

United States Army
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

***Building 8006
Wayside Area***

**NJDEP UST Registration No. 0192477-3
NJDEP Closure Approval No. C-92-2951**

July 1995

SMITH
ENVIRONMENTAL TECHNOLOGIES CORPORATION

**UNDERGROUND STORAGE TANK
CLOSURE AND SITE INVESTIGATION REPORT**

BUILDING 8006

**WAYSIDE AREA
NJDEP UST REGISTRATION NO. 0192477-3
CLOSURE APPROVAL NO. C-92-2951**

JULY 1995

**PROJECT NO.: 09-5004-01
CONTRACT NO.: DACA51-94-D-0014**

PREPARED FOR:

**UNITED STATES ARMY, FORT MONMOUTH, NEW JERSEY
DIRECTORATE OF PUBLIC WORKS
BUILDING 167
FORT MONMOUTH, NJ 07703**

PREPARED BY:

**BCM ENGINEERS/
SMITH ENVIRONMENTAL TECHNOLOGIES CORPORATION
BROMLEY CORPORATE CENTER
THREE TERRI LANE
BURLINGTON, NEW JERSEY 08016**

8006.DOC





TABLE OF CONTENTS

EXECUTIVE SUMMARY	IV
1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES	1
1.1 Overview	1
1.2 Site Description	2
1.2.1 Geological/Hydrogeological Setting	2
1.3 Health and Safety	4
1.4 Removal of Underground Storage Tank	4
1.4.1 General Procedures	4
1.4.2 Underground Storage Tank Excavation and Cleaning	4
1.5 Underground Storage Tank Transportation and Disposal	5
1.6 Management of Excavated Soils	5
2.0 SITE INVESTIGATION ACTIVITIES	6
2.1 Overview	6
2.2 Field Screening/Monitoring	6
2.3 Soil Sampling	7
3.0 CONCLUSIONS AND RECOMMENDATIONS	8
3.1 Soil Sampling Results	8
3.2 Conclusions and Recommendations	8

TABLE OF CONTENTS (CONTINUED)

Following Page No.

TABLES

Table 1	Summary of Post-Excavation Sampling Activities	7
Table 2	Post-Excavation Soil Sampling Results	8

FIGURES

Figure 1	Site Location Map	1
Figure 2	Site Map	2
Figure 3	Soil Sampling Results	7

APPENDICES

Appendix A	NJDEP-BUST Closure Approval
Appendix B	Certifications
Appendix C	Waste Manifest
Appendix D	Soil Analytical Data Package



EXECUTIVE SUMMARY

UST Closure

On July 8, 1993, a steel underground storage tank (UST) was closed by removal in accordance with Closure Approval No. C-92-2951 at U.S. Army Fort Monmouth, Fort Monmouth, New Jersey. The UST, New Jersey Department of Environmental Protection (NJDEP) Registration No. 0192477-3, was located immediately adjacent to Building 8006 in the Wayside area of U.S. Army, Fort Monmouth. UST No. 0192477-3 was a 550-gallon No. 2 fuel oil UST. The UST fill port was located directly above the tank. The tank closure was performed by All Service Environmental Inc.

Site Assessment

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) and the NJDEP *Field Sampling Procedure Manual*. Soils surrounding the tank were screened visually and with air monitoring instruments for evidence of contamination. Following removal, the UST was inspected for corrosion holes. No corrosion holes were noted in the UST and no potentially contaminated soils were observed surrounding the tank.

On July 9, 1993, following the removal of the UST, post-excavation soil samples were collected. Post-excavation samples A, B, C, D, E, F, and DUP E were collected from a total of six (6) locations along the base and sidewalls of the excavation. All samples were analyzed for TPHC.

On July 15, 1993, following removal of approximately 18 cubic yards of potentially contaminated soils from the vicinity of sampling locations A, B, and E, post-excavation samples G, H, I, and DUP I were collected from a total of four (4) locations along the base and sidewalls of the expanded portions of the excavation, and were analyzed for TPHC.

Findings

All post-excavation soil samples collected from the UST excavation and from below piping associated with the former UST at Building 8006 contained either non-detectable concentrations of TPHC or concentrations below the NJDEP residential direct contact total organic contaminants soil cleanup criteria of 10,000 milligrams per kilogram (mg/kg) (N.J.A.C. 7:26D and revisions dated February 3, 1994). Samples A, B, and E contained TPHC concentrations ranging from 189 mg/kg to 950 mg/kg. Samples C, D, F, G, H, and I contained non-detectable concentrations of TPHC.



Site Restoration

Following receipt of all post-excavation soil sampling results, the excavation was backfilled to grade with a combination of uncontaminated excavated soil and certified clean fill. The excavation site was then restored to its original condition.

Conclusions and Recommendations

Based on the post-excavation soil sampling results, soils with TPHC concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg do not remain in the former location of the UST or associated piping.

No further action is proposed in regard to the closure and site assessment of UST No. 0192477-3 at Building 8006.



1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No. 0192477-3, was closed at Building 8006 at U.S. Army Fort Monmouth, New Jersey on July 8, 1993. Refer to site location map on Figure 1. This report presents the results of the DPW's implementation of the UST Decommissioning/Closure Plan submitted to the NJDEP on August 5, 1991. The plan was approved on September 14, 1992 and assigned TMS No. C-92-2951. The UST was a steel, 550-gallon tank containing No. 2 fuel oil.

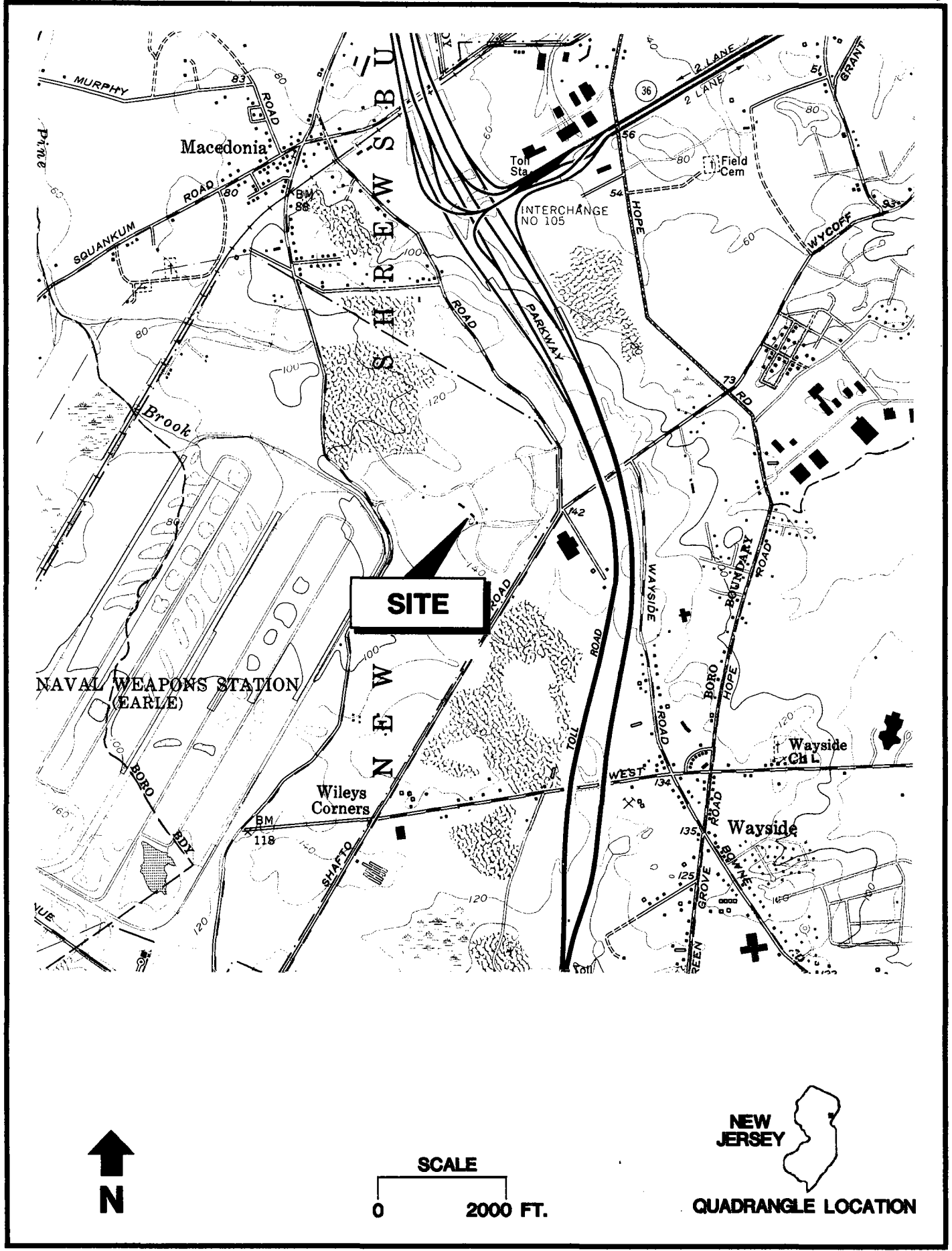
Decommissioning activities for UST No. 0192477-3 complied with all applicable federal, state and local laws and ordinances in effect at the date of decommissioning. These laws included but were not limited to: N.J.A.C. 7:14B-1 et seq., N.J.A.C. 5:23-1 et seq., and Occupational Safety and Health Administration (OSHA) 1910.146 & 1910.120. All permits including but not limited to the NJDEP-approved Decommissioning/Closure Plan were posted onsite for inspection. All Service Environmental Inc., the contractor that conducted the decommissioning activities, is registered and certified by the NJDEP for performing UST closure activities. Closure of UST No. 0192477-3 proceeded under the approval of the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST). The NJDEP-BUST closure approval and signed certifications for UST No. 0192477-3 are included in Appendices A and B, respectively.

Based on an inspection of the UST, field screening of subsurface soils, and analytical results of collected soil samples, the DPW has concluded that any potential historical discharges associated with the UST, have been remediated.

This UST Closure and Site Investigation Report has been prepared by BCM Engineers/Smith Environmental Technologies Corporation to assist the United States Army Directorate of Public Works (DPW) in complying with the NJDEP Bureau of Underground Storage Tanks (NJDEP-BUST) regulations. The applicable NJDEP-BUST regulations at the date of closure were the *Interim Closure Requirements for Underground Storage Tank Systems* (N.J.A.C. 7:14B-1 et seq. September 1990 and revisions dated November 1, 1991).

This report was prepared using information required at the time of closure. Where possible, information required by the *Technical Requirements for Site Remediation* (N.J.A.C. 7:26E) (*Technical Requirements*) was included. Section 1 of this UST Closure and Site Investigation Report provides a summary of the UST decommissioning activities. Section 2 of this report describes the site investigation activities. Conclusions and recommendations, including the results of the soil sampling investigation, are presented in the final section of this report.

Source: U.S.G.S. Quadrangle Long Branch, N.J.



1.2 SITE DESCRIPTION

Building 8006 is located in the northeast corner of the Wayside area of Fort Monmouth, as shown on Figure 1. Building 8006 is a radio testing facility for the army base. UST No. 0192477-3 was located south of Building 8006. A site map is provided in Figure 2. The USTs appurtenant piping ran less than 15 feet southwest to the fill port area. The fill port area was located directly above the UST in a parking lot, for easy accesses.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the area surrounding Building 8006. Included is a description of the regional geology of the area surrounding Fort Monmouth as well as descriptions of the local geology and hydrogeology of the Wayside area.

Regional Geology

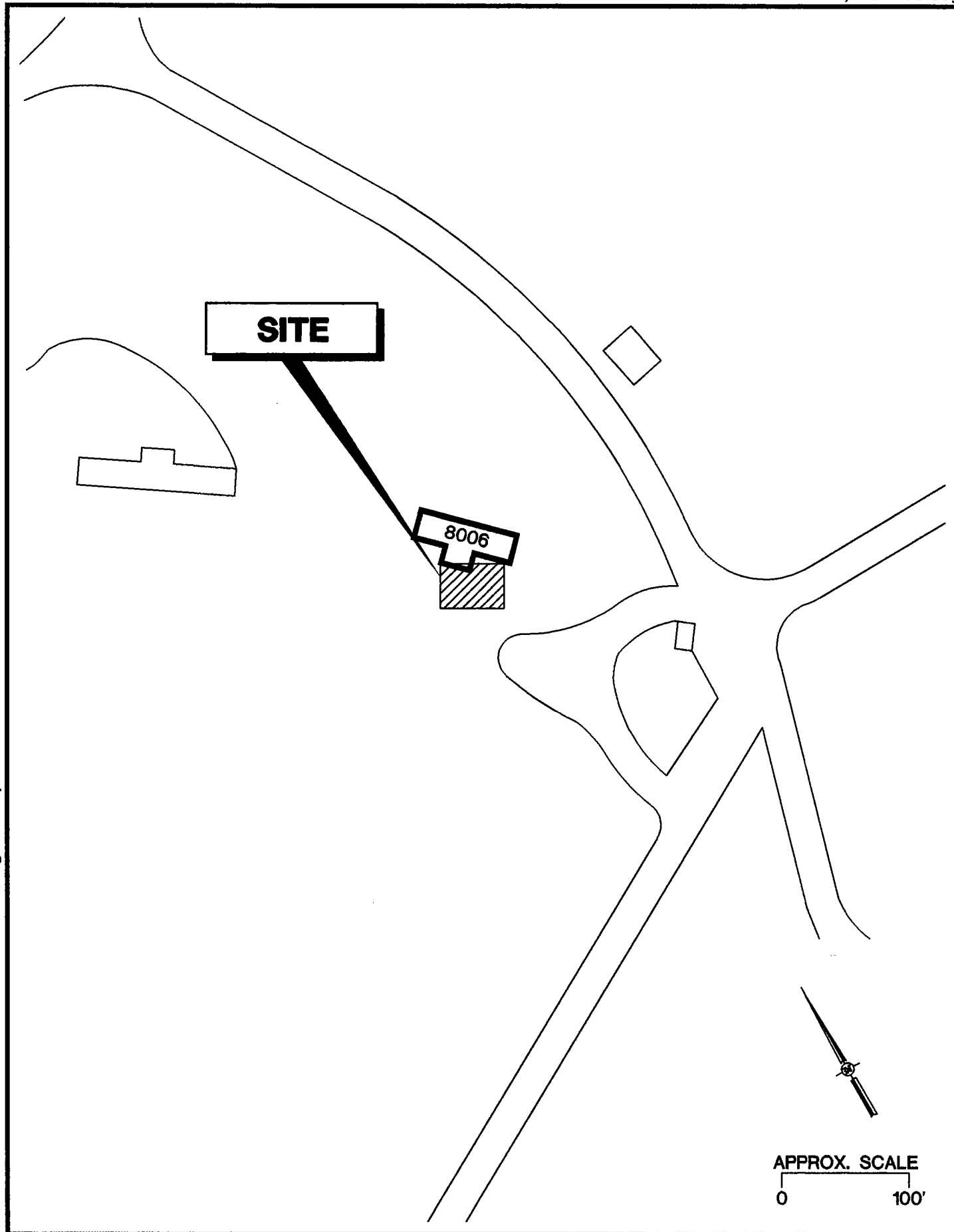
Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood, Wayside, and the Evans areas are located in what may be referred to as the Outer Coastal Plain subprovince, or the Outer Lowlands.

In general, New Jersey Coastal Plain formations consist of a seaward-dipping wedge of unconsolidated deposits of clay, silt, and gravel. These formations typically strike northeast-southwest with a dip ranging from 10 to 60 feet per mile and were deposited on Precambrian and lower Paleozoic rocks (Zapeczka, 1989). These sediments, predominantly derived from deltaic, shallow marine, and continental shelf environments, date from Cretaceous through the Quaternary Periods. The mineralogy ranges from quartz to glauconite.

The formations record several major transgressive/regressive cycles and contain units which are generally thicker to the southeast and reflect a deeper water environment. Over 20 regional geologic units are present within the sediments of the Coastal Plain. Regressive, upward coarsening deposits are usually aquifers (e.g., Englishtown and Kirkwood Formations, and the Cohansey Sand) while the transgressive deposits act as confining units (e.g., the Merchantville, Marshalltown, and Navesink Formations). The individual thicknesses for these units vary greatly (i.e., from several feet to several hundred feet). The Coastal Plain deposits thicken to the southeast from the Fall Line to greater than 6,500 feet in Cape May County (Brown and Zapeczka, 1990).

Local Geology

Based on the regional geologic map (Jablonski, 1968), the Tertiary age Vincentown and Kirkwood Formations outcrop at the Wayside area. The Vincentown Formation lies unconformably over the Hornerstown Sand and dips to the southeast at 27 feet per mile. The upper member of the Vincentown Formation ranges from a fine- to medium- grained quartz sand



to a sandy, clayey, limestone. The sand in this member is similar to coquina by its micaceous, glauconitic, calcareous, and fossiliferous attributes.

The Kirkwood Formation unconformably overlies the Vincentown Formation and dips to the southeast at a rate of 20 feet per mile. The lower unit of the Kirkwood Formation appears to be primarily brown silt in Monmouth County (Jablonski). The upper unit is fine yellowish-brown or light gray quartz sand containing layers of clay.

Hydrogeology

The water table aquifer at the Wayside area is identified as part of the "composite confining units", or minor aquifers. The minor aquifers include the Navesink formation, Red Bank Sand, Tinton Sand, Hornerstown Sand, Vincentown Formation, Manasquan Formation, Shark River Formation, Piney Point Formation, and the basal clay of the Kirkwood Formation.

The Kirkwood Formation has been described by Jablonski to consist of alternating layers of sand and clay that are chiefly discontinuous. Development of the aquifer in the Kirkwood Formation has been limited. Only a small percentage of the county is underlain by an aquifer thickness of 30 feet or more.

According to Jablonski, those wells that tap this aquifer may produce from 5 to 1,236 gallons per minute (gpm). Some well owners have reported water that requires treatment to remove iron. The water has also been reported to contain noticeable amounts of hydrogen sulfide gas, but this can be removed easily by aeration.

Shallow groundwater is locally influenced within the Wayside area by the following factors:

- tidal influence (based on proximity to the Atlantic Ocean, rivers and tributaries)
- topography
- nature of the fill material within the Wayside area
- presence of clay and silt lenses in the natural overburden deposits
- local groundwater recharge areas (i.e., streams, lakes)

Due to the fluvial nature of the overburden deposits (i.e., sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis.

Building 8006 is located approximately 1,500 feet northeast of Pine Brook, the nearest water body. Based on the Wayside area topography, the groundwater flow in the area of Building 8006 is anticipated to be to the southwest.

1.3 HEALTH AND SAFETY

Before, during, and after all decommissioning activities, hazards at the work site which may have posed a threat to the Health and Safety of all personnel who were involved with, or were affected by, the decommissioning of the UST system were minimized. All areas which posed, or may have been suspected to pose a vapor hazard were monitored by a qualified individual utilizing an organic vapor analyzer (OVA). The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA.

1.4 REMOVAL OF UNDERGROUND STORAGE TANK

1.4.1 General Procedures

- All underground obstructions (utilities, etc.) were marked out by the contractor performing the closure prior to excavation activities.
- All activities were carried out with the greatest regard to safety and health and the safeguarding of the environment.
- All excavated soils were visually examined and screened with an OVA for evidence of contamination. Potentially contaminated soils were identified and logged during closure activities.
- Surface materials (i.e., asphalt, concrete, etc.) were excavated and staged separately from all soil and recycled in accordance with all applicable regulations and laws.
- A Sub-Surface Evaluator from the DPW was present during all closure activities.

1.4.2 Underground Storage Tank Excavation and Cleaning

Prior to UST decommissioning activities, surficial soil was excavated to expose the UST and associated piping. All free product present in the piping was drained into the UST, and the UST was purged prior to cutting and removal of the piping. After removal of the associated piping, a manway was made in the UST to allow for proper cleaning. The UST was completely emptied of all liquids prior to removal from the ground. Approximately 490 gallons of liquid were removed from the UST. The liquids were transported and disposed of by Casie Ecology Oil Salvage, a NJDEP-approved petroleum recycling and disposal company located in Franklinville, New Jersey. Refer to Appendix C for waste manifest (No. NJA-1708420, which lists the combined liquid removed from USTs at Buildings 8003 and 8006).

UST was cleaned prior to removal from the excavation in accordance with the NJDEP-BUST regulations. After the UST was removed from the excavation, it was staged on polyethylene sheeting and examined for corrosion holes. No cracks, punctures or corrosion holes were observed during the inspection by the Sub-Surface Evaluator. Soils surrounding the UST were screened visually and with an OVA for evidence of contamination. Evidence of contamination was noted, and the soil was removed. No contaminated soil greater than the NJDEP soil cleanup criteria (TPHC > 1000 ppm) was identified.

Soil screening was also performed along the piping length from the UST to the fill port. No contamination was noted between the tank and the fill port.

1.5 UNDERGROUND STORAGE TANK TRANSPORTATION AND DISPOSAL

The tank was transported by All Service Environmental Inc., to Mazza and Sons Inc., for recycling in compliance with all applicable regulations and laws. A copy of the UST Disposal Certificate was not available.

The Subsurface Evaluator labeled the UST prior to transport with the following information:

- site of origin
- contact person
- NJDEP UST Facility ID number
- name of transporter/contact person
- destination site/contact person

1.6 MANAGEMENT OF EXCAVATED SOILS

Based on OVA air monitoring and TPHC analysis results from the first round of sampling, approximately 18 cubic yards of potentially contaminated soils were excavated from the area surrounding the former location of the UST. Potentially contaminated soils were stockpiled separately from other excavated material, and were placed on and covered with polyethylene sheets. Potentially contaminated soils were transported to a concrete pad located near Building 8005 for storage prior to ultimate disposal at Soil Remediation of Philadelphia. Soils that did not exhibit signs of contamination were used as backfill following removal of the UST.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed and carried out by U.S. Army DPW personnel. All analyses were performed and reported by U.S. Army Fort Monmouth Environmental Laboratory, a NJDEP certified testing laboratory. All sampling was performed under the direct supervision of a NJDEP Certified Sub-Surface Evaluator according to the methods described in the NJDEP Field Sampling Procedures Manual (1992). Sampling frequency and parameters analyzed complied with the NJDEP-BUST document *Interim Closure Requirements for Underground Storage Tank Systems* (September 1990 and revisions dated November 1, 1991) which was the applicable regulation at the date of the closure. All records of the Site Investigation activities are maintained by the Fort Monmouth DPW Environmental Office.

The following Parties participated in Closure and Site Investigation Activities.

- Closure Contractor: All Service Environmental Inc.
Contact Person: Mark Turoff
Phone Number: (914)365-0800
NJDEP Company Certification No.: G3100194
- Subsurface Evaluator: Charles Appleby
Employer: U.S. Army, Fort Monmouth
Phone Number: (908)532-6224
NJDEP Certification No.: 002056
- Analytical Laboratory: U.S. Army Fort Monmouth Environmental Laboratory
Contact Person: Brian K. McKee
Phone Number: (908)532-4359
NJDEP Company Certification No.: 13461
- Hazardous Waste Hauler: Casie Ecology Oil Salvage Inc.
Contact Person: Greg Call
Phone Number: (609)696-4401
NJDEP Hazardous Waste Hauler No.: S6747

2.2 FIELD SCREENING/MONITORING

Field screening was performed by a NJDEP Certified Sub-Surface Evaluator using an OVA and visual observations to identify potentially contaminated material. Soils were removed from the excavation surrounding UST No. 0192477-3 until no evidence of contamination remained.

2.3 SOIL SAMPLING

On July 9, 1993, post-excavation soil samples A, B, C, D, E, F, and DUP E were collected from a total of six (6) locations along the base and sidewalls of the UST excavation. Refer to soil sampling location map on Figure 3. The depth of the excavation was approximately 9 feet below ground surface. All samples were analyzed for TPHC. Because none of the samples exhibited a TPHC concentration exceeding 1,000 milligrams per kilograms (mg/kg), none were analyzed for volatile organic compounds with a forward library search for 10 tentatively identified compounds (VO+10).

An additional round of excavation and sampling was performed on July 15, 1993, by request of the Sub-Surface Evaluator. Post-excavation soil samples G, H, I, and DUP I were then collected from the base and sidewalls of the expanded portion of the excavation and were analyzed for TPHC. The depth of the excavation was approximately 11 feet below ground surface.

The site assessment was performed by U.S. Army personnel in accordance with the NJDEP *Technical Requirements* and the NJDEP *Field Sampling Procedures Manual*. A summary of sampling activities including parameters analyzed is provided on Table 1. The samples were collected using decontaminated stainless steel scoops. Following soil sampling activities, the samples were chilled and delivered to U.S. Army Fort Monmouth Environmental Laboratory located in Fort Monmouth, New Jersey for analysis.

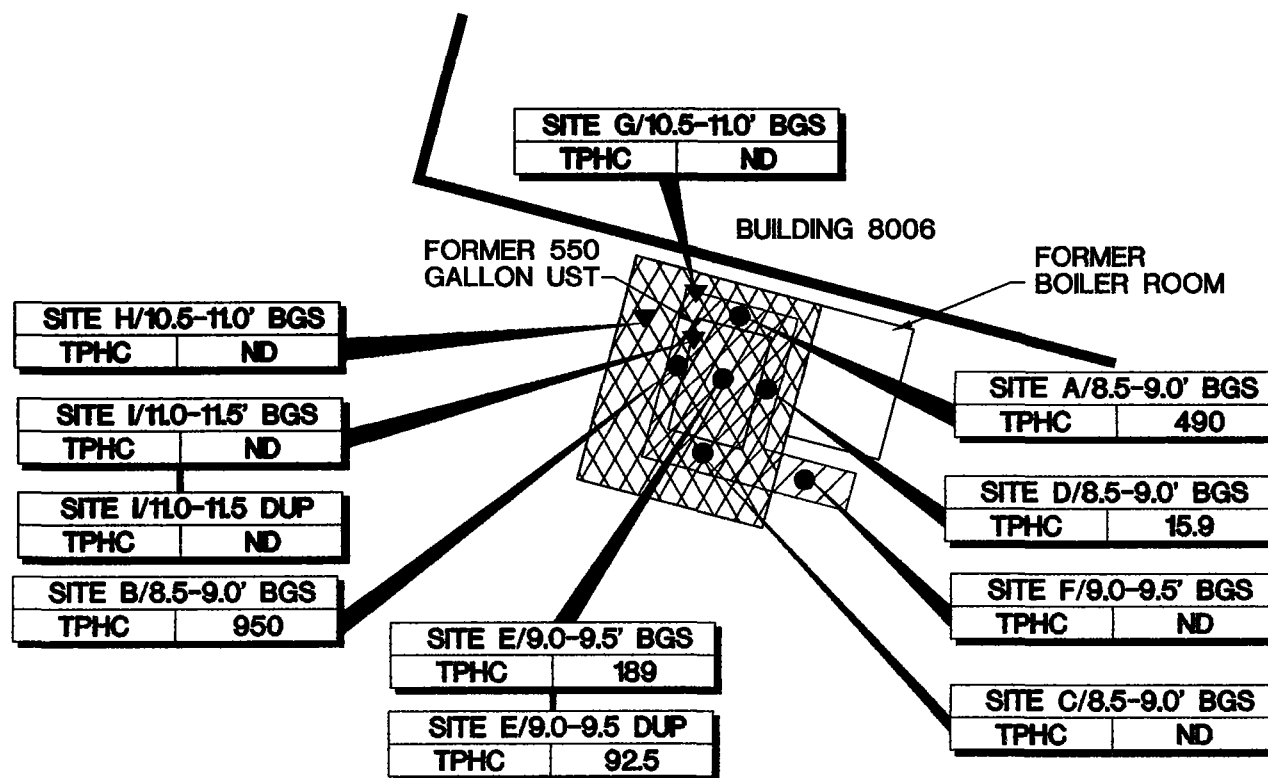
TABLE 1

SUMMARY OF POST-EXCAVATION SAMPLING ACTIVITIES
BUILDING 8006, WAYSIDE
FORT MONMOUTH, NEW JERSEY

Sample ID	Date of Collection	Date Analysis Started	Matrix	Sample Type	Analytical Parameters (and USEPA Method)*	Sampling Method
A	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
B	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
C	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
D	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
E	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
F	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
DUP E	7/9/93	7/10/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
G	7/15/93	7/16/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
H	7/15/93	7/16/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
I	7/15/93	7/16/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop
DUP I	7/15/93	7/16/93	Soil	Post-Excavation	TPHC	Stainless Steel Scoop

Note:

* TPHC Total Petroleum Hydrocarbons (Method 418.1 / soil and aqueous)



LEGEND

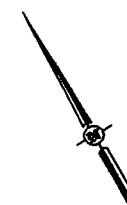
● SOIL SAMPLE LOCATION
(JULY 9, 1993)

▲ SOIL SAMPLE LOCATION
(JULY 15, 1993)

▨ LIMIT OF EXCAVATION
(JULY 9, 1993)

▩ LIMIT OF EXCAVATION
(JULY 15, 1993)

- NOTES: 1. ALL RESULTS IN MILLIGRAMS PER KILOGRAM (DRY WEIGHT)
2. SEE TABLE 2 FOR NJDEP SOIL CLEANUP CRITERIA
3. BGS = BELOW GROUND SURFACE



SCALE

0 10'

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

To evaluate soil conditions following removal of the UST and associated piping, post-excavation soil samples were collected from a total of six (6) locations on July 9, 1993, and from a total of four (4) locations on July 15, 1993. All samples were analyzed for TPHC. The post-excavation sampling results were compared to the NJDEP residential direct contact total organic contaminants soil cleanup criteria of 10,000 mg/kg (N.J.A.C. 7:26D and revisions dated February 3, 1994). A summary of the analytical results and comparison to the NJDEP soil cleanup criteria is provided on Table 2, and the soil sampling results are shown on Figure 3. The analytical data package is provided in Appendix D. The full data package, including associated quality control data, is on file at the U.S. Army Fort Monmouth, DPW.

All post-excavation soil samples collected on July 9, 1993, from the UST excavation and from below piping associated with the UST contained either non-detectable concentrations of TPHC or concentrations below the NJDEP soil cleanup criteria for total organics of 10,000 mg/kg. Samples C, and F, contained non-detectable concentrations of contaminants. All other samples (samples A, B, D, E, and DUP E) contained levels of TPHC ranging in concentration from 15.9 mg/kg to 950 mg/kg.

All post-excavation soil samples collected on July 15, 1993 contained non-detectable concentrations of TPHC.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all post-excavation soil samples collected from the UST closure excavation at Building 8006 were below the NJDEP soil cleanup criteria for total organic contaminants.

Based on the post-excavation sampling results, soils with TPHC concentrations exceeding the NJDEP soil cleanup criteria for total organic contaminants of 10,000 mg/kg do not remain in the former location of the UST or associated piping.

No further action is proposed in regard to the closure and site assessment of UST No. 0192477-3 at Building 8006.

TABLE 2

POST-EXCAVATION SOIL SAMPLING RESULTS
 BUILDING 8006, WAYSIDE AREA
 FT. MONMOUTH, NEW JERSEY

PAGE 1 OF 2

Sample ID/Depth	Sample Laboratory ID	Sample Date	Analysis Date	Analytical Method Used	Sample Quantitation Limit (mg/kg)	Compound of Concern	Result (mg/kg) *	NJDEP Soil Cleanup Criteria ** (mg/kg)	Exceeds Cleanup Criteria
A/8.5-9.0'	1240.1	7/09/93	7/10/03	Total Solid	--	--	88%	--	--
				TPHC	3.3	yes	490.0	10,000	--
B/8.5-9.0'	1240.2	7/09/93	7/10/93	Total Solid	--	--	89%	--	--
				TPHC	6.6	yes	950.0	10,000	--
C/8.5-9.0'	1240.3	7/09/93	7/10/93	Total Solid	--	--	94%	--	--
				TPHC	3.3	yes	ND	10,000	--
D/8.5-9.0'	1240.4	7/09/93	7/10/93	Total Solid	--	--	90%	--	--
				TPHC	3.3	yes	15.9	10,000	--
E/9.0-9.5'	1240.5	7/09/93	7/10/93	Total Solid	--	--	94%	--	--
				TPHC	3.3	yes	189.0	10,000	--
F/9.0-9.5'	1240.6	7/09/93	7/10/93	Total Solid	--	--	96%	--	--
				TPHC	3.3	yes	ND	10,000	--
DUP E/9.0-9.5'	1240.7	7/09/93	7/10/93	Total Solid	--	--	94%	--	--
				TPHC	3.3	yes	92.5	10,000	--
G/10.5-11.0'	1244.1	7/15/93	7/16/93	Total Solid	--	--	89%	--	--
				TPHC	3.3	yes	ND	10,000	--

TABLE 2

POST-EXCAVATION SOIL SAMPLING RESULTS
 BUILDING 8006, WAYSIDE AREA
 FT. MONMOUTH, NEW JERSEY

PAGE 2 OF 2

Sample ID/Depth	Sample Laboratory ID	Sample Date	Analysis Date	Analytical Method Used	Sample Quantitation Limit (mg/kg)	Compound of Concern	Result (mg/kg) *	NJDEP Soil Cleanup Criteria ** (mg/kg)	Exceeds Cleanup Criteria
H/10.5-11.0'	1244.2	7/15/93	7/16/93	Total Solid	--	--	87%	--	--
				TPHC	3.3	yes	ND	10,000	--
I/11.0-11.5'	1244.3	7/15/93	7/16/93	Total Solid	--	--	95%	--	--
				TPHC	3.3	yes	ND	10,000	--
DUP I/11.0-11.5'	1244.4	7/15/93	7/16/93	Total Solid	--	--	93%	--	--
				TPHC	3.3	yes	ND	10,000	--

Note:

* Unless noted otherwise

** NJDEP Residential Direct Contact soil cleanup criteria for total organics

-- Not applicable / does not exceed criteria

TPHC Total Petroleum Hydrocarbons

BCM Engineers Inc. (BCM Project No. 09-5004-01)

excsoil.doc

SMITH

APPENDIX A

NJDEP BUST CLOSURE APPROVAL

UNDERGROUND STORAGE TANK SYSTEM CLOSURE APPROVAL

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL
PROTECTION AND ENERGY

DIVISION OF RESPONSIBLE PARTY SITE REMEDIATION -
BUREAU OF UNDERGROUND STORAGE TANKS
CN-029, TRENTON, NJ 08625-0029

TMS # C-92-2951

UST # 0192477 -3 Bldg 8006

US Army Fort Monmouth
DEH Bldg. 167
Ft. Monmouth, NJ 07703

(Monmouth)

THE ABOVE LISTED FACILITY IS HEREBY GRANTED APPROVAL TO PERFORM
THE FOLLOWING ACTIVITY IN ACCORDANCE WITH N.J.A.C. 7:14B-1 et seq.:

REMOVAL: One 550 gallon #2 fuel oil (UST)s, and appurtenant piping.

SITE ASSESSMENT: Soil samples will be taken every five (5) feet along the center line of each tank and one (1) soil sample for every 15 feet along all associated piping. Two (2) additional samples will be taken from around the tank and biased to the areas of highest field screened readings. Samples will be analyzed for TPHC. If sample results are greater than 1,000ppm than samples will be analyzed for VO+10.

ON-SITE MANAGER: Dinkerrai Desai

908-532-1475
TELEPHONE:

OWNER:

TELEPHONE:

EFFECTIVE DATE: September 14, 1992

THIS FORM MUST BE DISPLAYED AT THE SITE DURING THE APPROVED
ACTIVITY AND MUST BE MADE AVAILABLE FOR INSPECTION AT ALL TIMES.

Michael S Kelly (for)

KEVIN F. KRATINA, ACTING BUREAU CHIEF
BUREAU OF UNDERGROUND STORAGE TANKS

SMTH

APPENDIX B
CERTIFICATIONS



UST # _____
Date Rec'd _____
TMS # _____
Staff _____

State of New Jersey
Department of Environmental Protection and Energy
Division of Responsible Party Site Remediation
CN 029

Trenton, NJ 08625-0029
Tel. # 609-984-3156
Fax. # 609-292-5604

Scott A. Weiner -
Commissioner

Karl J. Delaney
Director

**UNDERGROUND STORAGE TANK
SITE ASSESSMENT SUMMARY**

*Under the provisions of the Underground Storage
of Hazardous Substances Act
in accordance with N.J.A.C. 7:14B*

This Summary form shall be used by all owners and operators of Underground Storage Tank Systems (USTS) who have either reported a release and are subject to the site assessment requirements of N.J.A.C. 7:14B-8.2 or who have closed USTS pursuant to N.J.A.C. 7:14B-9.1 et seq. and are subject to the site assessment requirements of N.J.A.C. 7:14B-9.2 and 9.3.

INSTRUCTIONS:

- Please print legibly or type.
- Fill in all applicable blanks. This form will require various attachments in order to complete the Summary. The technical guidance document, Interim Closure Requirements for UST's, explains the regulatory (and technical) requirements for closure and the Scope of Work, Investigation and Corrective Action Requirements for Discharges from Underground Storage Tanks and Piping Systems explains the regulatory (and technical) requirements for corrective action.
- Return one original of the form and all required attachments to the above address.
- Attach a scaled site diagram of the subject facility which shows the information specified in Item IV B of this form.
- Explain any "No" or "N/A" response on a separate sheet.

Date of Submission 26 JUL 1995

Building 8006

0192477-3
FACILITY REGISTRATION #

I. FACILITY NAME AND ADDRESS

U.S. Army Fort Monmouth New Jersey
Directorate of Engineering and Housing Building 167
Fort Monmouth New Jersey 07703 County Monmouth
Telephone No. 908-532-6224

OWNER'S NAME AND ADDRESS, if different from above

Telephone No. _____

II. DISCHARGE REPORTING REQUIREMENTS

- A. Was contamination found? ☐ Yes ☒ No If Yes, Case No. _____
(Note: All discharges must be reported to the Environmental Action Hotline (609) 292-7172)
- B. The substance(s) discharged was(were) N/A
- C. Have any vapor hazards been mitigated? ☐ Yes ☐ No ☒ N/A

III. DECOMMISSIONING OF TANK SYSTEMS

Closure Approval No. C-92-2951

The site assessment requirements associated with tank decommissioning are explained in the Technical Guidance Document, Interim Closure Requirements for UST's, Section V. A-D. Attach complete documentation of the methods used and the results obtained for each of the steps of tank decommissioning used. Please include a site map which shows the locations of all samples and borings, the location of all tanks and piping runs at the facility at the beginning of the tank closure operation and annotated to differentiate the status of all tanks and piping (e.g., removed, abandoned, temporarily closed, etc.). The same site map can be used to document other parts of the site assessment requirements, if it is properly and legibly annotated.

IV. SITE ASSESSMENT REQUIREMENTS

A. Excavated Soil

Any evidence of contamination in excavated soil will require that the soil be classified as either Hazardous Waste or Non-Hazardous Waste. Please include all required documentation of compliance with the requirements for handling contaminated excavated soil (if any was present) as explained in the technical guidance documents for closure and corrective action. Describe amount of soil removed, its classification, and disposal location.

B. Scaled Site Diagrams

1. Scaled site diagrams must be attached which include the following information:

- North arrow and scale
- The locations of the ground water monitoring wells
- Location and depth of each soil sample and boring
- All major surface and sub-surface structures and utilities
- Approximate property boundaries
- All existing or closed underground storage tank systems, including appurtenant piping
- A cross-sectional view indicating depth of tank, stratigraphy and location of water table
- Locations of surface water bodies

C. Soil samples and borings (check appropriate answer)

- Were soil samples taken from the excavation as prescribed? ☒ Yes ☐ No ☐ N/A
- Were soil borings taken at the tank system closure site as prescribed? ☐ Yes ☐ No ☒ N/A
- Attach the analytical results in tabular form and include the following information about each sample:
 - Customer sample number (keyed to the site map)
 - The depth of the soil sample
 - Soil boring logs
 - Method detection limit of the method used
 - QA/QC Information as required

D. Ground Water Monitoring

1. Number of ground water monitoring wells installed. 0
2. Attach the analytical results of the ground water samples in tabular form. Include the following information for each sample from each well:
 - a. Site diagram number for each well installed
 - b. Depth of ground water surface
 - c. Depth of screened interval
 - d. Method detection limit of the method used
 - e. Well logs
 - f. Well permit numbers
 - g. QA/QC Information as required

V. SOIL CONTAMINATION

- A. Was soil contamination found? Yes ☒ No ☒

If "Yes", please answer Question B-E

If "No", please answer Question B

- B. The highest soil contamination still remaining in the ground has been determined to be:

1. N/A ppb total BTEX, N/A ppb total non-targeted VOC
2. N/A ppb total B/N, N/A ppb total non-targeted B/N
3. ND ppm TPHC
4. N/A ppb _____ (for non-petroleum substance)

C. Remediation of free product contaminated soils

1. All free product contaminated soil on the property boundaries and above the water table are believed to have been removed from the subsurface Yes ☒ No ☒
2. Free product contaminated soils are suspected to exist below the water table Yes ☒ No ☒
3. Free product contaminated soils are suspected to exist off the property boundaries. Yes ☒ No ☒

- D. Was the vertical and horizontal extent of contamination determined? Yes ☐ No ☐ N/A ☒

- E. Does soil contamination intersect ground water? Yes ☐ No ☐ N/A ☒

VI. GROUND WATER CONTAMINATION N/A

- A. Was ground water contamination found? Yes ☐ No ☐

If "Yes", please answer Questions B-G.

If "No", please answer only Question B.

- B. The highest ground water contamination at any 1 sampling location and at any 1 sampling event to date has been determined to be:

1. _____ ppb total BTEX, _____ ppb total non-targeted VOC
2. _____ ppb total B/N, _____ ppb total non-targeted B/N
3. _____ ppb total MTBE, _____ ppb total TBA
4. _____ ppb _____ (for non-petroleum substance)
5. greatest thickness of separate phase product found _____
6. separate phase product has been delineated Yes ☐ No ☐ N/A ☒

C. Result(s) of well search

1. A well search (including a review of manual well records) indicates that private, municipal or commercial wells do exist within the distances specified in the Scope of Work. Yes ☐ No ☐ N/A ☒
2. The number of these wells identified is _____.

D. Proximity of wells and contaminant plume

1. The shallowest depth of any well noted in the well search which may be in the horizontal or vertical potential path(s) of the contaminant plume(s) is _____ feet below grade (consideration has been given for the effects of pumping, subsurface structures, etc. on the direction(s) of contaminant migration). This well is _____ feet from the source and its screening begins at a depth of _____ feet.
2. The shallowest depth to the top of the well screen for any well in the potential path of the plume(s) (as described in D1 above) is _____ feet below grade. This well is located _____ feet from the source.
3. The closest horizontal distance of a private, commercial or municipal well in the potential path of the plume (as determined in D1) is _____ feet from the source. This well is _____ feet deep and screening begins at a depth of _____ feet.

E. A plan for separate phase product recovery has been included. ☐ Yes ☐ No ☐ N/A

F. A ground water contour map has been submitted which includes the ground water elevations for each well.
☐ Yes ☐ No ☐ N/A

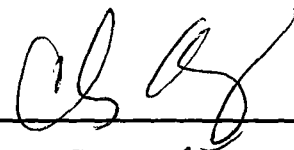
G. Delineation of contamination

1. The ground water contaminants have been delineated to MCLs or lower values at the property boundaries. ☐ Yes ☐ No
2. The plume is suspected to continue off the property at concentrations greater than MCLs.
☐ Yes ☐ No
3. Off property access (circle one): ☐ is being sought ☐ has been approved ☐ has been denied

VII. SITE ASSESSMENT CERTIFICATION [preparer of site assessment plan - N.J.A.C. 7:14B-6.3(b) & 9.5(a)3]

The person signing this certification as the "Qualified Ground Water Consultant" (as defined in N.J.A.C. 7:14B-1.6) responsible for the design and implementation of the site assessment plan as specified in N.J.A.C. 7:14B-8.3(a) & 9.2(b)2, must supply the name of the certifying organization and certification number.

"I certify under penalty of law that the information provided in this document is true, accurate, and complete and was obtained by procedures in compliance with N.J.A.C. 7:14B-8 and 9. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) Charles Appleby SIGNATURE 

COMPANY NAME U.S. Army Fort Monmouth DATE 7-27-95
(Preparer of Site Assessment Plan)

CERTIFYING ORGANIZATION NJDEP CERTIFICATION NUMBER 2056

VIII. TANK DECOMMISSIONING CERTIFICATION [person performing tank decommissioning portion of closure plan - N.J.A.C. 7:14B-9.5(a)4]

"I certify under penalty of law that tank decommissioning activities were performed in compliance with N.J.A.C. 7:14B-9.2(b)3. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) ALL SERVICE ENVIRONMENTAL, INC. SIGNATURE [Signature]
523 Route 303
COMPANY NAME Orangeburg NY 10962 DATE 9-20-93
(Performer of Tank Decommissioning)

IX. CERTIFICATIONS BY THE RESPONSIBLE PARTY(IES) OF THE FACILITY

A. The following certification shall be signed by the highest ranking individual with overall responsibility for that facility [N.J.A.C. 7:14B-2.3(c)1].

"I certify under penalty of law that the information provided in this document is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) James Ott SIGNATURE [Signature]
COMPANY NAME U.S. Army Fort Monmouth DATE 7/27/95

B. The following certification shall be signed as follows [according to the requirements of N.J.A.C. 7:14B-2.3(C)2]:

1. For a corporation, by a principal executive officer of at least the level of vice president.
2. For a partnership or sole proprietorship, by a general partner or the proprietor, respectively; or
3. For a municipality, State, Federal or other public agency by either the principal executive officer or ranking elected official.
4. In cases where the highest ranking corporate partnership, governmental officer or official at the facility as required in A above is the same person as the official required to certify in B, only the certification in A need to be made. In all other cases, the certifications of A and B shall be made.

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false, inaccurate, or incomplete information, including fines and/or imprisonment."

NAME (Print or Type) _____ SIGNATURE _____
COMPANY NAME _____ DATE _____

SMITH

APPENDIX C
WASTE MANIFEST



State of New Jersey
Department of Environmental Protection and Energy
Hazardous Waste Regulation Program
Manifest Section
CN 028, Trenton, NJ 08625-0028

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

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

UNIFORM HAZARDOUS WASTE MANIFEST		1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
3. Generator's Name and Mailing Address NW3 E. Main St. #2096 Route 209 NJ 08625-0028		4. Generator's Phone (708) 571-0515		A. State Manifest Document Number NJ 1708420	
5. Transporter 1 Company Name Castle Ecology Oil Salvage, Inc. IA Castle/Protank		6. US EPA ID Number NJ 004399389		B. State Generator's ID 5465	
7. Transporter 2 Company Name		8. US EPA ID Number		C. State Trans. ID NJ 004399389	
9. Designated Facility Name and Site Address Castle Ecology Oil Salvage, Inc. IA Castle/Protank 3209 W. Hill Rd Vineland, N.J. 08360		10. US EPA ID Number NJ 004399389		D. Transporter's Phone (809) 696-4401	
11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number) HM		12. Containers No. Type		13. Total Quantity	14. Unit Wt/Vol
a. X Combustible Liquid, H.O.S. Combustible Liquid, NA1993		403 T		11980	G X 7 2 2
b.					
c.					
d.					
J. Additional Descriptions for Materials Listed Above L.T. Water 10:1/Sec.		K. Handling Codes for Wastes Listed Above			
a.		b.		c.	
b.		d.		e.	
15. Special Handling Instructions and Additional Information 24 hour emergency response telephone (800) 452-7322 CFR 0092 F2 E.P.C. 127					
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 JOHN PAWLUS		Signature John Pawlus		Month Day Year 10 20 78	
17. Transporter 1 Acknowledgement of Receipt of Materials		Printed/Typed Name Jim McLean		Signature Jim McLean	
18. Transporter 2 Acknowledgement of Receipt of Materials		Printed/Typed Name		Signature	
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		Month Day Year	



APPENDIX D

SOIL ANALYTICAL DATA PACKAGE

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEPE Certification # 13461

Client: U.S. Army
DEH, SELFM-EH-EV
Bldg. 167
Ft. Monmouth, NJ 07703

Lab. ID #: 1240.1-.7
Sample Rec'd: 07/09/93
Analysis Start: 07/10/93
Analysis Comp: 07/10/93

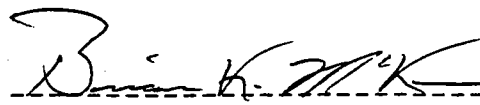
Analysis: 418.1 (TPH)
Matrix: Soil
Analyst: S. Hubbard

NJDEPE UST Reg. #: 00192477-3
TMS #: C-12-2951
NJDEPE Case #:
Location #: 8006 (550 gal #2)

Lab ID.	Description	%Solid	Result (mg/Kg)	MDL
1240.1	Site A #	88	490.	3.3
1240.2	Site B #	89	950.	6.6
1240.3	Site C #	94	ND	3.3
1240.4	Site D #	90	15.9	3.3
1240.5	Site E #	94	189.	3.3
1240.6	Site F #	96	ND	3.3
1240.7	Site G #	94	92.5	3.3
M. Bl.	METHOD BLANK	100	ND	3.3

Notes: ND = Not Detected, MDL = Method Detection Limit
* = Silica Gel Added # = hNu reading = ND

Batch Lab Dup = 100%; Batch Spike = 85%; Spike Dup. = 87%



Brian K. McKee
Laboratory Director

**SERV-AIR, INC.**

An E-SYSTEMS Company

P.O. #:

Chain of Custody

Project #: <u>Bldg 8006</u>		Sampler: <u>C. Appleby DEH</u>		Date / Time <u>7/9/93</u> <u>9:30 am</u>		Analysis Parameters								Start:	
Customer: <u>DEH</u> <u>C. Appleby</u>		Site Name: <u>Bldg. 8006 - Unit # 0019277-3</u> <u>SSD gnl - #2H-oil</u>												Finish:	
Phone: <u>X 26224</u>															
Lab Sample ID Number	Date/Time	Customer Sample Location/ID Number	Sample Matrix	# of Bottles	TPHC								Remarks		
<u>1240.1</u>	<u>7/9/93</u> <u>10:00</u>	<u>Site A</u>	<u>Soil</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
<u>1240.2</u>	<u>10:01</u>	<u>Site B</u>	<u>↓</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
<u>1240.3</u>	<u>10:02</u>	<u>Site C</u>	<u>↓</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
<u>1240.4</u>	<u>10:03</u>	<u>Site D</u>	<u>↓</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
<u>1240.5</u>	<u>10:04</u>	<u>Site E</u>	<u>↓</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
<u>1240.6</u>	<u>10:05</u>	<u>Site F</u>	<u>↓</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
<u>1240.7</u>	<u>10:06</u>	<u>Site G</u>	<u>↓</u>	<u>1</u>	<u>X</u>							<u>ND</u>			
Relinquished By (signature) <u>[Signature]</u>		Date / Time <u>7/9/93</u> <u>13:15</u>		Received By (signature) <u>Sarah J. Hubbard</u>		Shipped By:									
Relinquished By (signature)		Date / Time		Received for Lab by (signature):		Date / Time									

Note: A drawing depicting sample location should be attached or drawn on the reverse side of this chain of custody.

July 10, 1993 1500
Blank Sarah J. Heller

33.75 (77) MV R. 9989

67.5 (180) MV

135 (388) MV

1240.1 (328 MV)

1240.2 (321 MV) 2.4 dil

1240.3 ND

1240.4 (10 MV)

1240.5 (134 MV)

1240.6 ND

1240.7 (65 MV)

1240.8 ND

1240.8 ND

1240.10 (203 MV)

1240.11

1240.10 Dup N 1240.11 Spk (337 MV)

1240.11 Spk Dup (242 MV)

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEPE Certification # 13461

Client: U.S. Army
DEH, SELFM-EH-EV
Bldg. 167
Ft. Monmouth, NJ 07703

Lab. ID #: 1244.1-.4
Sample Rec'd: 07/15/93
Analysis Start: 07/16/93
Analysis Comp: 07/16/93

Analysis: 418.1 (TPH)
Matrix: Soil
Analyst: S. Hubbard

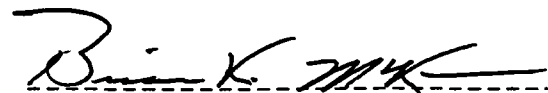
NJDEPE UST Reg.#: 00192477-3
TMS #: C-92-2951
NJDEPE Case #:
Location #: Bldg. # 8006

Site Remediation

Lab ID.	Description	%Solid	TPHC	
			Result	MDL
			(mg/Kg)	
1244.1	Site G, W. WALL, hNu = ND	89	ND	3.3
1244.2	Site H, N. SIDE WALL, hNu = ND	87	ND	3.3
1244.3	Site I, W.PIT BOTTOM, hNu = ND	95	ND	3.3
1244.4	Site J, DUP OF I hNu = ND	93	ND	3.3
M. Bl.	METHOD BLANK	100	ND	3.3

Notes: ND = Not Detected, MDL = Method Detection Limit
* = Silica Gel Added

Batch Dup = 95%: Batch Spike = 90% Batch Spike Dup. = 98%



Brian K. McKee
Laboratory Director



P.O. #:

Chain of Custody

SAI-ENV COC form 01

Page 1 of 1 Pages

Rev. A Date: 02 Apr 93

FT. MONMOUTH OFFICE

E-SYSTEMS, INC. • P. O. BOX 369, BUILDING 1209 • 11 LIONHEAD DRIVE NEW JERSEY 07703-5000 • (201) 541-0925

Report of Analysis
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEPE Certification # 13461

Client: U.S. Army
DEH, SELFM-EH-EV
Bldg. 167
Ft. Monmouth, NJ 07703

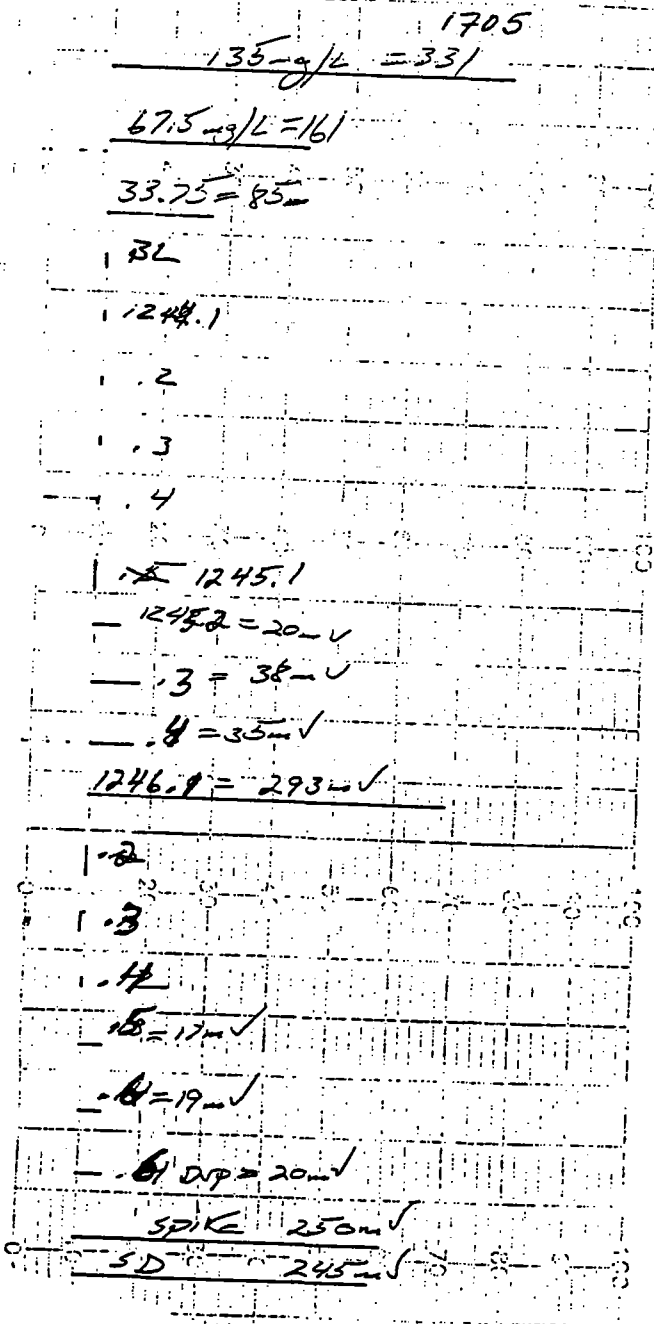
Lab. ID #: 1244.1-.4
Sample Rec'd: 07/15/93
Analysis Start: 07/16/93
Analysis Comp: 07/16/93

Analysis: 418.1 (TPH)
Matrix: Soil
Analyst: S. Hubbard

NJDEPE UST Reg.#: 00192477-3
TMS #: C-92-2951
NJDEPE Case #:
Location #: Bldg. # 8006

Site Remediation

July 16, 1993 B. McKee



PHC Conformance/Non-conformance Summary Report

No Yes

1. Blank Contamination - If yes, list the sample and the corresponding concentrations in each blank

☒ ☐

2. Matrix Spike/Matrix Sp Dup. Recoveries Meet Criteria (If not met, list the sample and corresponding recovery which falls outside the acceptable range)

☐ ☒

3. IR Spectra submitted for standards, blanks, & samples

☐ ☒

4. Chromatograms submitted for standards, blanks, and samples if GC fingerprinting was conducted.

☒

5. Extraction holding time met. (If not met, list number of days exceeded for each sample)

☒

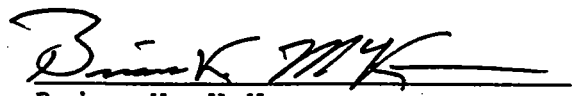
6. Analysis holding time met. (If not met, list number of days exceeded for each sample)

☒

Comments:

Laboratory Authentication Statement

I certify under penalty of law, where applicable, that this laboratory meets the Laboratory Performance Standards and Quality Control requirements specified in N.J.A.C. 7:18 and 40 CFR Part 136 for Water and Wastewater Analyses and SW 846 for Solid Waste Analysis. I have personally examined the information contained in this report, and to the best of my knowledge, I believe that the submitted information is true, accurate, complete, and meets the above referenced standards where applicable. I am aware that there are significant penalties for purposefully submitting falsified information, including the possibility of a fine and imprisonment.



Brian K. McKee
Laboratory Manager