typed Name <b>RAYMOND N ROBERGE</b>				Signature 				Date <b>12/13/95</b>			
17. Transporter 1 Acknowledgement of Receipt of Materials						Signature 		Date <b>12/13/95</b>			
Printed/Typed Name <b>ROBERT N HARRIS JR</b>				Signature 				Date			
19. Discrepancy Indication Space.											
20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.											
Printed/Typed Name				Signature				Date			

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-0708 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-9300 24 HOURS PER DAY.

**APPENDIX D**

**DEGREASER/VENDOR INFORMATION**

- Water-Based Non-Toxic Readily Biodegradable Non-Petroleum • Leaves No Residue
- No Phosphates No Chlorinated Solvents No Butyl No Halogens No Noxious Odors
- No Flash Point • No Volatile Vapors

## Heavy Duty Degreaser



## All Purpose Cleaner

### USES

**Extra Heavy Cleaning**  
 Holding Tanks • Engines • Carbon on Engine Heads • Cosmoline • Bunker C Grease Traps • Sludge Removal

**Heavy Cleaning**  
 Decks • Platforms • Engine Rooms Bulkheads • Oil-Stained Concrete Degas Tanks and Barge Compartments Carbon • Petroleum-Based Drilling Muds Creosote • Heat Exchanges

**Normal Cleaning**  
 Bilges • Exhaust Stack Smoke • Rubber Clothing Blood (organic stains) • Water Line Scum • Vinyl Decks • Teakwood • Air Conditioner Filters Carpeting • Terrazzo • PVC Fiberglass • Automotive Paint Prep

### DIRECTIONS

Scrape extreme conditions, if possible  
 Allow product to penetrate soil  
 Agitate severe spots A thorough rinse should follow

**Steam Cleaning or Pressure Washing**  
 Steam Cleaning - Hot or cold Pressure Wash  
 A pre-mixed solution of 1 to 5 to 1 to 20 can be drawn from auxiliary tube or put directly into mixing tank giving up to 1 to 200 dilution at nozzle

### Dilution Table

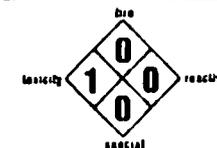
	SW 1000	WATER
Extra Heavy Cleaning	1 part	1 to 5
Heavy Cleaning	1 part	5 to 10
Normal Cleaning	1 part	10 to 20
Steam or Pressure Wash	1 part	5 to 20

**Not Classified As A Hazardous Material  
 Reduces Generation Of Hazardous Waste**

SW 1000 contains no ingredients which are listed in the National Toxicology Program or the International Agency for Research on Cancer as being suspected carcinogens

Substance	CAS No
Water	7732-18-5
Isopropanol	67-63-0
Sodium Metasilicate	6834-93-0
Sodium Hydroxide	1310-73-2

**Hazard Rating**  
 4 = Extreme  
 3 = High  
 2 = Moderate  
 1 = Slight  
 0 = Insignificant



**HERITAGE LABS, INC. 201/437-7775**

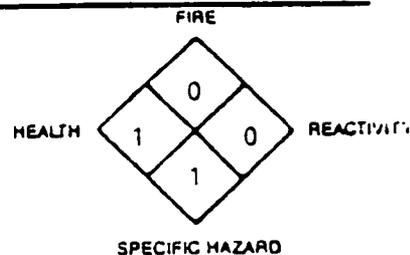
# Material Safety Data Sheet

QUICK IDENTIFIER (in plain common name)

SW 1000

Manufacturer's (201) 437-7775  
 Name Heritage Labs, Inc.  
 Address P.O. Box 4141  
 Bayonne, NJ 07002  
 Signature of Person Responsible for Preparation *Donald J. Adone*  
 10/10/89 Donald J. Adone

HAZARD RATING  
 4 = Extreme  
 3 = High  
 2 = Moderate  
 1 = Slight  
 0 = Insignificant



See Section (5)

## SECTION 1 - IDENTITY

Common Name (used on label) **SW 1000**  
 (Trade Name & Synonyms)

Chemical Name **n.a.**

Formula **Proprietary**

## SECTION 2 - HAZARDOUS INGREDIENTS

Principal Hazardous Component(s) (chemical & common name(s))	CAS #	%	ACGIH TLV	Other Limits Recommended
Sodium metasilicate	6834-93-0	< 5%	n.a.	
Isopropanol	67-63-0	< 5%	(TWA 400 ppm, STEL 500 ppm)	
Sodium hydroxide	1310-73-2	< 1%	(C 2 mg/m <sup>3</sup> )	

## SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS (Fire & Explosion Data)

Boiling Point	213°F	Specific Gravity (H <sub>2</sub> O = 1)	1.036	Vapor Pressure (mm Hg)	n.a.
Percent Volatile by Volume (%)	0	Vapor Density (Air = 1)	n.a.	Evaporation Rate (water = 1)	< 1%
Solubility in Water	completely	Reactivity in Water	none		
Appearance and Odor	clear liquid / non objectionable odor				

Flash Point	none	Flammable Limits in Air % by volume	Lower n.a. Upper n.a.	Extinguisher Media	none required	Auto-ignition Temperature	none
Special Fire Fighting Procedures	none	Unusual Fire and Explosion Hazards	none				

## SECTION 4 - REACTIVITY DATA

Unstable		Conditions to Avoid	none
Stable	X		
Incompatibility (Materials to Avoid)	Only those materials incompatible with water.		
Hazardous Decomposition or Byproducts	n.a.		
Hazardous Polymerization	May Occur	Conditions to Avoid	n.a.
	Will Not Occur	X	

**SECTION 5 - HEALTH HAZARDS**

Route(s) of Entry:      Inhalation?      unlikely      Skin?      likely      Ingestion?      unlikely

Health Hazards (Acute and Chronic)      Skin irritation may develop if repeated exposure occurs or if it is used for long periods of time. Avoid eye contact.

Carcinogenicity:      None known

Signs and Symptoms of Exposure      None known

Emergency and First Aid Procedures      n.a.

- 1 Inhalation      Move to more adequate ventilation.
- 2 Eye      Rinse thoroughly with water, if irritation develops --see physician.
- 3 Skin      Same as above.
- 4 Ingestion      Drink juices, milk or water - consult a physician.

**SECTION 6 - SPECIAL PROTECTION INFORMATION**

Respiratory Protection (Specify Type)      n.a. provide proper ventilation.

Ventilation	Local Exhaust	Mechanical (General)	Special	Other
				Should be adequate.

Protective Gloves      water resistant gloves.      Eye Protection      Goggles or safety glasses.

Other Protective Clothing or Equipment

**SECTION 7 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES**

Precautions to be Taken in Handling and Storage      Store in temperatures ranging from 30°F to 110°F / 0°-43°C

Other Precautions      None

Steps to be Taken in Case Material is Released or Spilled      Hose down with water.

Waste Disposal Methods      Biodegradable. Refer to applicable regulations. Special disposal may not be required.

The information on this data sheet represents our current data and best opinion as to the proper use in the handling of this product under normal conditions. The information and recommendations are offered for the user's consideration and examination, and it is the user's responsibility to satisfy itself that they are suitable and complete for its particular use. Any use of this product which is not in conformance with this data sheet or which involves using the product in combination with any other product or any other

**APPENDIX E**

**BILLS OF LADING (DEBRIS DISPOSAL)**

54422



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

185 INDUSTRIAL ROAD  
WRENTHAM, MA 02093  
TEL 508-384-6161 FAX 508-384-6028

329 CHAMBERLAIN HWY.  
MERIDEN, CT 06451  
TEL 203-630-3472 FAX 203-630-2530

WORK ORDER #  
**002575**

<b>BILL TO:</b>	<b>JOB #</b>	<b>ORIGIN</b>	<b>DESTINATION</b>
FROM REMEDIATION SERVICE 200 HOBSON CENTER DRIVE TRENTON, NJ 08650 10027 300 3000	100452	NEWPORT, RI 02841-1712	ROCHESTER, NH 02866
<b>EMERGENCY RESPONSE TEL. #</b>	800-538-5050		<b>FACILITY W/O #</b>
<b>MANIFEST / DOCUMENT NUMBER</b>	<b>PICK-UP DATE &amp; TIME</b>	<b>PURCHASE ORDER #</b>	<b>OFF LOAD DATE / TIME</b>
002575	10/30/8PM	206984	Same day

# UNITS	TYPE	HM	DESCRIPTION OF ARTICLES	QUANTITY	PER UNIT	AMOUNT
1	2/10x		TRANSPORT @/C # 71 to above job site	1	#71	1

### EQUIPMENT CERTIFICATION

CUSTOMER VERIFIES THAT: TANKER # NA TRAILER # 337 ROLL-OFF CONTAINER # 71 W/LINER Y  
 CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.  
 DRIVER'S SIG: [Signature] DATE: 10/30/95 CUSTOMER'S SIG: [Signature] DATE: 10/30/95

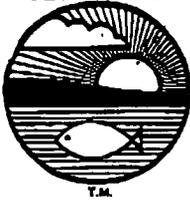
PICK-UP	DATE	TIME	EXPLANATION OF LOADING TIME
ARRIVE AT SHIPPER	10/30	1300	
START LOADING	I		Container # 71; Pickup # 104
FINISH LOADING			
LEAVE SITE	I	1400	Leave roll liner.

SHIPMENT RECEIVED IN APPARENT GOOD ORDER (CONTENTS AND CONDITION OF CONTENTS UNKNOWN) SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING REGULATIONS AND TARIFFS OF THE DATE OF SHIPMENT. THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.  
 DRIVER: [Signature] DATE: 10/30/95 SHIPPER: [Signature] DATE: 10/30/95

DELIVERY	DATE	TIME	EXPLANATION OF UNLOADING TIME
ARRIVE AT SITE			
BEGIN UNLOADING			
FINISH UNLOADING			
LEAVE SITE			

DRIVER: \_\_\_\_\_ DATE: \_\_\_\_\_ RECEIVER: \_\_\_\_\_ DATE: \_\_\_\_\_  
 ADDITIONAL INSTRUCTIONS OR COMMENTS: Deliver empty rolloff container # 71 with liner.  
 Liner approval Code: 189533.  
 START TRIP (DATE & TIME) 10/30/95 @ 12:00 PM FINISH TRIP (DATE & TIME) \_\_\_\_\_

AB  
10/30  
1900200  
\$215 - container  
790 - Transport  
Liner



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

183 INDUSTRIAL ROAD  
WRENTHAM, MA 02093  
TEL 508-384-6181 FAX 508-384-6028

329 CHAMBERLAIN HWY.  
MERIDEN, CT 06451  
TEL 203-630-3472 FAX 203-630-2530

WORK ORDER #  
**0J2935**

<b>BILL TO:</b> ORNL FERTILIZATION SERVICES 200 WOODBURN CENTER ROAD TRENTON, NJ 08650 TEL 609-390-0000	<b>JOB #</b> 00000000	<b>ORIGIN</b> HAWKINS CONTROL SYSTEMS ONE SOUTH MAIN DRIVE NEWPORT, RI 02841-1719	<b>DESTINATION</b> YUNNKA WAREHOUSE 30 ROCHESTER HIGH ROAD ROCHESTER, NH 02887
<b>EMERGENCY RESPONSE TEL. #</b> MANIFEST / DOCUMENT NUMBER 002935	500-535-5054		<b>FACILITY W/O #</b> OFF LOAD DATE / TIME Sun day
	<b>PICK-UP DATE &amp; TIME</b> 11/8	<b>PURCHASE ORDER #</b> 200584	

# UNITS	TYPE	HM	DESCRIPTION OF ARTICLES	QUANTITY	PER UNIT	AMOUNT
1	CM	-	P.P.E. + Debris Non-Hazardous	1		

AB  
11/8  
1980200  
1790

### EQUIPMENT CERTIFICATION

CUSTOMER VERIFIES THAT: TANKER # \_\_\_\_\_ TRAILER # \_\_\_\_\_ ROLL-OFF CONTAINER # 158 W/LINER? YES  
 CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.  
 DRIVER'S SIG. [Signature] DATE: 11/8 CUSTOMER'S SIG. [Signature] DATE: 11/8

PICK UP	DATE	TIME	EXPLANATION OF LOADING TIME
ARRIVE AT SHIPPER		10 am	Drop # 158 1/10 1/11
START LOADING		11:00	
FINISH LOADING			
LEAVE SITE			

SHIPMENT RECEIVED IN APPARENT GOOD ORDER (CONTENTS AND CONDITION OF CONTENTS UNKNOWN) SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING CLASSIFICATIONS AND TARIFF CLASSIFICATION ON FILE ON THE DATE OF SHIPMENT  
 THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION  
 DRIVER: [Signature] DATE: 11/8/95 SHIPPER: \_\_\_\_\_ DATE: 11/8/95

DELIVERY	DATE	TIME	EXPLANATION OF UNLOADING TIME
ARRIVE AT SITE			
BEGIN UNLOADING			
FINISH UNLOADING			
LEAVE SITE			

DRIVER: \_\_\_\_\_ DATE: \_\_\_\_\_ RECEIVER: \_\_\_\_\_ DATE: \_\_\_\_\_

**ADDITIONAL INSTRUCTIONS OR COMMENTS**

START TRIP (DATE & TIME) \_\_\_\_\_ FINISH TRIP (DATE & TIME) \_\_\_\_\_



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

188 INDUSTRIAL ROAD  
 WRENTHAM, MA 01905  
 TEL 508-386-6151 FAX 508-386-6228

189 CHAMBERLAIN HWY.  
 MERIDEN, CT 06461  
 TEL 203-630-3002 FAX 203-630-3230

WORK ORDER #  
**002149**

**VEHICLE #** 2244M **JOB #** JOHN 757 **ORIGIN** NETC **DESTINATION** John  
**EMERGENCY RESPONSE TEL #** **PLANT DATE & TIME** **PURCHASE ORDER #** **FACILITY YTD #** **REF. LOAD #**  
 11-10-95

QTY	TYPE	RM	DESCRIPTION OF ARTICLES	QUANTITY	PERCENT	AMOUNT
			120000 Empty 100104			
			# 110 w/liner Tarp + Bows			

### EQUIPMENT CERTIFICATION

**CUSTOMER VERIFIES THAT: TANKER #** **TRAILER #** **ROLL-OFF CONTAINER #** 110 **W/**  
 CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.  
**DRIVER'S SIG.** **DATE:** 11-10 **CUSTOMER'S SIG.** **DATE:** 11-10

ACTIVITY	DATE	TIME	EXPLANATION OF LOADING/TIME
ARRIVE AT SHIPPER			
START LOADING			
FINISH LOADING			
LEAVE SITE			

SHIPPER RECEIVED IN APPARENT GOOD ORDER (CONTENTS AND CONDITION OF CONTENTS UNDETERMINED) SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING CLASSIFICATIONS AND TARIFFS LAWFULLY ON FILE ON THE DATE OF SHIPMENT.  
 THIS IS TO CERTIFY THAT THE ABOVE LISTED ARTICLES ARE PROPERLY CLASSIFIED, PACKAGED, MARKED AND LABELED AND ARE SHIPPED IN CONFORMANCE WITH THE REGULATIONS ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION.  
**DRIVER:** **DATE:** **SHIPPER:** **DATE:**

ACTIVITY	DATE	TIME	EXPLANATION OF UNLOADING/TIME
ARRIVE AT SITE	11-10	7:45	LOC 6 5114 11-10 1502 # 110
BEFORE UNLOADING		8:00	
FINISH UNLOADING		8:15	
DEPART SITE			

**DRIVER:** **DATE:** 11-10-95 **RECEIVER:** **DATE:** 11-10

**ADDITIONAL INSTRUCTIONS OR COMMENTS**

**START TRIP (DATE & TIME)** **FINISH TRIP (DATE & TIME)**



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

185 INDUSTRIAL ROAD  
WRENTHAM, MA 02093  
TEL 508-366-6151 FAX 508-366-6088

339 CHAMBERLAIN HWY.  
MERIDEN, CT 06461  
TEL 203-630-8472 FAX 203-630-2530

WORK ORDER #  
**002578**

<b>BILL TO:</b>	<b>JOB #</b> TOM759	<b>ORIGIN</b>	<b>DESTINATION</b>
CDD REMEDIATION SERVICES 200 HORIZON CENTER BLVD TRENTON, NJ 08650 (609) 598-8355	NAVAL EDUCATION TRAINING 98 DEFENSE HIGHWAY MIDDLETOWN, RI	TURNKEY LANDFILL 90 ROCHESTER NECK ROAD ROCHESTER, NH 02867	
<b>EMERGENCY RESPONSE TEL #</b>	<b>PICKUP DATE &amp; TIME</b>		<b>PURCHASE ORDER #</b>
002978	11/13		206884
<b>EMERGENCY RESPONSE TEL #</b>	<b>EMERGENCY RESPONSE TEL #</b>	<b>EMERGENCY RESPONSE TEL #</b>	<b>EMERGENCY RESPONSE TEL #</b>

QTY	TYPE	MM	DESCRIPTION OF ARTICLES	QUANTITY	REMARKS	AMOUNT
1	CM		PVC and wood debris	30	✓	
AB 11/13 1900200 150.00						

### EQUIPMENT CERTIFICATION

CUSTOMER VERIFIES THAT: TANKER # \_\_\_\_\_ TRAILER # \_\_\_\_\_ ROLL-OFF CONTAINER # \_\_\_\_\_  
 CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.

DRIVER'S SIG. \_\_\_\_\_ DATE: \_\_\_\_\_ CUSTOMER'S SIG. \_\_\_\_\_ DATE: \_\_\_\_\_

EVENT	DATE	TIME	EXPLANATION OF UNLOADING TIME
ARRIVE AT SHIPPER	11-13	7:45 AM	arrival and load on #158 on trailer
START LOADING		8:15	
FINISH LOADING		8:25	
LEAVE SITE		8:30	

SHIPMENT RECEIVED IN APPARENT GOOD ORDER (CONTENTS AND CONDITION OF CONTENTS UNKNOWN) SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING CLASSIFICATIONS AND TARIFFS LAWFULLY ON FILE ON THE DATE OF SHIPMENT

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION

DRIVER: Bob King DATE: 11-13-95 SHIPPER: Jenkins DATE: 11-13-95

DELIVERY	DATE	TIME	EXPLANATION OF UNLOADING TIME
ARRIVE AT SITE			
BEGIN UNLOADING			
FINISH UNLOADING			
LEAVE SITE			

DRIVER: \_\_\_\_\_ DATE: \_\_\_\_\_ RECEIVER: \_\_\_\_\_ DATE: \_\_\_\_\_

ADDITIONAL INSTRUCTIONS OR COMMENTS: Must deliver at Turnkey before 3PM.

START TRIP (DATE & TIME) \_\_\_\_\_ FINISH TRIP (DATE & TIME) \_\_\_\_\_



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

188 INDUSTRIAL ROAD  
WRENTHAM, MA 02093  
TEL 508-384-6181 FAX 508-384-6089

330 CHAMBERLAIN HWY.  
MERRIDEN, CT 06457  
TEL 203-430-9472 FAX 203-430-2930

WORK ORDER #

**003219**

<b>CLIENT:</b>	<b>JOB #:</b> TOM1753	<b>ORIGIN:</b>	<b>DESTINATION:</b>
ENVIRONMENTAL SERVICES	NAUPAC CONTRACTS-NEWTC	TURNKEY CANDELL	
200 HORIZON CENTER BLVD	ONE SIMON PETRI DRIVE	90 ROCHESTER NECK ROAD	
TRENTON, NJ 08650	NEWPORT, RI 02841-1712	ROCHESTER, NH 022987	
(609) 588-5355			

<b>EMERGENCY RESPONSE TEL #</b>	800-535-5059	<b>FACILITY NAME</b>	Turnkey
NAME / DOCUMENT NUMBER	REV. DATE & TIME	<b>OFFICE NUMBER</b>	
003219	11/17	<b>PURCHASE ORDER #</b>	

QUANTITY	TYPE	MM	DESCRIPTION OF ARTICLES	QUANTITY	PER UNIT	AMOUNT
			DROP MTY R/U # 173			
			P/U #			
1 ea			PPE and debris	30	4	

**EQUIPMENT CERTIFICATION**

CUSTOMER VERIFIED THAT: TANKER # \_\_\_\_\_ TRAILER # \_\_\_\_\_ ROLL-OFF CONTAINER # 173 WILLBER 256

IS CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.

DRIVER'S SIG: [Signature] DATE: 11/17/95 CUSTOMER'S SIG: [Signature] DATE: 11/17/95

ARRIVE AT SHIPPER	11/17	10:30 AM	173
START LOADING			
FINISH LOADING			
LEAVE SITE	11/17	11:50 AM	

SHIPMENT RECEIVED IN APPARENT GOOD ORDER (CONTENTS AND CONDITION OF CONTENTS UNLOADING SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING CLASSIFICATIONS AND TARIFFS LAWFULLY ON FILE ON THE DATE OF SHIPMENT)

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION

DRIVER: [Signature] DATE: 11/17/95 SHIPPER: [Signature] DATE: 11/17/95

ARRIVE AT SITE			
BEGIN UNLOADING			
FINISH UNLOADING			
LEAVE SITE			

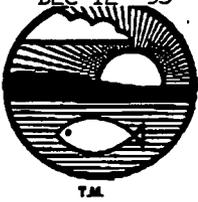
DRIVER: \_\_\_\_\_ DATE: \_\_\_\_\_ RECEIVER: \_\_\_\_\_ DATE: \_\_\_\_\_

**ADDITIONAL INSTRUCTIONS OR COMMENTS**

DELIVER EMPTY CONTAINERS WITH LINER.

TURNKEY APPROVAL CODE: 109533.

<b>START TRIP (DATE &amp; TIME)</b>	<b>FINISH TRIP (DATE &amp; TIME)</b>



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

185 INDUSTRIAL ROAD  
 WRENTHAM, MA 02093  
 TEL 508-384-6151 FAX 508-384-6028  
 TOHM759

329 CHAMBERLAIN HWY.  
 MERIDEN, CT 06481  
 TEL 203-630-2402 FAX 203-630-2530

WORK ORDER #  
**003540**

**BILL TO:** REMEDIATION SERVICES  
 200 HORIZON CENTER BLVD  
 TRENTON, NJ 08650  
 (609) 588-6655

**ORIGIN:** CONTRACTS-NETC  
 ONE SIMON PETRI DRIVE  
 NEWPORT, RI 02841-1712

**DESTINATION:** POTTERY LANDFILL  
 30 ROCHESTER NECK ROAD  
 ROCHESTER, NH 025867

900-535-5053

**EMERGENCY RESPONSE TEL #**  
 U.S. HAZARDOUS WASTE / DOCUMENT NUMBER

PICK-UP DATE & TIME PURCHASE ORDER #

FACILITY W/O # OFF LOAD DATE / TIME

# UNITS	TYPE	HM	DESCRIPTION OF ARTICLES	QUANTITY	PER UNIT	AMOUNT
			Franklin Environmental Services Corp. Rental Period: Begin <u>12-6-95</u> End <u>12-6-95</u> Payment Approval: _____ Rental Period: Begin _____ End _____ Location Rec'd: _____ Rec'd By: _____ Sup. No. _____ PO No. <u>201684</u> Date Rec'd: <u>12-6-95</u>			

Full  Partial Amount \$ 1778  
**EQUIPMENT CERTIFICATION**

CUSTOMER VERIFIES THAT: TANKER # \_\_\_\_\_ TRUCKER # \_\_\_\_\_ ROLL-OFF CONTAINER # 132 W/LINER? Y  
 IS CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.  
 DRIVER'S SIG. Philip P... DATE: 12/6 CUSTOMER'S SIG. [Signature] DATE: 12/6/95

PICK UP	DATE	TIME	EXPLANATION OF LOADING TIME
ARRIVE AT SHIPPER	<u>12/6</u>	<u>1130</u>	DROP M/T 132 ON SITE
START LOADING			REMOVE TARP ON CAN 173 +
FINISH LOADING			CUT AWAY LINER FROM BOWS, PICK -
LEAVE SITE			UP CAN

SHIPMENT RECEIVED IN APPARENT GOOD ORDER (CONTENTS AND CONDITION OF CONTENTS UNKNOWN) SUBJECT TO THE TERMS AND CONDITIONS OF THE UNIFORM STRAIGHT BILL OF LADING AND ANY GOVERNING CLASSIFICATIONS AND TARIFFS MANFULLY OR FILED ON THE DATE OF SHIPMENT

DRIVER: Philip P... DATE: 12/6 SHIPPER: [Signature] DATE: 12/6/95

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION

DELIVERY	DATE	TIME	EXPLANATION OF UNLOADING TIME
ARRIVE AT SITE			
BEGIN UNLOADING			
FINISH UNLOADING			
LEAVE SITE			

DRIVER: \_\_\_\_\_ DATE: \_\_\_\_\_ RECEIVER: \_\_\_\_\_ DATE: \_\_\_\_\_

ADDITIONAL INSTRUCTIONS OR COMMENTS

START TRIP (DATE & TIME) 12/6 FINISH TRIP (DATE & TIME) 12/6

AS  
 12/6/95  
 190020000  
 512



# FRANKLIN ENVIRONMENTAL SERVICES, INC.

185 INDUSTRIAL ROAD  
WRENTHAM, MA 02093  
TEL 508-384-0151 FAX 508-384-0228

379 CHAMBERLAIN HWY.  
MERIDEN, CT 06451  
TEL 203-630-8472 FAX 203-630-2830

WORK ORDER #  
**003639**

<b>BILL TO:</b>	<b>JOB #</b>	<b>ORIGIN</b>	<b>DESTINATION</b>
500 INDUSTRIAL DRIVE WRENTHAM, MA 02093		NEWPORT, RI 02881	
<b>EMERGENCY RESPONSE TEL #</b>	<b>MANIFEST / DOCUMENT NUMBER</b>	<b>PICKUP DATE &amp; TIME</b>	<b>PURCHASE ORDER #</b>
002639			
		<b>FACILITY W/O #</b>	<b>OFF LOAD DATE / TIME</b>

# UNITS	TYPE	HM	DESCRIPTION OF ARTICLES	QTY	REMARKS	PER UNIT	AMOUNT
1			2/0 debris				
			DROP MTY # 173		PO No: 20584		
			PIV OAW # 132		Rec'd By: Newport Tank Farm		
			10AVE LINER		Location Rec'd: Newport Tank Farm		
					Partial Period: Begin		
					End		
					Payment Approval		
					<input type="checkbox"/> Partial Amount \$		16298

## EQUIPMENT CERTIFICATION

CUSTOMER VERIFIES THAT: TANKER # \_\_\_\_\_ TRAILER # \_\_\_\_\_ ROLL-OFF CONTAINER # \_\_\_\_\_ W/LINER 1  
IS CLEAN AND SUITABLE FOR THE TRANSPORTATION, STORAGE OR SERVICE TO BE PROVIDED.  
DRIVER'S SIG. \_\_\_\_\_ DATE: \_\_\_\_\_ CUSTOMER'S SIG. *Christopher J. Sylwia* DATE: 12/7/95

PICKUP	DATE	TIME	EXPLANATION OF LOADING TIME
ARRIVE AT SHIPPER	12/7/95	1:45	Rotary can # 132 Imp can # 173 PV can 132
START LOADING			
FINISH LOADING			
LEAVE SITE		2:15 PM	

THIS IS TO CERTIFY THAT THE ABOVE NAMED MATERIALS ARE PROPERLY CLASSIFIED, DESCRIBED, PACKAGED, MARKED AND LABELED AND ARE IN PROPER CONDITION FOR TRANSPORTATION ACCORDING TO THE APPLICABLE REGULATIONS OF THE DEPARTMENT OF TRANSPORTATION GOVERNING CLASSIFICATIONS AND TARIFFS LAWFULLY ON FILE ON THE DATE OF SHIPMENT.

DRIVER: *E. Harper* DATE: 12/7/95 SHIPPER: *Christopher J. Sylwia* DATE: 12/7/95

DELIVERY	DATE	TIME	EXPLANATION OF UNLOADING TIME
ARRIVE AT SITE			
BEGIN UNLOADING			
FINISH UNLOADING			
LEAVE SITE			

DRIVER: \_\_\_\_\_ DATE: \_\_\_\_\_ RECEIVER: \_\_\_\_\_ DATE: \_\_\_\_\_

ADDITIONAL INSTRUCTIONS OR COMMENTS

START TRIP (DATE & TIME) \_\_\_\_\_ FINISH TRIP (DATE & TIME) \_\_\_\_\_

**APPENDIX F**  
**STRUCTURAL INSPECTION**

STONE & WEBSTER ENGINEERING CORPORATION  
245 SUMMER STREET  
BOSTON, MA

J.O. No. 04657.31:04

TRIP REPORT  
TANK CONTENT REMOVAL  
TANK FARM #4 NETC, NEWPORT, RHODE ISLAND  
CONTRACT N62472-94-C-0808

Trip to Tank No. 42 - Tank Farm No. 4  
NETC, Newport, Rhode Island  
November 28, 1995

Present for:

Stone & Webster Engineering  
Corporation (SWEC)

Peter M. Veneto, P.E.

PURPOSE

The purpose of this trip was to inspect the interior concrete of Tank No. 42.

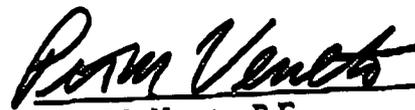
DISCUSSION

Tank No. 42 is a buried, cylindrical, reinforced concrete oil storage tank, approximately 116 ft in diameter, and 35 ft high. The concrete roof is supported internally by 32 reinforced concrete columns. The tank was built around 1942.

The interior of the tank had been cleaned of most of the oil residue, so that a large portion of the interior concrete surface was exposed to view. Several minor (< 1/8 in. wide) random cracks were visible in the concrete floor. Also visible were very intermittent parallel hairline cracks running circumferentially around the tank wall, up to approximately 8 ft above the floor. These cracks are not considered significant and do not require sealing. Additionally, very minor pitting, probably formed during construction, was observed in the walls and columns.

All of the cracks in the floor were inspected more closely, and were determined to be of minor structural significance. It could not be determined definitively from this inspection if these cracks had leaked at any time, since the groundwater was being lowered to below the floor elevation. However, it did appear from this closer observation that these cracks are of little concern and need not be sealed.

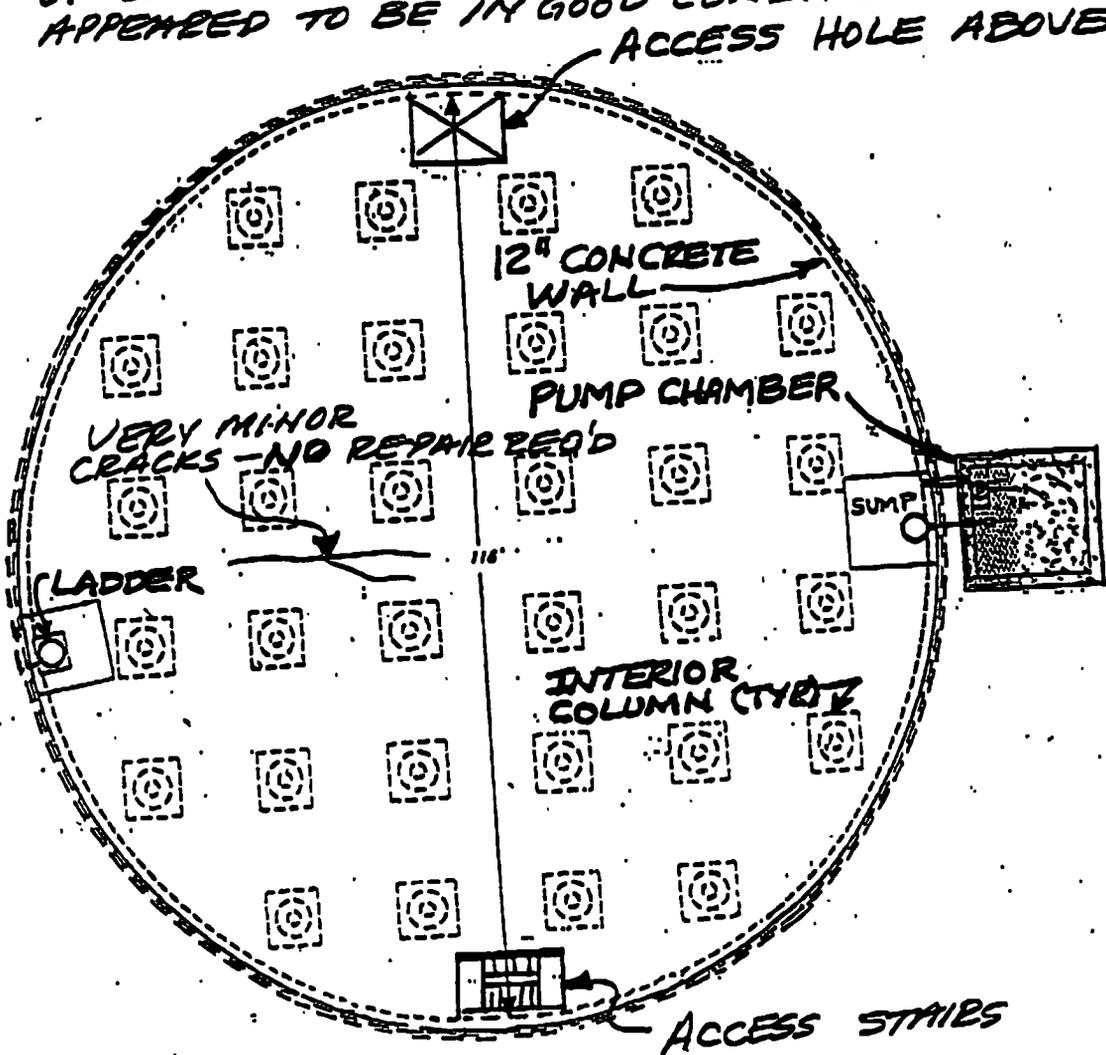
From observation of the large portion of the tank that had been cleaned, the concrete is in good condition with no major structural distress apparent.



Peter M. Veneto, P.E.

TRIP REPORT  
TANK CONTENT REMOVAL  
TANK FARM #4 NETC, NEWPORT, RHODE ISLAND  
CONTRACT N62472-94-C-0808

NOTE: TANK STILL CONTAINED SOME OIL RESIDUE ON THE WALL AND FLOOR WHICH OBSCURED VISIBILITY OF SOME AREAS, HOWEVER, THE TANK GENERALLY APPEARED TO BE IN GOOD CONDITION.



FLOOR: VERY MINOR CRACKS IN SOME AREAS, NO REPAIRS ARE REQUIRED.  
COLUMNS: VERY MINOR SPALLS IN SOME COLUMNS, NO REPAIRS REQ'D.  
WALL: VERY MINOR SPALLS AND CIRCUMFERENTIAL CRACKS IN SOME AREAS, NO REPAIRS REQ'D

FLOOR PLAN  
TANK # 42  
11/28/95

**APPENDIX G**  
**BORING LOGS**

BORING LOG

(BORING NO. TF4-B-42 = WELL NO TF4-MW-123)

NUS CORPORATION

PROJECT: C10-143 LOCATION: USI-42 DRILLED BY: TESTY TAKEN BORING: B-42-42  
 DATE STARTED: 11-15-94 INCLINATION: VERTICAL LOGGED BY: TRACY I. [unclear] GROUND ELEV.: 88.9 M.W. [unclear]  
 TIME COMPLETED: 11-16-94 BEARING: \_\_\_\_\_ CHECKED BY: \_\_\_\_\_ TOTAL DEPTH: 39'

ELEV feet	DEPTH feet	SAMPLE				REMARKS ON ADVANCE OF BORING	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
		TYPE- NO.	BLOWS PER 6"	PEN. in.	REC. in.			
								0026 - NO SAMPLES TAKEN
	26	S-1	23, 23 14, 10	24	14	0815	★ NO DI	2628 SILTY (SANDY, GRAVEL) (GM) MOSTLY ANGULAR GRAVEL ~ 1.5" DIAM. FEW FINE F. SAND. FEW SILT. BROWN NO ODOR, OR STAINING DRY.
	26	S-2	18, 8 26, 15	24	12	0820	DJ	2830 SIMILAR TO ABOVE - (GM) DRY - GRAVEL = ROCK FRAGS UP TO 2" DIAM. = ROCK WAFERS.
	38	S-3	16, 15 16, 13	24	15	0840	DJ	3032 SIMILAR TO ABOVE. (GM) MOSTLY ANGULAR GRAVEL ~ 2" DIAM. = ROCK WAFERS FEW F. SAND. FEW SILT. GREY. NO ODOR OR STAINING. DRY, BUT MOIST IN LAST 2"
	32	S-4	8, 50 60, 15	24	10	0850	★ NO DI	3234 SILTY, SANDY (GRAVEL) (GM) MOSTLY GRAVEL - ANGULAR UP TO 2" DIAM. TRACE F. SAND. TRACE SILT. BROWN. SATURATED. IGNORES ROCK IN NOSE = SUBRUND ~ 2" Ø

LEGEND:  
 YPE-NO - Type of sample  
 RC - Rock core sample  
 SC - Split barrel sample  
 BLOWS PER 6" - 40 lb hammer  
 "falling 30" to drive  
 "split barrel sampler"  
 "oring time per foot of rock"  
 PEN - Penetration length of sampler  
 REC - Length of sample recovered  
 Z - Natural ground water table

NOTES. START BORING @ 1420.  
 SHUT DOWN @ 1515 - 11-15 @ 15'  
 START @ 11-16 - @ 0725.

DON CAMERON ON SITE ~ 0845 DATE: 11/16/94 PROJECT NO.: \_\_\_\_\_  
 PAGE: \_\_\_\_\_ OF \_\_\_\_\_ BORING NO.: \_\_\_\_\_

BORING LOG (BORING NO. TF4-B-42 = WELL NO. TF4-MW-123)

NUS CORPORATION

PROJECT: CTO-743 LOCATION: UST-42 DRILLED BY: A. CARON BORING NO.: B-42  
 DATE STARTED: 11-15-94 INCLINATION: VERT. LOGGED BY: T. DORRAN GROUND ELEV.: 88.9 MLW  
 COMPLETED: 11-16-94 BEARING: --- CHECKED BY: --- TOTAL DEPTH: 39'

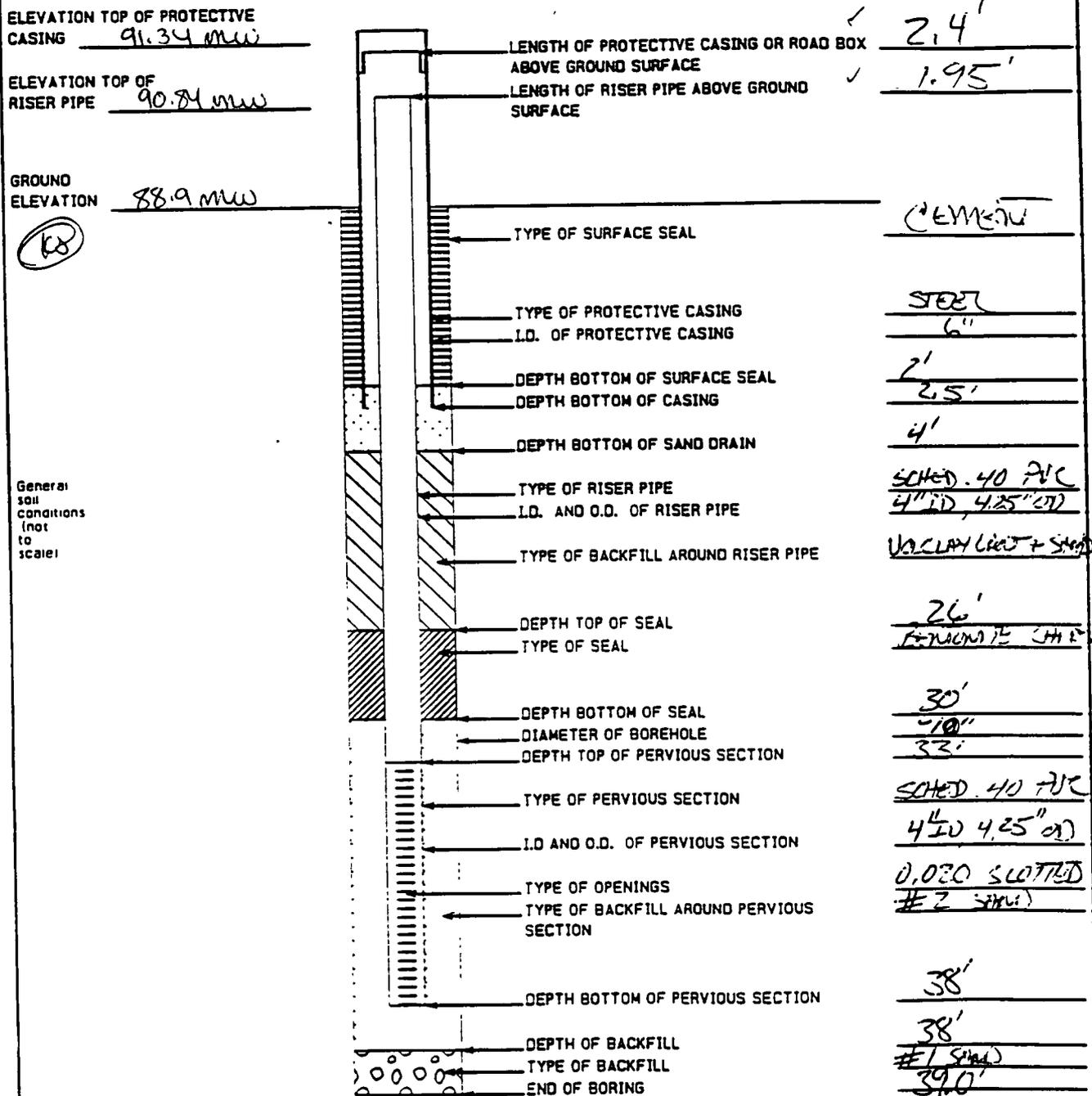
ELEV. feet	DEPTH feet	SAMPLE				REMARKS ON ADVANCE OF BORING	GRAPHIC LOG	SOIL AND ROCK DESCRIPTIONS
		TYPE-NO.	BLOWS PER 6"	PEN. in.	REC. in.			
	34.55	23, 25 19, 13	24	7	0910	DS	3436 MOSTLY FINE TO COARSE GRAINED SAND TRACE SILT. 3 PIECES OF FEW QUARTZITE WHICH CAN BE FITTED TOGETHER INTO N 3.5" ROUNDED CORNER-CORNER. DARK GREEN. ANGULAR FACIES. ARE FRESH, NOT WEATHERED. NO STRAWS	
	36.56	16, 14 23, 21	24	15	0918	DS	3638 SIMILAR TO ABOVE. FREE-PHASE OIL, SATURATED THROUGHOUT WHOLE SAMPLE.	
	38.5-7	97, 120/3	9"	9"	0925	DS	3838 38.9' 7A-1" SIMILAR TO ABOVE. - OIL FREE-PHASE 7B-2" TAN WEATHERED ROCK 7C-1" ORANGE OXIDIZED WEATHERED ROCK 7D-5" LIGHT GREY SOFT WEATHERED ROCK. ROCK IS DISSIMILAR TO DARK GREY SLATES + SHISTS THAT HAVE BEEN PREDOMINANT AT SITE. DIFFICULT TO I.D. DUE TO POOR CONDITION. VERY WEATHERED + INCOMPACT. EOS @ 39' - ALL REF.	

END:  
 S-NO - Type of sample  
 - Rock core sample  
 S - Soft barrel sample  
 BLOWS PER 6" - 140 lb. hammer falling 30" to drive a soft barrel sampler; coring time per foot of rock  
 PEN - Penetration length of sampler  
 REC - Length of sample recovered  
 ? - natural ground water table

NOTES: B-42 = MW-123.

DATE \_\_\_\_\_ PROJECT NO.: \_\_\_\_\_  
 PAGE \_\_\_\_\_ OF \_\_\_\_\_ BORING NO.: \_\_\_\_\_

PROJECT: CTD-143 - UST RI PAGE: 1 OF 1  
 PROJECT LOCATION: NETC - NONPACT WASTE RISE TANK FILM 4145  
 CLIENT: US NAVY WELL BORING NO.: MW-123  
 CONTRACTOR: Edi Drilling, Inc. Driller: A.J. (Azer) BORING LOCATION: UST-42 (TF4-B-42)  
 LOGGED BY: Riley D. Brown DATE: 11-16-94 PROJECT NO.: 0288  
 CHECKED BY: \_\_\_\_\_ DATE: \_\_\_\_\_



**APPENDIX H**

**SOIL AND GROUNDWATER ANALYTICAL RESULTS**

CASE NO CTO143

CEIMIC CORPORATION

TCL SOIL VOLATILE ORGANICS (ug/Kg)

TANK 42  
↓

STATION ID  
LABORATORY ID.

SOTF438DUP    SOTF4B383234    SOTF4B423234    SOTF4B423638    SOTF4B453234  
940996-22    940996-21    940996-23    940996-24    940996-25  
FIELD DUPLICATE PAIR

ANALYTE	CRQL	MDL/IDL	SOTF438DUP 940996-22	SOTF4B383234 940996-21	SOTF4B423234 940996-23	SOTF4B423638 940996-24	SOTF4B453234 940996-25
Chloromethane	10	2	12 U	60 U	11 U	57 U	59 U
Bromomethane	10	2	12 U	60 U	11 U	57 U	59 U
Vinyl Chloride	10	2	12 U	60 U	11 U	57 U	59 U
Chloroethane	10	2	12 U	60 U	11 U	57 U	59 U
Methylene Chloride	10	2	12 U	60 U	11 U	57 U	59 U
Acetone	10	2	21 U	60 UJ	11 U	57 U	59 U
Carbon Disulfide	10	2	12 U	60 U	11 U	57 U	59 U
1,1-Dichloroethene	10	2	12 U	60 U	11 U	57 U	59 U
1,1-Dichloroethane	10	2	12 U	60 U	11 U	57 U	59 U
1,2-Dichloroethene (total)	10	2	12 U	60 U	11 U	57 U	59 U
Chloroform	10	2	12 U	60 U	11 U	57 U	59 U
1,2-Dichloroethane	10	2	12 U	60 U	11 U	57 U	59 U
2-Butanone	10	2	12 UJ	12 J	11 U	57 U	59 U
1,1,1-Trichloroethane	10	2	12 U	60 U	11 U	57 U	59 U
Carbon Tetrachloride	10	2	12 U	60 U	11 U	57 U	59 U
Bromodichloromethane	10	2	12 U	60 U	11 U	57 U	59 U
1,2-Dichloropropane	10	2	12 U	60 U	11 U	57 U	59 U
cis-1,3-Dichloropropene	10	2	12 U	60 U	11 U	57 U	59 U
Trichloroethene	10	2	12 U	60 U	11 U	57 U	59 U
Dibromochloromethane	10	2	12 U	60 U	11 U	57 U	59 U
1,1,2-Trichloroethane	10	2	12 U	60 U	11 U	57 U	59 U
Benzene	10	2	12 U	60 U	11 U	57 U	59 U
trans-1,3-Dichloropropene	10	2	12 U	60 U	11 U	57 U	59 U
Bromoform	10	2	12 U	60 U	11 U	57 U	59 U
4-Methyl-2-Pentanone	10	2	12 U	60 U	11 U	57 U	59 U
2-Hexanone	10	2	12 U	60 U	11 U	57 U	59 U
Tetrachloroethene	10	2	12 U	60 U	11 U	57 U	59 U
1,1,2,2-Tetrachloroethane	10	2	12 U	60 U	11 U	57 U	59 U
Toluene	10	2	12 U	60 U	11 U	57 U	59 U
Chlorobenzene	10	2	12 U	60 U	11 U	57 U	59 U
Ethylbenzene	10	2	12 U	60 U	11 U	57 U	59 U
Styrene	10	2	12 U	60 U	11 U	57 U	59 U
Xylene (total)	10	2	12 U	60 U	11 U	57 U	59 U
DILUTION FACTOR			1	5	1	5	5
% SOLIDS			86	84	90	87	85

CASE NO CTO143

CEIMIC CORPORATION

TCL SOIL SEMI-VOLATILE ORGANICS (ug/kg)

STATION ID.  
LABORATORY ID.

SOTF438DUP    SOTF4B383234    SOTF4B423234    SOTF4B423638    SOTF4B453234  
940996-22    940996-21    940996-23    940996-24    940996-25  
FIELD DUPLICATE PAIR

TANK 42  
↓

TANK 42  
↓

ANALYTE	CRQL	MDL/IDL	SOTF438DUP 940996-22	SOTF4B383234 940996-21	SOTF4B423234 940996-23	SOTF4B423638 940996-24	SOTF4B453234 940996-25
ACENAPHTHENE	300	30	380 U	390 U	370 U	1900 U	390 U
2,4-DINITROPHENOL	800	80	930 U	940 U	910 U	4600 U	950 U
4-NITROPHENOL	800	80	930 U	940 U	910 U	4600 U	950 U
DIBENZOFURAN	300	30	380 U	390 U	370 U	1900 U	390 U
2,4-DINITROTOLUENE	300	30	380 U	390 U	370 U	1900 U	390 U
DIETHYL PHTHALATE	300	30	380 U	390 U	370 U	1900 U	390 U
4-CHLOROPHENYL-PHENYL ETHER	300	30	380 U	40 J	370 U	1900 U	52 J
FLUORENE	300	30	380 UJ	40 J	370 U	1900 U	52 J
4-NITROANILINE	800	80	930 U	940 U	910 U	4600 U	950 U
4,6-DINITRO-2-METHYLPHENOL	800	80	930 U	940 U	910 U	4600 U	950 U
N-NITROSODIPHENYLAMINE	300	30	380 U	390 U	370 U	1900 U	390 U
4-BROMOPHENYL-PHENYL ETHER	300	30	380 U	390 U	370 U	1900 U	390 U
HEXACHLOROBENZENE	300	30	380 U	390 U	370 U	1900 U	390 U
PENTACHLOROPHENOL	800	80	930 U	940 U	910 U	4600 U	950 U
PHENANTHRENE	300	30	380 U	390 U	370 U	1900 U	130 J
ANTHRACENE	300	30	380 U	390 U	370 U	1900 U	390 U
DI-n-BUTYLPHTHALATE	300	30	380 U	390 U	370 U	1900 U	390 U
FLUORANTHENE	300	30	380 U	390 U	370 U	1900 U	390 U
CARBAZOLE	300	30	380 U	390 U	370 U	1900 U	390 U
PYRENE	300	30	380 U	390 U	370 U	440 J	59 J
BUTYLBENZYLPHTHALATE	300	30	380 U	390 U	370 U	1900 U	390 U
3,3'-DICHLOROBENZIDINE	300	30	380 U	390 U	370 U	1900 U	390 U
BENZO(a)ANTHRACENE	300	30	380 U	390 U	370 U	1900 U	390 U
CHRYSENE	300	30	380 U	390 U	93 J	1900 U	830
BIS(2-ETHYLHEXYL)PHTHALATE	300	30	380 U	390 U	370 U	1900 U	390 U
DI-n-OCTYLPHTHALATE	300	30	380 U	390 U	370 U	1900 U	390 U
BENZO(b)FLUORANTHENE	300	30	380 U	390 U	370 U	1900 U	390 U
BENZO(k)FLUORANTHENE	300	30	380 U	390 U	370 U	1900 U	390 U
BENZO(a)PYRENE	300	30	380 U	390 U	370 U	1900 U	390 U
INDENO(1,2,3-cd)PYRENE	300	30	380 U	390 U	370 U	1900 U	390 U
DIBENZO(a,h)ANTHRACENE	300	30	380 U	390 U	370 U	1900 U	390 U
BENZO(g,h,i)PERYLENE	300	30	380 U	390 U	370 U	1900 U	390 U
DILUTION FACTOR			1	1	1	5	1
% SOLIDS			86	85	88	87	83

CASE NO CTO143

CEIMIC CORPORATION

TCL SOIL SEMI-VOLATILE ORGANICS (ug/kg)

STATION ID.  
LABORATORY ID.

SOTF438DUP SOTF4B383234 SOTF4B423234 SOTF4B423638 SOTF4B453234  
940996-22 940996-21 940996-23 940996-24 940996-25  
FIELD DUPLICATE PAIR

TANK 42  
↓

TANK 42  
↓

ANALYTE	CRQL	MDL/DL	SOTF438DUP 940996-22	SOTF4B383234 940996-21	SOTF4B423234 940996-23	SOTF4B423638 940996-24	SOTF4B453234 940996-25
PHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
BIS(2-CHLOROETHYL)ETHER	300	30	380 U	390 U	370 U	1900 U	390 U
2-CHLOROPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
1,3-DICHLOROBENZENE	300	30	380 U	390 U	370 U	1900 U	390 U
1,4-DICHLOROBENZENE	300	30	380 U	390 U	370 U	1900 U	390 U
1,2-DICHLOROBENZENE	300	30	380 U	390 U	370 U	1900 U	390 U
2-METHYLPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
2,2'-OXYBIS(1-CHLOROPROPANE)	300	30	380 U	390 U	370 U	1900 U	390 U
4-METHYLPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
N-NITROSO-DI-n-PROPYLAMINE	300	30	380 U	390 U	370 U	1900 U	390 U
HEXACHLOROETHANE	300	30	380 U	390 U	370 U	1900 U	390 U
NITROBENZENE	300	30	380 U	390 U	370 U	1900 U	390 U
ISOPHORONE	300	30	380 U	390 U	370 U	1900 U	390 U
2-NITROPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
2,4-DIMETHYLPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
BIS(2-CHLOROETHOXY)METHANE	300	30	380 U	390 U	370 U	1900 U	390 U
2,4-DICHLOROPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
1,2,4-TRICHLOROBENZENE	300	30	380 U	390 U	370 U	1900 U	390 U
NAPHTHALENE	300	30	380 U	390 U	370 U	1900 U	390 U
4-CHLOROANILINE	300	30	380 U	390 U	370 U	1900 U	390 U
HEXACHLOROBUTADIENE	300	30	380 U	390 U	370 U	1900 U	390 U
4-CHLORO-3-METHYLPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
2-METHYLNAPHTHALENE	300	30	380 U	390 U	370 U	1900 U	390 U
HEXACHLOROCYCLOPENTADIENE	300	30	380 U	390 U	370 U	1900 U	390 U
2,4,6-TRICHLOROPHENOL	300	30	380 U	390 U	370 U	1900 U	390 U
2,4,5-TRICHLOROPHENOL	800	80	930 U	940 U	910 U	4600 U	950 U
2-CHLORONAPHTHALENE	300	30	380 U	390 U	370 U	1900 U	390 U
2-NITROANILINE	800	80	930 U	940 U	910 U	4600 U	950 U
DIMETHYLPHTHALATE	300	30	380 U	390 U	370 U	1900 U	390 U
ACENAPHTHYLENE	300	30	380 U	390 U	370 U	1900 U	390 U
2,6-DINITROTOLUENE	300	30	380 U	390 U	370 U	1900 U	390 U
3-NITROANILINE	800	80	930 U	940 U	910 U	4600 U	950 U

CASE NO CTO143

CEIMIC CORPORATION  
TOTAL  
RCRA SOIL METALS (mg/Kg)

STATION ID.  
LABORATORY ID

SOTF438DUP      SOTF4B383234      SOTF4B423234      SOTF4B423638      SOTF4B453234  
941996-22      941996-21      941996-23      941996-24      941996-25  
FIELD DUPLICATE PAIR

TANK 42  
↓

TANK 42  
↓

ANALYTE	CRDL	IDL	SOTF438DUP 941996-22	SOTF4B383234 941996-21	SOTF4B423234 941996-23	SOTF4B423638 941996-24	SOTF4B453234 941996-25
ARSENIC	1	02	149	178	315	114	90
BARIUM	20	03	93	123	60	64	144
CADMIUM	05	04	28	31	47	28	18
CHROMIUM	1	07	89	89	159	160	110
LEAD	03	01	89	72	106	66	80
MERCURY	01	005	009 UJ	009 UJ	008 UJ	008 UJ	009 UJ
SELENIUM	05	02	015 U	019 U	019 U	019 U	018 U
SILVER	1	04	12 U	17 U	28 U	17 U	065 UJ
% SOLIDS			85.1	84.7	84.3	82.9	82





CASE NO CTO143

CEIMIC CORPORATION

TCL AQUEOUS VOLATILE ORGANICS (ug/L)

TANK 42  
↓

STATION ID.  
LABORATORY ID

GWTF4MW123    GWTF4MW124    GWTF4MW125    GWTF4TB1    GWTF5MW100  
941038-11    941038-03    941038-12    941038-04    941038-14

ANALYTE	CRQL	MDL/IDL						
Chloromethane	10	2	10 U					
Bromomethane	10	2	10 U					
Vinyl Chloride	10	2	10 U					
Chloroethane	10	2	10 U					
Methylene Chloride	10	2	10 U					
Acetone	10	2	10 U	16 U	50 U	10 U	10 U	10 U
Carbon Disulfide	10	2	10 U					
1,1-Dichloroethene	10	2	10 U					
1,1-Dichloroethane	10	2	10 U					
1,2-Dichloroethene (total)	10	2	10 U					
Chloroform	10	2	10 U					
1,2-Dichloroethane	10	2	10 U					
2-Butanone	10	2	10 U					
1,1,1-Trichloroethane	10	2	10 U					
Carbon Tetrachloride	10	2	10 U					
Bromodichloromethane	10	2	10 U					
1,2-Dichloropropane	10	2	10 U					
cis-1,3-Dichloropropene	10	2	10 U					
Trichloroethene	10	2	10 U					
Dibromochloromethane	10	2	10 U					
1,1,2-Trichloroethane	10	2	10 U					
Benzene	10	2	10 U					
trans-1,3-Dichloropropene	10	2	10 U					
Bromoform	10	2	10 U					
4-Methyl-2-Pentanone	10	2	10 U					
2-Hexanone	10	2	10 U					
Tetrachloroethene	10	2	10 U					
1,1,2,2-Tetrachloroethane	10	2	10 U	10 U	1 J	10 U	10 U	10 U
Toluene	10	2	10 U					
Chlorobenzene	10	2	10 U					
Ethylbenzene	10	2	10 U					
Styrene	10	2	10 U					
Xylene (total)	10	2	10 U					
DILUTION FACTOR			1	1	1	1	1	1

CASE NO CTO143

CEIMIC CORPORATION

TCL AQUEOUS SEMI-VOLATILE ORGANICS (ug/L)

TANK 42  
↓

STATION ID:  
LABORATORY ID

GW-TF4-MW123 941038-11    GW-TF4-MW124 941038-03    GW-TF4-MW125 941038-12    GW-TF5-MW100 941038-14    GW-TF5-MW101 941038-05

ANALYTE	CRQL	MDL/IDL	GW-TF4-MW123	GW-TF4-MW124	GW-TF4-MW125	GW-TF5-MW100	GW-TF5-MW101
ACENAPHTHENE	10	1	10 U	10 U	200 U	10 U	10 U
2,4-DINITROPHENOL	25	25	25 U	25 U	500 U	25 U	25 U
4-NITROPHENOL	25	25	25 U	25 U	500 U	25 U	25 U
DIBENZOFURAN	10	1	10 U	10 U	200 U	10 U	10 U
2,4-DINITROTOLUENE	10	1	10 U	10 U	200 U	10 U	10 U
DIETHYL PHTHALATE	10	1	10 U	10 U	200 U	10 U	10 U
4-CHLOROPHENYL-PHENYL ETHER	10	1	10 U	10 U	200 U	10 U	10 U
FLUORENE	10	1	10 U	10 U	20 J	10 U	10 U
4-NITROANILINE	25	25	25 U	25 U	500 U	25 U	25 U
4,6-DINITRO-2-METHYLPHENOL	25	25	25 U	25 U	500 U	25 U	25 U
N-NITROSODIPHENYLAMINE	10	1	10 U	10 U	200 U	10 U	10 U
4-BROMOPHENYL-PHENYL ETHER	10	1	10 U	10 U	200 U	10 U	10 U
HEXACHLOROBENZENE	10	1	10 U	10 U	200 U	10 U	10 U
PENTACHLOROPHENOL	25	25	25 U	25 U	500 U	25 U	25 U
PHENANTHRENE	10	1	10 U	10 U	48 J	10 U	10 U
ANTHRACENE	10	1	10 U	10 U	200 U	10 U	10 U
DI-n-BUTYLPHTHALATE	10	1	10 U	10 U	200 U	10 U	10 U
FLUORANTHENE	10	1	10 U	10 U	200 U	10 U	10 U
CARBAZOLE	10	1	10 U	10 U	200 U	10 U	10 U
PYRENE	10	1	10 U	10 U	28 J	10 U	10 U
BUTYLBENZYLPHTHALATE	10	1	10 U	10 U	200 U	10 U	10 U
3,3'-DICHLOROBENZIDINE	10	1	10 U	10 U	200 U	10 U	10 U
BENZO(a)ANTHRACENE	10	1	10 U	10 U	200 U	10 U	10 U
CHRYSENE	10	1	10 U	10 U	23 J	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10	1	10 U	10 U	200 U	10 U	10 U
DI-n-OCTYLPHTHALATE	10	1	10 U	10 U	200 U	10 U	10 U
BENZO(b)FLUORANTHENE	10	1	10 U	10 U	200 U	10 U	10 U
BENZO(k)FLUORANTHENE	10	1	10 U	10 U	200 U	10 U	10 U
BENZO(a)PYRENE	10	1	10 U	10 U	200 U	10 U	10 U
INDENO(1,2,3-cd)PYRENE	10	1	10 U	10 U	200 U	10 U	10 U
DIBENZO(a,h)ANTHRACENE	10	1	10 U	10 U	200 U	10 U	10 U
BENZO(g,h,i)PERYLENE	10	1	10 U	10 U	200 U	10 U	10 U
DILUTION FACTOR			1	1	20	1	1

CASE NO CTO143

CEIMIC CORPORATION

TCL AQUEOUS SEMI-VOLATILE ORGANICS (ug/L)

TANK 42  
↓

STATION ID.  
LABORATORY ID.

GW-TF4-MW123 941038-11  
GW-TF4-MW124 941038-03  
GW-TF4-MW125 941038-12  
GW-TF5-MW100 941038-14  
GW-TF5-MW101 941038-05

ANALYTE	CRQL	MDL/IDL	GW-TF4-MW123 941038-11	GW-TF4-MW124 941038-03	GW-TF4-MW125 941038-12	GW-TF5-MW100 941038-14	GW-TF5-MW101 941038-05
PHENOL	10	1	10 U	10 U	200 U	10 U	10 U
BIS(2-CHLOROETHYL)ETHER	10	1	10 U	10 U	200 U	10 U	10 U
2-CHLOROPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
1,3-DICHLOROBENZENE	10	1	10 U	10 U	200 U	10 U	10 U
1,4-DICHLOROBENZENE	10	1	10 U	10 U	200 U	10 U	10 U
1,2-DICHLOROBENZENE	10	1	10 U	10 U	200 U	10 U	10 U
2-METHYLPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
2,2'-OXYBIS(1-CHLOROPROPANE)	10	1	10 U	10 U	200 U	10 U	10 U
4-METHYLPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
N-NITROSO-DI-n-PROPYLAMINE	10	1	10 U	10 U	200 U	10 U	10 U
HEXACHLOROETHANE	10	1	10 U	10 U	200 U	10 U	10 U
NITROBENZENE	10	1	10 U	10 U	200 U	10 U	10 U
ISOPHORONE	10	1	10 U	10 U	200 U	10 U	10 U
2-NITROPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
2,4-DIMETHYLPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
BIS(2-CHLOROETHOXY)METHANE	10	1	10 U	10 U	200 U	10 U	10 U
2,4-DICHLOROPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
1,2,4-TRICHLOROBENZENE	10	1	10 U	10 U	200 U	10 U	10 U
NAPHTHALENE	10	1	10 U	10 U	200 U	10 U	10 U
4-CHLOROANILINE	10	1	10 U	10 U	200 U	10 U	10 U
HEXACHLOROBUTADIENE	10	1	10 U	10 U	200 U	10 U	10 U
4-CHLORO-3-METHYLPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
2-METHYLNAPHTHALENE	10	1	10 U	10 U	200 U	10 U	10 U
HEXACHLOROCYCLOPENTADIENE	10	1	10 U	10 U	200 U	10 U	10 U
2,4,6-TRICHLOROPHENOL	10	1	10 U	10 U	200 U	10 U	10 U
2,4,5-TRICHLOROPHENOL	25	25	25 U	25 U	500 U	25 U	25 U
2-CHLORONAPHTHALENE	10	1	10 U	10 U	200 U	10 U	10 U
2-NITROANILINE	25	25	25 U	25 U	500 U	25 U	25 U
DIMETHYLPHTHALATE	10	1	10 U	10 U	200 U	10 U	10 U
ACENAPHTHYLENE	10	1	10 U	10 U	200 U	10 U	10 U
2,6-DINITROTOLUENE	10	1	10 U	10 U	200 U	10 U	10 U
3-NITROANILINE	25	25	25 U	25 U	500 U	25 U	25 U

CASE NO CTO143

CEIMIC CORPORATION  
TOTAL  
RCRA AQUEOUS METALS (ug/L)

TANK 42  
↓

STATION ID  
LABORATORY ID.

GW-TF4-DUP1    GW-TF4-MW119    GW-TF4-MW120    GW-TF4-MW121    GW-TF4-MW122    GW-TF4-MW123  
941038-08      941038-09      941038-01      941038-02      941038-10      941038-11  
FIELD DUPLICATE PAIR

ANALYTE	CRDL	IDL							
ARSENIC	10	2	59 U	75 U	24 UJ	126	656	330	
BARIUM	200	1	164 U	208 U	113 U	514	1530	379 U	
CADMIUM	5	3	30 U	30 U	30 U	30 U	30 U	30 U	
CHROMIUM	10	5	50 U	50 U	50 U	52	496	258	
LEAD	3	1	29 U	52 U	10 U	118	722	160	
MERCURY	02	01	0.13 UJ	0.42 J	0.13 UJ	0.14 UJ	0.52 J	0.13 UJ	
SELENIUM	5	2	20 U	20 U	20 U	20 U	20 U	20 U	
SILVER	10	4	40 U	40 U	40 U	40 U	290	40 U	

**APPENDIX I**  
**CHAIN-OF-CUSTODY FORMS**

**CHAIN OF CUSTODY**  
Original Chain of Custody goes to Laboratory

Proj. #		Project name		Sample Matrix	Number of containers	Analyses				Remarks
Samplers (Please print)						UOC	TPH	SVOC	Metals	
DATE	Time	Comp. Grab.	Sample Identification							
GD143 Fallburton NW Crp										
Gary Glenn Kayleen Jankut TRAC JRG										
11/16/94	1222	G	SO-TF4-B-37-3234	Soil	2	1	1	1	1	
11/16/94	1236		SO-TF4-B-37-3436		2	1	1	1	1	
11/17/94	1120		SO-TF4-B-38-2628		2	1	1	1	1	
11/17/94	1151		SO-TF4-B-38-3234		4	1	1	1	1	
11/16/94	1236		SO-TF4-B-37-DUP		2	1	1	1	1	
11/16/94	0850		SO-TF4-B-42-3234		4	1	1	1	1	
11/16/94	0918		SO-TF4-B-42-3638		4	1	1	1	1	
11/15/94	0943		SO-TF4-B-45-3234		4	1	1	1	1	
11/15/94	1005		SO-TF4-B-45-3436		2	1	1	1	1	
11/15/94	1005		SO-TF4-B-45-DUP		2	1	1	1	1	
11/16/94	1502		SO-TF4-B-RB2	water	4	2	0	1	1	
Relinquished by (Signature)		Date/Time	Received by (Signature)		Date/Time	Remarks:				
Gary Glenn		11/18/94 1635	Paul B. Glenn		11/18/94 1635					
Relinquished by (Signature)		Date/Time	Received by (Signature)		Date/Time					
Relinquished by (Signature)		Date/Time	Received by (Signature)		Date/Time					