

Rec'd 11/3/99

**TANK CLOSURE REPORT
Former H.J. Mills Site
151 Church Street, Bristol, CT 06010**

September 22, 1999

prepared for:
Mr. Michael R. Parks
BRISTOL DEVELOPMENT AUTHORITY
111 North Main Street, Bristol, CT 06010

prepared by:
Peter J. Chiarizio, L.E.P.
ACTUAL ENVIRONMENTAL
P.O. Box 175, Lebanon, CT 06249



Cost of project = \$25,852

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1.0 INTRODUCTION

ACTUAL ENVIRONMENTAL (Æ) performed a heating-oil underground storage tank (UST) closure at the former H.J. Mills site, located at 151 Church Street in Bristol, CT. The site work began on August 25, 1999 and was completed on August 31, 1999. The Bristol Development Authority (BDA) is the property owner and Hermann & Sons Construction, LLC, was the tank removal contractor.

2.0 SITE DESCRIPTION

Figure 1 depicts the location of the subject property, or site. The H.J. Mills site is presently a vacant lot, formerly a cardboard box assembly plant. The site is situated in a mixed industrial/commercial/residential section of downtown Bristol, CT. Surrounding properties include: to the north the Bristol Education Department is located, to the east adjacent commercial properties are located, to the south an industrial machining company (Melnick's) is located and the site is bounded to the west by Church Street, with residential properties existing across Church Street.

Figure 2 is a not-to-scale drawing of the UST removal area. The H.J. Mills site consists of an asphalt-paved driveway at the southern property boundary, against the Melnick's building, which runs to a paved area east of the Melnick's building. Approximately seventy feet (70') north of the driveway, a channelized stream or diversion is located which flows from west to east and runs the entire length of the site. The remainder of the site is covered with fill to the west and south and concrete to the north and east.

The heating oil UST, which may have been installed approximately seventy (70) years ago, was located beneath the driveway, approximately seventy feet (70') east of Church Street along the northern edge of the paved driveway.

3.0 UST REMOVAL, CLEANING & DISPOSAL

The UST excavation began on August 25, 1999. Strong petroleum odors were noted during excavation and the soil was screened for visual, olfactory and photoionization-detectable petroleum impact. Impacted soils were stockpiled on polyethylene sheeting (i.e., Visquene) in the north east quadrant of the site. The actual location of the UST was unknown; the excavation began north of the paved driveway. Underground product piping was excavated and followed to an area beneath the driveway where the UST was ultimately located. There were two feet (2') of overburden on the UST. The dimensions of the UST were forty-eight inches (48") in diameter and twenty-two feet (22') in length, with an approximate capacity of twenty-six hundred (2600) gallons. There were approximately eleven inches of fluid at the west end of the UST and no fluid accumulation at the east end of the UST.

On August 26, 1999, a mixture of tank-bottom sludge, oil and water were removed using a vacuum truck. Two hundred twenty five (225) gallons of this oilwater mixture were transported by United Industrial Services to a designated treatment facility, United Oil Recovery of Meriden, CT. A copy of the manifest is included in the Appendix of this report. The UST was removed and inspected. Several perforations the size of a half-dollar were present along the bottom of the UST. The UST was cut, cleaned and disposed at J.W. Green Company of Plainville, CT; the scrapyard receipt is included in the Appendix as proof of destruction. Photographs are included in the Appendix of this report which show the condition of the UST and the excavation.

4.0 SITE HYDROGEOLOGY

Soils encountered at the site range from silty, gravelly artificial fill at the surface, with cobbles, to a more silty material with depth. At a depth of approximately six feet (6') below grade (bg), a poorly sorted fine to medium sand with little silt was encountered. This material was saturated with groundwater and product. The water table was observed at approximately six feet (6') bg in the area of the former UST. Mottling of the soil indicated that the water table fluctuations reach as high as three feet (3') bg. The direction of groundwater flow is unknown as no monitoring wells or survey data exist at the site. Groundwater flow directions may be affected by the channelized drainage feature on the property.

5.0 RELEASE REPORTING

On August 25, 1999, a release report was filed with the Connecticut Department of Environmental Protection (CT DEP) Oil and Chemical Spill Response Division (OCSRD). The spill number assigned was #99-05701.

6.0 SOIL REMOVAL

From August 25, 1999, through August 31, 1999, petroleum hydrocarbon-impacted soils were screened for stockpiling and subsequent removal. Soils exceeding 50 parts per million (ppm) as screened using a photoionization detector (PID, Photovac Model 2020 equipped with a 10.6 eV lamp) were stockpiled for recycling. On August 31, 1999, 200 tons of impacted soil was transported to Phoenix Soils, Inc. of Waterbury for recycling. Weight tickets and the recycling certificate for the impacted soil are included in the appendix of this report.

7.0 POST-EXCAVATION SOIL SAMPLING

After the excavation of approximately 224.02 tons of impacted soil from the site, eight (8) post-excitation soil samples were collected from the walls of the excavation for laboratory analysis. No bottom soil sample was collected due to the presence of groundwater. Soil

samples were collected using latex gloves and clean, laboratory-supplied jars for each sample collected. After the soil samples were collected, they were placed in a cooler on ice and transported to Connecticut Testing Laboratories (CTL) for analysis by EPA Method 418.1 (Total Petroleum Hydrocarbons, or TPH). The sample with the highest TPH value was additionally tested for Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270C. Figure 2 in the Appendix depicts the sampling locations and Table 1 in the Appendix summarizes the analytical results and compares them to the CT DEP Remediation Standard Regulations (RSRs) for soil. The number of soil samples collected and the analytical techniques selected were based upon CT DEP guidance documents for UST removals involving heating oil. Appendix D contains the analytical report for the post-excavation soil samples.

8.0 EXCAVATION BACKFILL

Due to the observation of separate-phase hydrocarbons floating on the water table along the southern wall of the excavation on August 27, 1999, it was decided to backfill the immediate area where the UST was located and the area where separate-phase product was observed with 3/8" peastone gravel to facilitate product recovery, if necessary, and to facilitate the collection of groundwater samples for impact characterization as no soil sample was collected from the bottom of the excavation. Also, a six-inch (6") inside diameter (ID) schedule 40 PVC well screen was set to the bottom of the excavation within the peastone to an approximate depth of eight feet (8') bg. Approximately 119.05 tons of peastone were used to bring the tank grave and adjacent excavation to within two feet (2') of grade. Approximately 102.41 tons of sandy bank run gravel was used to restore the grade at the site. Photographs included in the Appendix illustrate the setting of the well point.

9.0 CONCLUSIONS AND RECOMMENDATIONS

A 2,600 gallon capacity heating oil UST was removed from the H.J. Mills site, located at 151 Church Street in Bristol, CT. Approximately 200 cubic yards of impacted soil was removed from the site and recycled properly. This work was completed from August 25 through August 31, 1999.

Post-excavation soil sample results indicate remediation of the site is required. Soil samples collected from the northwest, north, northeast, south, southwest and south walls of the excavation at the water table (approximately six feet below grade) exceed CT DEP Remediation Standard Regulations (RSRs) for TPH.

Separate-phase product was observed along the south wall of the excavation; a well point was installed in peastone gravel to facilitate product recovery.

Soil samples from the bottom of the excavation could not be collected due to the presence

of groundwater; a groundwater sample should be collected from the well point and analyzed by EPA Methods 418.1 and 8270C to characterize the degree of hydrocarbon impact to the groundwater.

Delineation of the petroleum-hydrocarbon impacted soils and groundwater is incomplete at this time.

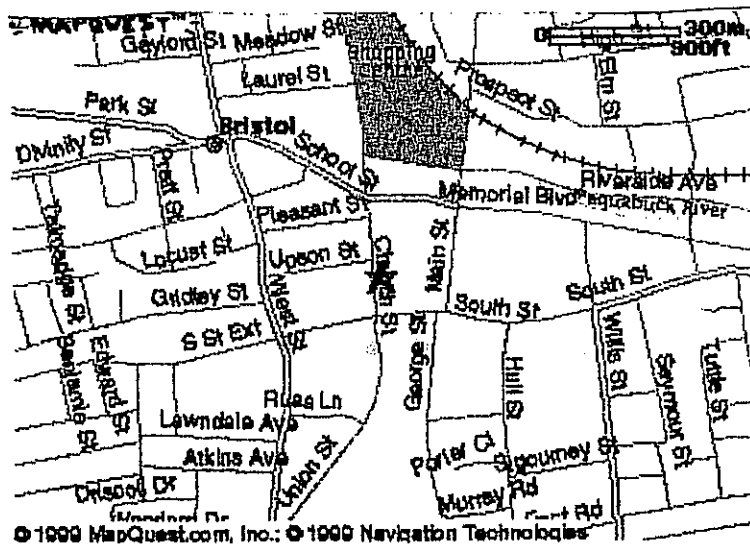
It is recommended that several rounds of fluid-level data collection using a sonic oil/water interface tape be performed on a weekly basis for the next two (2) months to evaluate the presence of separate-phase petroleum hydrocarbons in the subsurface. A separate-phase product removal system may be required immediately if it is determined that a significant volume of separate-phase product is present within the subsurface. One (1) round of groundwater sampling of the well point is recommended to characterize the impact to groundwater. To delineate the impact to the subsurface, it is recommended that a drive-point sampling program be conducted. Additional groundwater monitoring wells need to be installed to collect groundwater flow direction information. Based upon this information, a cost-effective remedial alternative can be selected for pilot testing and implementation at the site. Remedial alternatives can include further soil excavation and dewatering if the impacted area is limited, to in-situ techniques if the impacted area is great, such as bioremediation via a groundwater circulation cell and the peastone gravel set in the tank grave.

As the site is located in a GB area, the depth to bedrock has to be determined in order to use the less stringent GB RSRs. If the bedrock is shallow, among other limitations, GA soil and groundwater standards may be applicable at this site.

10.0 DISCLAIMER

This UST Closure and Report were prepared for the use of Bristol Development Authority. Reasonable due diligence was exercised by the staff of Actual Environmental in conducting this UST Closure. The conclusions provided by Actual Environmental in this investigation are based solely on the information reported in this document. Future investigative site information which was not available to Actual Environmental at the time of this UST Closure may result in a modification of the conclusions stated above. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur. This UST Closure has been prepared in accordance with generally accepted professional practices. No other warranty, expressed or implied, is made.

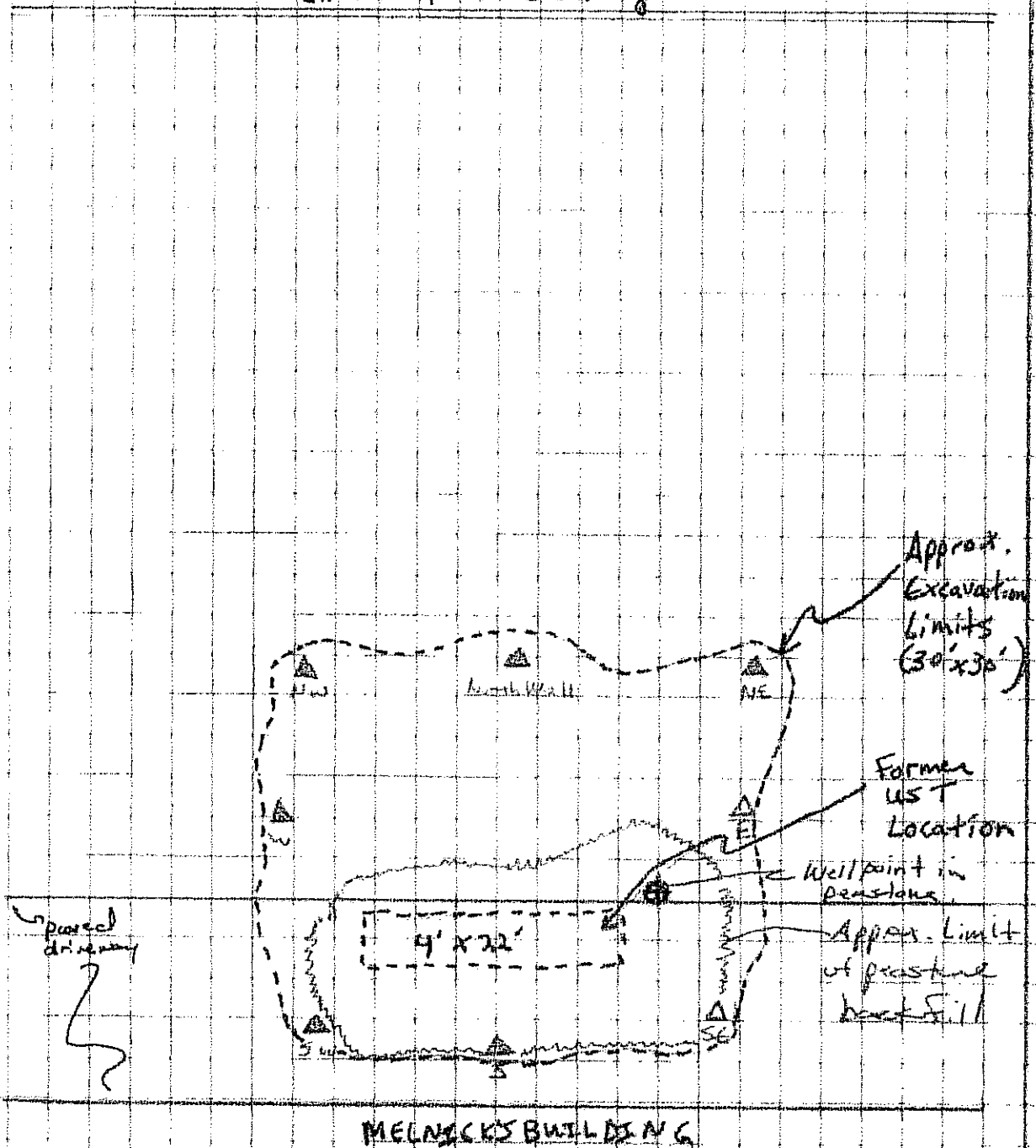
APPENDIX A - Figures



**FIGURE 1: SITE LOCUS MAP
 161 CHURCH STREET
 BRISTOL, CT
 HEATING OIL UST REMOVAL
 8/25-3/199**

ACTUAL ENVIRONMENTAL ♦ P.O. BOX 175 ♦ LEBANON, CT 06249 ♦ (860) 892-4610
 L.E.P. Services, Environmental & Systems Consulting, Site Investigation & Remediation

Channelized Drainage



← to church ST



NOTE: Drawing not to scale

△ Post-Excavation Soil Sampling Locations 8/30/77

Figure 2 - Site Sketch

Former HJ Miller site

151 Church ST, Bristol CT

HEATING OIL UST CLOSURE

8/25 - 5/77

prepared for: BDA

prepared by: PJC Action/Env.
(860) 892-1610

APPENDIX B - Waste Manifests, Scrap Receipt, Weight Tickets

PHOENIX SOIL LLC * P.O.BOX 1750 * WATERBURY CT. 06721

INVOICE TO
 HERMAN & SONS LLC
 245 VIRA RD
 BRISTOL
 CT 06010

SITE NAME
 CITY OF BRISTOL
 CITY OF BRISTOL
 125 CHURCH ST
 BRISTOL
 CT 06010-

Invoice Number
 7108

Stream Number
 5496

Invoice Date: 9/9/99

Ticket Number	Date	Manifest	Plate Number	Net Weight
2777	9/3/99	PSA29828	J40015	20.28
2778	9/3/99	PSA29827	25238A	22.28
2779	9/3/99	PSA29826	25238A	28.88
2780	9/3/99	PSA29822	V33881	23.24
2781	9/3/99	PSA29824	28485A	23.58
2782	9/3/99	PSA29821	25873A	18.60
2784	9/3/99	PSA54931	25238A	24.72
2787	9/3/99	PSA54920	28485A	22.25
2793	9/3/99	PSA29823	J40015	21.41
2794	9/3/99	PSA29820	J44155	20.98
Total Tons				224.01

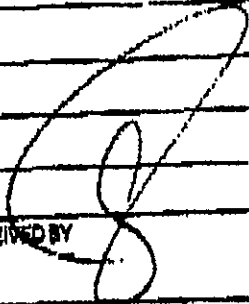
Thursday, September 09, 1999

Phone (860) 747-5514

J.W. GREEN COMPANY, INC.

Scrap Iron • Metals • Structural Steel

SOUTH WASHINGTON STREET • P.O. BOX 67 • PLAINVILLE, CONNECTICUT 06062

CUSTOMER'S ORDER NO.		PHONE		DATE 8/27/99			
NAME HERMANN & Son							
ADDRESS							
BOLD BY		CASH	G.O.D.	CHARGE	ONACCT.	PAID OUT	CHECK #
DESCRIPTION				QTY.	PRICE	AMOUNT	
Rec'd 3000 GAL							
TANK - ADAM							N/V
Clean # Cut up							
RECEIVED BY 						TAX	
						TOTAL	N/C

No 2443

All claims and returned goods
MUST be accompanied by this bill.
Returns subject to restocking fee.

Thank You

APPENDIX C - Photographs

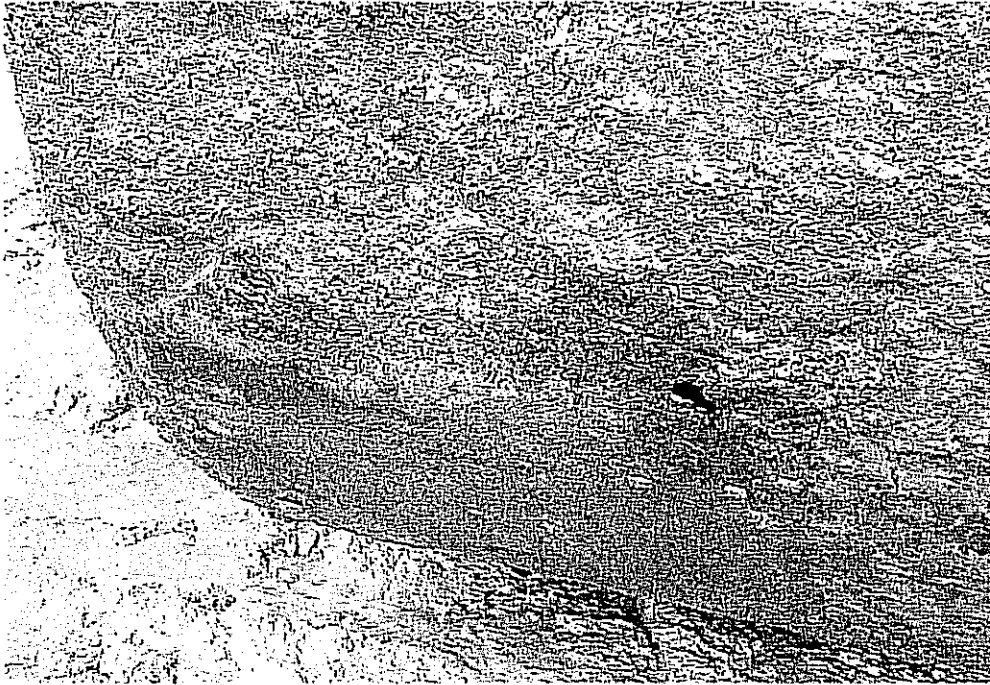


Photo 1: UST condition. Note perforations at bottom of tank left and right of photo center.

Photo 2: Excavation condition. Note water table, separate-phase product.



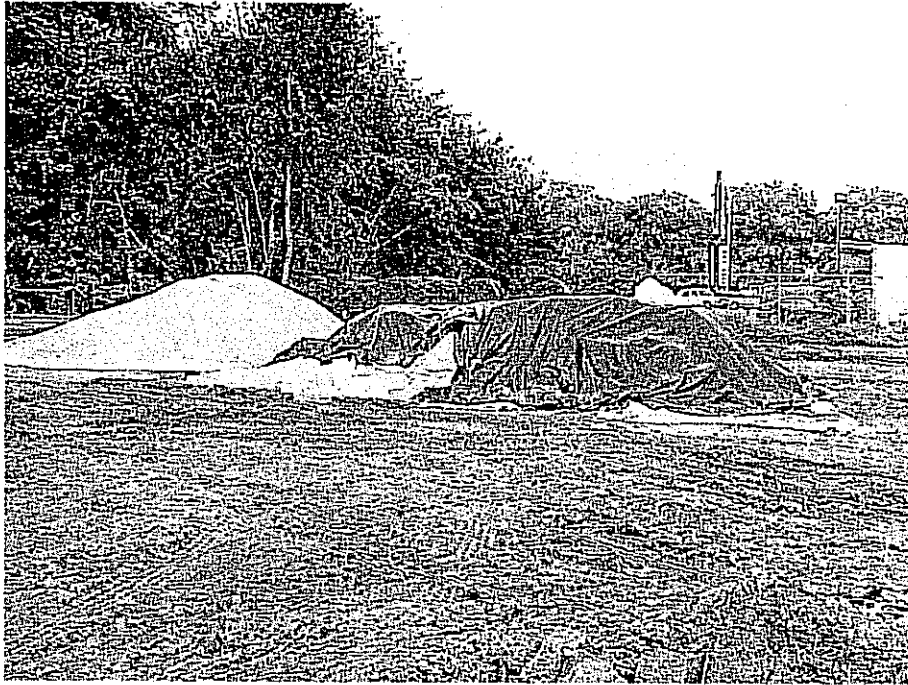
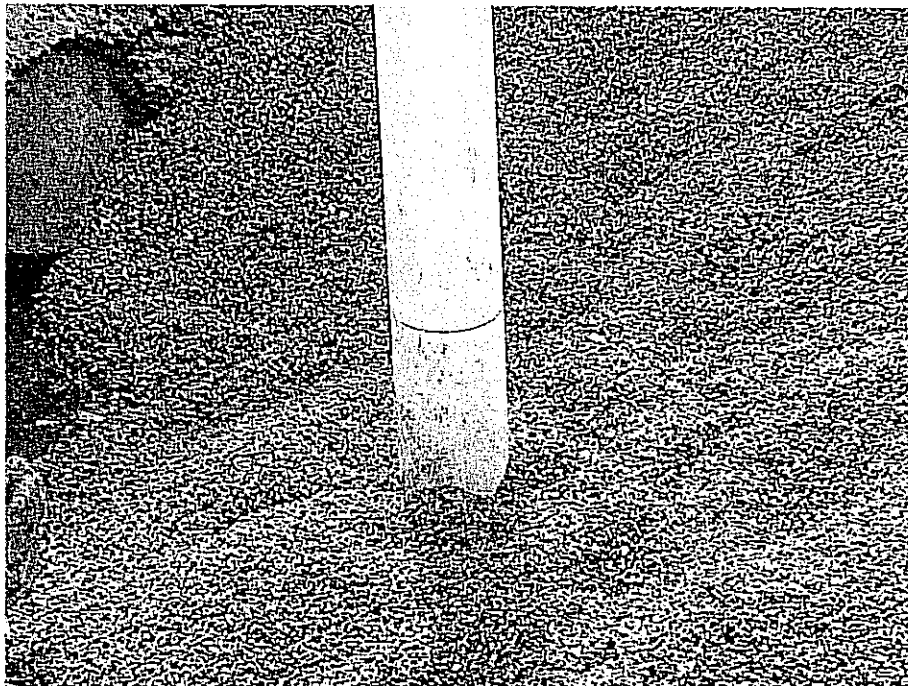


Photo 3: Soil stockpile in northeast section of site. Note building debris in foreground.

Photo 4: Well point installation. 6" ID 10-slot PVC well screen set in 3/8" peastone (traprock).



APPENDIX D - Analytical Summary and Report

Table 1: Post - Excavation Soil Sample Analytical Summary
 Heating Oil UST Removal, 8\25-30\99
 151 Church St., Bristol, CT

Sample ID	TPH (ppm)	DEC-Res*	GB-PMC**
3K Post-Ex NW	824	500	2500
3K Post-Ex North Wall	7740		
3K Post-Ex NE	1372		
3K Post-Ex E	168		
3K Post-Ex SE	40		
3K Post-Ex S	12600[†]		
3K Post-Ex SW	1700		
3K Post-Ex W	540		

Notes:

Soil samples collected 8\30\99.

TPH = Total Petroleum Hydrocarbons by EPA 418.1.

ppm = parts per million

DEC-Res* = CT DEP Residential Direct Exposure Criteria in ppm

GB-PMC** = CT DEP Pollutant Mobility Criteria for a GB classified area in ppm

Values in **Bold Type** exceed applicable CT Remediation Standard Regulations

[†] = This sample was additionally analyzed for Polynuclear Aromatic Hydrocarbons (PAHs) by EPA Method 8270C. No analytes were detected above the detection limits.

September 21, 1999

Actual Environmental
276 Scott Road
Lebanon, CT 06249

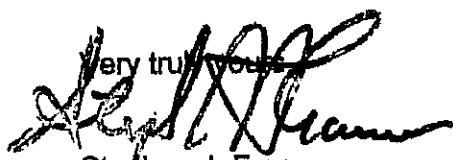
Attn: Mr. Peter Chiarizio

Please find attached laboratory report(s) for the samples submitted on:
August 30, 1999.

All pertinent information for this analysis is located on the report. Should it be necessary to contact us regarding billing or the test results, please have the following information readily available:

Lab No. : 899477
PO/Job No. : 151
Invoice No. : 1000003749
Customer No. : 1887

Please contact us if you have any questions.

Very truly yours,


Stephen J. Franco
Laboratory Director
PH-0547



STEPHEN J. FRANCO
Laboratory Director
PHONE ■ 203/634-3731
165 GRACEY AVENUE ■ MERIDEN, CT ■ 06451

Date Samples Received : 8/30/99

Client Name : Actual Environmental	CTL Lab No. : 899477
Report Date : 9/20/99	PO/ Job No. : 151

RESULTS OF ANALYSIS

EPA Method 418.1

Matrix Type: S

Oil & Grease
(TPH)-ppm

Field ID	CTL #	MDL			
3K Post Ex NW	10993	25	824		
3K Post Ex North Wall	10994	25	7,740		
3K Post Ex NE	10995	25	1,372		
3K Post Ex E	10996	25	168		
3K Post Ex SE	10997	25	40		
3K Post Ex S	10998	25	12,600		
3K Post Ex SW	10999	25	1,700		
3K Post Ex (S)	11000	25	540		

*w pjk 9/23/99
see col*

MDL= Minimum Detectable Level / BDL= Below Detection Level

Matrix Type: W= Water/Aqueous S= Soil/Solid O= Oil/Hydrocarbon

Client Name : Actual Environmental	Date Extracted: 9/16/99
Lab No.: 899477	Date Analyzed: 9/17/99
PO No. 151	Analyst : YK
Report Date : 9/2099	

PAHs by EPA METHOD 8270C (GC/MS)

Date Samples Rec'd: 8/30/99

Matrix Type **S**
 CTL Sample #: **10998**
 Field ID : **3K Post Ex S**

Results of Analysis

Parameters	MDL				
Naphthalene	10	BDL			
Acenaphthylene	10	BDL			
Acenaphthene	10	BDL			
Fluorene	10	BDL			
Phenanthrene	10	BDL			
Anthracene	10	BDL			
Fluoranthene	10	BDL			
Pyrene	10	BDL			
Benzo(a)anthracene	10	BDL			
Chrysene	10	BDL			
Benzo(b)fluoranthene	10	BDL			
Benzo(k)fluoranthene	10	BDL			
Benzo(a)pyrene	10	BDL			
Indeno (1,2,3-cd)pyrene	50	BDL			
Dibenzo(a,h)anthracene	50	BDL			
Benzo(ghi)perylene	50	BDL			
Benzo(j)fluoranthene	50	BDL			
Dibenzo(a,h)acridine	50	BDL			
Dibenzo(a,i)acridine	50	BDL			
7H-Dibenzo(c,g)carbazole	50	BDL			
3-Methylcholanthrene	50	BDL			

MDL= Minimum Detectable Level / BDL = Below Detection Level / Units = ppb

Matrix Types: W = Water/Aqueous S= Soil/Solid O= Oil/Hydrocarbon

Connecticut Testing Laboratories, Inc.
 165 Gracey Avenue / Meriden, CT 06451
 (203) 634-3731 (Fax) 630-1336
 Certification CT-PH0547/ MA-CT035

LAB TRACKING No. 899477

CONNECTICUT TESTING LABORATORIES, INC.
 165 Gracey Avenue / Meriden, CT 06451
 Tel # 203-634-3731 Fax # 203-630-1336

Client Name: Actual Environmental 860-892-
 Send Report To: Peter Chianizio
 Send Bill To: same PO#: 151 4610

Samples Collected By (Print) Peter J. Chianizio
 Signature: [Signature]

- FIVE WORKING DAYS 48 HOURS
 PRIORITY 2-4 Day OTHER _____
 TEN WORKING DAYS

LAB USE ONLY ...

#	Field Identifications (PLEASE PRINT NEATLY)	DATE SAMPLED	TIME SAMPLED	MATRIX W-S-O	PRESERV. & BOTTLE TYPE USED	SAMPLE VOLUMES COLLECTED
1	3k Post EX NW	8/30/99	Am	S	GS 02C 201	802
2	" Northwall					
3	" NE					
4	" E					
5	" SE					
6	" S					
7	" SW					
8	" W					

ANALYSIS...	1	2	3	4	5	6	7	8	NOTES
METALS, DISS. WTR-8									
METALS, TOTAL WTR-8									
METALS, TOTAL SOIL-8									
Mass Analysis - Soils									
TCLP METALS S/W									
TCLP VOLATILES - 11									
TCLP SEMI VOL. - 13									
TCLP PEST/HERB - 8									
TCLP COMPLETE - 40									
8021B (601 Only)									
8021B (602 Only)									
8021B (Complete)									
8016B SCAN									
8270C Phenols Only									
8270C B/Neut. Only									
8270C (Modified BNA)									
8081A Pest. Only									
8081A PCB Only									
8081A Complete									
8280 GC/MS									
8100 (PAH GC/MS)									
TOC									
Pb % (PAINT CHIPS)									
WATER POTABILITY									
EDB SCAN									
COLIFORM BACTERIA									
RELINQ BY: <u>[Signature]</u>									Date 8/30/99
									Time 1:40 pm
REC'D BY: <u>Mureen McMahon</u>									Date 8/30/99
									Time 11:58

Note: Please run 418.1 on all, run 8270C on highest 418.1. PAH's only

ANALYSIS...	1	2	3	4	5	6	7	8	NOTES
pH / SPEC COND.									
COPPER / NICKEL									
TSS / TDS									
NITRATE-N / NITRITE-N									
CN - TOT. / CN - AMEN.									
BOD (5) (20) / COD									
AMMONIA - N / TKN									
TPH - EPA 418.1		X	X	X	X	X	X	X	
OL & GR. EPA 413.2									
FILTER SAMPLES									
PRESERVE SAMPLES									
EXTRA PARAMETERS - PLEASE LIST SEPARATELY									
RELINQ BY:									Date
									Time
REC'D BY:									Date
									Time

Please fill in the Field ID's exactly as they appear on the bottle labels. All used samples are kept refrigerated for 45 days from Date Received unless otherwise instructed. The number after the analyte refers to the number of tests associated with that parameter. Where there are more than one item per line, please circle the desired test(s). CTL will not be held liable for incomplete or in correctly filled out Chain of Custody forms. This form is protected by Copyright Laws and is not to be reproduced without permission. © 1998 Connecticut Testing Laboratories, Inc. All rights reserved