

**EXHIBIT C-9**

**RTN 3-0015149, Powerplant**

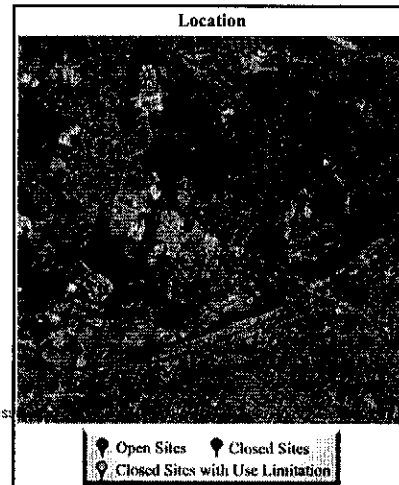
Site Information			
Site Number:	3-0015149	Category:	72 HR
Site Name:	POWERPLANT	Release Type:	RAO
Address:	200 TRAPELO RD	Current date:	7/11/1997
Town:	WALTHAM	Phase:	
Zipcode:		RAO class:	
Official notification date:	5/30/1997	Location type:	STATE
Initial status date:	5/30/1998	Source:	UST

Response Action Information	
Response Action Type:	RAO - Response Action Outcome - RAO
Status:	RAORCD - RAO Statement Received
Submittal Date:	7/11/1997
RAO class:	B1
Activity & Use Limitation:	NONE
Response Action Information	
Response Action Type:	IRA - Immediate Response Action
Status:	ASSESS - IRA Assessment Only
Submittal Date:	5/30/1997
RAO class:	
Activity & Use Limitation:	
Response Action Information	
Response Action Type:	REL - Potential Release or Threat of Release
Status:	REPORT - Reportable Release or Threat of Release
Submittal Date:	5/30/1997
RAO class:	
Activity & Use Limitation:	

Chemicals		
Chemical	Amount	Units
GASOLINE	250	PPMV

LSPs	
LSP#	Name
9092	O'BRIEN, JAMES B
N/A	O'BRIEN, JAMES D

RAO Detail			
Class	Method	GW Category	Soil Category
B1	1	2	1
B1	1	2	1



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Response Action Outcome (RAO) Statement  
Massachusetts Department of Mental Retardation  
Walter E. Fernald School B-1  
1,000 Gallon Gasoline Underground Storage Tank  
200 Trapelo Road  
Waltham, Massachusetts NA-C  
RTN# 3-15149  
VERTEX Project No. 0405

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**VERTEX**

Prepared for:

Massachusetts Department of  
Environmental Protection,  
Northeast Regional Office  
10 Commerce Way  
Woburn, MA 01801

June 30, 1997

**VERTEX**<sup>SM</sup>  
**Engineering Services, Inc.**

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June 30, 1997

Massachusetts Department of Environmental Protection,  
Northeast Regional Office  
10 Commerce Way  
Woburn, MA 01801

RE: Response Action Outcome (RAO) Statement  
Massachusetts Department of Mental Retardation  
Walter E. Fernald School  
1,000 Gallon Gasoline Underground Storage Tank  
200 Trapelo Road  
Waltham, Massachusetts  
RTN# 3-15149  
VERTEX Project No. 0405

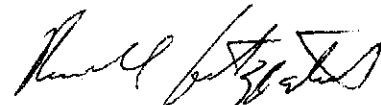
To whom it may concern:

VERTEX Engineering Services, Inc. (VERTEX) has been retained by the Massachusetts Department of Mental Retardation to conduct Licensed Site Professional Services at the above referenced site. This document serves as a Response Action Outcome Statement and is submitted to the Department pursuant to 310 CMR 40.1000 as supporting documentation for a Class B-1 RAO. In addition, please find the Response Action Outcome (RAO) Statement (BWSC-104) Transmittal Form.

Please do not hesitate to contact the undersigned should you have any questions or comments. Thank you.

Sincerely,

VERTEX Engineering Services, Inc.



Russell Fitzpatrick  
Senior Project Manager



James B. O'Brien, L.S.P.  
President

cc: Mr. George Atamian, P.E.  
Massachusetts Department of  
Mental Retardation

## **RESPONSE ACTION OUTCOME (RAO) STATEMENT**

Massachusetts Department of Mental Retardation

Walter E. Fernald School

200 Trapelo Road

Waltham, Massachusetts

RTN# 3-15149

VERTEX Project No. 0405

### **1.0 INTRODUCTION**

This Class B-1 Response Action Outcome (RAO) Statement has been prepared by Vertex Engineering Services, Inc. (VERTEX) to document a condition of "No Significant Risk" which has been achieved at a release site (DEP RTN#3-15149), at a property referenced as the Walter E. Fernald School at 200 Trapelo Road, Waltham, Massachusetts (site). This RAO is being submitted to the Massachusetts Department of Environmental Protection (MADEP) as required by the Massachusetts Contingency Plan (MCP) in response to the above referenced release.

On May 29, 1997, Vertex Engineering Services, Inc. (VERTEX), under contract with the Massachusetts Department of Mental Retardation (MDMR) observed the removal of a 1,000 gallon Underground Storage Tank (UST). The UST was historically used to store gasoline which supplied a generator within the adjacent power plant building. The actual removal was conducted by Keystone Environmental Services, Inc of 77 Accord Park Drive, Norwell, Massachusetts (Keystone).

The release at the site was originally reported to the Massachusetts Department of Environmental Protection (MADEP) on May 30, 1997 due to a photoionization detector (PID) reading of 250 parts per million (ppm) during headspace analysis of soil from the bottom of the excavation. This situation required notification to the MADEP within seventy two hours pursuant to the Massachusetts Contingency Plan 310 CMR 40.0313 (2).

Discrete soil samples were obtained from each side wall and from the bottom of the excavation. A composite soil sample was homogenized and collected. This composite and three discrete samples (two from the side walls and one from the bottom of the excavation), were submitted to Woods Hole Laboratories for Analysis of Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene and Xylenes (BTEX) and Methyl- tert Butyl Ether (MTBE). Results from these analysis are discussed later in this report.

In accordance with the MCP, a Risk Characterization has been performed which documents that a condition of "No Significant Risk" has been achieved at the site. This RAO documents site activities, investigations, analytical results and the Method 1 Risk characterization as required by 310 CMR 40.1056. Specifically, this RAO includes the following sections:

- 1.0 Introduction
- 2.0 RAO Category
- 3.0 General Disposal Site Information
- 4.0 Environmental Remediation Activities
- 5.0 Risk Characterization
- 6.0 Feasibility of Restoration To Background
- 7.0 Conclusions
- 8.0 Qualifications

## **2.0 RESPONSE ACTION OUTCOME (RAO) CATEGORY**

The category of this RAO was determined in accordance with 310 CMR 40.1036. Class B-1 is appropriate to this site for the following reasons:

- 1) Assessment actions indicate that a level of no significant risk exists pursuant to 310 CMR 40.0900.
- 2) Remedial actions are not necessary and have not been conducted.
- 3) No Activity and Use Limitations are required to maintain a level of No Significant Risk..

### **3.0 GENERAL DISPOSAL SITE INFORMATION**

The site is located on the campus of the Walter E. Fernald School in Waltham Massachusetts. Specifically, this area occurs between Chapel Street and a building known as the "power plant"; this building is used to supply power to the rest of the Fernald School's on-campus buildings. The former 1,000 gallon gasoline tank was covered by a concrete slab and approximately three feet of soil. Lithology around the former tank mainly consisted of brown, medium to fine sand with cobbles and some boulders. The excavation is bordered to the north and east by the power plant building which is constructed of brick and concrete. A separate RTN # 3-13467, has been assigned to a release of # 6 fuel oil at the power plant building.

According to Maurice O'Connell of Massachusetts Department of Mental Retardation (MDMR), the tank was bordered to the west by a high pressure steam pipe which is located under an existing concrete slab. This pipe is active and services the power plant building. The southern side of the excavation is adjacent to the east/west access road which serves as the rear entrance for the campus. The road is paved with three inches of asphalt over six inches of concrete. The location of the site is shown on the Boston North, Massachusetts USGS Topographic Quadrangle, dated 1985. Please refer to Figure 1 ( Site Locus Map).

In general, the site slopes to the south toward Waverly Oaks Road and the nearby wetland area. The site and surrounding properties are serviced by municipal water. The site is not located within a Current or Potential Drinking Water Source Area or within a Potentially Productive Aquifer.

This RAO addresses RTN #3-15149, which applies to a release site comprised of the former UST, the location of which is shown on Figure-2 (Site Schematic).



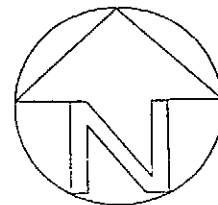


USGS Topographic Map, 1985

Boston North, Quadrangle

Contour Interval: 10 feet

1/2 mi. **Graphic Scale** 1 mi.



# **SITE LOCUS MAP**

Walter E. Fernald School  
200 Trapelo Road  
Waltham, MA

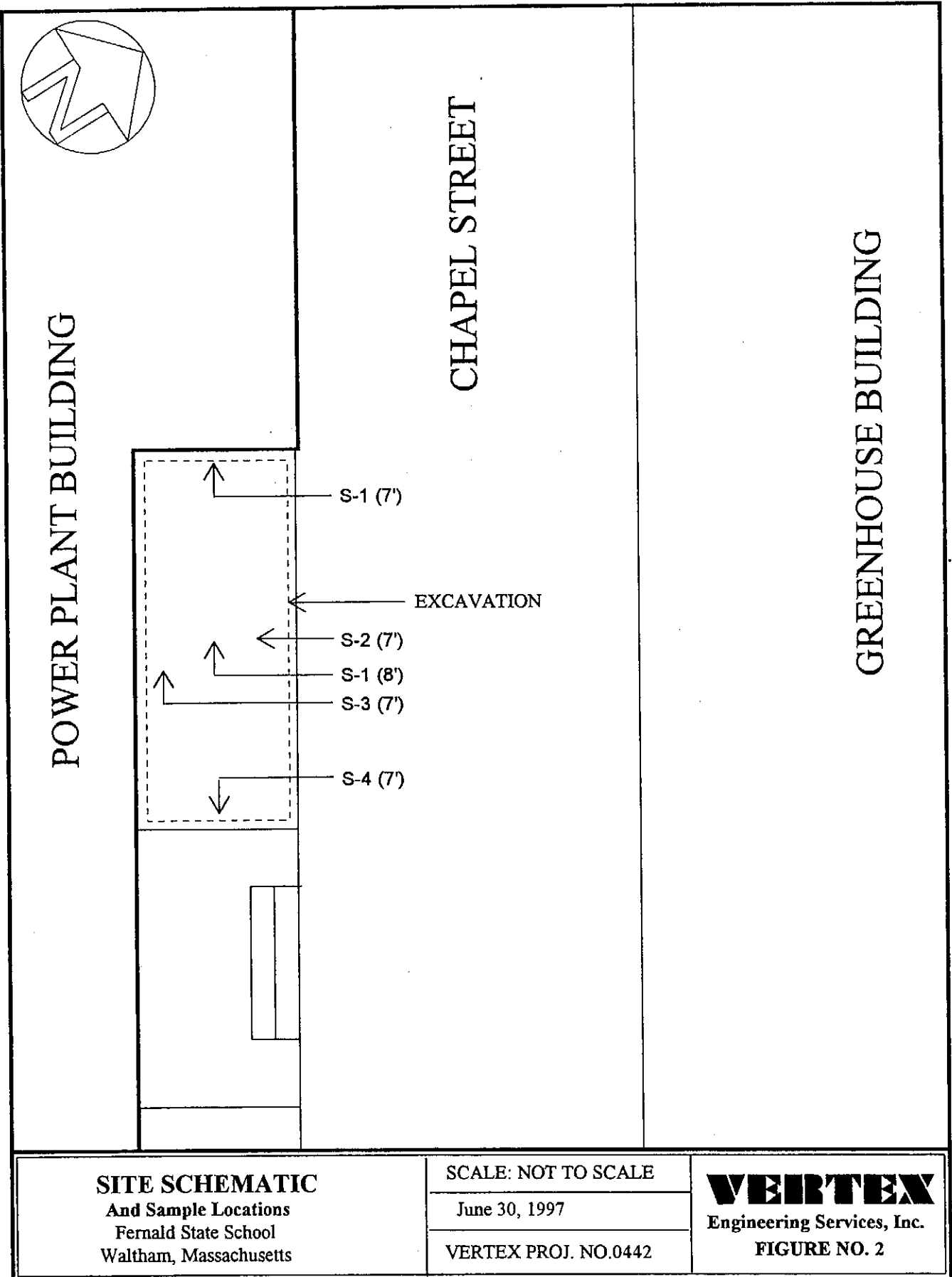
SCALE: AS SHOWN

June 27, 1997

VERTEX Proj. No. 0405

**VERTEX**

FIGURE NO. 1



#### 4.0 ENVIRONMENTAL REMEDIATION ACTIVITIES

VERTEX, under contract with the MDMR to perform Licensed Site Professional (LSP) Services, observed the removal of a 1,000 gallon Underground Storage Tank (UST) adjacent to the power plant at the Walter E. Fernald School in Waltham, Massachusetts. The UST was historically used to store gasoline which supplied a generator within the adjacent power plant building. Removal activities were conducted by Keystone Environmental Services, Inc of 77 Accord Park Drive, Norwell, Massachusetts (Keystone).

Prior to the removal of the UST, A permit for the removal of the tank was obtained by Keystone from the Town of Waltham Fire Department a copies of this permit is attached in Appendix B.

On May 20, 1997 the UST was pumped of residual usable product (estimated 50-gallons). The contractor transported the usable product off-site for future use. Removal activities commenced on May 29, 1997. VERTEX was on site at 8:00 a.m. to assess site conditions prior to commencing removal actions of the 1,000 gallon UST. Keystone began uncovering the UST at 8:30 a.m., first breaking through the concrete slab above it and then removing approximately three feet of overlying soil. During removal, soil was continuously screened for Total Organic Vapors (TOVs) which revealed no evidence of contamination.

The tank was observed to be bordered to the south and west by the power plant building which is constructed of brick. According to Maurice O'Connell of MDMR, the tank was bordered to the east by a high pressure steam pipe which is located under an existing concrete slab. This pipe is active and services the power plant building. The northern side of the tank was adjacent to the east/west access road (Chapel Street) which serves as the rear entrance for the campus. The road is paved with three inches of asphalt over six inches of concrete. Utility manholes were also observed and believed to access the power plant building directly underneath the UST.

The UST was slightly lifted to tilt the tank to one side as to aid in the flushing and pumping of any residual product not removed during the previous pumping event. Approximately thirty-five (35) gallons of water and fuel was pumped directly into a 55-gallon DOT drum, which was transported by Zecco Inc. of Northboro Massachusetts to offsite disposal. A uniform hazardous waste manifest documenting the removal and disposal of the drum is attached in Appendix B.

The tank was then monitored for explosive vapors and oxygen content. It was determined that the atmosphere within the tank exceeded 10% of the Lower Explosive Limit (LEL) for gasoline (as defined by OSHA). Therefore, the tank was then vented until the gasoline vapor concentration was lowered to below 10% of the LEL. Dry ice was then poured into the tank to further reduce the risk of explosion during removal activities.

The Waltham Fire Department was contacted prior to removing the UST in accordance with 527 Code of Massachusetts Regulations (CMR) 9.00. A Waltham Fire Prevention Officer witnessed the removal of the UST at approximately 12:00 p.m. Visual inspection of the steel tank revealed that it was slightly

weathered with no apparent areas of significant corrosion or holes. The fill, vent, and feed/return lines were disconnected from the UST which did not contain any residual product. Soil in the vicinity of these lines was visually inspected and field screened utilizing a PID for signs of contamination. Oil absorbent pads were utilized as a precaution to prevent possible leakage from the disconnected pipes.

The tank excavation measured approximately 12 feet long by 7 feet wide and 8 feet deep. Soil lithology around the former tank mainly consisted of brown, medium to fine sand with cobbles and some boulders. Visual and olfactory inspection of soils along the sidewalls of the excavation did not reveal evidence of gasoline contamination. However, soil from the bottom of the excavation did have an odor of gasoline. In addition, groundwater was not encountered within the excavation.

Discrete soil samples were collected from the side walls and from the bottom of the tank excavation and field screened with a PID (see Figure 2.0 – Site Sampling Location Schematic). Field screening of the side-wall soil samples revealed concentrations of TOV's ( below 10 ppm ). However, TOV's from the soil from the bottom of the excavation were detected at 250 ppm. At the request of MDMR, VERTEX notified the MADEP of the release within the allowed 72 hours of obtaining knowledge of said release as required by 310 CMR 40.000, and obtained verbal approval for the Immediate Response Action (IRA) of assessment of the nature and extent of the release. Soil removal from the bottom of the excavation was prohibited due to the close proximity to the underground utilities. The excavation was lined with polyethylene and backfilled with clean soil.

The tank was photographed and transported off-site for disposal at James G. Grant Co., Inc., a licensed tank yard. A copy of the tank disposal receipt is attached in Appendix B. In addition, please refer to Appendix A: Color Photographic Documentation.

One composite soil sample collected in laboratory supplied sample container was generated from the five soil samples from the tank excavation. This composite sample and all 5 discrete samples were placed on ice in a cooler, and hand delivered to Woods Hole Group (a Massachusetts Certified Laboratory; Formerly Inchcape Testing). All samples were analyzed for BTEX and MTBE. Sample S-1 and the composite sample were additionally analyzed for Total Petroleum Hydrocarbons (TPH) according to EPA Method 8100 Modified. Groundwater was not encountered during excavation activities. Table 1 summarizes field screening and analytical results of the soil samples collected. The laboratory report and chain-of custody documentation are attached in Appendix C.

Table 1- Screening and Analytical Results				
Sample I.D.	Sample Location	TOV's (ppm)	TPH (mg/kg)	BTEX + MTBE (ppm)
S-1	Bottom of Excavation (8' below grade)	250	23.0	Benzene 0.012 U Toluene 0.006 J Ethylbenzene 0.012 U Xylene (Total) 0.046 MTBE 0.320
S-2	Side Wall Toward Street (7' below grade)	5	N/A	Benzene 0.005 U Toluene 0.005 U Ethylbenzene 0.005 U Xylene (Total) 0.005 U MTBE 0.005 U
S-3	Side Wall Toward Building (7' below grade)	ND	N/A	Benzene 0.005 U Toluene 0.005 U Ethylbenzene 0.005 U Xylene (Total) 0.005 U MTBE 0.005 U
S-4	Side Wall Up-Gradient (7' below grade)	7	N/A	Benzene 0.005 U Toluene 0.005 U Ethylbenzene 0.005 U Xylene (Total) 0.005 U MTBE 0.005 U
S-5	Side Wall Down Gradient (7' below grade)	2	N/A	Benzene 0.006 U Toluene 0.006 U Ethylbenzene 0.006 U Xylene (Total) 0.006 U MTBE 0.002 J
Composite	Composite Sample (Samples 1-5)	N/A	28.0	Benzene 0.006 U Toluene 0.006 U Ethylbenzene 0.006 U Xylene (Total) 0.001 J MTBE 0.006 U

Notes:

ND = Not Detected Above Detection Limit

N/A= Not Applicable

PPM = Parts Per Million

PPB = Parts Per Billion

U = Analyzed but not found

J = Estimated value, below quantitation limit

## **5.0 RISK CHARACTERIZATION**

This section discusses the characterization of risk posed by the release of gasoline at the site. This characterization has been conducted in accordance with the procedures outlined in 310 CMR 40.0900 of the Massachusetts Contingency Plan (MCP), to demonstrate that a condition of No Significant Risk has been achieved at the site. This risk characterization involves discussions of the following:

- Hazard Identification;
- Exposure Assessment;
- Identification of Soil and Groundwater Categories;
- Selection of Method to Characterize Risk; and
- Characterization of Risk.

### **5.1 Hazard Identification**

As discussed previously, the site is an institutional campus with an identified soil release of gasoline at a depth of approximately eight feet, the gasoline impact is limited to the soil. Confirmatory samples were collected from the excavation to evaluate the extent of gasoline contamination in the soil. Results of the final confirmatory samples with the highest detectable concentrations are shown on Table 1, Section 4.0.

### **5.2 Exposure Assessment**

This section discusses the receptors, site activities and uses, exposure points and exposure point concentrations to assess the exposure that a receptor might receive during contact with impacted media at the site.

#### **Identification of Receptors**

As the site is currently and has historically been used as an institutional property, and has a mixture of administration, educational and residential buildings, the use of the property in the foreseeable future is considered to remain the same. Potential human receptors are considered to be adult workers, clients and trespassers.

#### **Identification of Site Activities and Uses**

As the site is currently and has historically been used as an institutional property for the mentally retarded. The site is comprised of a mixture of administration, educational and residential buildings, the use of the property in the foreseeable future is considered to remain an educational institution.

As potable water is supplied to the site from municipal sources and no public wells have been identified within ½ mile of the site, use of site water for drinking or washing is not considered applicable to this assessment. Additionally, the site is not located in an area designated as a potentially productive aquifer.

#### Identification of Exposure Points

Exposure points are the points at which identified receptors would contact identified hazards during site activities/use. For this assessment, it is considered that the receptors could not come into contact with impacted soil due to its depth (8 feet). The tank grave has been backfilled with soil and it will have a concrete slab poured over it within the next two weeks. A wetland does occur to the southwest of the power plant building, which could be a potential environmental receptor. However, as indicated previously, groundwater was not encountered during the excavation of the tank and the impacted soil concentrations are not great enough to be considered a contamination source. Groundwater is not used for potable purposes and exposure to groundwater is not considered an exposure point for this assessment.

#### Identification of Exposure Pathways

Exposure pathways are the routes by which exposure to the receptors at exposure points could occur. For the purposes of this assessment, site receptors could not be exposed during normal activities at the site. If contact was in some way possible, the exposure pathways would be through dermal contact with soil, ingestion of soil, and inhalation of particulates. As indicated previously, groundwater is not used for potable purposes and completion of an exposure pathway to groundwater is not considered to occur at the site.

#### Identification of Exposure Point Concentrations

Exposure point concentrations are the concentration of chemicals that receptors could be exposed to during site activities. To determine an exposure point concentration as allowed under 310 CMR 40.0926(3) the highest concentrations of each chemical were considered. These concentrations are displayed on Table-1 Section 4.0. As indicated previously, there is no exposure pathway for groundwater to impact receptors. Therefore, a groundwater exposure point concentration is not applicable.

### **5.3 Identification of Soil and Groundwater Categories**

#### Soil Category

The site, receptor and exposure information previously discussed has been evaluated to determine the applicable soil category for the site. As on-site workers and clients are included as potential receptors at the site during normal site activities, the highest potential for exposure to soil has been selected as applicable to the site, for conservatism, and to demonstrate that an Activity Use

Limitation (AUL) is not necessary for the Site. As such, the S-1 category, as defined in 310 CMR 40.0933 (5) has been selected.

#### Groundwater Category

As potable water is supplied to the site from municipal sources and no public wells have been identified within ½ mile of the site, use of site water for drinking or washing is not considered applicable to this assessment. Additionally, the site is not located in an area designated as a potentially productive aquifer. For these reasons the groundwater at the site has been identified as category GW-2.

#### **5.4 Selection of Method to Characterize Risk**

A Method 1 Risk Characterization, as described in 310 CMR 40.0970, has been selected to characterize the risk of harm to health, public welfare and the environment at this site, based on the evaluation presented previously. Specifically, the Method 1 characterization is considered applicable to this disposal site for the following reasons:

- 1) Oil materials (OHM) have only been detected in soil.
- 2) All OHM detected at the site are listed in 310 CMR 40.0974 and 40.0975.
- 3) OHM present on-site are not known to bioaccumulate.



## 5.5 Characterization of Risk

A comparison of the exposure point concentrations to the applicable Method 1 soil (S-1) standards is presented below in Table-2.

Table 2- Screening and Analytical Results				
Sample ID.	Sample Location	TOV's (ppm)	TPH (mg/kg)	BTEX + MTBE (ppm)
S-1	Bottom of Excavation (8' below grade)	250	23.0	Benzene 0.012 U Toluene 0.006 I Ethylbenzene 0.012 U Xylene (Total) 0.046 MTBE 0.320
Composite	Composite Sample (Samples 1-5)	N/A	28.0	Benzene 0.006 U Toluene 0.006 U Ethylbenzene 0.006 U Xylene (Total) 0.001 I MTBE 0.006 U
Method 1 Risk Assessment S-1 SOIL & GW-2 Standard	N/A	N/A	500	Benzene 40.0 Toluene 500.0 Ethylbenzene 500.0 Xylene (Total) 500.0 MTBE 100.0

Analytical results of the samples collected from UST excavation and the composite of all five discrete soil samples do not indicate a significant impact of gasoline. All detectable concentrations are below the Method 1 Risk Assessment standards for S-1 Soil & GW-2. As indicated above, detections of TPH in Samples S-1 and the composite sample were 23.0 and 28.0 ppm respectively. These concentrations are well below the applicable Method 1 Risk Assessment Standard of 500 ppm. Also, the highest concentration for BTEX and MTBE constituents were found in Sample S-1, at 0.046 ppm (Total Xylenes) and 0.320 ppm (MTBE). As the above table shows, these concentration are also well below the applicable standard of 500 and 100 ppm respectively. Therefore, no further removal actions are warranted for the site. Based on this risk characterization the site does not pose a risk to public health, safety, welfare. A condition of No Significant Risk, pursuant to 31 CMR 40.0900 has been achieved at the site.

## **6.0 FEASIBILITY OF RESTORATION TO BACKGROUND**

The chemicals of concern at this site are Petroleum Hydrocarbons, BTEX and MTBE. These contaminants are not naturally occurring in soil and are constituents of gasoline. The sources of the contamination detected in soil at the site are no longer present. Therefore, further degradation of the groundwater or subsurface soil is not anticipated.

Additionally, no Exposure Point Concentration greater than the applicable MCP Method 1 Soil or Groundwater Standard exists at the site in the area of the former 1,000 gallon UST. Therefore, a condition of no significant risk of harm to health, public welfare and the environment exists.

## **7.0 CONCLUSIONS**

The following conclusions were made based upon the Method 1 Risk Characterization of site conditions at the subject site:

- 1) Current exposure point concentrations of TPH, BTEX and MTBE in site soil meet S-1 Soil & GW-2 soil standards.
- 2) The site does not pose a risk of harm to health, public welfare and the environment.
- 3) A condition of No Significant Risk as defined by 310 CMR 40.0973(7) exists at the site.
- 4) No Activity and Use Limitations are necessary for this site.

## 8.0 QUALIFICATIONS

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with customary principles and practices in the fields of environmental science and engineering. This warranty is in lieu of all other warranties either expressed or implied. VERTEX is not responsible for the independent conclusions, opinions or recommendations made by others based on the records review, site inspection, field exploration, and laboratory test data presented in this report.

It must be recognized that environmental investigations are inherently limited in the sense that conclusions are drawn and recommendations developed from information obtained from limited research and site investigation. All site subsurface conditions were not field investigated as part of this study and may differ from the conditions implied by the limited investigation. Additionally, the passage of time may result in a change in the environmental characteristics at this site and surrounding properties. This report does not warrant against future operations or conditions, nor does this warrant operations or conditions present of a type or at a location not investigated.

The conclusions presented in this report are professional opinions based solely upon visual observations and supplemental testing of soil and/or groundwater at the site. Our interpretation of the available historical information and documents reviewed, as described in this report, were also considered in the conclusions. VERTEX relied upon but did not attempt to independently verify the validity or accuracy of the findings and conclusions noted in the documentation reviewed.

This report is intended for the sole use of the Massachusetts Department of Mental Retardation (MDMR). The scope of services performed in execution of this investigation may not be appropriate to satisfy the needs of other users, and any use or re-use of this document or the findings, conclusions, or recommendations is at the risk of said user.

It should be noted that twenty percent (20%) of Response Action Outcome Statements and supporting documentation are audited by the Massachusetts Department of Environmental Protection ("the Department"). The Department may conduct Random Audits or Targeted Audits for up to five (5) years following the submission of an RAO Statement. Under certain circumstances, as provided in 310 CMR 40.1110(3), there are no time constraints for Targeted Audits.

Due to the inherent flexibility in interpreting the applicable regulations, the Audits are often subjective and dependent on the opinion of the auditor. As a result, the auditor could require additional assessment of the site and/or remedial action. Based on these considerations, VERTEX is not and will not be responsible for costs or other possible ramifications of additional work required by the Department. MDMR and any other parties with financial or other interests in the subject property are urged to consider these facts.

APPENDIX A  
PHOTOGRAPHIC DOCUMENTATION

Photo

1



Photo

2



**PHOTOGRAPHIC  
DOCUMENTATION**

Walter E. Fernald School  
200 Trapelo Road, Waltham MA

VERTEX PROJ. NO. 0405

June 30, 1997

**VERTEX**  
Engineering Services, Inc.

### Description of Photographs

1. Photograph 1 depicts 1000 gallon UST in place.
2. Photograph 2 depicts the 1000 gallon UST after removal.
3. Photograph 3 depicts the tank grave of the former 1000 gallon UST.
4. Photograph 4 depicts the area in where the UST was formally located.

Photo  
3

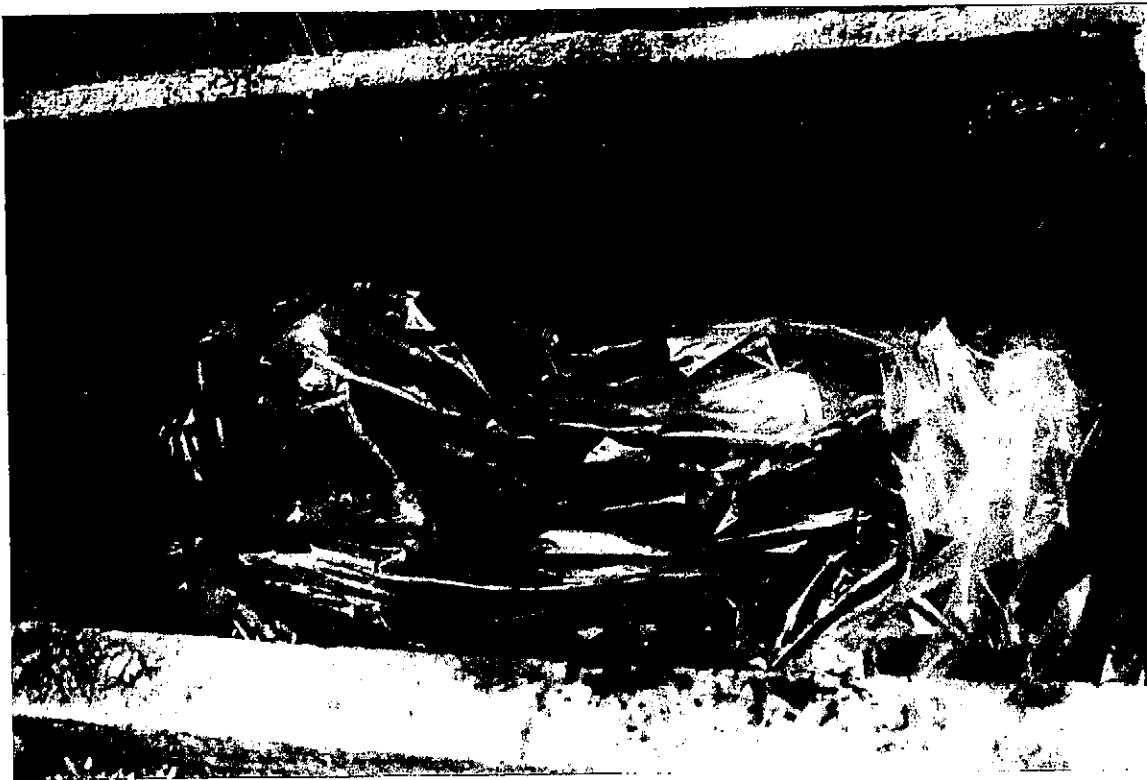


Photo  
4



**PHOTOGRAPHIC  
DOCUMENTATION**

Walter E. Fernald School  
200 Trapelo Road, Waltham MA

VERTEX PROJ. NO. 0405

June 30, 1997

**VERTEX**  
Engineering Services, Inc.

**APPENDIX B**  
**PERMITS, MANIFESTS AND RECIEPTS**



# APPLICATION and PERMIT

### Tank Owner

RECEIPT OF DISPOSAL OF UNDERGROUND STEEL STORAGE TANK

NAME AND ADDRESS JAMES G. GRANI CO. INC.

OF R: 28 WOLCOTT ST.

APPROVED TANK YARD REAYVILLE, MA 02137

APPROVED TANK YARD NO. #008

Tank Yard Ledger 502 CMR 3.03(4) Number: 9728786



I certify under penalty of law I have personally examined the underground steel storage tank delivered to this "approved tank yard" by firm, corporation or partnership Keystone Env. and accepted same in conformance with Massachusetts Fire Prevention Regulation 502 CMR 3.00 Provisions for Approving Underground Steel Storage Tank dismantling yards. A valid permit was issued by LOCAL Head of Fire Department FDID# 12308 to transport this tank to this yard.

Name and Official title of approved tank yard owner or owners authorized representative:

Edward V. [Signature] Manager 5-29-97  
SIGNATURE TITLE DATE SIGNED

This signed receipt of disposal must be returned to the local head of the fire department FDID# 12308 pursuant to 502 CMR 3.00. (EACH TANK MUST HAVE A RECEIPT OF DISPOSAL)

FORM F.P. 291 (rev. 11/95)

(OVER)

MASSACHUSETTS STATE FIRE MARSHAL'S OFFICE

Tank Data

Gallons 1000

Previous Contents Gas

Diameter \_\_\_\_\_ Length \_\_\_\_\_

Date Received 5-29-97

Serial # (if available) \_\_\_\_\_

Tank I.D. # (Form FP-290) \_\_\_\_\_

Tank Removed From:

200 Trapella Rd.  
(No. and Street)

Waltham  
(City or Town)

Fire Dept. Permit # 483

Owner/Operator to mail revised copy of Notification Form(FP-290, or Fp-290R) to: UST Compliance, Office of the State Fire Marshal, 1010 Commonwealth Avenue, Boston, Ma. 02215.





DEPARTMENT OF ENVIRONMENTAL PROTECTION  
DIVISION OF HAZARDOUS WASTE  
One Winter Street Boston, Massachusetts 02108

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		Generator's US EPA ID No. <b>MPG178943600</b>		Manifest Document No. <b>198049</b>		2. Page <b>1</b> of <b>1</b>		Information in the shaded areas is not required by Federal law.			
3. Generator's Name and Mailing Address <b>COMMONWEALTH of MASSACHUSETTS Dept of Mental Retardation 160 North Washington St Boston, MA 02114</b>						A. State Manifest Document Number <b>MA G 298049</b>					
4. Generator's Phone <b>(617) 727-5608</b>						B. State Gen. ID <b>205 Trach Rd Waltham</b>					
5. Transporter 1 Company Name <b>222 Century Mat Inc of RI</b>						C. State Trans. ID <b>10359 RT</b>					
7. Transporter 2 Company Name						D. Transporter's Phone <b>(617) 781-6340</b>					
9. Transporter 1 US EPA ID Number <b>RED 980906986</b>						E. State Trans. ID					
10. Facility Name and Site Address <b>NORTHLAND ENVIRONMENTAL INC 275 ALLENS AVE PROVIDENCE, RI 02905-5003</b>						F. Transporter's Phone					
10. US EPA ID Number <b>RED 04099352</b>						G. State Facility's ID <b>NOT REQUIRED</b>					
10. Facility's Phone <b>(617) 781-6340</b>						H. Facility's Phone					
11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number) <b>RG Waste Flammable Liquid, N.O.S. (Gasoline) 3 UN 1993 PG II</b>						12. Containers No. <b>004</b> Type <b>DM</b>		13. Total Quantity <b>XX220 G</b>		14. Unit <b>Doz</b>	
15. Additional Descriptions for Materials Listed Above (Include physical state and hazard code) <b>GASOLINE / WATER MIX</b>						K. Handling Codes for Wastes Listed Above					
15. Special Handling Instructions and Additional Information <b>IN CASE OF EMERGENCY, CALL Keynote Environmental @ 607-712-3990</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>Maurice O'Connell</b>						Signature <i>Maurice O'Connell</i>		Date <b>06 Dec 87</b>		Month Day Year	
17. Transporter 1 Acknowledgement of Receipt of Materials Printed/Typed Name <b>John Medeiros</b>						Signature <i>John Medeiros</i>		Date <b>06 Dec 87</b>		Month Day Year	
18. Transporter 2 Acknowledgement of Receipt of Materials Printed/Typed Name						Signature		Date		Month Day Year	
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 Month Day Year											

## Generator Waste Profile Form

**A. GENERAL INFORMATION**

GENERATOR NAME: Comm of Mass Dept of Mental Retardation

FACILITY ADDRESS: 160 No. Washington St Boston, MA 02114

GENERATOR CONTACT: James Ciardello TITLE: Operations Manager PHONE: 617 874-3600 x 2104

GENERATORS COMMON NAME FOR WASTE: WASTE GASOLINE AND WATER

PROCESS GENERATING WASTE: TANK CLEANING / BOTTOM PUMP OUTS

BILL TO: Keystone ENV. Svcs.

CUSTOMER CONTACT: Kevin J Peterson

CUSTOMER PHONE: (617) 792-3990

GENERATOR U.S. EPA ID#: RI011709436FF

**B. PHYSICAL CHARACTERISTICS OF WASTE**

VISCOSITY	COLOR	ODOR	PHYSICAL STATE @ 70°F		LAYERS
<input type="checkbox"/> HIGH <input type="checkbox"/> MED <input checked="" type="checkbox"/> LOW	<u>VARIES</u>	<input type="checkbox"/> NONE <input type="checkbox"/> MILD <input checked="" type="checkbox"/> STRONG DESCRIBE: <u>GAS</u>	<input type="checkbox"/> THICK VISCOUS LIQUID <input type="checkbox"/> LIQUID WITH NO SETTLED SOLIDS <input checked="" type="checkbox"/> LIQUID WITH LESS THAN 10% SETTLED SOLIDS <input type="checkbox"/> LIQUID WITH GREATER THAN 10% SETTLED SOLIDS	<input type="checkbox"/> SOLID WITHOUT FREE LIQUIDS <input type="checkbox"/> POWDER/DUST/ASH <input type="checkbox"/> SOIL	<input type="checkbox"/> MULTI-LAYERED <input checked="" type="checkbox"/> B-LAYERED <input type="checkbox"/> SINGLE PHASE <input type="checkbox"/> EMULSION
FREE LIQUIDS		SPECIFIC GRAVITY AT 70°F		FLASH POINT	pH
<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO VOLUME: <u>100</u> %		<input type="checkbox"/> < .8 <input type="checkbox"/> N/A <input checked="" type="checkbox"/> .8-1.0 <input type="checkbox"/> 1.3-1.6 <input type="checkbox"/> 1.0-1.3 <input type="checkbox"/> > 1.6		<input checked="" type="checkbox"/> < 70°F <input type="checkbox"/> 141-200°F <input type="checkbox"/> 70-100°F <input type="checkbox"/> > 200°F <input type="checkbox"/> 101-140°F <input type="checkbox"/> None	<input type="checkbox"/> 0-2 <input type="checkbox"/> N/A <input type="checkbox"/> 2.1-4 <input type="checkbox"/> 7.1-10 <input checked="" type="checkbox"/> 4.1-6.9 <u>5-10</u> <input type="checkbox"/> Neutral (7) <input type="checkbox"/> > 12.5

094-560-26

**C. COMPOSITION (INCLUDE INERT COMPONENTS, DEBRIS, ROCKS, PIPES)**  
(must total 100%)

<u>GASOLINE</u>	<u>&gt; 90</u> %
<u>WATER</u>	<u>&lt; 10</u> %

**H. METALS** ☒ TOTAL (PPM) ☐ TOXICITY CHARACTERISTIC LEACHING PROCEDURE (TCLP)

ARSENIC (As)	<u>&lt; 5.0</u>	SELENIUM (Se)	<u>&lt; 1.0</u>
BARIUM (Ba)	<u>&lt; 100</u>	SILVER (Ag)	<u>&lt; 5.0</u>
CADMIUM (Cd)	<u>&lt; 1.0</u>	COPPER (Cu)	<u>N/A</u>
CHROMIUM (Cr)	<u>&lt; 5.0</u>	NICKEL (Ni)	<u> </u>
CHROMIUM HEX (Cr + 6)	<u>&lt; 5.0</u>	ZINC (Zn)	<u> </u>
LEAD (Pb)	<u>&lt; 5.0</u>	TIN (Sn)	<u> </u>
MERCURY (Hg)	<u>&lt; 0.2</u>	OTHER	<u> </u>

**I. OTHER COMPONENTS**

	No	Yes	Total ppm		No	Yes	Total ppm
PCB's	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Chelators	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Cyanides	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Reactives	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Sulfides	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Oil & Grease	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Pesticides	<input checked="" type="checkbox"/>	<input type="checkbox"/>		Biological	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Phenolics	<input checked="" type="checkbox"/>	<input type="checkbox"/>		OSHA Carcinogens	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<u>CEASE</u>
Dioxins	<input checked="" type="checkbox"/>	<input type="checkbox"/>		F001-F005 Solvents	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

**D. DEPT. OF TRANSPORTATION SHIPPING INFORMATION**

D.O.T. HAZARDOUS MATERIAL: ☒ YES ☐ NO (GASOLINE)

D.O.T. SHIPPING NAME: WASTE FLAMMABLE LIQUIDS, GAS

D.O.T. HAZARD CLASS: 3 PG II

UNNA: 1993 REF: TABLE QUANTITY VALUE 10 lbs

**E. SHIPMENT METHOD**

☐ BULK LIQUID ☐ BULK SOLID ☒ DRUM (SIZE) 55 GALLON

☐ OTHER (SPECIFY)  

**F. ANTICIPATED VOLUME**

VARIES ☐ GALS ☐ DRUMS ☐ TONS

PER ☐ ONE TIME ☐ MONTH ☐ QUARTER ☐ YEAR

**J. SAMPLE STATUS**

☐ REPRESENTATIVE SAMPLE HAS BEEN SUPPLIED

NORTHLAND ENVIRONMENTAL, INC. HAS WAIVED THE SAMPLE REQUIREMENT FOR THE FOLLOWING REASON

☒ WASTE HAS BEEN PREVIOUSLY RECEIVED BY NORTHLAND ENVIRONMENTAL, INC.

**K. OTHER COMMENTS (FOR CUSTOMER'S USE)**

**L. FOR NORTHLAND ENVIRONMENTAL, INC.**

NET CODE: TLF

I hereby certify that all information submitted to this and all attached documents is complete and accurate to the best of my knowledge and that all known or suspected hazards have been disclosed including any Total Toxic Organics as outlined in the Federal Register. I also certify that the waste is not radioactive, pyrophoric, infectious, explosive or shock sensitive and certify that the sample submitted is representative of the waste stream described here.

Maurice O'Connell GENERATOR SIGNATURE Maurice O'Connell NAME (PRINT) 6/23/97 DATE

## SECTION IV. CALIFORNIA LIST WASTES

COLUMN 1:  
LINE ITEM  
EE MANIFESTCOLUMN 2:  
WASTE CODE / SUBCATEGORYCOLUMN 3:  
WASTEWATER/  
NON-WASTEWATERCOLUMN 4:  
HANDLING CODEHazardous waste containing one or more of the following  
California List constituents:☐ WW ☐ Non-WW

1 2 3 4 5 6

- ☐ ALL CALIFORNIA LIST CONSTITUENTS
- ☐ Liquids with nickel greater than or equal to 134 mg/l
- ☐ Liquids with thallium greater than or equal to 130 mg/l
- ☐ Liquids with PCB's greater than or equal to 50 ppm
- ☐ Waste containing HOC's greater than or equal to 1,000 mg/kg

## SECTION V. OTHER LISTED WASTES (F006-12, F019-F028, F037-38, F039, K-, U-, AND P-CODES)

COLUMN 1:  
LINE ITEM  
EE MANIFESTCOLUMN 2:  
WASTE CODE / SUBCATEGORYCOLUMN 3:  
WASTEWATER/  
NON-WASTEWATERCOLUMN 4:  
HANDLING CODE☐ WW ☐ Non-WW

3 4 5 6

☐ WW ☐ Non-WW

3 4 5 6

☐ WW ☐ Non-WW

3 4 5 6

☐ WW ☐ Non-WW

3 4 5 6

☐ WW ☐ Non-WW

3 4 5 6

CHECK HERE IF ADDITIONAL LISTED WASTE CODES ARE PRESENT. COMPLETE AND ATTACH LDR-I CONTINUATION SHEET.

CHECK HERE IF WASTE CODE F039 (MULTISOURCE LEACHATE) IS PRESENT. IDENTIFY F039 CONSTITUENTS BY COMPLETING SECTIONS II AND IV OF CHI FORM LDR-I ADDENDUM AND ATTACH COMPLETED ADDENDUM TO THIS FORM.

## SECTION VI. CONTACT NAME AND DATE

Print name: Maurice O'ConnellDate: 6/23/97Signature: Maurice O'Connell

## SECTION VII. TERMS/DEFINITIONS

CLASS I SDWA SYSTEM means a Class I deep well facility regulated under the Safe Drinking Water Act (SDWA).

CWA SYSTEM means a centralized wastewater treatment facility discharging under a Clean Water Act (CWA) permit. For example, a CWA facility would treat domestic or inorganic aqueous wastes and discharge the treated effluent to the local sewer system.

CWA-EQUIVALENT SYSTEM means a "zero discharge system" that engages in "CWA-equivalent" treatment before land disposal. Zero-discharge facilities for hazardous wastes using "CWA-equivalent" treatment methods, but do not discharge the treatment effluent to a sewer or water body (e.g., spray irrigation land application). "CWA-equivalent" treatment methods means biological treatment for organics, alkaline chlorination, or ferrous sulfate precipitation for cyanide, precipitation/sedimentation for metals, reduction of hexavalent chromium, or other treatment technology that can be demonstrated to perform equally or greater than these technologies.

HIGH TOC IGNITABLE LIQUIDS SUBCATEGORY means an ignitable liquid hazardous waste (waste code D001) which contains greater than or equal to 10% organic carbon (TOC). Pursuant to 40 CFR 268.40, such wastes must be treated using organic recovery (RORGs) or combustion (CMBST) technology.

WASTEWATERS are wastes that contain less than 1% by weight total organic carbon (TOC) and less than 1% by weight total suspended solids (TSS), with the following exceptions: (1) F001-F005 wastewaters are solvent-water mixtures that contain less than 1% by weight TOC or less than 1% by weight total F001-F001 constituents listed in the table "Treatment Standards for Hazardous Wastes" in Section 268.40; (2) K011, K013, and K014 wastewaters contain less than 5% by weight TOC and less than 1% by weight TSS, as generated; and (3) K013 and K014 wastewaters contain less than 4% by weight TOC and less than 1% by weight TSS. [See 40 CFR 268.2(g)]

APPENDIX C  
LABORATORY ANALYTICAL REPORT



# Woods Hole Group

*Environmental Laboratories*

375 Paramount Drive • Suite B  
Raynham, MA 02767-5154 • USA  
Phone: 508-822-9300  
Fax: 508-822-3288

## Certification of Results

The enclosed results of analyses are representative of the sample(s) as received by the laboratory. Woods Hole Group Environmental Laboratories (WHG) makes no representations or certifications as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by WHG. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by:

*Michael M. Lamy*

Woods Hole Group Environmental Laboratories

Date: *6/6/97*

### Certificates

Massachusetts MA030  
Connecticut PH0141  
New Hampshire 220696  
Rhode Island 64  
California I-2209 (Interim)  
New York 11627 (Interim)





# Woods Hole Group

Environmental Laboratories

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Phone: 508-822-9300  
Fax: 508-822-3288

## EPA Method - 8260

Vertex Engineering

ETR Number: 38056

Project: Fernald 0405

Lab ID Number: 38056-1

Sample ID: TANK-5 (S-1) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
5/30/97	N/A	3 Jun 97 5:59 p	EMH	2.45 g	SOIL	B2060302	86%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

### Compound

Benzene	12 U
Toluene	6 J
Ethylbenzene	12 U
Xylene (total)	46
Methyl tert-butyl ether (MTBE)	320

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	98%	82%-121%
Toluene-d8	96%	81%-111%
4-Bromofluorobenzene	93%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



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## EPA Method - 8260

Vertex Engineering

ETR Number: 38056

Project: Fernald 0405

Lab ID Number: 38056-2

Sample ID: TANK-5 (COMPOSITE) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
5/30/97	N/A	3 Jun 97 6:23 a	EMH	5.07 g	SOIL	B2060202	90%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

### Compound

Benzene	6 U
Toluene	6 U
Ethylbenzene	6 U
Xylene (total)	1 J
Methyl tert-butyl ether (MTBE)	6 U

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	97%	82%-121%
Toluene-d8	98%	81%-111%
4-Bromofluorobenzene	98%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



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## EPA Method - 8260

### Quality Control Results

Volatile Blank Spike/Blank Spike Duplicate							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	N/A	3 Jun 97	EMH	1	SOIL	B2060302	100%

Concentration units ug/Kg

Blank Spike Q2060301				Blank Spike Dup Q2060302			
SAMPLE ID:							
Compound	Sample Conc.	BS Conc.	BS % Recovery	BSD Conc.	BSD % Recovery	% RPD	% Recovery
1,1 Dichloroethene	U	43	87%	45	90%	3.2%	59-172%
Benzene	U	45	90%	46	93%	2.7%	66-142%
Trichloroethene	U	46	93%	48	97%	4.4%	62-137%
Toluene	U	46	92%	47	94%	2.9%	59-139%
Chlorobenzene	U	46	92%	47	94%	2.2%	60-133%

\* = Recovery outside limits.



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## EPA Method - 8260

### Quality Control Report

Lab ID Number: B2060302

Sample ID: Method Blank		Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
Date Received	Date Extracted	3 Jun 97 3:50 p	EMH	5 g	SOIL	N/A	100%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

#### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	98%	82%-121%
Toluene-d8	101%	81%-111%
4-Bromofluorobenzene	101%	69%-117%

**Key:** U - Analyzed but not found.

J - Estimated value, below quantitation limit.

N/A - Not Applicable.



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## EPA Method - 8260

### Quality Control Results

Volatile Blank Spike/Blank Spike Duplicate							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	N/A	3 Jun 97	EMH	1	SOIL	B2060202	100%

Concentration units ug/Kg

Blank Spike Q2060203				Blank Spike Dup Q2060204			
SAMPLE ID:							
Compound	Sample Conc.	BS Conc.	BS % Recovery	BSD Conc.	BSD % Recovery	% RPD	% Recovery
1,1 Dichloroethene	U	45	89%	44	88%	1.4%	59-172%
Benzene	U	45	90%	44	88%	2.1%	66-142%
Trichloroethene	U	47	94%	47	94%	0.6%	62-137%
Toluene	U	45	91%	45	90%	1.0%	59-139%
Chlorobenzene	U	43	86%	43	86%	0.3%	60-133%

\* = Recovery outside limits.



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## EPA Method - 8260

### Quality Control Report

Lab ID Number: B2060202

Sample ID: Method Blank							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
N/A	N/A	3 Jun 97 2:09 a	EMH	5 g	SOIL	N/A	100%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

#### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	99%	82%-121%
Toluene-d8	100%	81%-111%
4-Bromofluorobenzene	100%	69%-117%

**Key:** U - Analyzed but not found.

J - Estimated value, below quantitation limit.

N/A - Not Applicable.



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## TOTAL PETROLEUM HYDROCARBONS by GC/FID

Vertex Engineering

ETR Number: 38056

Project: Fernald 0405

Lab ID Number: 38056-1

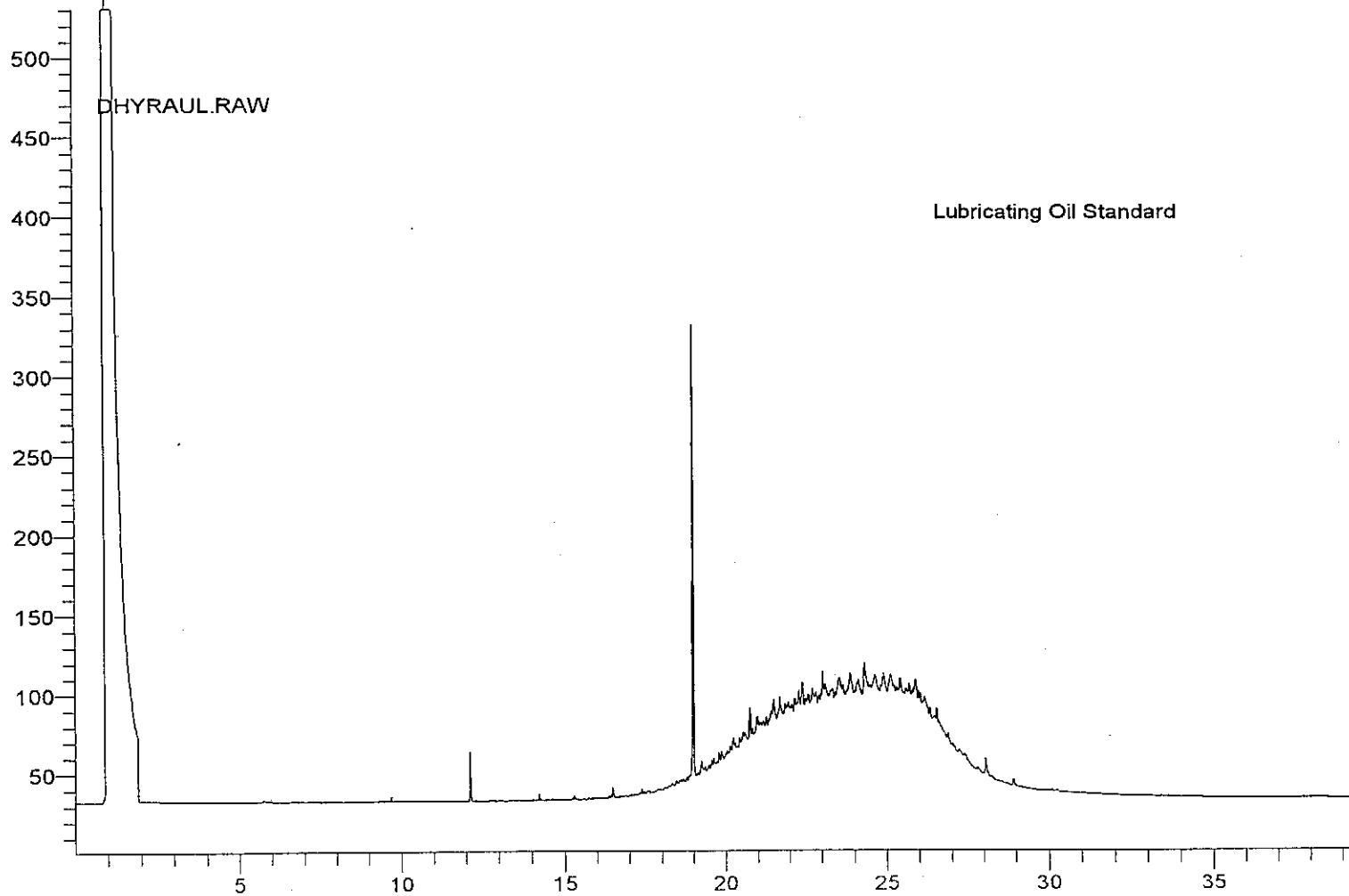
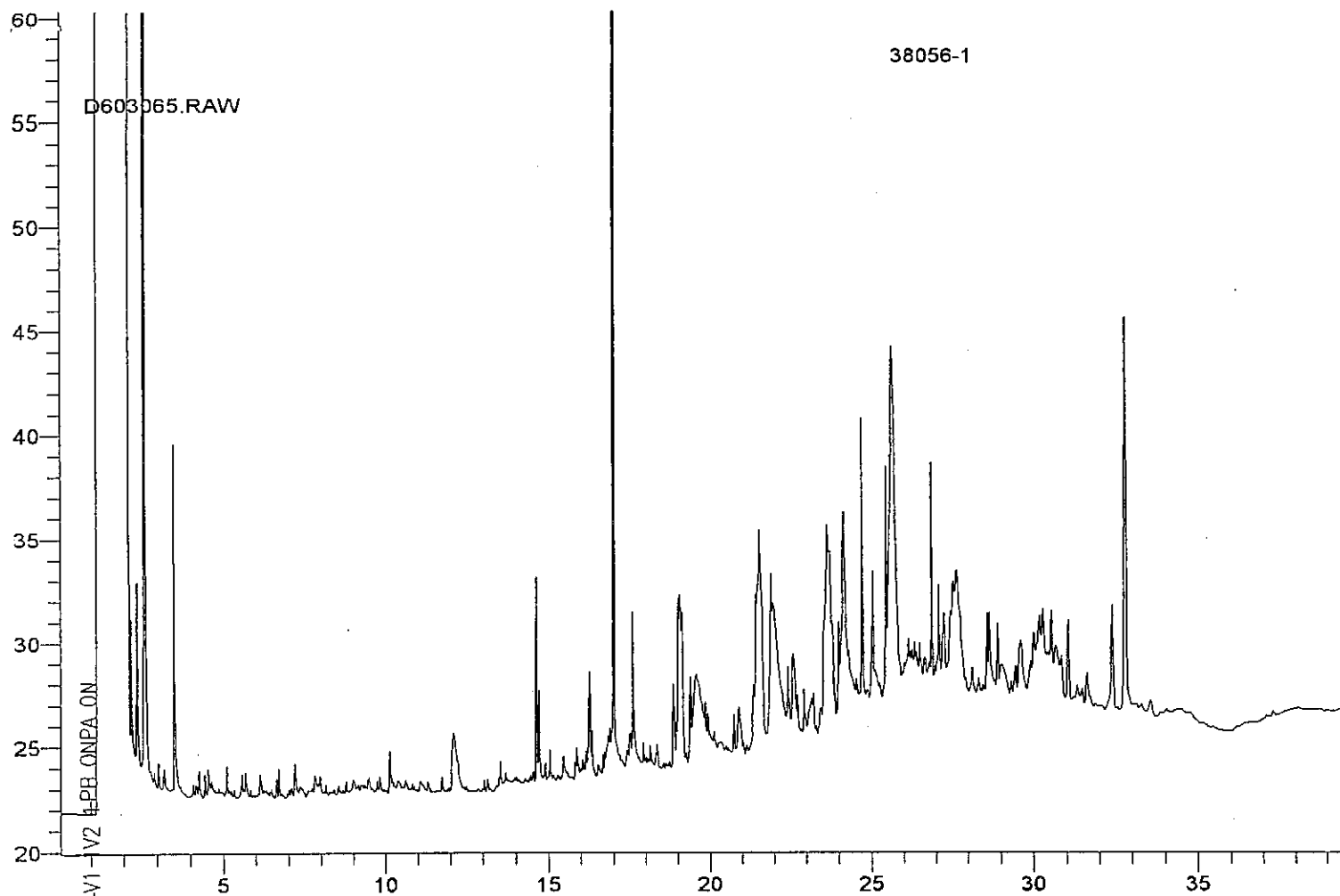
Sample ID: TANK-5 (S-1) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
5/30/97	6/3/97	6/5/97	NLJr	1	SOIL	TS0603B1	86%

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<19
C19-C36 Hydrocarbons	23
Total Petroleum Hydrocarbons	23

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	55%	25%-120%

### Qualitative Identification Results:

This sample has GC/FID characteristics which are similar to high molecular weight components in the lubricating oil range.







# Woods Hole Group

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## TOTAL PETROLEUM HYDROCARBONS by GC/FID

Vertex Engineering

ETR Number: 38056

Project: Fernald 0405

Lab ID Number: 38056-2

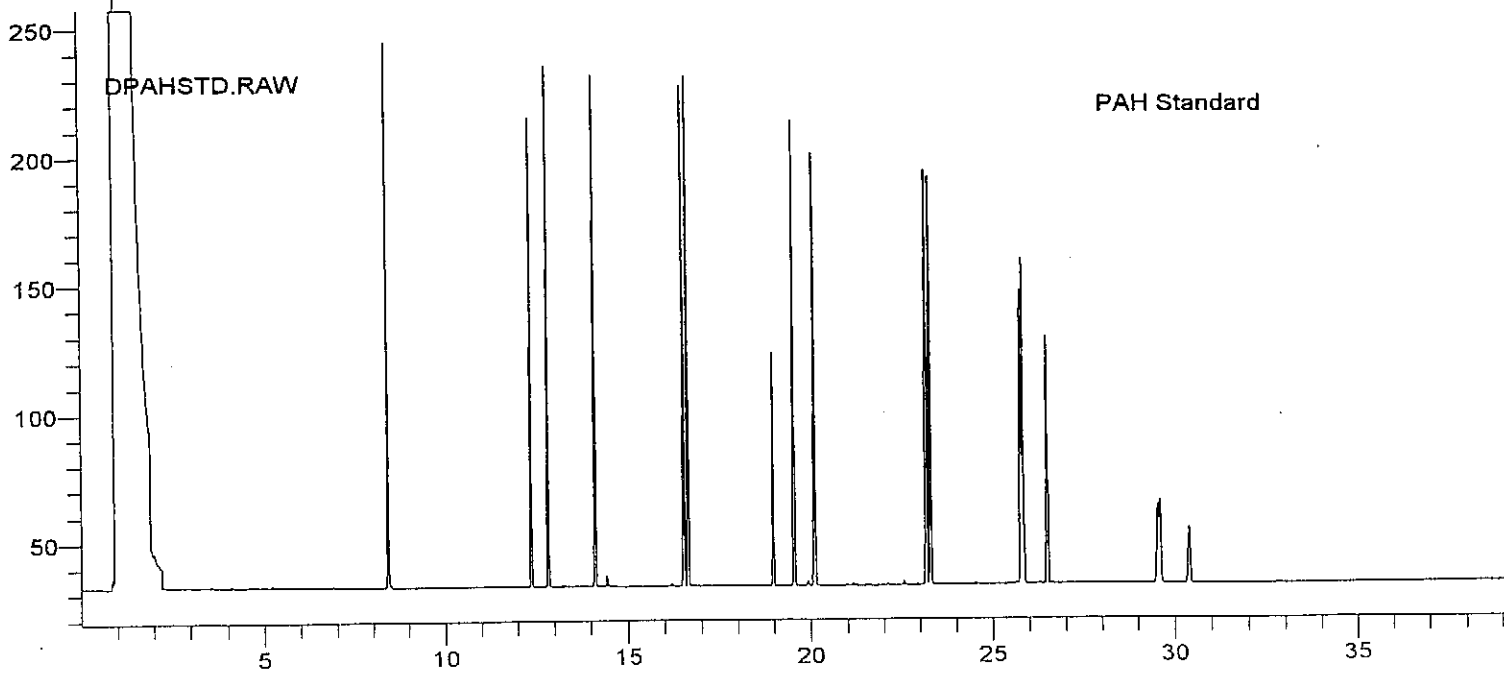
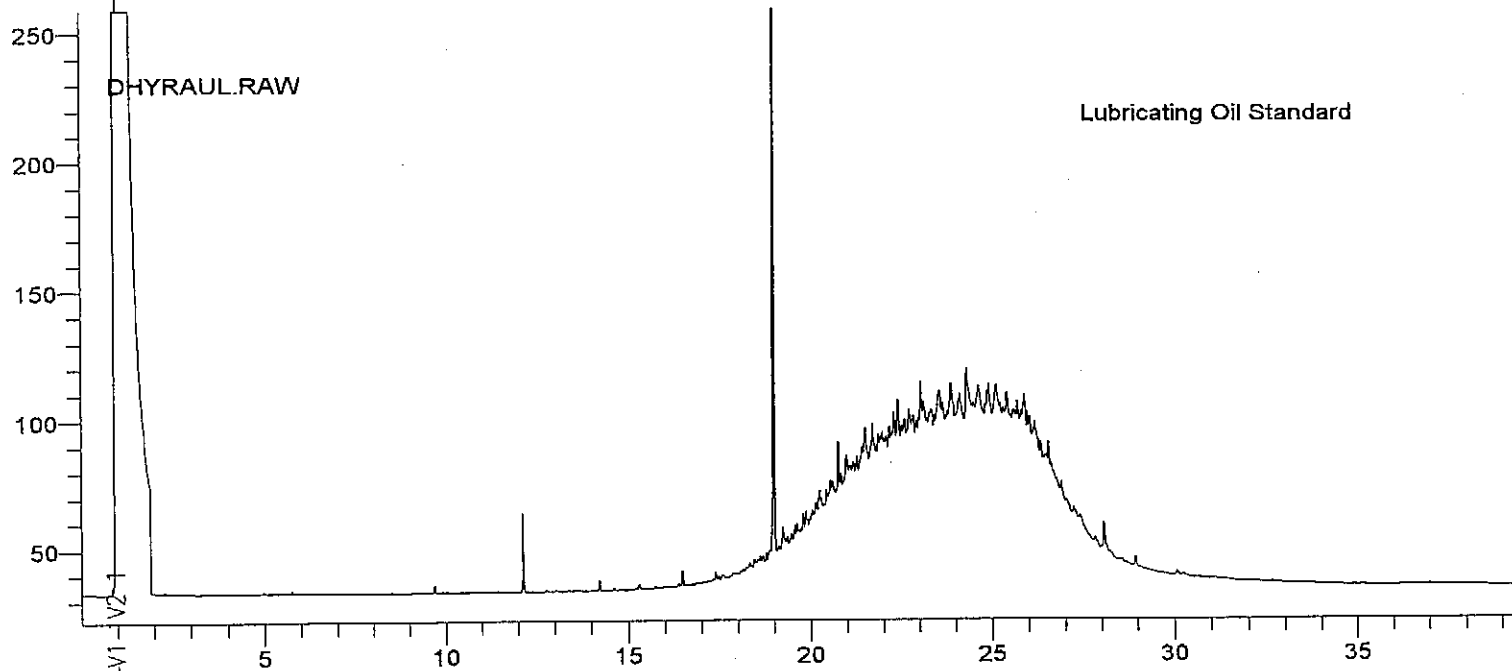
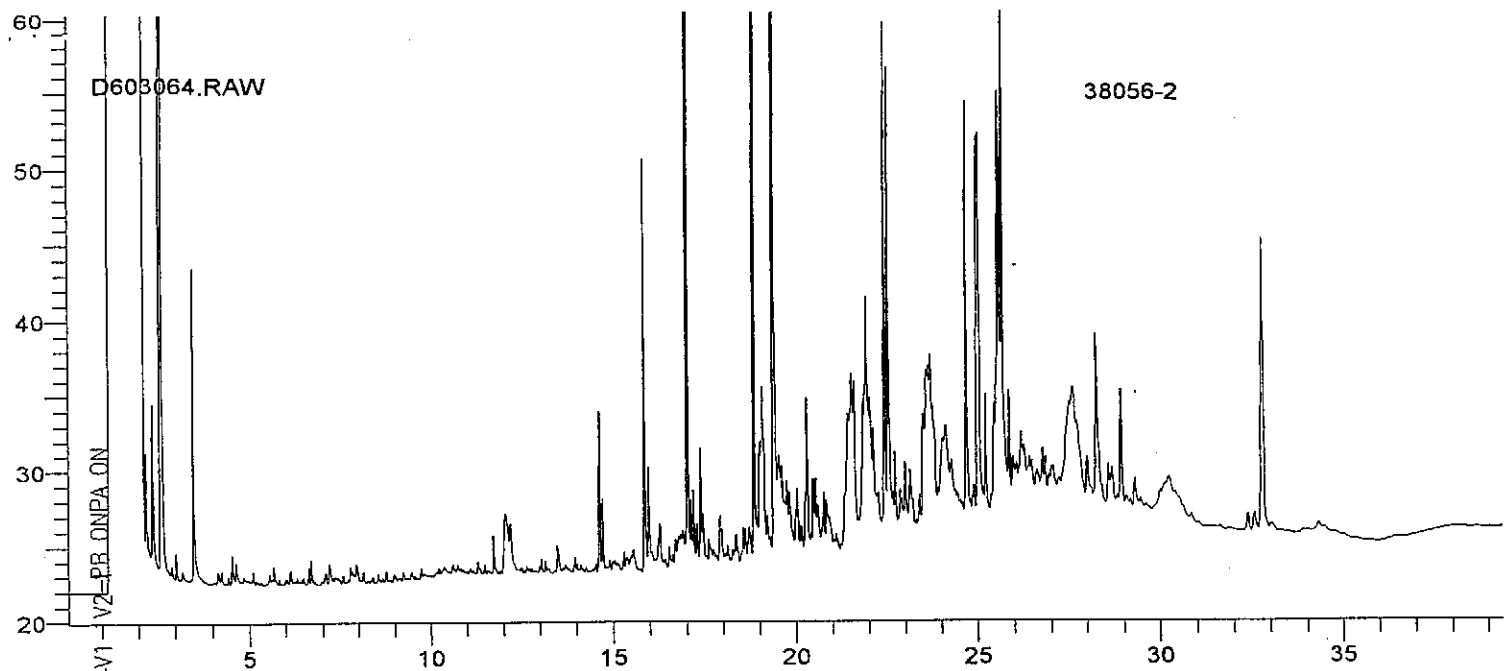
Sample ID: TANK-5 (COMPOSITE) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
5/30/97	6/3/97	6/5/97	NLJr	1	SOIL	TS0603B1	90%

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<18
C19-C36 Hydrocarbons	28
Total Petroleum Hydrocarbons	28

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	60%	25%-120%

### Qualitative Identification Results:

This sample has GC/FID characteristics which are similar to a mixture of high molecular weight components in the lubricating oil range and polynuclear aromatic hydrocarbons.





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## TOTAL PETROLEUM HYDROCARBONS by GC/FID

### Quality Control Report

Lab ID Number: TS0603B1

Sample ID: Method Blank							
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	6/3/97	6/5/97	NLJr	1	SOIL	N/A	100%

Parameter	Results in mg/Kg (ppm)
C9-C18 Hydrocarbons	<17
C19-C36 Hydrocarbons	<17
Total Petroleum Hydrocarbons	<17

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	78%	25%-120%



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## Total Petroleum Hydrocarbons by GC/FID

Sample ID:		Laboratory Control Spike					
Date Received	Date Extracted	Date Analyzed	Analyzed by	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	6/3/97	6/5/97	NLJr	1	SOIL	TS0603B1	100%

Parameter	Results in mg/Kg (ppm)	% Recovery
DIESEL FUEL	179	54%

Amount Spiked: 333 mg/Kg

Surrogate	Percent Recovery	QC Advisory Limits
ortho-Terphenyl	54%	25%-120%





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## Certification of Results

The enclosed results of analyses are representative of the sample(s) as received by the laboratory. Woods Hole Group Environmental Laboratories (WHG) makes no representations or certifications as to the method of sample collection, sample identification, or transportation/handling procedures used prior to the receipt of samples by WHG. To the best of my knowledge, the information contained in this report is accurate and complete.

Approved by: *Shawn B. Graham*  
Woods Hole Group Environmental Laboratories

Date: 6-12-97

### Certificates

Massachusetts MA030  
Connecticut PH0141  
New Hampshire 220696  
Rhode Island 64  
California I-2209 (Interim)  
New York 11627 (Interim)



# Woods Hole Group

Environmental Laboratories

375 Paramount Drive • Suite B  
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Phone: 508-822-9300  
Fax: 508-822-3288

## EPA Method - 8260

Vertex Engineering

ETR Number: 38135

Project: Fernald 0405

Lab ID Number: 38135-1

Sample ID: TANK-5(S-2) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
6/9/97	N/A	6/10/97 23:43	EMH	5.1 g	SOIL	B2061002	94%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	99%	82%-121%
Toluene-d8	100%	81%-111%
4-Bromofluorobenzene	102%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



# Woods Hole Group

Environmental Laboratories

375 Paramount Drive • Suite B  
Raynham, MA 02767-5154 • USA  
Phone: 508-822-9300  
Fax: 508-822-3288

## EPA Method - 8260

Vertex Engineering

ETR Number: 38135

Project: Fernald 0405

Lab ID Number: 38135-2

Sample ID: TANK-5(S-3) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
6/9/97	N/A	6/11/97 0:16	EMH	5.17 g	SOIL	B2061002	91%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

Surrogate	% Recovery	Acceptable Range
Dibromofluoromethane	100%	82%-121%
Toluene-d8	99%	81%-111%
4-Bromofluorobenzene	99%	69%-117%

**Key:** U - Analyzed but not found.  
J - Estimated value, below quantitation limit.  
B - Found in associated blank as well as sample.  
N/A - Not Applicable.





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## EPA Method - 8260

Vertex Engineering

ETR Number: 38135

Project: Fernald 0405

Lab ID Number: 38135-3

Sample ID: TANK-5(S-4) 05/29/97 @1200(SOIL)							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
6/9/97	N/A	6/11/97 0:49	EMH	5.1 g	SOIL	B2061002	93%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	99%	82%-121%
Toluene-d8	99%	81%-111%
4-Bromofluorobenzene	100%	69%-117%

**Key:** U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



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## EPA Method - 8260

Vertex Engineering

ETR Number: 38135

Project: Fernald 0405

Lab ID Number: 38135-4

Sample ID: TANK-5(S-5) 05/29/97 (@1200(SOIL))							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
6/9/97	N/A	6/11/97 17:51	EMH	4.95 g	SOIL	B2061102	86%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

### Compound

Benzene	6 U
Toluene	6 U
Ethylbenzene	6 U
Xylene (total)	6 U
Methyl tert-butyl ether (MTBE)	2 J

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	100%	82%-121%
Toluene-d8	100%	81%-111%
4-Bromofluorobenzene	98%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

B - Found in associated blank as well as sample.

N/A - Not Applicable.



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## EPA Method - 8260

### Quality Control Report

Lab ID Number: B2061002

Sample ID: Method Blank							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
N/A	N/A	6/10/97 22:06	EMH	5 g	SOIL	N/A	100%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

#### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

<u>Surrogate</u>	<u>% Recovery</u>	<u>Acceptable Range</u>
Dibromofluoromethane	100%	82%-121%
Toluene-d8	100%	81%-111%
4-Bromofluorobenzene	102%	69%-117%

Key: U - Analyzed but not found.

J - Estimated value, below quantitation limit.

N/A - Not Applicable.



# Woods Hole Group

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## EPA Method - 8260

### Quality Control Results

Volatile Blank Spike/Blank Spike Duplicate							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	N/A	6/10/97	EMH	1	SOIL	B2061002	100%

Concentration units ug/Kg

Blank Spike Q2061001				Blank Spike Dup Q2061002			
SAMPLE ID:							
Compound	Sample Conc.	BS Conc.	BS % Recovery	BSD Conc.	BSD % Recovery	% RPD	% Recovery
1,1 Dichloroethene	U	52	103%	43	86%	17.8%	59-172%
Benzene	U	52	104%	44	87%	17.9%	66-142%
Trichloroethene	U	52	104%	45	89%	14.8%	62-137%
Toluene	U	52	103%	44	89%	15.3%	59-139%
Chlorobenzene	U	51	102%	44	87%	14.9%	60-133%

\* = Recovery outside limits.



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## EPA Method - 8260

### Quality Control Report

Lab ID Number: B2061102

Sample ID: Method Blank							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Sample Amount	Matrix	Associated Blank	% Solids
N/A	N/A	6/11/97 16:14	EMH	5 g	SOIL	N/A	100%

CONCENTRATION UNITS:  $\mu\text{g/Kg}$

#### Compound

Benzene	5 U
Toluene	5 U
Ethylbenzene	5 U
Xylene (total)	5 U
Methyl tert-butyl ether (MTBE)	5 U

Surrogate	% Recovery	Acceptable
		Range
Dibromofluoromethane	102%	82%-121%
Toluene-d8	101%	81%-111%
4-Bromofluorobenzene	102%	69%-117%

**Key:** U - Analyzed but not found.

J - Estimated value, below quantitation limit.

N/A - Not Applicable.



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Fax: 508-822-3288

## EPA Method - 8260

### Quality Control Results

Volatile Blank Spike/Blank Spike Duplicate							
Date Received	Date Extracted	Date Analyzed	Analyzed By	Dilution Factor	Matrix	Associated Blank	% Solids
N/A	N/A	6/11/97	EMH	1	SOIL	B2061102	100%

Concentration units ug/Kg

Blank Spike Q2061101				Blank Spike Dup Q2061102			
SAMPLE ID:							
Compound	Sample Conc.	BS Conc.	BS % Recovery	BSD Conc.	BSD % Recovery	% RPD	% Recovery
1,1 Dichloroethene	U	46	92%	45	89%	3.0%	59-172%
Benzene	U	46	92%	45	91%	1.4%	66-142%
Trichloroethene	U	49	98%	47	95%	3.2%	62-137%
Toluene	U	48	95%	46	93%	2.4%	59-139%
Chlorobenzene	U	47	95%	46	93%	2.1%	60-133%

\* = Recovery outside limits.



Woods Hole Analytical  
Laboratories, Ltd. (WHALE)

Chain of Custody Record

375 Paramount Drive  
Raynham, MA 02767

TEL: (508) 822-9300  
FAX: (508) 822-3288

PAGE 1 OF 1

COMPANY INFORMATION

Name: Verter Engineering  
Address: 400 Liberty Plaza  
Weymouth, MA 02187  
Telephone: 617-335-6361  
Facsimile: 617-335-3543  
Contact Name: Tara Friedman

COMPANY'S PROJECT INFORMATION

Project Name: Fennell  
Project Number: 0405  
P.O. #: 166  
Sampler Name(s): J.F.

SHIPPING INFORMATION

Carrier: Quik  
Airbill Number: \_\_\_\_\_  
Date Shipped: \_\_\_\_\_  
Quote #: \_\_\_\_\_

TAT — 10 Day — 5 Day — 3 Day — 24 Hr — Other ASAP

VOLUME/CONTAINER TYPE/  
PRESERVATIVE (NOTE 4)

402 glass / RT

NUMBER OF CONTAINERS

1  
1  
1  
1

ANALYSIS/REMARKS (NOTE 2, 3)

MTBE + BTEX  
MTBE +  
MTBE +  
MTBE +

MATRIX

Soil  
Soil  
Soil  
Soil

COMPOSITE  
GRAB

Grab  
Grab  
Grab  
Grab

COLLECTION  
DATE

5/29/97  
5/29/97  
5/29/97  
5/29/97

SAMPLE ID (NOTE 1)

Tank-5 (S-2)  
Tank-5 (S-3)  
Tank-5 (S-4)  
Tank-5 (S-5)

ITS LAB #

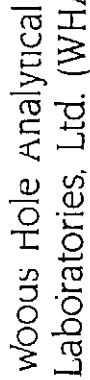
381351  
-2  
-3  
-4

NOTES TO SAMPLER (S): (1) Limit Sample Identification to 6 characters, if possible; (2) Indicate designated Lab Q.C. sample and type (e.g.: MS/MSD/REP) and provide sufficient sample; (3) Field duplicates are separate sample; (4) e.g.: 40ml/glass/H<sub>2</sub>SO<sub>4</sub>.

Notes to Lab:

Mike, Pls. turn around ASAP  
at the minimum cost  
Harbor Town

Relinquished by: (signature)	DATE	TIME	Received by: (signature)
<u>[Signature]</u>	<u>5/29/97</u>	<u>1750</u>	<u>[Signature]</u>
Relinquished by: (signature)	DATE	TIME	Received by: (signature)
<u>[Signature]</u>	<u>5/29/97</u>	<u>1845</u>	<u>M.F.</u>
Relinquished by: (signature)	DATE	TIME	Received for Laboratory by: (signature)
<u>[Signature]</u>	<u>5/29/97</u>		<u>[Signature]</u>



woous Hole Analytical  
Laboratories, Ltd. (WHAle)

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Raynham, MA 02767  
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TEL: (508) 822-9300  
FAX: (508) 822-3288

PAGE 7 OF 7

## COMPANY'S PROJECT INFORMATION

## SHIPPING INFORMATION

VOLUME/CONTAINER TYPE/  
PRESERVATIVE (NOTE 4)

Name: Vortex Engineering  
Address: 500 Liberty Plaza  
Westborough, MA 02134  
Telephone: 617-335-6361  
Facsimile: 617-335-3543  
Contact Name: Tom Dardal

Project Name: Fernwald  
Project Number: 0403  
P.O. # 166  
Sampler Name(s): J.F

Carrier: \_\_\_\_\_  
Airbill Number: \_\_\_\_\_  
Date Shipped: \_\_\_\_\_  
Quote #: \_\_\_\_\_

TAT — 10 Day — 5 Day — 3 Day — 48 Hr — 24 Hr — Other ASAP

NUMBER OF CONTAINERS

ANALYSIS/REMARKS (NOTE 2, 3)

COLLECTION	
DATE	TIME

**SAMPLE ID (NOTE 1)**

ITS LAB #

5/29/5 17:50

281354 71-103

5/30/17	17:00
---------	-------

$$-7 \quad T_1 \quad -1 \quad -3$$

5/30/57 12:00

$$-3 \quad \text{Frank} \rightarrow (c-u)$$

5/30/23	12:10
---------	-------

$$\frac{1}{2} \frac{1}{1 - \frac{1}{2} \frac{1}{2}}$$

6

10

[illegible]

1

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\_\_\_\_\_


1

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Downloaded from <http://ajph.org/> on November 10, 2015

Received by: (signature)

DATE	TIME
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~~Relinquished by: (signature)~~

Received by: (signature)

DATE	TIME
11/11/2023	10:00

~~Reinquished by: (signature)~~

Received for Laboratory by: (signature)

DATE	TIME
------	------

Relinquished by: (signature)

NOTES TO SAMPLER (S): (1) Limit Sample Identification to 6 characters, if possible; (2) Indicate designated Lab Q.C. sample and type (e.g., MS/MSD/REP) and provide sufficient sample; (3) Field duplicates are separate sample; (4) e.g.: 40ml/glass/H<sub>2</sub>SO<sub>4</sub>.

Notes to Lab: \_\_\_\_\_

Mike, P/s. term around ASAP  
at the minimum cost  
Humberto Jerez