U.S. Army Garrison
Fort Monmouth, New Jersey

Underground Storage Tank Closure and Site Investigation Report

Main Post – Building 364

NJDEP UST Registration No.: 81533-74
UST No.: 81533-74

October 2010

UNDERGROUND STORAGE TANK CLOSURE AND SITE INVESTIGATION REPORT

MAIN POST – BUILDING 364
NJDEP UST REGISTRATION NO.: 81533-74

OCTOBER 2010

PROJECT NO.: 10-24949

PREPARED FOR:

U.S. ARMY GARRISON, FORT MONMOUTH, NJ
DIRECTORATE OF PUBLIC WORKS
BUILDING 167
FORT MONMOUTH, NJ 07703

PREPARED BY:

TECOM-VINNELL SERVICES, INC.
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EXECUTIVE SUMMARY

UST Closure

On July 13, 1994, a steel underground storage tank (UST) was closed by removal in accordance with the Directorate of Public Works (DPW) UST Closure Plan for the U.S. Army Garrison, Fort Monmouth, New Jersey. The tank was located adjacent to Building 364 in Main Post area. Installed in 1970, UST No.: 81533-74 was a 1,500-gallon, steel, No. 2 heating oil tank. The tank with all associated piping was present at the time of removal. The tank closure was performed by Cleaning Up The Environment, Inc. (CUTE).

Site Assessment

The site assessment was performed by TVS personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* (*N.J.A.C.* 7:26E) and the NJDEP *Field Sampling Procedures Manual*. Soils surrounding the tank were screened visually and with air monitoring instruments for evidence of contamination. Upon removal, the UST was inspected for holes. A hole was located on the top quarter portion of the UST. No petroleum odors or stained soils were observed in the soils surrounding the tanks.

Closure soil samples were collected on July 13, 1994 after the removal of the UST. Closure samples C, D, E, and F were collected from a total of four (4) locations along the UST sidewalls of the excavation for the UST No.: 81533-74. Samples A and B were collected along the piping. Sample G was collected from the soil pile. All samples were analyzed for total petroleum hydrocarbons (TPH). Groundwater was not encountered at the bottom of the excavation; a concerete pad was located at 7.5'.

Findings

The closure soil samples collected from the UST excavation associated UST No.: 81533-74 contained TPH concentrations below the NJDEP health based criterion of 10,000 milligrams per kilogram (mg/kg) for total organic contaminants (*N.J.A.C.* 7:26E and revisions dated February 3, 1994). Sample A contained a TPH concentration of 109.0 mg/kg. The TPH concentration of sample B was 39.0 mg/kg. Sample C contained a TPH concentration of 13.0 mg/kg. The TPH concentration of samples D, E, F, and G was Not Detect.

Conclusions and Recommendations

Based on the closure soil sampling results, soils with TPH concentrations exceeding the NJDEP health based criterion of 10,000 mg/kg for total organic contaminants (*N.J.A.C.* 7:26E and revisions dated February 3, 1994) are not present in the former location of the UST.

No Further Action is proposed in regard to the closure and site assessment of UST No.: 81533-74 at Building 364.

1.0 UNDERGROUND STORAGE TANK DECOMMISSIONING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No.: 81533-74, was closed at Building 364 of the Main Post at U.S. Army Garrison, Fort Monmouth, New Jersey. Refer to site location maps Figure 1 & 2. This report presents the results of the implementation of the Directorate of the Public Works UST Closure Plan, July, 1993. Installed in 1970, the UST was a 1,500-gallon, steel tank, containing No. 2 heating oil for residential use. The UST was removed on July 13, 1994.

Decommissioning activities for UST No.: 81533-74 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. The closure and subsurface evaluation of the UST was conducted by NJDEP licensed U.S. Army-DPW personnel.

This UST Closure and Site Investigation Report has been prepared by TVS to assist the U.S. Army Garrison-DPW in complying with the NJDEP - Underground Storage Tanks regulations. The applicable NJDEP regulations at the date of closure were the *Closure of Underground Storage Tank Systems* (*N.J.A.C.* 7:14B-9 et seq. December, 1987).

This report was prepared using information required by the *Technical Requirements for Site Remediation* (*N.J.A.C.* 7:26E) (*Technical Requirements*). Section 1 provides a summary of the UST decommissioning activities. Section 2 describes the site investigation activities. Conclusions and recommendations are presented in Section 3 of this report.

1.2 SITE DESCRIPTION

Building 364 is located in the eastern portion of the Main Post area of Fort Monmouth, as shown on Figure 1 & 2. UST No.: 81533-74 was located adjacent to the building, as shown on Figure 3.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of Bldg. 364. 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 Main Post area.

Fort Monmouth lies within the Outer Coastal Plain subprovince of the New Jersey section of the Atlantic Coastal Plain physiographic province, which generally consists of a seaward-dipping wedge of unconsolidated sediments including interbedded clay, silt, sand, and gravel.

To the northwest is the boundary between the Outer and Inner Coastal Plains, marked by a line of hills extending southwest, from the Atlantic Highlands overlooking Sandy Hook Bay, to a point southeast of Freehold, New Jersey, and then across the state to the Delaware Bay. These formations of clay, silt, sand, and gravel formations were deposited on Precambrian and lower Paleozoic rocks and typically strike northeast-southwest, with a dip that ranges from 10 – 60 feet per mile. Coastal Plain sediments date from the Cretaceous through the Quaternary Periods and are predominantly derived from deltaic, shallow marine, and continental shelf environments.

The property is located within the outer fringe of the Atlantic Coastal Plain Physiographic Province, of New Jersey, approximately 20 miles south of Raritan Bay. This province is characterized by a wedge-shaped mass of unconsolidated to semi-consolidated marine, marginal marine and non-marine deposits of clay, silt, sand, and gravel. These sediments range in age from Cretaceous to Holocene and lie unconformably on pre-Cretaceous bedrock consisting of metamorphic schists and gneiss, with local occurrences of basalts, sandstone, and shale (Zapecza, 1984). These sediments trend northeast-southwest and dip southeast toward the Atlantic Ocean. These sediments thicken southeastward from the Piedmont-Coastal Plain Province boundary to approximately 4,500 feet near Atlantic City, New Jersey. During the Cretaceous and Tertiary time period, sediments were deposited alternately in flood plains and in marine environments during sea transgression and sea regression periods. The formations record several major transgressive/regressive cycles and contain units that 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).

Regressive upward coarsening deposits, such as Englishtown and Kirkwood Formations and the Cohansey Sand are usually aquifers, while transgressive deposits, such as the Merchantville, Marshalltown, and Navesink Formations, act as confining units. The thicknesses of these units vary greatly, ranging from several feet to several hundred feet, and thicken to the southeast.

The eastern half of the Main Post is underlain by the Red Bank Formation, ranging in thickness from 20-30 feet, while the western half is underlain by the Hornerstown Formation, ranging in thickness from 20-30 feet. The predominant formation underlying the Charles Wood Area is also the Hornerstown, with small areas of Vincentown Formation intruding in the southwest corner. Sand and gravel deposited in recent geologic times lie above these formations. Interbedded sequences of clay serve as semi-confining units for groundwater. The mineralogy ranges from quartz to glauconite.

Udorthents-Urban land is the primary classification of soils on Fort Monmouth, which have been modified by excavating or filling. Soils at the Main Post include Freehold sandy loam, Downer sandy loam, and Kresson loam. Freehold and Downer are somewhat well drained, while Kresson is a poorly drained soil.

The Charles Wood Area has sandy loams of the Freehold, Shrewsbury, and Holmdel types. Shrewsbury is a hydric soil; Kresson and Holmdel are hydric due to inclusions of Shrewsbury. Downer is not generally hydric, but can be.

Local Geology

Fort Monmouth lies in the Atlantic and Eastern Gulf Coastal Plain groundwater region and is underlain by underformed, unconsolidated to semi-consolidated sedimentary deposits. The chemistry of the water near the surface is variable with generally low dissolved solids and high iron concentrations. In areas underlain by glauconitic sediments, the water chemistry is dominated by calcium, magnesium, and iron (*e.g.* Red Bank and Tinton sands). The sediments in the vicinity of Fort Monmouth were deposited in fluvial-deltaic to nearshore environments. The water table is generally shallow at the installation; water is typically encountered at depths ranging from 2 to 9 feet below ground surface (bgs) and in certain areas fluctuates with the tidal action in Parkers and Oceanport creeks at the Main Post.

Based on the regional geologic map (Jablonski, 1968), the Cretaceous age Red Bank and Tinton Sands outcrop at the Main Post area. The Red Bank sand conformably overlies the Navesink Formation and dips to the southeast at 35 feet per mile.

The upper member (Shrewsbury) of the Red Bank sand is a yellowish-gray to reddish brown clayey, medium- to coarse-grained sand that contains abundant rock fragments, minor mica and glauconite (Jablonski). The lower member (Sandy Hook) is a dark gray to black, medium-to-fine grained sand with abundant clay, mica, and glauconite.

The Tinton sand conformably overlies the Red Bank Sand and ranges from a clayey medium to very coarse-grained feldspathic quartz and glauconite sand to a glauconitic coarse sand. The color varies from dark yellowish orange or light brown to moderate brown and from light olive to grayish olive. Glauconite may constitute 60 to 80 percent of the sand fraction in the upper part of the unit (Minard, 1969). The upper part of the Tinton is often highly oxidized and iron oxide encrusted (Minard).

"Arsenic and lead are naturally occurring in soil and can vary widely. All soils contain naturally-occurring arsenic and lead in some amount (Kabata-Pendias and Pendias, 1984). In general, the concentrations of arsenic in any particular soil are dependent upon the parent material and the soil forming processes. Because the soil forming processes are relatively consistent in New Jersey, differences in arsenic concentrations depend primarily on the soil parent material and past and present land use (Motto, Personal comm., 1997).

Because the underlying geologic materials vary widely throughout New Jersey, naturally occurring concentrations of metals in New Jersey soils also vary widely. Even though soils within a specific soil series can be similar in texture and color, the mineral and organic matter composition of soil tend to be heterogeneous. As a result, concentrations of metals in adjacent soil samples can vary substantially over distances of a few feet.

Based on a Department survey of background concentrations of metals in soil in rural and suburban areas of the state, non-agricultural soils contained 0.02 – 22.7 ppm of arsenic with an average 3.25 ppm and less than 1.2- 150 ppm of lead with an average of 19.2 ppm (Fields, et al., 1993). A statistical test was conducted to determine the correlation between sand, silt and clay content of the samples and metal concentrations. Samples containing higher clay content tended to have higher concentrations of most metals, including arsenic and lead (Fields, et al., 1993).

While naturally-occurring lead concentrations have not been detected above the Department's residential soil cleanup criteria in New Jersey, elevated arsenic concentrations have been found. Higher concentrations of naturally-occurring arsenic have been specifically associated with soils containing glauconite. The US Geological Survey found arsenic concentrations generally lower than 10 ppm in sandy soils from undeveloped areas, but concentrations were as large as 40 ppm in samples containing higher clay content (Barringer, et al., 1998). Soil sampling conducted as part of site remediation activities have shown glauconite soils to commonly contain arsenic concentrations of 20-40 ppm and range as high as 260 ppm (Schick, Personal comm., 1998). The Department is currently involved in a research project with the New Jersey Geological Survey investigating metal levels in glauconite soils." *Findings and Recommendations for Remediation of Historic Pesticide Contamination, Historic Pesticide Contamination Task Force, Final Report March 1999*

Fort Monmouth has been an operational military facility for in excess of ninety (90) years; and in many areas of the Main Post, human activities have completely transformed the topography. Currently, Fort Monmouth is conducting a correlation study to determine the relative impact of the ubiquitous glauconitic silty sands and clays and the concentrations of dissolved arsenic observed in a number of monitoring wells on the post. Upon the completion of the study, the results will be provided to NJDEP for review and comment. It is the intent of the US Army to demonstrate that the preponderance of the dissolved arsenic is a function of soil type and chemistry and is not anthropogenic in nature.

Hydrogeology

The water table aquifer in the Main Post 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 Hornerstown Formation acts as an upper boundary of the Red Bank aquifer, but it might yield enough water within its outcrop to supply individual household needs. The Red Bank outcrops along the northern edges of the Installation, and contains two members, an upper sand member and a lower clayey sand member. The upper sand member functions as the aquifer and is probably present on some of the surface of the Main Post and at a shallow depth below the Charles Wood Area. The Hornerstown and Red Bank formations overlay the larger Wenonah-Mount Laurel aquifer.

Based on records of wells drilled in the Main Post area, water is typically encountered at depths ranging from 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may yield 2 to 25 gallons per minute (gpm). Some local well owners have reported acidic water that requires treatment to remove iron. Acid sulfate soils are naturally occurring soils, sediments or organic substrates (e.g. peat) that are formed under waterlogged conditions. Soil and sediment materials rich in iron sulfide tend to be very dark and soft. Iron sulfides can react rapidly when they are disturbed (i.e. exposed to oxygen). Pyrite will tend to occur as more discrete crystals in soil and organic matter matrices and will react more slowly when disturbed. The oxidation of iron sulfide in the potential acid sulfate soil materials (sulfidic material) may result in the formation of actual acid sulfate soil material or sulfuric material.

These soils contain iron sulfide minerals (predominantly as the mineral pyrite) or their oxidation products. Soil horizons that contain sulfides are called 'sulfidic materials' (Isbell 1996; Soil Survey Staff 2003) and can be environmentally damaging if exposed to air by disturbance. Exposure results in the oxidation of pyrite.

1.3 HEALTH AND SAFETY

Work site health and safety hazards were minimized during all decommissioning activities. All areas which posed a vapor hazard were monitored by a qualified individual utilizing a calibrated photo-ionizer detector: Thermo Instruments Organic Vapor Monitor (OVM) – Model #580-B. The individual ascertained if the area was properly vented to render the area safe, as defined by OSHA. All work areas were properly vented to insure that there were no contaminants present in the breathing zone above permissible exposure limits (PEL's).

1.4 REMOVAL OF UNDERGROUND STORAGE TANK

1.4.1 General Procedures

- All underground utilities were marked out by the respective trade shops or utility contractor prior to excavation activities.

- All activities were carried out with great regard to safety and health and the safeguarding of the environment.

- All excavated soils were visually examined and screened with an OVM 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.

- An NJDEP certified Subsurface Evaluator was present during all closure and remediation activities.

1.4.2 Underground Storage Tank Excavation

During decommissioning activities, surficial soil was carefully removed to expose the UST. The tank was completely empty and contained no liquids prior to removal from the ground.

After the UST was removed from the excavation, it was staged on an impervious surface, labeled and examined for holes. The Subsurface Evaluator observed a hole in the top quarterly portion of the tank during the inspection. Soils surrounding the UST were screened visually and with an OVM for evidence of contamination. Soil staining or petroleum hydrocarbons were not observed.

1.5 UNDERGROUND STORAGE TANK DECOMMISSIONING AND DISPOSAL

Subsequent to disposal, the UST was purged with air to remove vapors prior to cutting. A 4 feet by 3 feet access hole was made in the UST using a pneumatic ripper gun with a non-sparking bit. The UST was cleaned first with rubber squeeges and adsorbent material broomed on the sidewalls and bottom. The adsorbent material was then drummed and subsequently put into Ft. Monmouth's 'Oil Spill Debris' roll-off container for proper disposal. The atmosphere in and around the tank was monitored using an OVM and an Oxygen/Lower Explosive Level (LEL) meter to ensure safe working conditions during cutting and cleaning activities.

The tank liquids were transported by Freehold Cartage Inc. to Lionetti Oil Recovery Co., Inc., Old Bridge, NJ for disposal in compliance with all applicable regulations and laws. Refer to Appendix B for UST waste manifest.

The Subsurface Evaluator labeled the UST with the following information:

- site of origin
- NJDEP UST Facility ID number
- date of removal
- size of tank
- previous contents of tank

Photographic documentation of the UST is included in Appendix C.

2.0 SITE INVESTIGATION ACTIVITIES

2.1 OVERVIEW

The Site Investigation was managed by U.S. Army DPW personnel. All analyses were performed and reported by Fort Monmouth Environmental Testing Laboratory, a NJDEP-certified testing laboratory. All sampling was performed by a NJDEP Certified Subsurface Evaluator according to the methods described in the NJDEP *Field Sampling Procedures Manual* (1992). Sampling frequency and parameters analyzed complied with the NJDEP document *Technical Requirements for Site Remediation, 7:26E-3.9* (June 7, 1993) 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.

- Ft. Monmouth Directorate of Public Works-Environmental Division
  Contact Person: Joseph Fallon
  Phone Number: (732) 532-6223

- Subsurface Evaluator: Charles Appleby
  Employer: U. S. Army
  Phone Number: (732) 532-5241
  NJDEP License No.: 0009974

- Analytical Laboratory: Fort Monmouth Environmental Testing Laboratory
  Contact Person: Dan Wright
  Phone Number: (732) 532-4359
  NJDEP Laboratory Certification No.: 13461

2.2 FIELD SCREENING/MONITORING

Field screening was performed by a NJDEP certified Subsurface Evaluator using an OVM and visual observations to identify potentially contaminated material, of which none were found.

2.3 SOIL SAMPLING

On July 13, 1994, closure soil samples C, D, E, and F were collected from a total of four (4) locations along the UST sidewalls of the excavation for the UST No.: 81533-74. Samples A and B were collected along the piping. Sample G was collected from the soil pile. Refer to soil sampling location map in Figure 3. All samples were analyzed for total petroleum hydrocarbons

(TPH). Groundwater was not encountered at the bottom of the excavation; a concrete pad was located at 7.5'.

The site assessment was performed by U.S. Army-DPW personnel in accordance with the NJDEP *Technical Requirements for Site Remediation* and the NJDEP *Field Sampling Procedures Manual*. A summary of sampling activities including parameters analyzed is provided on Table 1. The closure soil samples were collected. After collection, the samples were immediately placed on ice in a cooler and delivered to Fort Monmouth Environmental Testing Laboratory for analysis.

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

Closure soil samples were collected from a total of seven locations on July 13, 1994 to evaluate soil conditions following removal of the UST and piping. All samples were analyzed for TPH. The closure soil sample results were compared to the NJDEP health based criterion of 10,000 mg/kg for total organic contaminants (*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. The analytical data package, including associated quality control data, is provided in Appendix D.

Closure soil samples collected on July 13, 1994 from the UST site excavation contained concentrations of TPH below the NJDEP soil cleanup criteria.

3.2 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for the UST closure of UST No. 81533-74 indicates that sample A contained a TPH concentration of 109.0 mg/kg. The TPH concentration of sample B was 39.0 mg/kg. Sample C contained a TPH concentration of 13.0 mg/kg. The TPH concentration of samples D, E, F, and G was Not Detect.

Based on the closure soil sampling results, soils with TPH concentrations exceeding the NJDEP soil cleanup criterion for total organic contaminants of 10,000 mg/kg are not present in the location of former UST No.: 81533-74.

No Further Action is proposed in regard to the closure and site investigation of UST No.: 81533-74 at Building 364.

FIGURES

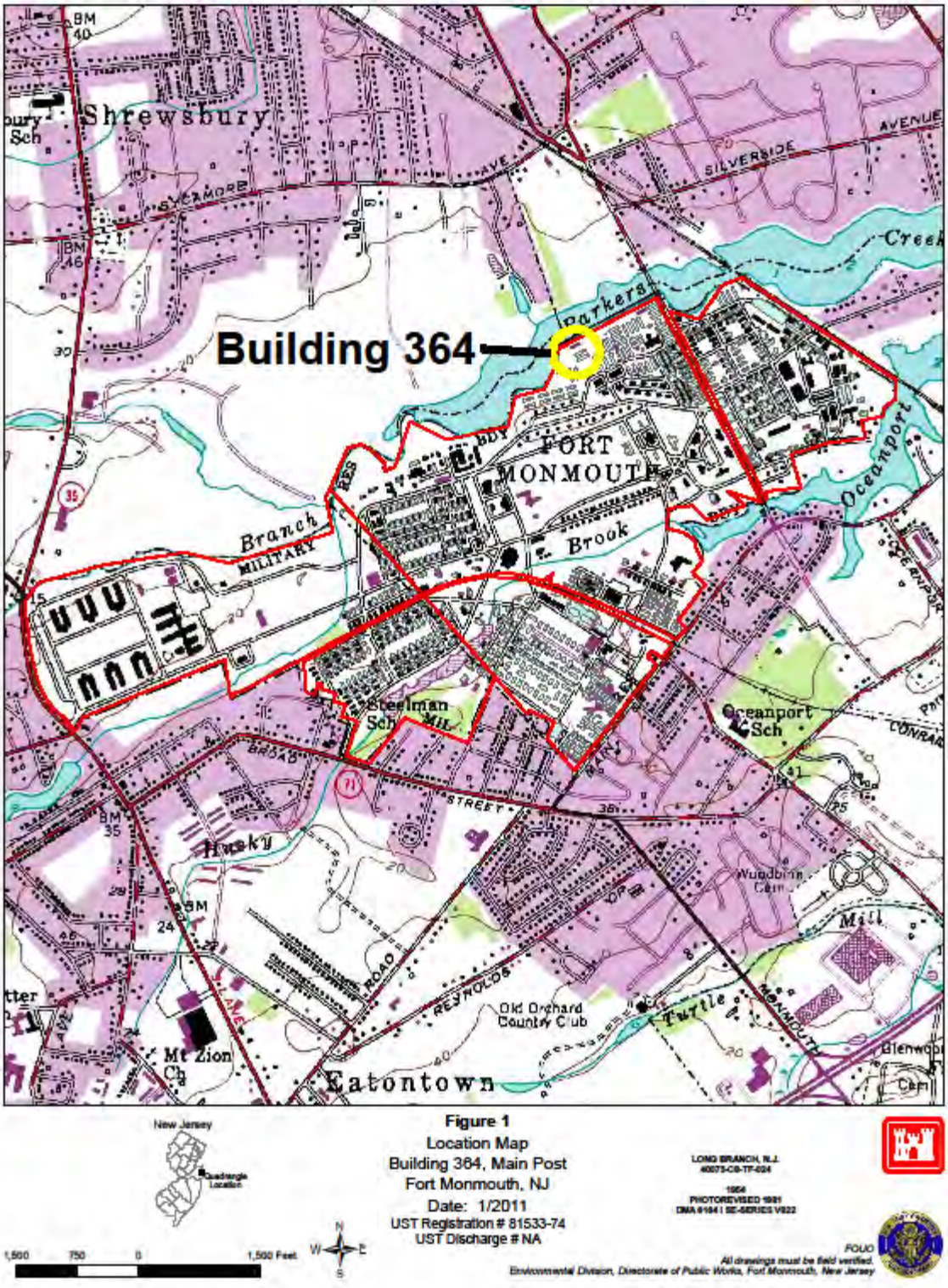


Figure 1
Location Map
Building 364, Main Post
Fort Monmouth, NJ
Date: 1/2011
UST Registration # 81533-74
UST Discharge # NA

LONG BRANCH, N.J.
40073-C6-TF-024
1954
PHOTOREVISED 1981
DMA 6164 I SE-SERIES V822

FOUO
All drawings must be field verified.
Environmental Division, Directorate of Public Works, Fort Monmouth, New Jersey

Figure 2
Location Map
Building 364 Main Post
Fort Monmouth, NJ
Date: 1/2011
UST Registration # 81533-74
UST Discharge # NA

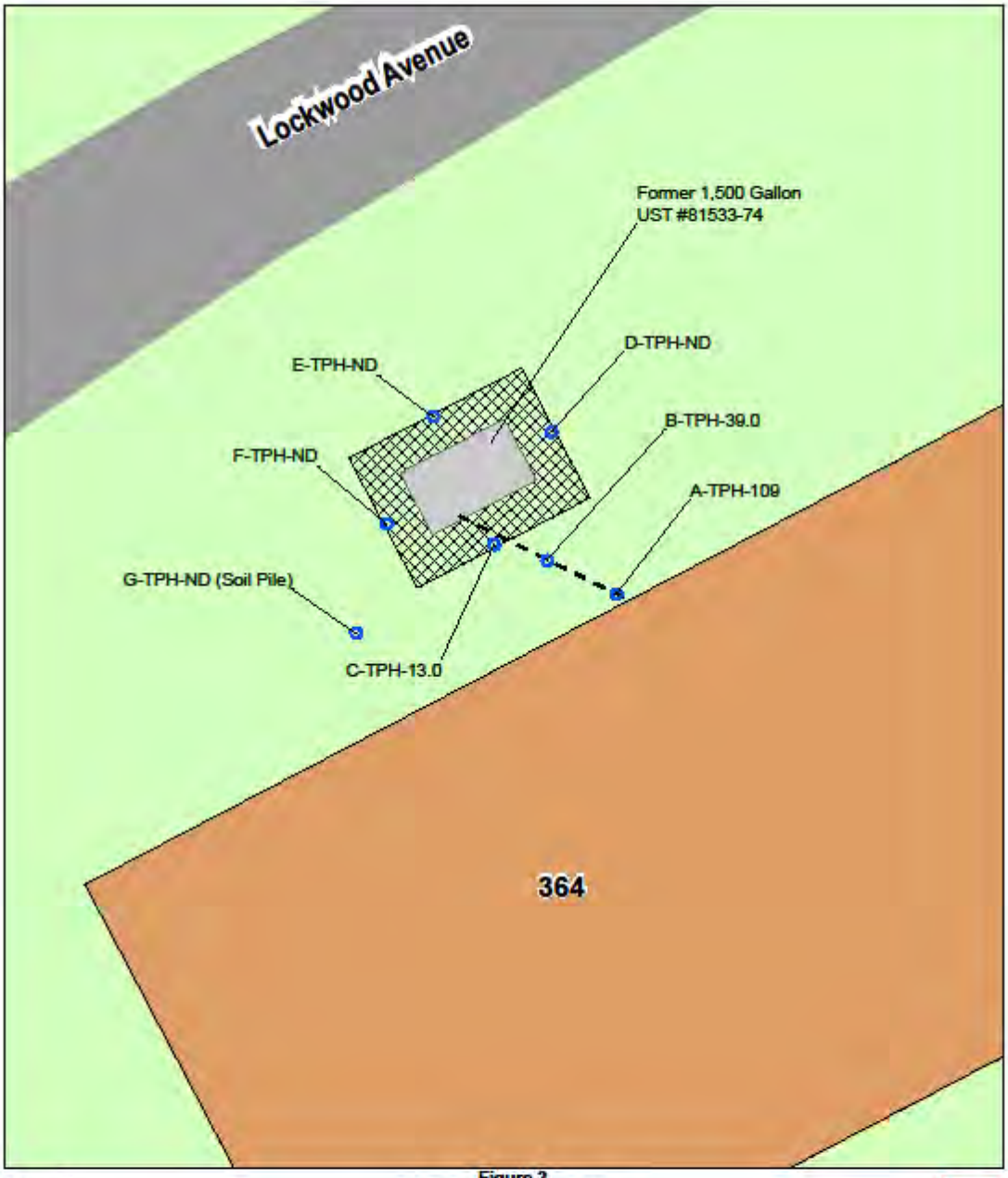


Figure 3
Soil Sampling Location Map
Building 364, Main Post
Fort Monmouth, NJ
Date: 1/2011
UST Registration # 81533-74
UST Discharge # NA

FOUO
All drawings must be field verified.
Environmental Division, Directorate of Public Works, Fort Monmouth, New Jersey

TABLES

TABLE 1

SUMMARY OF LABORATORY ANALYSIS

FT. MONMOUTH, BUILDING 364, UST No.: 81533-74
13 July 1994

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE DATE	SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD
A	1563.1	13-Jul-94	SOIL	TPH	418.1
B	1563.2	13-Jul-94	SOIL	TPH	418.1
C	1563.3	13-Jul-94	SOIL	TPH	418.1
D	1563.4	13-Jul-94	SOIL	TPH	418.1
E	1563.5	13-Jul-94	SOIL	TPH	418.1
F	1563.6	13-Jul-94	SOIL	TPH	418.1
G	1563.7	13-Jul-94	SOIL	TPH	418.1

ABBREVIATIONS:
TPH = Total Petroleum Hydrocarbons, EPA Method 418.1

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS

FT. MONMOUTH, BUILDING 364, UST No.: 81533-74
13 July 1994

TOTAL PETROLEUM HYDROCARBONS

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE LOCATION	SAMPLE DEPTH	MATRIX	TPH RESULTS
			(in feet)		mg/kg
A	1563.1	SOUTH PIPE	1.5	Soil	109
B	1563.2	CENTER PIPE	1.5	Soil	39.0
C	1563.3	SOUTH SIDEWALL	8.0	Soil	13.0
D	1563.4	EAST SIDEWALL	8.0	Soil	ND
E	1563.5	NORTH SIDEWALL	8.0	Soil	ND
F	1563.6	WEST SIDEWALL	8.0	Soil	ND
G	1563.7	WEST SOIL PILE	N/A	Soil	ND

ABBREVIATIONS:
mg/kg = Milligrams Per Kilogram = parts per million
ND = Compound Not Detected

Gray shading indicates exceedance of NJDEP health based criterion of 10,000 ppm total organic contaminants

APPENDIX A

CERTIFICATIONS

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 #	UST #
C-93-3566	0081533

US Army
BLDG. 364
Ft. Monmouth, NJ

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 of: one 1,500 gallon #2 diesel 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 25% of the samples will be analyzed for VO+10.

ON-SITE MANAGER: C. Appleby TELEPHONE: 908-532-1475

OWNER: TELEPHONE:

EFFECTIVE DATE: SEP 07 1993

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

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

UNDERGROUND STORAGE TANK (UST) CLOSURE CERTIFICATION

BUILDING NO. 364

NJDEP UST REGISTRATION NO. 81533-74

DATE TANK REMOVED 7/13/94

IJO / CONTRACT NUMBER 91-0148

I CERTIFY UNDER PENALTY OF LAW THAT TANK DECOMMISSIONING ACTIVITIES WERE PERFORMED IN COMPLIANCE WITH NJAC 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) George Bernotsky

SIGNATURE

NJDEP UST CLOSURE CERTIFICATE NO. 0003249

COMPANY PERFORMING TANK DECOMMISSIONING CUTE Inc.

NJDEP UST CLOSURE CORPORATE CERTIFICATE NO. 0200128

DATE OF SUBMITTAL 8/16/94

APPENDIX B

UST WASTE MANIFEST

UST File Copy
Bldg. 364

State of New Jersey
Department of Environmental Protection and Energy
Hazardous Waste Regulation Program
Manifest Section
CN 421, Trenton, NJ 08625-0421

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. NJ 3 2 1 0 0 2 0 5 9 7 — Manifest Document No. 07262

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: US Army Communications Electronics Command
Main Post, c/o James Shirghio, Bldg 2504, ATTN: SELFM-DL-EM-MS
Fort Monmouth, NJ 07703

4. Generator's Phone (908) 532-6223

A. State Manifest Document Number: NJA 1907262

B. State Generator's ID-(Gen. Site Address): SAME

5. Transporter 1 Company Name: Freehold Cartage Inc.

6. US EPA ID Number: NJD054126164

C. State Trans. ID-NJDEPE: -52265
Decal No.: -56897

7. Transporter 2 Company Name

8. US EPA ID Number

D. Transporter's Phone (908) 462-1001

E. State Trans. ID-NJDEPE

Decal No.-

9. Designated Facility Name and Site Address:
Lionetti Oil Recovery Co., Inc.
Runyon & Cheesequake Rds.
Old Bridge, NJ 08857

10. US EPA ID Number: NJD084044064

F. Transporter's Phone ( )

G. State Facility's ID

H. Facility's Phone (908) 721-0900

	11. US DOT Description (Including Proper Shipping Name, Hazard Class or Division, ID Number and Packing Group)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	X Petroleum Oil, N.O.S. Class 3 (Petroleum Oil) Combustible liquid UN 1270 PG III	001	TT	00305	G	X 7 2 2
b.	X ~~Petroleum Oil, N.O.S. Class 3 (Petroleum Oil) Combustible Liquid UN 1270 PG III~~	001	TT			~~X 7 2 2~~
c.	X ~~Petroleum Oil, N.O.S. Class 3 (Petroleum Oil) Combustible Liquid UN 1270 PG III~~	001	TT			~~X 7 2 2~~
d.	X ~~Petroleum Oil, N.O.S. Class 3 (Petroleum Oil) Combustible Liquid UN 1270 PG III~~	001	TT			~~X 7 2 2~~

J. Additional Descriptions for Materials Listed Above

a. petroleum oil 90 %
water %

b. ~~petroleum oil~~ %
~~water~~ %

K. Handling Codes for Wastes Listed Above

c. T04 Filtration d. T04 Filtration

~~c. T04 Filtration d. T04 Filtration~~

15. Special Handling Instructions and Additional Information
NOT EPA REGULATED. REGULATED AS HAZARDOUS WASTE IN NJ. 11a. ERG# 27
24 HOUR EMERGENCY PHONE: 201-427-2881 A. UST 008533-44
NJ DECAL#

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.

GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
Joseph M. Fallon	Joseph M. Fallon	05	26	94

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
David S Smith	David S Smith	05	26	94

18. Transporter 2 Acknowledgement of Receipt of Materials

TRANSPORTER

Printed/Typed Name	Signature	Month	Day	Year

19. Discrepancy Indication Space

FACILITY

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

In case of an emergency involving this waste, call the state the emergency occurred in and the N.J. Dept. of Environmental Protection and Energy. (609) 292-7172

EPA Form 8700-22 (Rev. 9/88) Previous editions are obsolete.

SIGNATURE AND INFORMATION *MUST* BE LEGIBLE ON ALL COPIES

1 — TSD MAIL TO - TSD'S STATE

APPENDIX C

PHOTO DOCUMENTATION


BLDG 364
FT MONMOUTH
GRAPPLEBY #2 OIL
UST 008153B-74
CUTE WILLIAMS
MAZZA & SONS

APPENDIX D

SOIL ANALYTICAL DATA PACKAGE

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

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

Lab. ID #: 1563.1-.7
Sample Rec'd: 07/13/94
Analysis Start: 07/14/94
Analysis Comp: 07/14/94

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

NJDEPE UST Reg.#: **0081533-74**
Closure #: **C-93-3566**
DICAR #:
Location #: **Bldg. 364**

Lab ID.	Description	%Solid	Result (mg/Kg)	MDL
1563.1	Site A, S. Pipe 1.5' OVA= ND	92	109.	6.6
1563.2	Site B, Ctr. Pipe 1.5' OVA= ND	91	39.0	6.6
1563.3	Site C, S. Sidewall 8' OVA= 20	85	13.0	6.6
1563.4	Site D, E. Sidewall 8' OVA= 100	86	ND	6.6
1563.5	Site E, N. Sidewall 8' OVA= 10	85	ND	6.6
1563.6	Site F, W. Sidewall 8' OVA= 100	87	ND	6.6
1563.7	Site G, W. Soil Pile OVA= 10	85	ND	6.6
M. Bl.	Method Blank	100	ND	3.3

Notes: ND = Not Detected, MDL = Method Detection Limit
* = Silica Gel Added, NA = Not Applicable
1563.1 dup= 97% 1563.1 s= 96% 1563.1 sd= 96% RPD= 0.0%

Brian K. McKee
Laboratory Director

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

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

Lab. ID #: 1563.1-.7
Sample Rec'd: 07/13/94
Analysis Start: 07/14/94
Analysis Comp: 07/14/94

Analysis: Munsel

Lab ID#	Soil Color
1563.1	7.5YR 3/3 Dark Brown
1563.2	7.5YR 3/4 Dark Brown
1563.3	5Y 4/4 Olive
1563.4	5Y 3/2 Dark Olive Gray
1563.5	5Y 2.5/2 Black
1563.6	5Y 2.5/2 Black
1563.7	5Y 3/2 Dark Olive Gray

B. McK

Brian K. McKee
Laboratory Director

SERV-AIR, INC.

P.O. #: PWS-007

Chain of Custody

Project #: C93-3566	Sampler: Gary B. / Cate Tice	Date / Time: 7/13/94 1400	Analysis Parameters
Customer: C. Appleby SELFM-PW-EV	Site Name: Bldg. 364 UST# 0081533-74 C-93-3566		Start: / Finish:
Phone: 908 532-6224			Preservation Method

Lab Sample ID Number	Date/Time	Customer Sample Location/ID Number	Sample Matrix	# of Bottles	TPHC	% Solids	Mositure	OVA PPM	Remarks
15603.1	7-13-94 1456	Site A - South Pipe Chase 1.5'	Soil	1	X	X	X	ND	Kept < 4°C
.2	1458	Site B - Center Pipe Chase 1.5'	Soil	1	X	X	X	ND	
.3	1435	Site C - South Sidewall 8.0'	Soil	1	X	X	X	20	
.4	1440	Site D - East Sidewall 8.0'	Soil	1	X	X	X	100	
.5	1450	Site E - North Sidewall 8.0'	Soil	1	X	X	X	10	
.6	1448	Site F - West Sidewall 8.0'	Soil	1	X	X	X	100	OVA Sn 52114
.7	1505	Site G - West Soil Pile	Soil	1	X	X	X	10	Cal. 7-13-94 14ach w/ 95 PPM Methane - Zero Air - Read 77 PPM high humidity OK - CT.

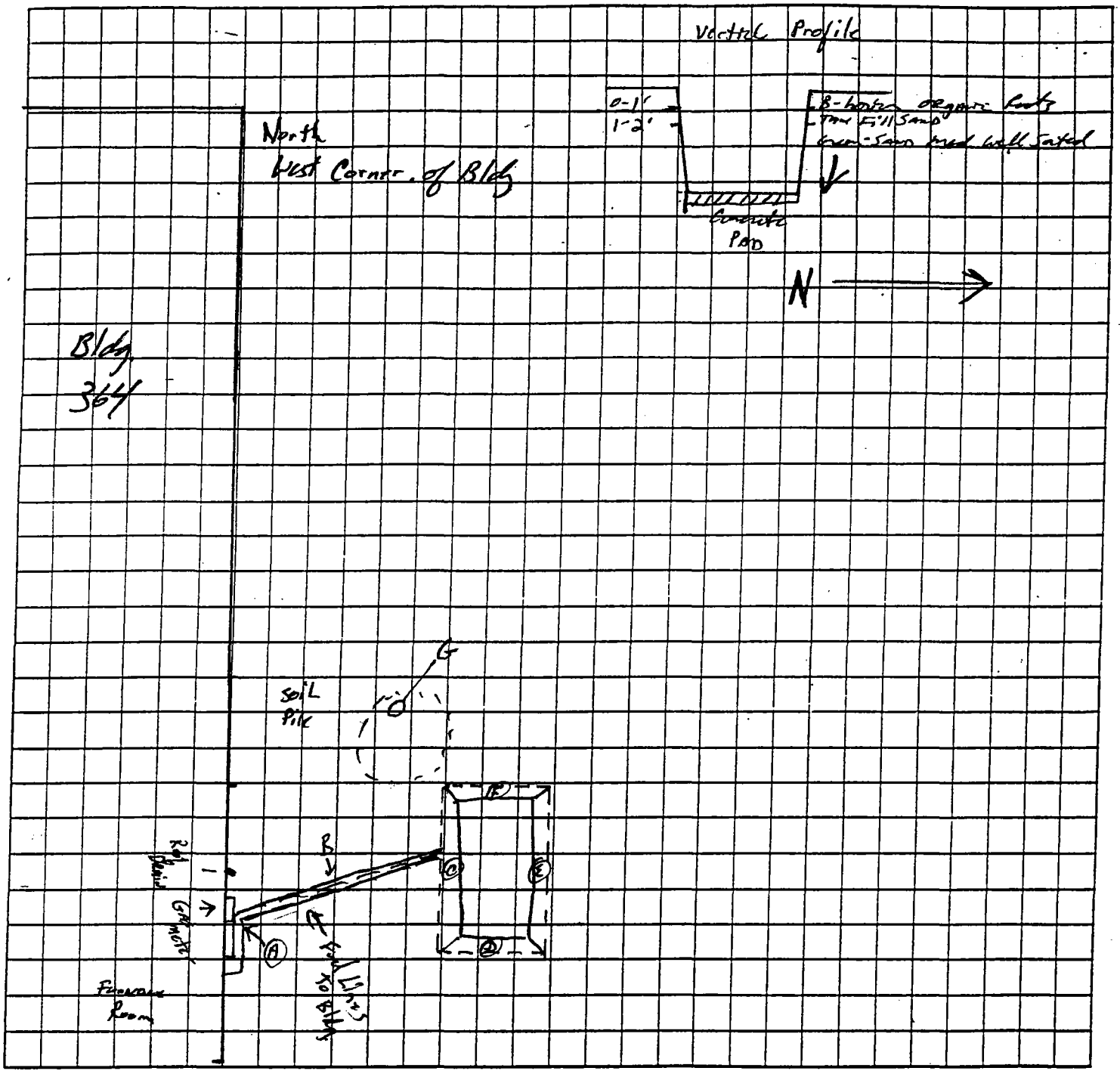
Relinquished By (signature)	Date / Time	Received By (signature)	Shipped By:
			Hand

Relinquished By (signature)	Date / Time	Received for Lab by (signature):	Date / Time
Charles Tice DPW&EV	7-13-94 1535	Sarah J. Hubbard	7/13/94 1535

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

S[illegible]-AIR, INC. FORT MONMOUTH NEW JERSEY

PROPOSED SITE PLAN



NOTE: *Indicate scale and compass direction.*

7-13-94 ct - 1"=10'

TANK LOCATION

BLDG# 364

TANK # 00815333-74

TANK SIZE 1500 gal

TANK CONTENTS #2 Fuel oil

REMARKS

Removal Site Assessment

Depth - Pipe Chase Exc. 1.5

UST Excavation 7.5'

Site 6 Soil Pile highest BVA 10 PPM

Pit Excavation Samples taken 1' Below Adjacent to Concrete PAD

July 14, 1994 0935

Blank) 0 MV

40.75 107 MV

81.5 204 MV

163 401 MV

1563. 41 MV Dup

1563.1 40 MV Dup

1563.1 57 MV Spk

1563.1 57 MV Dup. Spk.

1563.2 17 MV

1563.3 8 MV

1563.4 0 MV

1563.5 2 MV

1563.6 5 MV

1563.7 3 MV

1564.1 22 MV

1564.2 4 MV

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.		NA
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.

Project #1563

Brian K. McKee
Laboratory Manager