DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

30 September 2019

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Northern Bureau of Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, NJ 07927-1112

SUBJECT: UST 906A Site Investigation Report
Fort Monmouth, Monmouth County, Oceanport, New Jersey
PI G000000032

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has reviewed and summarized previous investigations and recent soil removal efforts conducted at the location of former Underground Storage Tank (UST) 906A within Parcel 68. This Site Investigation Report (SIR) provides: a) an overview of historical information; b) the results of recent field investigations and soil excavations between April 2016 and November 2018; and c) a comparison of site data with applicable New Jersey Department of Environmental Protection (NJDEP) criteria for this site.

1.0 OBJECTIVES

Groundwater and soil sampling were conducted in 2016, 2017, and 2018 to delineate contaminated media at former UST 906A (**Attachment A, Correspondences 2 and 4**). Proposed field investigation activities were documented in two work plans: the *Parcel 68 Work Plan Addendum for a Former UST Site (March 2016)* and the *Unregulated Heating Oil Tank (UHOT) Work Plan (WP) (August 2017)*; these plans were approved by NJDEP in March 2016 and October 2017, respectively (**Attachment A, Correspondences 1 and 3**).

2.0 SITE DESCRIPTION

Former UST 906A was a 1,000-gallon steel No. 2 fuel oil UST (Registration ID No. 81533-146) that was removed in June 1990; however, closure soil samples were not collected at that time because a release was not observed. The location of former UST 906A is shown on **Figure 1**.

2.1 Site Land Use

Former UST 906A was located near former Building 906 within the central portion (900 area) of the Main Post (MP) of FTMM. The location of former UST 906A is surrounded by open grassy areas and paved parking areas and driveways (**Figure 2**). Ownership of the property has been transferred to Monmouth County. Planned future land use of the site is for an adult homeless shelter to be owned

and operated by Monmouth County. Building 906 was demolished and construction of the adult homeless shelter was initiated in the summer of 2018.

2.2 Site Geology and Hydrogeology

The Hornerstown Formation underlies much of the MP (including the UST 906A area) and is approximately 25 to 30 feet thick based on other MP soil borings. This formation is distinguished by varying proportions of glauconitic clay, silty clay, and minor sand. The Tinton Formation underlies the Hornerstown Formation and consists of dense fine sand and trace silt, glauconite, and clay.

Soil encountered in borings at UST 906A were primarily moist brown sand with some silt and traces of clayey silt. Deeper soils below approximately five feet (ft) typically consisted of wet gray and brown mottled sand with some silt. Indications of fill (coal, brick, and slag) were observed in the boring log for temporary well PAR-68-906A-TMW-03 down to 12 inches and brick and rock fragments were observed in PAR-68-SB-02 down to 20 inches. Soil borings logs are provided in **Attachment B**. The depth to groundwater at UST 906A typically ranged from approximately 4 to 6 ft below ground surface (bgs) (**Table 1**). Groundwater is typically encountered in the gray and brown sand and flows north-northwest (**Figure 3).**

3.0 PREVIOUS INVESTIGATIONS

As previously stated, closure samples were not collected in 1990 when UST 906A was removed because a release was not observed. In January 2006, a subsurface investigation was conducted to confirm there had been no leaks from UST 906A. Three soil samples and one groundwater sample were collected from three locations along the former tank centerline. The soil samples were analyzed for total petroleum hydrocarbons (TPH), and the groundwater sample was analyzed for volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs). As documented in the closure report for UST 906A (Attachment A, Correspondence 6), TPH in these soil samples did not exceed the NJDEP TPH criterion of 10,000 milligrams/kilogram (mg/kg) that was in effect in 2006. The groundwater sample results were also below then-current NJDEP Ground Water Quality Criteria (GWQC). However, when a No Further Action (NFA) determination was requested by the Army in April 2015, NJDEP determined that additional action was necessary because: 1) the soil samples exhibited TPH levels up to 5,634 mg/kg and 6,699 mg/kg, which were above the criterion of 5,100 mg/kg in effect in April 2015; and 2) the 2-methylnaphthalene concentrations in groundwater were above the GWQC standard of 30 micrograms per liter (µg/L) in effect in April 2015 (Attachment A, Correspondence 5).

4.0 SITE INVESTIGATION RESULTS

Additional site investigations were completed in 2016, 2017, and 2018 as proposed in the 2016 and 2017 Work Plans (see Section 1.0). Soil and groundwater sampling were performed at former UST 906A to provide an updated assessment of the extent of contaminated soil, determine the potential for impact to groundwater, and to delineate plume migration (**Attachment A, Correspondence 2 and Correspondence 4**).

Boring logs and field notes are provided in **Attachments B and C,** respectively; there were field indications of fuel oil (petroleum odors and elevated photoionization detector [PID] results) in multiple soil borings and the temporary well near the former tank site. Permanent wells were installed to a depth of 14 to 16 ft bgs after the analytical data from the temporary wells (PAR-68-906A-TMW-03, PAR-68-906A-TMW-04, and PAR-68-906A-TMW-05) were evaluated. Groundwater samples were analyzed for VOCs and SVOCs in accordance with NJDEP requirements for No. 2 fuel oil (**Table 2**). Soil samples were analyzed for total extractable petroleum hydrocarbons (EPH) with additional contingency SVOC analyses for naphthalene and 2-methylnapthalene (**Table 3**).

4.1 Groundwater Results

Recent groundwater analytical results are shown on **Table 2** and **Figure 4** for the following wells:

- Temporary well PAR-68-906A-TMW-01 sampled August 2016,
- Temporary well PAR-68-906A-TMW-02 sampled August 2016
- Temporary well PAR-68-906A-TMW-03 sampled November 2017,
- Temporary well PAR-68-906A-TMW-04 sampled November 2017,
- Temporary well PAR-68-906A-TMW-05 sampled November 2017.
- New permanent well PAR-68-906A-MW-01 sampled January 2018,
- New permanent well PAR-68-906A-MW-02 sampled January 2018, and
- New permanent well PAR-68-906A-MW-03 sampled January 2018,

Permanent well M12MW14 results have also been included in the evaluation of results because it bounds the area to the southwest. This well was sampled in May 2016.

4.1.1 Exceedances of NJDEP Comparison Criteria

Exceedances of the NJDEP GWQC occurred at two temporary wells during the 2016 sampling (see **Figure 4** and **Table 2**).

- Temporary well PAR-68-906A-TMW-01, located at the former UST 906A:
  - 1,2,2-trichloroethane concentration of 4.6 µg/L exceeded the NJDEP GWQC of 3 µg/L.
  - Total SVOC TICs concentration of 2,718.8 µg/L exceeded the NJDEP GWQC of 500 µg/L.
- Temporary well PAR-68-906A-TMW-02, downgradient of UST 906A:
  - 1,2,4-trimethylbenzene exceedance concentration of 102 µg/L that exceeded the NJDEP GWQC of 100 µg/L.
  - 2-methylnapthalene exceedance concentration of 386 µg/L that exceeded the NJDEP GWQC of 30 µg/L.
  - Total SVOC TICs concentration of 2,318.5 µg/L, which exceeded the NJDEP GWQC of 500 µg/L.

Although the select VOCs and SVOCs identified above were detected at concentrations above their GWQC within two temporary wells (PAR-68-906A-TMW-01 and PAR-68-906A-TMW-02) in August 2016, there were no exceedances in permanent or temporary wells in the subsequent 2017 and 2018 sampling events (see **Figure 4** and **Table 2**). In comparison to temporary well results, the results from the permanent wells are much more representative of groundwater conditions because the permanent

wells are developed and purged prior to the implementation of low flow groundwater sampling. Therefore, the Army has concluded that there are no exceedances in groundwater at UST 906A.

4.2 Soil Results

In 2016 seven soil borings (PAR-68-SB-01 to PAR-68-SB-06, and PAR-68-906A-SB-07) were advanced at the former UST 906A tank area. The locations of the soil samples are shown on **Figure 5**. Three soil samples were collected from each boring and analyzed for EPH, and two samples with EPH concentrations greater than 1,000 mg/kg were analyzed for the SVOCs 2-methylnaphthalene and naphthalene.

The soil analytical results are shown on **Table 3** and **Figure 5**.

4.2.1 Exceedances of NJDEP Comparison Criteria

Exceedances of the NJDEP RDCSRS and/or Impact to Groundwater Soil Screening Level (IGW SSL) occurred at three boring locations during the 2016 and 2017 sampling (see **Figure 5** and **Table 3)**.

- EPH concentrations at two soil borings (6,260 mg/kg at PAR-68-SB-04, and 5,310 mg/kg at PAR-68-SB-01) exceeded the NJDEP RDCSRS of 5,100 mg/kg.
- 2-Methylnaphthalene concentrations at two soil borings (35 mg/kg at PAR-68-SB-04, and 8.7 mg/kg at PAR-68-906A-SB-07) exceeded the NJDEP IGW SSL of 8 mg/kg.

EPH concentrations exceeded the NJDEP RDCSRS in representative soil samples at UST 906A. Concentrations of 2-methylnaphthalene also exceeded the NJDEP IGWSSL in multiple soil samples.

Boring logs (**Attachment B**) indicate elevated PID results typically from approximately 3 ft bgs to 8 ft bgs near former UST 906A. The soil samples with RDCSRS and IGWSSL exceedances were collected from within this 3 ft bgs to 8 ft bgs depth interval. Field observations and analytical results indicated that additional remedial action for soil was warranted, as discussed in Section 5.0 below.

5.0 SOIL REMOVAL

Excavation of petroleum-contaminated soil coinciding with the demolition of Building 906 and homeless shelter construction at the site took place in two phases: one in September 2018 and a second in October 2018. Soil from the four locations identified between 2016 and 2018 with soil concentrations of EPH and/or 2-methylnaphthalene above NJDEP criteria (PAR-68-SB-01, PAR-68-SB-04, PAR-68-906A-SB-07, and PAR-68-906A-W) were removed by Monmouth County for disposal by the Army. Excavation limits are shown on **Figure 6**.

Post-excavation confirmation soil samples were collected from one location from the bottom of the excavation and four locations on the north, south, east and west sidewalls (**Figure 6**) during the first phase of excavation. Exceedances of the NJDEP RDCSRS and/or IGW SSL in post-excavation soil samples initially occurred at two locations: PAR-68-906A-W from the western sidewall, and PAR-68-906A-S from the southern sidewall.

Additional Phase 2 soil excavation was performed to address the exceedances of NJDEP criteria in the western sidewall. However, the removal of additional contaminated soil from the southern side wall was not performed due to physical constraints from existing infrastructure, including a subsurface sanitary sewer line, an electrical vault, and Courier Avenue (**Figure 2**). The Phase 2 soil removal

extended the excavation first towards the west, and then towards the north, in response to field indications of soil contamination (**Figure 6**). Three additional post-excavation soil samples (PAR-68-906A-B2, -W2 and -N2) were subsequently collected from the bottom, west sidewall and north sidewall of the Phase 2 final excavation. A total of approximately 200 cubic yards of petroleum contaminated soil was removed from the two excavations by Monmouth County for disposal by the Army. Offsite soil disposal is scheduled for October 2019. Additional subsurface utilities and surface infrastructure (such as pavement, and curb and gutter) were subsequently constructed within the vicinity of the soil excavation area as part of the homeless shelter construction.

Analytical results for two sidewall samples collected in September and October 2018 indicate exceedances of EPH and 2-methylnaphthalene were still present at the site. Exceedances of the NJDEP RDCSRS and/or IGW SSL occurred at two post-excavation sample locations following the 2018 excavation effort (see **Figure 6** and **Table 3)**.

- EPH concentrations at two post-excavation sample locations (6,920 mg/kg at PAR-68-906A-S, and 7,160 mg/kg at PAR-68-906A-W2) exceeded the NJDEP RDCSRS of 5,100 mg/kg.
- 2-Methylnaphthalene concentrations two post-excavation sample locations (28.3 and 38.7 mg/kg at PAR-68-906A-S, and 17.9 mg/kg at PAR-68-906A-W2) exceeded the NJDEP IGW SSL of 8 mg/kg.

One additional delineation soil boring (PAR-68-906A-W3) was advanced west of the excavation area in July 2019 (**Figure 6**), and soil samples were analyzed for total EPH, naphthalene, and 2-methylnaphthalene. There were no exceedances of the NJDEP RDCSRS or IGW SSL in the PAR-68-906A-W3 samples (**Table 3**).

6.0 SUMMARY AND CONCLUSIONS

The Army no longer owns the property where UST 906A was located. The property was transferred to the FMERA and subsequently transferred to Monmouth County and is currently being redeveloped. Although substantial remedial effort has been expended by the Army to remove petroleum contaminated soil from the site, concentrations of EPH and 2-methylnaphthalene remain in soil, due to subsurface utilities, at concentrations exceeding NJDEP comparison criteria. The conclusions of the investigations and removal actions performed by the Army are that: a) there are no exceedances of NJDEP groundwater criteria; b) if POL compliance averaging was performed using the tables and figures provided in Attachment D, the remaining fuel oil constituents in soil would meet the NJDEP RDCSRS for EPH; and c) although 2-methylnaphthalene concentrations in soil exceed the NJDEP IGW SSL, there are no 2-methylnaphthalene exceedances in groundwater and therefore, no further action is warranted to address 2-methylnaphthalene in soil. Based on this SIR, the Army requests NJDEP's concurrence that no further action is needed and that an Unrestricted Use, NFA determination be issued for the former UST 906A site.

Thank you for reviewing this request; we look forward to your approval and/or comments. Our technical Point of Contact is Kent Friesen; kent.friesen@parsons.com. I can be reached at (732) 383-5104; william.r.colvin18.civ@mail.mil.

Sincerely,

William R. Colvin
Fort Monmouth BRAC Environmental Coordinator

cc: Ashish Joshi (e-mail and 2 hard copies)
William Colvin, BEC (e-mail and 1 hard copy)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Joseph Fallon, FMERA (e-mail)
Cris Grill, Parsons (e-mail)

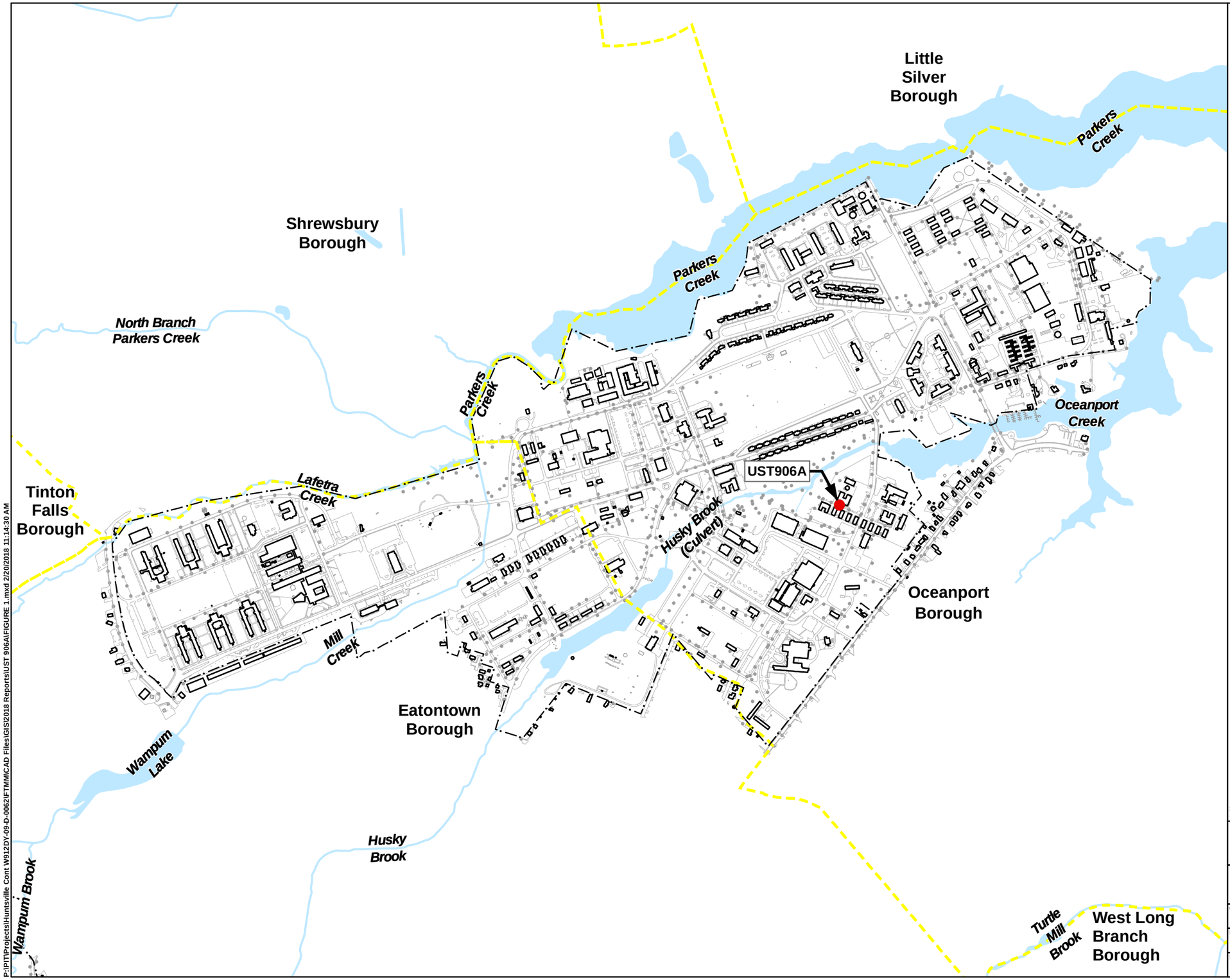
Attachments:

Figure 1 – UST 906A Site Location
Figure 2 – UST 906A Site Layout
Figure 3 – UST 906A Groundwater Contours – January 15, 2018
Figure 4 – UST 906A Site Layout, Groundwater Sampling Locations, and Results
Figure 5 – UST 906A Soil Sampling Locations and Results (2006-2017)
Figure 6 – UST 906A Soil Excavation Limits and Soil Sampling Results (2018 and 2019)

Table 1 - Groundwater Gauging Data and Elevations (January 15, 2018)
Table 2 – Ground Water Sampling Results – Comparison to NJDEP Ground Water Quality Criteria
Table 3 – Soil Sampling Results – Comparison to NJDEP Soil Remediation Standards

Attachment A – Regulatory Correspondence
Attachment B – Soil Boring Logs and Well Construction Details
Attachment C – Field Notes
Attachment D – Compliance Averaging Technical Memo

FIGURES



LEGEND:

- UHOT Location
- Installation Boundary
- Municipal Boundary
- Surface Water Feature

N

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

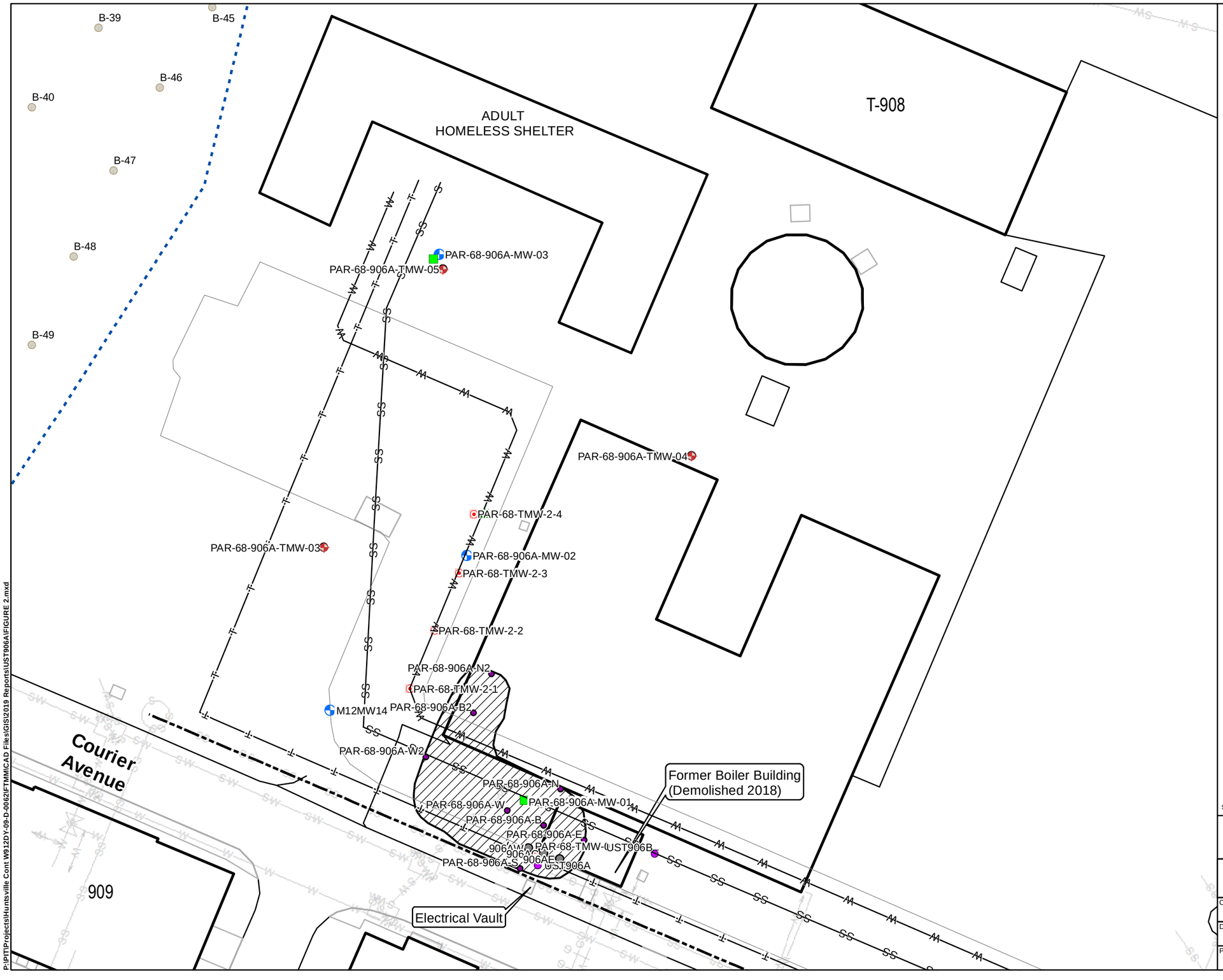
Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL	**Fort Monmouth** **New Jersey**

UST906A SITE LOCATION

CREATED BY: RR	REVIEWED BY: JC
DATE: FEB. 2018	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-02130	FILE: FIGURE 1.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\UST 906A\FIGURE 1.mxd 2/20/2018 11:14:30 AM



LEGEND:

- 2019 Post-Excavation Sample
- Soil Sample (2017)
- Screening Location (2016)
- Historic Sample Location (2006)
- Temporary Monitoring Well
- Soil Boring
- Former UST Location
- Shallow Monitoring Well
- Excavation Limits
- Approximate FTMM-12 Landfill Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

N

1 inch = 30 feet

0 15 30 60 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

UST906A
SITE LAYOUT

CREATED BY: RR	REVIEWED BY: KF
DATE: FEB. 2019	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 110015.07000	FILE: FIGURE 2.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2019 Reports\UST906A\FIGURE 2.mxd

T-908

PAR-68-906A-MW-03
5.19
PAR-68-906A-TMW-05

5.3

5.5

5.7

PAR-68-906A-TMW-04

PAR-68-TMW-2-4

PAR-68-906A-TMW-03

PAR-68-906A-MW-02
5.81

5.9

PAR-68-TMW-2-3

PAR-68-TMW-2-2

6.1

PAR-68-TMW-2-1

906

M12MW14
5.86

6.3

PAR-68-906A-SB-07
6.44

PAR-68-906A-MW-01

PAR-68-TMW-01

UST906B

UST906A

909

910

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\Parcel 68\FIGURE 5.mxd

LEGEND:

- TEMPORARY MONITORING WELL
- SOIL BORING
- Shallow Monitoring Well
- Former UST Location
- Screening Location (2016)
- Approximate FTMM-12 Landfill Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction
- Potentiometric Surface Elevation Contour
- Inferred Potentiometric Surface Elevation Contour
- 8.57 Groundwater Elevation Recorded on January 15, 2018 (NAD88) (ft.)
- NA Unavailable

N

1 inch = 30 feet

0 15 30 60 Feet

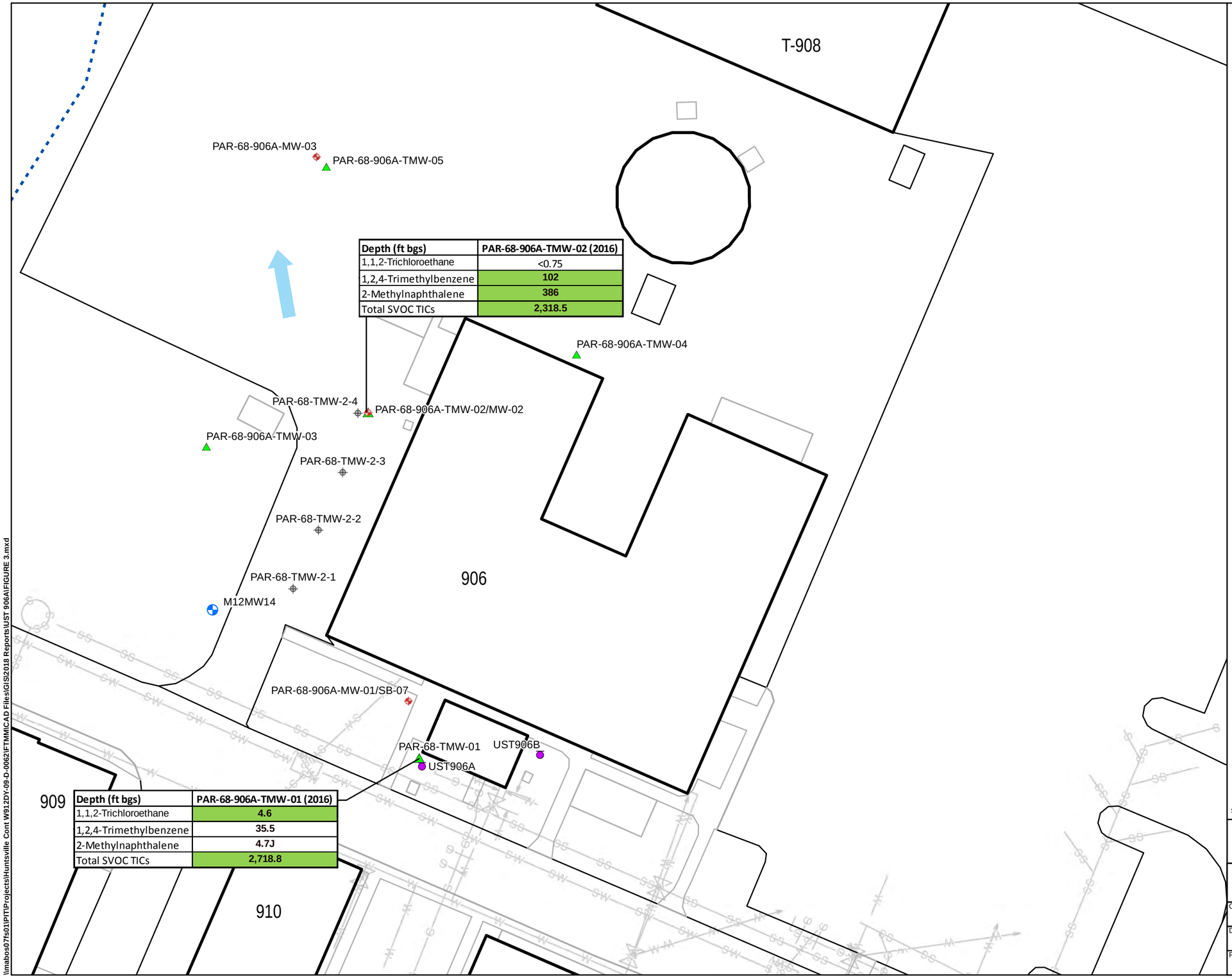
Source: FTMM Supplied CAD, 2013.

PARSONS
401 Diamond Drive NW,
Huntsville AL

Fort Monmouth
New Jersey

UST906A GROUNDWATER CONTOURS - JANUARY 15, 2018

CREATED BY: RR	REVIEWED BY: KF
DATE: MAR. 2018	FIGURE NUMBER: FIGURE 3
PROJECT NUMBER: 748810-06031	FILE: FIGURE 5.mxd



Depth (ft bgs)	PAR-68-906A-TMW-02 (2016)
1,1,2-Trichloroethane	<0.75
1,2,4-Trimethylbenzene	102
2-Methylnaphthalene	386
Total SVOC TICs	2,318.5

Depth (ft bgs)	PAR-68-906A-TMW-01 (2016)
1,1,2-Trichloroethane	4.6
1,2,4-Trimethylbenzene	35.5
2-Methylnaphthalene	4.7J
Total SVOC TICs	2,718.8

LEGEND:

- Permanent Monitoring Well
- Groundwater Sample (Temporary Well)
- Field Screening Boring
- Shallow Monitoring Well
- Former UST Location
- Approximate FTMM-12 Landfill Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction

NOTE:

1. Temporary monitoring well PAR-68-TMW-02 was installed at the screening location along the west side of Building 906 with the greatest field indication of petroleum contamination.
2. Permanent monitoring well PAR-68-906A-MW-02 was installed at the same location as PAR-68-906A-TMW-02.
3. Permanent monitoring well PAR-68-906A-MW-01 was installed at the same location as the new soil boring PAR-68-906A-SB-07.
4. Green shading represents a result that is above the NJDEP GWQC.

Analyte	NJDEP GWQC
1,1,2-Trichloroethane	3
1,2,4-Trimethylbenzene	100
2-Methylnaphthalene	30
Total SVOC TICs	500

N

1 inch = 30 feet

0 15 30 60 Feet

Source: FTMM Supplied CAD, 2013.

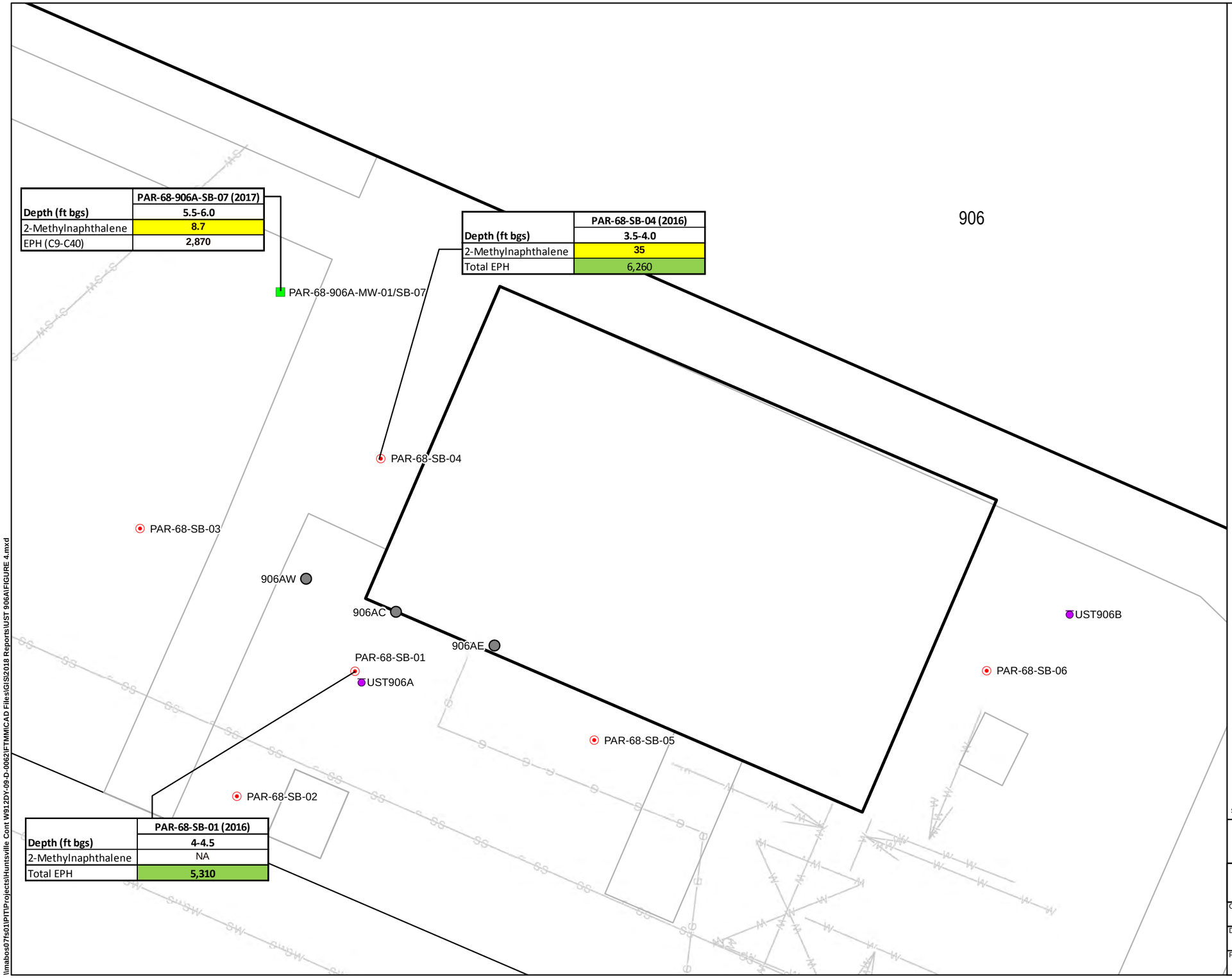
PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth
New Jersey

UST906A SITE LAYOUT, GROUNDWATER SAMPLING LOCATIONS, AND RESULTS

CREATED BY:	REVIEWED BY:
PDS	KF
DATE:	FIGURE NUMBER:
APR. 2018	FIGURE 4
PROJECT NUMBER:	FILE:
748810-06031	FIGURE 3.mxd

\\nabos07fs01\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\UST 906A\FIGURE 3.mxd



Depth (ft bgs)	PAR-68-906A-SB-07 (2017) 5.5-6.0
2-Methylnaphthalene	8.7
EPH (C9-C40)	2,870

Depth (ft bgs)	PAR-68-SB-04 (2016) 3.5-4.0
2-Methylnaphthalene	35
Total EPH	6,260

Depth (ft bgs)	PAR-68-SB-01 (2016) 4-4.5
2-Methylnaphthalene	NA
Total EPH	5,310

LEGEND:

- Soil Sample (2017)
- Soil Sample (2016)
- Historic Sample Location (2006)
- Former UST Location
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

NOTE:

1. Permanent monitoring well PAR-68-906A-MW-01 was installed at the same location as the new soil boring PAR-68-906A-SB-07.
2. Green shading represents a result that is above the NJDEP RDCSRS.
   Yellow shading represents a result that is above the NJDEP IGW SSL.

Analyte	NJDEP RDCSRS	NJDEP IGW Soil Screening Level
2-Methylnaphthalene	230	8
Total EPH	5,100	NLE

N

1 inch = 5 feet

0 2.5 5 10 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

UST906A SOIL SAMPLING LOCATIONS, AND RESULTS (2006-2017)

CREATED BY:	REVIEWED BY:
PDS	KF
DATE: APR. 2018	FIGURE NUMBER: FIGURE 5
PROJECT NUMBER: 748810-06031	FILE: FIGURE 4.mxd

\\mabos07fs01\PITProjects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\UST 906A\FIGURE 4.mxd

PAR-68-TMW-2-2

PAR-68-906A-N2

PAR-68-TMW-2-1

M12MW14

PAR-68-906A-B2

PAR-68-906A-W3

PAR-68-906A-W2

PAR-68-906A-N

PAR-68-906A-MW-01

PAR-68-906A-W

PAR-68-906A-B

PAR-68-SB-04

PAR-68-SB-03

PAR-68-906A-E

906AW

906AC

68-TMW-01

906AE

PAR-68-SB-01

UST906A

PAR-68-906A-S

PAR-68-SB-05

UST906B

PAR-68-SB-06

PAR-68-SB-02

Former Boiler Building (Demolished 2018)

Electrical Vault

	PAR-68-906A-W2	
Depth (ft bgs)	6.5-7.0	9.5-10.0
2-Methylnaphthalene	**17.9**	**<0.088**
Total EPH	7,160	**121**

	PAR-68-906A-S	
Depth (ft bgs)	3.5-4.0	7.0-7.5
2-Methylnaphthalene	**26.3**	**38.7**
Total EPH	3,650	6,920

LEGEND:

- 2019 Post-Excavation Sample
- 2018 Post-Excavation Sample
- Soil Sample (2017)
- Soil Sample (2016)
- Screening Location (2016)
- Historic Sample Location (2006)
- Temporary Monitoring Well
- Soil Boring
- Former UST Location
- Shallow Monitoring Well
- Excavation Limits
- Approximate FTMM-12 Landfill Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

Analyte	NJDEP RDCSRS	NJDEP IGW Soil Screening Level
2-Methylnaphthalene	230	8
Total EPH	5,100	NLE

N

1 inch = 10 feet

0 5 10 20 Feet

Source: FTMM Supplied CAD, 2013.

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2019 Reports\UST906A\FIGURE 5.mxd

PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

UST906A EXCAVATION LIMITS AND SOIL SAMPLING RESULTS (2018 and 2019)

CREATED BY: RR	REVIEWED BY: KF
DATE: JUN. 2019	FIGURE NUMBER: FIGURE 6
PROJECT NUMBER: 110015.07000	FILE: FIGURE 5.mxd

Table

Table 1
Groundwater Gauging Data and Elevations (January 15, 2018)
Parcel 68 UST 906A
Fort Monmouth, New Jersey

Site	Well Permit #	Y Coord. (North)	X Coord. (East)	Installation Date	Depth	Well Riser Pipe Casing Length	Well Screen Length	Top of PVC Well Casing (elevation)	Slot Size	Flush Mount or Upright Protective Casing (FM or UR)	Protective Casing Elevation	Ground Surface Elevation	Gauge Time	Gauged Depth to Water	Gauged Depth to Bottom	Calculated Groundwater Elevation	Sampling Date
					(ft.)				inches					(ft. TOC)	(ft. TOC)	(ft.)	
PAR-68-906A-MW-01	E201713119	539104.9	621094.5	11/22/2017	15.00	5.00	10.00	12.26	0.01	FM	12.70	12.71	12:24	5.82	15.45	6.44	1/18/2018
PAR-68-906A-MW-02	E201713120	539181.3	621075.5	11/22/2017	15.00	5.00	10.00	11.26	0.01	FM	11.73	11.72	12:30	5.45	15.41	5.81	1/18/2018
PAR-68-906A-MW-03	E201713786	539274.7	621066.9	12/15/2017	13.00	3.00	10.00	9.33	0.01	FM	9.73	9.65	12:34	4.14	12.90	5.19	1/18/2018
M12MW14	E201007330	539133.332	621032.886	7/20/2010	20.00	5.00	15.00	14.10	0.01	UR	N/A	N/A	12:28	8.24	15.00	5.86	NS

Notes:

- The synoptic round of water levels in the wells was collected on January 15, 2018.
- Well information were provided by FTMM for all wells installed before June 2013.
- ft = feet
- TOC = Top of Casing
- Elevation = feet above mean sea level
- N/A = information not available
- NS = Not Sampled

TABLE 2
GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GWQC
PARCEL 68 906A UST
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	M12MW14		PAR-68-906A-MW-01	PAR-68-906A-MW-02	PAR-68-906A-MW-03	PAR-68-906A-TMW-01	PAR-68-906A-TMW-02	PAR-68-906A-TMW-03	PAR-68-906A-TMW-04	PAR-68-906A-TMW-05
Sample ID		M12MW14-14.25	M12MW14-19.25	PAR-68-906A-GW-MW-01-10.4	PAR-68-906A-GW-MW-02-10.2	PAR-68-906A-GW-MW-03-8.5	PAR-68-GW-TMW01	PAR-68-GW-TMW02	PAR-68-906A-TMW-03-11	PAR-68-906A-TMW-04-10	PAR-68-906A-TMW-05-10
Sample Date		5/25/2016	5/25/2016	1/18/2018	1/18/2018	1/18/2018	8/1/2016	8/1/2016	11/7/2017	11/7/2017	11/7/2017
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)											
1,1,1,2-Tetrachloroethane	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,1-Trichloroethane	30	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2,2-Tetrachloroethane	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2-Trichloroethane	3	< 1	< 1	< 0.75	< 0.75	< 0.75	**4.6**	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	50	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloropropene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichlorobenzene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichloropropane	0.03	< 5	< 5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trichlorobenzene	9	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2,4-Trimethylbenzene	100	< 1	< 1	**30 J+**	**19.4 J+**	< 0.75	**35.5**	**102**	< 0.75	< 0.75	< 0.75
1,2-Dibromo-3-chloropropane	0.02	< 5	< 5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dibromoethane	0.03	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichlorobenzene	600	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloroethane	2	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloropropane	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3,5-Trimethylbenzene	100	< 1	< 1	< 0.75	**3.8 J+**	< 0.75	**3.4**	**12**	< 0.75	< 0.75	< 0.75
1,3-Dichlorobenzene	600	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichloropropane	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
1,4-Dichlorobenzene	75	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
2,2-Dichloropropane	100	< 1	< 1	< 0.75	< 0.75	< 0.75 UJ	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
2-Chlorotoluene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Acetone	6,000	< 5	**3.5 J**	< 3.8	< 3.8	< 3.8	**8.3**	**3.4 J**	**3.5 J**	**5.8 J+**	**6.9 J+**
Benzene	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	**0.41 J**	< 0.75	< 0.75	< 0.75
Bromobenzene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromochloromethane	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromodichloromethane	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Bromoform	4	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Carbon tetrachloride	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chlorobenzene	50	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chlorodibromomethane	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	5	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Chloroform	70	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,2-Dichloroethene	70	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,3-Dichloropropene	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Cymene	100	< 1	< 1	**1.4 J+**	**1 J+**	< 0.75	**4**	**4.1**	< 0.75	< 0.75	< 0.75
Dichlorodifluoromethane	1,000	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Ethyl benzene	700	< 1	< 1	**7.6 J+**	**6.3 J+**	< 0.75	**3.6**	**28.8**	< 0.75	< 0.75	< 0.75
Hexachlorobutadiene	1	< 1	< 1	< 3.8	< 3.8	< 3.8	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Isopropylbenzene	700	< 1	< 1	**3.5 J+**	**1.9 J+**	< 0.75	**3.7**	**7.8**	< 0.75	< 0.75	< 0.75
Meta/Para Xylene	1,000	< 2	< 2	< 1.5	**0.83 J**	< 1.5	**1 J**	**4.4**	< 1.5	< 1.5	< 1.5
Methyl bromide	10	< 1	**0.47 J**	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Methyl butyl ketone	300	< 5	< 5	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl chloride	100	**0.46 J**	**0.49 J**	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Methyl ethyl ketone	300	< 5	< 5	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl isobutyl ketone	100	< 5	< 5	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8	< 3.8
Methyl Tertbutyl Ether	70	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Methylene chloride	3	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	**0.5 J**	< 0.75	< 0.75
Naphthalene	300	< 1	< 1	**57.2 J+**	**23.6 J+**	**0.7 J**	**12.4**	**185**	**0.65 J**	< 0.75	< 0.75
n-Butylbenzene	100	< 1	< 1	< 0.75	**1 J+**	< 0.75	**4.2**	**4.7**	< 0.75	< 0.75	< 0.75
Ortho Xylene	1,000	< 1	< 1	< 0.75	< 0.75	< 0.75	**1.2**	< 0.75	< 0.75	< 0.75	< 0.75
p-Chlorotoluene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Propylbenzene	100	< 1	< 1	**5.8 J+**	**3 J+**	< 0.75	**6.4**	**13.5**	< 0.75	< 0.75	< 0.75
sec-Butylbenzene	100	**1.5**	**1.6**	**3.3 J+**	**3.1 J+**	< 0.75	**6.7**	**7.2**	**1.2 J+**	< 0.75	< 0.75
Styrene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Tert Butyl Alcohol	100	< 25	< 25	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5	< 12.5
tert-Butylbenzene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Tetrachloroethene	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Toluene	600	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	**0.37 J**	< 0.75	< 0.75	< 0.75
Total Xylenes	1,000	NA	NA	< 2.3	< 2.3	< 2.3	NA	NA	< 2.3	< 2.3	< 2.3
Trans-1,2-Dichloroethene	100	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trans-1,3-Dichloropropene	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trichloroethene	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Trichlorofluoromethane	2,000	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
Vinyl chloride	1	< 1	< 1	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75	< 0.75
TIC VOCs (µg/l)											
Total TICs	500	NA	NA	**142.7 JN**	**54.4 JN**	NA	**286 JN**	**401.7 JN**	NA	**2.8 JN**	**2.7 JN**

TABLE 2
GROUND WATER SAMPLING RESULTS - COMPARISON TO NJDEP GWQC
PARCEL 68 906A UST
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	M12MW14		PAR-68-906A-MW-01	PAR-68-906A-MW-02	PAR-68-906A-MW-03	PAR-68-906A-TMW-01	PAR-68-906A-TMW-02	PAR-68-906A-TMW-03	PAR-68-906A-TMW-04	PAR-68-906A-TMW-05
Sample ID		M12MW14-14.25	M12MW14-19.25	PAR-68-906A-GW-MW-01-10.4	PAR-68-906A-GW-MW-02-10.2	PAR-68-906A-GW-MW-03-8.5	PAR-68-GW-TMW01	PAR-68-GW-TMW02	PAR-68-906A-TMW-03-11	PAR-68-906A-TMW-04-10	PAR-68-906A-TMW-05-10
Sample Date		5/25/2016	5/25/2016	1/18/2018	1/18/2018	1/18/2018	8/1/2016	8/1/2016	11/7/2017	11/7/2017	11/7/2017
Filtered		Total	Total	Total	Total	Total	Total	Total	Total	Total	Total
Semivolatile Organic Compounds (µg/l)											
1,2,4-Trichlorobenzene	9	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
1,2-Dichlorobenzene	600	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
1,2-Diphenylhydrazine	20	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
1,3-Dichlorobenzene	600	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
1,4-Dichlorobenzene	75	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2,4,5-Trichlorophenol	700	< 8	< 8.3	< 3.2	< 3	< 3.1	< 12	< 15	< 6	< 2.8	< 12
2,4,6-Trichlorophenol	20	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2,4-Dichlorophenol	20	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2,4-Dimethylphenol	100	< 8	< 8.3	< 5.3	< 5.1	< 5.2	< 20	< 25	< 10	< 4.6	< 20
2,4-Dinitrophenol	40	< 16	< 16.6	< 8.4	< 8.1	< 8.2	< 32	< 40	< 16	< 7.4	< 32
2,4-Dinitrotoluene	10	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2,6-Dinitrotoluene	10	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2-Chloronaphthalene	600	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2-Chlorophenol	40	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
2-Methylnaphthalene	30	< 2	< 2.1	< 1.1	**3**	< 1	**4.7 J**	**386**	**0.65 J**	< 0.93	< 4
2-Methylphenol	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2-Nitroaniline	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
2-Nitrophenol	100	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
3,3'-Dichlorobenzidine	30	< 16	< 16.6	< 3.2	< 3	< 3.1	< 12	< 15	< 6 UJ	< 2.8 UJ	< 12 UJ
3-Nitroaniline	100	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
4,6-Dinitro-2-methylphenol	1	< 8	< 8.3	< 5.3	< 5.1	< 5.2	< 20	< 25	< 10	< 4.6	< 20
4-Bromophenyl phenyl ether	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
4-Chloro-3-methylphenol	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
4-Chloroaniline	30	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
4-Chlorophenyl phenyl ether	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
4-Nitroaniline	5	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
4-Nitrophenol	100	< 8	< 8.3	< 5.3	< 5.1	< 5.2	< 20	< 25	< 10	< 4.6	< 20
Acenaphthene	400	**0.33 J**	**0.72 J**	**0.44 J**	**1.9 J**	< 1	**19.6**	**18.8**	< 2	< 0.93	< 4
Acenaphthylene	100	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Anthracene	2,000	**0.24 J**	**0.3 J**	< 1.1	< 1	< 1	**12.8**	**7.2 J**	**0.42 J**	< 0.93	< 4
Benzidine	20	< 30	< 31.1	< 31.6	< 30.3	< 30.9	< 120 UJ	< 150 UJ	< 60 UJ	< 27.8 UJ	< 120 UJ
Benzo(a)anthracene	0.1	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Benzo(a)pyrene	0.1	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Benzo(b)fluoranthene	0.2	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Benzo(ghi)perylene	100	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Benzo(k)fluoranthene	0.5	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Benzyl alcohol	2,000	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
Bis(2-Chloroethoxy)methane	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Bis(2-Chloroethyl)ether	7	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Bis(2-Chloroisopropyl)ether	300	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Bis(2-Ethylhexyl)phthalate	3	< 8	< 8.3	< 1.1	< 1	< 1	**1.5 J**	< 5	**0.73 J**	**1.7 J**	**2.7 J**
Butyl benzyl phthalate	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	**0.4 J**	**0.53 J**
Carbazole	100	< 8	< 8.3	**0.2 J**	**1.7 J**	< 1	**3.3 J**	**9.4 J**	**0.61 J**	< 0.93	< 4
Chrysene	5	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Cresol	NLE	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Dibenz(a,h)anthracene	0.3	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Dibenzofuran	100	**0.77 J**	**1.1 J**	< 1.1	**1 J**	< 1	**15.8 J**	< 5	**0.83 J**	< 0.93	< 4
Diethyl phthalate	6,000	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	**0.46 J**	< 4
Dimethyl phthalate	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Di-n-butylphthalate	700	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	**0.46 J**	**0.48 J**	**1.1 J**
Di-n-octylphthalate	100	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Fluoranthene	300	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	**0.58 J**	< 0.93	< 4
Fluorene	300	**0.5 J**	**1 J**	< 1.1	**2 J**	< 1	**37.3**	**35.3**	**0.9 J**	< 0.93	< 4
Hexachlorobenzene	0.02	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Hexachlorobutadiene	1	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Hexachlorocyclopentadiene	40	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
Hexachloroethane	7	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Indeno(1,2,3-cd)pyrene	0.2	< 2	< 2.1	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Isophorone	40	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Naphthalene	300	< 2	< 2.1	< 1.1	**5.6**	< 1	< 4	**109**	< 2	< 0.93	< 4
Nitrobenzene	6	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
N-Nitrosodimethylamine	0.8	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	< 4	< 1.9	< 8
N-Nitroso-di-n-propylamine	10	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
N-Nitrosodiphenylamine	10	< 8	< 8.3	< 2.1	< 2	< 2.1	< 8	< 10	**0.4 J**	< 1.9	< 8
Pentachlorophenol	0.3	< 16	< 16.6	< 8.4	< 8.1	< 8.2	< 32	< 40	< 16	< 7.4	< 32
Phenanthrene	100	< 2	< 2.1	< 1.1	**0.29 J**	< 1	**88.9**	**74.5**	**1.9 J**	< 0.93	**0.94 J**
Phenol	2,000	< 8	< 8.3	< 1.1	< 1	< 1	< 4	< 5	< 2	< 0.93	< 4
Pyrene	200	< 2	< 2.1	< 1.1	< 1	< 1	**11.2**	**5.7 J**	**0.61 J**	**0.19 J**	< 4
TIC SVOCs (µg/l)											
Total TICs	500	NA	NA	**176.2 JN**	**81.2 JN**	NA	**2718.8 JN**	**2318.5 JN**	**17.2 JN**	**94 JN**	**72.5 JN**

Footnote:

1) All historical data collected prior to 2013 are reported as provided by others.

2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.

3) NLE = no limit established.

4) ND = not detected in any background sample, no background concentration available.

5) Bold chemical dectection

6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.

B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

R = Rejected, data validation rejected the results.

U = non-detect, i.e. not detected at or above this value.

U-DL = Elevated sample detection limit due to difficult sample matrix.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

E (or ER) = Estimated result.

D = Results from dilution of sample.

J-DL = Elevated sample detection limit due to difficult sample matrix.

JN = Tentatively identified compound, estimated concentration.

UJ=The compound was not detected: however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

J+ = The result is an estimated quantity, but the result may be biased high.

J- = The result is an estimated quantity, but the result may be biased low.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

a) DELETE THIS NOTE BEFORE GOING FINAL: Refer to the NJDEP Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010) and the NJDEP Health Based end Ecological Screening Criteria for Petroleum Hydrocarbons (Version 4.0, August 9, 2010) to determine the category of tank being investigated and the appropriate cleanup standards or screening levels for that category of tank.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Ground Water Quality Criteria ####

NJDEP Interim Specific GWQC values are presented for the NJ GWQS where there is not a Specific Ground Water Quality Criteria. A full list of compounds is available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

NJDEP Interim Generic GWQC values are presented for the NJ GWQS where there is not a XXXXX or a NJDEP Interim Specific GWQC. Available at (http://www.nj.gov/dep/wms/bwqsa/gwqs_interim_criteria_table.htm).

10) Criteria action level source document and web address.

- The NJ Ground Water Quality Criteria refers to the NJDEP Groundwater Quality Standards - Adopted July 22, 2010

http://www.state.nj.us/dep/wms/bwqsa/docs/njac79C.pdf

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-SB-01				PAR-68-SB-02		
Sample ID				PAR-68-SB-01-3-3.5	PAR-68-SB-101-3-3.5	PAR-68-SB-01-4-4.5	PAR-68-SB-01-9.5-10	PAR-68-SB-02-3-3.5	PAR-68-SB-02-6-6.5	PAR-68-SB-02-9.5-10
Sample Date				4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016
Semivolatile Organic Compounds (mg/kg)										
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)										
C10-C12 Aromatics	NLE	NLE	NLE	**0.81 JB**	**0.86 JB**	**33.9**	**0.85 JB**	**0.81 JB**	**1 JB**	**0.85 JB**
C12-C16 Aliphatics	NLE	NLE	NLE	**56.7 J**	**14.2 J**	**1,250**	**1 J**	< 1.1 UJ	**59.4**	< 1.3 UJ
C12-C16 Aromatics	NLE	NLE	NLE	**1.2**	**0.63 J**	**831**	**0.76 J**	**0.39 J**	**12.7**	**0.25 J**
C16-C21 Aliphatics	NLE	NLE	NLE	**227 J**	**81.5 J**	**1,200**	**3.1 J**	**0.64 J**	**106**	< 1.3 UJ
C16-C21 Aromatics	NLE	NLE	NLE	**75.8**	**35.7**	**1,440**	**2.8**	< 1.1	**65.9**	< 1.3
C21-C36 Aromatics	NLE	NLE	NLE	**49.8**	**28.8**	**224**	**1 JB**	**0.37 JB**	**15.6**	**0.37 JB**
C21-C40 Aliphatics	NLE	NLE	NLE	**66 J**	**31.8 J**	**240**	**2.4 JB**	**1.2 JB**	**25.5 J**	**1.9 JB**
C9-C12 Aliphatics	NLE	NLE	NLE	**0.39 J**	**0.51 J**	**97.4 J**	**0.61 J**	**0.41 J**	**1.4 J**	**0.34 J**
EPH (C9-C40)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA
Total Aliphatics	NLE	NLE	NLE	**350 J**	**128 J**	**2,780**	**7.1 J**	**2.6 J**	**192 J**	**2.7 J**
Total Aromatics	NLE	NLE	NLE	**128**	**66.1**	**2,530**	**5.4**	**1.7 J**	**95.3**	**1.6 J**
Total EPH	SS	SS	SS	**478 J**	**194 J**	**5,310**	**12.4**	**4.3 J**	**287**	**4.3 J**

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-SB-03			PAR-68-SB-04		
Sample ID				PAR-68-SB-03-3-3.5	PAR-68-SB-03-8-8.5	PAR-68-SB-03-13.5-14	PAR-68-SB-04-3-3.5	PAR-68-SB-04-3.5-4	PAR-68-SB-04-9.5-10
Sample Date				4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	**35**	NA
Naphthalene	6	17	25	NA	NA	NA	NA	**2.9**	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
C10-C12 Aromatics	NLE	NLE	NLE	**0.79 JB**	**30.1**	**0.64 JB**	**38.7**	**60.8**	**1.1 JB**
C12-C16 Aliphatics	NLE	NLE	NLE	**0.52 J**	**652**	< 1.4 UJ	**1,300**	**1,600**	< 1.4 UJ
C12-C16 Aromatics	NLE	NLE	NLE	**0.6 J**	**356**	**0.37 J**	**843**	**920**	**0.95 J**
C16-C21 Aliphatics	NLE	NLE	NLE	**0.51 J**	**629**	< 1.4 UJ	**1,060**	**1,430**	< 1.4 UJ
C16-C21 Aromatics	NLE	NLE	NLE	**0.49 J**	**631**	< 1.4	**1,310**	**1,530**	**1 J**
C21-C36 Aromatics	NLE	NLE	NLE	**0.94 J**	**124**	< 1.4	**203**	**276**	**0.48 J**
C21-C40 Aliphatics	NLE	NLE	NLE	**1.2 JB**	**124**	**1.4 JB**	**178**	**263**	**1.2 JB**
C9-C12 Aliphatics	NLE	NLE	NLE	**0.65 J**	**95.1 J**	**0.55 J**	**160 J**	**185 J**	**0.65 J**
EPH (C9-C40)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Total Aliphatics	NLE	NLE	NLE	**2.9 J**	**1,500**	**2.5 J**	**2,700**	**3,480**	**2.8 J**
Total Aromatics	NLE	NLE	NLE	**2.8 J**	**1,140**	< 5.4	**2,390**	**2,780**	**3.6 J**
Total EPH	SS	SS	SS	**5.7 J**	**2,640**	**3.8 J**	**5,090**	**6,260**	**6.4 J**

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-SB-05			PAR-68-SB-06		
Sample ID				PAR-68-SB-05-3-3.5	PAR-68-SB-05-6.5-7	PAR-68-SB-05-9.5-10	PAR-68-SB-06-3-3.5	PAR-68-SB-06-4.5-5	PAR-68-SB-06-9.5-10
Sample Date				4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	NA	NA
Naphthalene	6	17	25	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
C10-C12 Aromatics	NLE	NLE	NLE	**0.79 JB**	**1.1 JB**	**1.1 JB**	**0.81 JB**	**0.78 JB**	**0.78 JB**
C12-C16 Aliphatics	NLE	NLE	NLE	< 1.2 UJ	**193**	< 1.3 UJ	< 1.2 UJ	< 1.1 UJ	< 1.5 UJ
C12-C16 Aromatics	NLE	NLE	NLE	**0.65 J**	**46.7**	**0.66 J**	**0.26 J**	**0.35 J**	< 1.5
C16-C21 Aliphatics	NLE	NLE	NLE	< 1.2 UJ	**256**	< 1.3 UJ	< 1.2 UJ	< 1.1 UJ	< 1.5 UJ
C16-C21 Aromatics	NLE	NLE	NLE	**0.56 J**	**245**	**0.25 J**	**0.55 J**	**0.31 J**	**0.52 J**
C21-C36 Aromatics	NLE	NLE	NLE	**0.46 J**	**53.9**	< 1.3	**0.48 J**	**0.49 J**	**0.39 J**
C21-C40 Aliphatics	NLE	NLE	NLE	**1.3 JB**	**51.1 J**	**1.4 JB**	**0.64 J**	**0.72 J**	< 1.5 UJ
C9-C12 Aliphatics	NLE	NLE	NLE	**0.47 J**	**5.4 J**	**0.66 J**	**0.29 J**	**0.45 J**	**0.28 J**
EPH (C9-C40)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Total Aliphatics	NLE	NLE	NLE	**2.3 J**	**506 J**	**2.9 J**	< 4.9 UJ	< 4.5 UJ	< 5.9 UJ
Total Aromatics	NLE	NLE	NLE	**2.5 J**	**346**	**2.2 J**	**2.1 J**	**1.9 J**	**1.9 J**
Total EPH	SS	SS	SS	**4.8 J**	**852**	**5.1 J**	**3.3 J**	**3.5 J**	< 11.8

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-906A-B	PAR-68-906A-B2	PAR-68-906A-E		PAR-68-906A-N	
Sample ID				PAR-68-906A-B-8-8.5	PAR-68-906A-B2-10-10.5	PAR-68-906A-E-3.5-4	PAR-68-906A-E-7-7.5	PAR-68-906A-N-4-4.5	PAR-68-906A-N-7-7.5
Sample Date				9/24/2018	10/3/2018	9/24/2018	9/24/2018	9/24/2018	9/24/2018
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	< 0.087	**0.052 J**	< 0.077	**3.4**	< 0.076	< 0.088
Naphthalene	6	17	25	**0.044 J**	< 0.08	< 0.077	**0.23**	< 0.076	**0.019 J**
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
EPH (C9-C40)	NLE	NLE	NLE	**931**	**47**	**158**	**2,320**	**703**	**533**
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Total EPH	SS	SS	SS	NA	NA	NA	NA	NA	NA

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-906A-N2		PAR-68-906A-S	
Sample ID				PAR-68-906A-N2-6-6.5	PAR-68-906A-N2-8.5-9	PAR-68-906A-S-3.5-4	PAR-68-906A-S-7-7.5
Sample Date				10/3/2018	10/3/2018	9/24/2018	9/24/2018
Semivolatile Organic Compounds (mg/kg)							
2-Methylnaphthalene	230	2,400	8	< 0.076	< 0.093	**26.3**	**38.7**
Naphthalene	6	17	25	< 0.076	< 0.093	**0.23**	**0.6**
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)							
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
EPH (C9-C40)	NLE	NLE	NLE	**1,720**	**50.6**	**3,650**	**6,920**
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
Total EPH	SS	SS	SS	NA	NA	NA	NA

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-906A-SB-07			PAR-68-906A-W	
Sample ID				PAR-68-906A-SB-07-1.5-2.0	PAR-68-906A-SB-07-5.5-6.0	PAR-68-906A-SB-07-11.5-12.0	PAR-68-906A-W-3.5-4	PAR-68-906A-W-7-7.5
Sample Date				11/7/2017	11/7/2017	11/7/2017	9/24/2018	9/24/2018
Semivolatile Organic Compounds (mg/kg)								
2-Methylnaphthalene	230	2,400	8	NA	**8.7**	NA	**0.24 J**	**46.8**
Naphthalene	6	17	25	NA	**0.18**	NA	**0.026 J**	**6.2**
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)								
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
EPH (C9-C40)	NLE	NLE	NLE	**2.5 J**	**2,870**	**1.5 J**	**903**	**8,090**
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA	NA
Total EPH	SS	SS	SS	NA	NA	NA	NA	NA

TABLE 3
SOIL SAMPLING RESULTS - COMPARISON TO NJDEP RDCSRS
UST 906A FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	PAR-68-906A-W2		PAR-68-906A-W3	
Sample ID				PAR-68-906A-W2-6.5-7	PAR-68-906A-W2-9.5-10	PAR-68-906A-W3-6.5-7	PAR-68-906A-W3-9.5-10
Sample Date				10/3/2018	10/3/2018	7/11/2019	7/11/2019
Semivolatile Organic Compounds (mg/kg)							
2-Methylnaphthalene	230	2,400	8	**17.9**	< 0.088	**0.077 J**	<0.043
Naphthalene	6	17	25	**3.2**	< 0.088	**<0.038**	<0.043
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)							
C10-C12 Aromatics	NLE	NLE	NLE	NA	NA	NA	
C12-C16 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
C12-C16 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C16-C21 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
C16-C21 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C21-C36 Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
C21-C40 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
C9-C12 Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
EPH (C9-C40)	NLE	NLE	NLE	**7,160**	**121**	**204**	**NA**
Total Aliphatics	NLE	NLE	NLE	NA	NA	NA	NA
Total Aromatics	NLE	NLE	NLE	NA	NA	NA	NA
Total EPH	SS	SS	SS	NA	NA	NA	NA

Footnote:

1) All historical data collected prior to 2013 are reported as provided by others.

2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.

3) NLE = no limit established.

4) ND = not detected in any background sample, no background concentration available.

5) Bold chemical dectection

6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.

B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

R = Rejected, data validation rejected the results.

U = non-detect, i.e. not detected at or above this value.

U-DL = Elevated sample detection limit due to difficult sample matrix.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

E (or ER) = Estimated result.

D = Results from dilution of sample.

J-DL = Elevated sample detection limit due to difficult sample matrix.

JN = Tentatively identified compound, estimated concentration.

UJ=The compound was not detected: however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

J+ = The result is an estimated quantity, but the result may be biased high.

J- = The result is an estimated quantity, but the result may be biased low.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

a) DELETE THIS NOTE BEFORE GOING FINAL: Refer to the NJDEP Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010) and the NJDEP Health Based end Ecological Screening Criteria for Petroleum Hydrocarbons (Version 4.0, August 9, 2010) to determine the category of tank being investigated and the appropriate cleanup standards or screening levels for that category of tank.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Residential Direct Contact Soil Remediation Standard. ####

There are no NJDEP soil standards for individual PCB Aroclors, therefore the total PCB NJDEP standards were used for individual Aroclors.

- Cell Shade values represent a result that is above the NJ Non-Residential Direct Contact Soil Remediation Standard. ###

- Cell Shade values represent a result that is above the NJ Impact to GW Soil Screening Level ###

- Cell Shade values represent a result that is above both the NJ Residential, Non-Residential, AND NJ Impact to GW Soil Screening Level Direct Contact Soil Remediation Standard. ###

- Cell Shade values represent a result that is above both the NJ Residential and Non-Residential Direct Contact Soil Remediation Standard. ###

10) Criteria action level source document and web address.

- The NJ Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards

http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Non-Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards

http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Impact to GW Soil Screening Level criteria refers to the Development of Site Specific Impact to Ground Water Soil Remediation Standards - Nov 2013 revised

http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf

Attachment A
Correspondence:

1. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, *Supplemental Unregulated Heating Oil Tank (UHOT) Work Plan, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. October 13.
2. Department of the Army. 2017. *Supplemental Unregulated Heating Oil Tank (UHOT) Work Plan, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. August 15.
3. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *Parcel 68 Work Plan Addendum and Response to NJDEP's 24 September 2015 Comments on the April 2015 Underground Storage Tanks within ECP Parcels 68, 74, and 77, Fort Monmouth, New Jersey and Parcel 68 Work Plan Addendum for a Former UST Site (March 2016)* March 29.
4. Department of the Army. 2016. *Parcel 68 Work Plan Addendum and Response to NJDEP's 24 September 2015 Comments on the April 2015 Underground Storage Tanks within ECP Parcels 68, 74, and 77, Fort Monmouth, Oceanport, Monmouth County.* Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. March 2.
5. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Underground Storage Tanks within ECP Parcels 68, 74, and 77, Fort Monmouth, Oceanport, Monmouth County.* September 24.
6. Department of the Army. 2015. *Underground Storage Tanks within Parcel 68, Fort Monmouth, NJ*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 14.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
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BOB MARTIN
Commissioner

October 13, 2017

Mr. William Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
P. O. Box 148
Oceanport, NJ 07757

Re: Supplemental Unregulated Heating Oil Tank Work Plan
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (Department) has completed review of the Supplemental Unregulated Heating Oil Tank Work Plan (UST Workplan). The UST Workplan included proposal for further investigation(s) at various Underground Storage Tank (UST) locations. The Department offers the following comments:

- **UST 142B, UST 202A, UST 202D** – The proposal to install monitor wells (MWs) is approved. Please ensure that all approved sampling methodologies are utilized. Please also document field observations, including the presence of free product and/or sheen in any of the MWs. Please note that the proposal to install additional MW, as needed, is also approved as this may assist in further delineating the extent of ground water contamination.
- **UST 211** – Further investigation is approved as proposed. However, the Department recommends installing one temporary well south of boring locations SCREEN 5 and SCREEN 6.
- **UST 228B** – Further investigation is approved as proposed. Based on the findings from previous investigation(s) and subsequent sampling results (soils and ground water), the Department may recommend removing the UST.
- **UST 444** – The installation of borings (6), temporary wells (3) and permanent monitor wells (3) is approved. However, as other USTs were present in the area, please ensure that results from UST 444 and other USTs' results are not co-mingled.
- **UST 490** – Further investigation is approved as proposed. However, please indicate if any previous soil remediation in the form of soil removal was performed when this UST was removed in 1990 or thereafter.
- **UST 750J, UST 800-12, UST 800-20, UST 884, UST 906A** and **UST 3035** – Further investigations are approved as proposed at these locations.

Please submit all results of the findings to my attention for review. If possible, please have each UST findings, tables, figures and maps individually prepared. Thank you and please feel free to contact me if you have any questions.

Sincerely,

A.J. Joshi

C: James Moore, USACE
Rich Harrison, FMERA
Joe Fallon, FMERA
Joe Pearson, Calibre
File

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
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15 August 2017

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Northern Bureau of Field Operations
7 Ridgedale Avenue
Cedar Knolls, NJ 07927

SUBJECT: Supplemental Unregulated Heating Oil Tank (UHOT) Work Plan
Fort Monmouth, New Jersey
PI G000000032

Figures:

Figure 1 – UHOT Locations
Figure 2 – UST 142B Sample Location
Figure 3 – UST 202A and UST 202D Sample Locations
Figure 4 – UST 211 Sample Locations
Figure 5 – UST 228B Sample Location
Figure 6 – UST 444 Sample Locations
Figure 7 – UST 490 Sample Locations
Figure 8 – UST 750J Sample Location
Figure 9 – UST 800-12 Sample Locations
Figure 10 – UST 800-20 Sample Locations
Figure 11 – UST 884 Sample Locations
Figure 12 – UST 906A Soil Sample Locations
Figure 13 – UST 906A Groundwater Sample Locations
Figure 14 – UST 3035 Sample Locations

Tables:

Table 1 – Sampling Summary
Table 2 – UST 906A Soil Sample Results
Table 3 – UST 906A Groundwater Sample Results

Attachments:

A. Groundwater Flow Direction Maps

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this Work Plan to describe the proposed sampling and analyses activities to support environmental investigations at select unregulated heating oil tanks (UHOTs; also referred to as underground storage tanks [USTs] in this submittal) at FTMM (Figure 1).

The UHOTs described in this Work Plan are being evaluated in accordance with the New Jersey Administrative Code (NJAC) 7:26E *Technical Requirements for Site Remediation*. Most of these UHOTs require a remedial investigation (RI) in accordance with NJAC 7:26E-4.3 for delineation of an identified release of fuel oil constituents in groundwater. However, additional USTs have been included in this Work Plan that only require site investigation (SI) soil or groundwater sampling (NJAC 7:26E-3.4 or -3.5) to determine if a release has occurred, as designated below:

- UST 142B (SI)
- UST 202A (SI)
- UST 202D (RI)
- UST 211 (RI)
- UST 228B (SI)
- UST 444 (RI)
- UST 490 (RI)
- UST 750J (SI)
- UST 800-12 (RI)
- UST 800-20 (RI)
- UST 884 (RI)
- UST 906A (RI)
- UST 3035 (SI)

Specific data needs and proposed sampling at each UHOT site are described in the subsections below. Groundwater flow directions in the area where delineation in groundwater is required are generally not well established due to the distances to other nearby monitor wells. Therefore, regional groundwater flow directions from previous documents (Attachment A) were used as a basis for initial planning of groundwater sampling at each site.

The proposed groundwater assessment strategy includes a combination of field screening and groundwater sampling and analysis to delineate the groundwater plume. For a typical UHOT site without any previous plume assessment, Geoprobe soil borings will be placed in a ring around the former tank site, and each boring will be advanced to a depth below the shallow groundwater. Field screening using a photoionization detector (PID) and visual observation of the Geoprobe soil cores will be used to identify and assess areas impacted by fuel oil downgradient of the source area. Previous Geoprobe assessments at FTMM have successfully identified fuel oil contamination in areas downgradient of former UHOTs using these field screening techniques. The field screening results will be used to verify the contaminant migration direction (and by implication, the groundwater flow direction) for each UHOT site. Temporary groundwater monitoring wells will then be placed within and outside of the plume at each tank site using a Geoprobe, and the groundwater will be sampled to verify the nature and extent of groundwater contamination. Following receipt of analytical data from the temporary wells, permanent monitoring wells will be installed to establish a monitoring network with a minimum of three wells at each site: a source area well near the former tank site, a well downgradient of the source but within the plume, and a downgradient sentry well beyond the plume. Select existing monitoring wells will also be used for water level measurements to complement the monitoring network. All new permanent monitoring wells and the existing monitoring wells to be used for water level measurements will be surveyed by a New Jersey-licensed surveyor in accordance with the Sampling and Analysis Plan (SAP; Reference 23).

Sampling and analytical procedures will follow the protocols established for previous FTMM Work Plan submittals (Reference 24). All Site personnel will be required to read, understand, and comply with the safety guidelines in the Accident Prevention Plan (APP) including the Site Health and Safety Plan (SHASP), which is included as Appendix A of the APP (Reference 25). The detailed field procedures to be used for the activities described in this sampling plan are described in the SAP (Reference 23). Please let me know if you need these or any other documents referred to in this Work Plan to be sent to you.

Specific sampling and analytical requirements are summarized in Table 1, and are described for each UHOT in the subsections below.

1. UST 142B

UST 142B was a steel 550-gallon No. 2 fuel oil UST that was removed in July 1994, along with approximately 30 cubic yards of contaminated soil, as presented in Attachment H of ***USTs Within ECP Parcel 79*** (Reference 2). Subsequently, NJDEP required a groundwater investigation to be performed (Reference 13); a temporary well was installed, sampled and abandoned in August 2016. Multiple polynuclear aromatic hydrocarbons (PAHs) were detected in the groundwater sample, which was attributed to sample turbidity rather than a release of fuel oil to groundwater (as reported in Reference 10). NJDEP (Reference 22) then recommended resampling using a method to reduce turbidity due to the high concentrations for PAHs detected.

To address this data need, a 2-inch diameter permanent monitoring well will be installed at the former UST 142B tank location, as shown on Figure 2. This approach is expected to result in a low-turbidity groundwater sample without PAH exceedances. The well will be installed within a Geoprobe boring and will be completed with a 10-foot well screen to approximately 7 feet (ft) below the water table (estimated at approximately 4 ft below ground surface [bgs]). The well will be developed to meet the criteria specified in NJDEP's most recent ***Field Sampling Procedures Manual***. Low-flow sampling methods will be used to sample this well and the sample will be analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) in accordance with the requirements for No. 2 fuel oil in Table 2-1 of the NJAC 7:26E ***Technical Requirements for Site Remediation***. The Field Geologist will note any indications of fill within the soil column such as cinders, coal, or other debris. A letter report will be prepared for UST 142B that either requests a No Further Action (NFA) determination or recommends additional investigation or action, as warranted from the analytical data.

2. UST 202A

UST 202A was a fiberglass 1,000-gallon heating oil UST that was removed in October 2001, along with an unspecified quantity of contaminated soil, as presented in Attachment J of ***USTs Within ECP Parcel 79*** (Reference 2). NJDEP (Reference 13) subsequently required a groundwater investigation for the UST 202A and UST 202D area. One temporary well and two existing permanent wells were sampled in May and August 2016 (Reference 10). NJDEP then recommended installation of a permanent well nearby to assess UST 202D (Reference 22); at the same time, NFA was not approved for UST 202A. Additional data are needed to delineate groundwater contamination associated with UST 202A and to delineate groundwater contamination at nearby UST 202D (described in Section 3 below).

To address the UST 202A data need, one temporary monitoring well will be installed at the former UST 202A tank location, as shown on Figure 3. The well will be installed within a Geoprobe boring and will be completed with a 5-foot well screen to approximately 4 ft below the water table (estimated at approximately 2 ft bgs). This well will be sampled and the sample will be analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. The Army may also install and sample additional permanent wells based on the temporary well results. A letter report will be prepared for UST 202A that either requests a No Further Action (NFA) determination or recommends additional investigation or action.

3. UST 202D

UST 202D was a steel 500-gallon heating oil UST that was removed in May 2005 along with approximately 20 cubic yards of contaminated soil (Attachment L of Reference 2). A temporary well was sampled at the former UST 202D location in June 2011; benzene (1.61 µg/L) and 2-methylnaphthalene (109 to 233 µg/L) were detected at concentrations greater than NJDEP Ground Water Quality Criteria (GWQC). NJDEP subsequently required a groundwater investigation for UST 202D (Reference 13). One temporary well and two existing permanent wells were sampled in May and August 2016 (Reference 10). NJDEP then recommended installation of a permanent well to assess UST 202D with low-flow sampling and analysis for VOCs and SVOCs (Reference 22).

To address this data need, one permanent monitoring well and at least three temporary wells will be installed at the former UST 202D tank location, as shown on Figure 3. Recent temporary well results (Reference 10) suggest that fuel oil constituents have not migrated more than approximately 50 ft downgradient of the former tank location (Figure 3). Therefore, two additional downgradient temporary wells and one field screening boring will be installed for verification at offset locations approximately 50 feet downgradient of the former tank location to verify that the plume was not missed. A third temporary well will be installed at the former UST 202A location as described in Section 2.0 above. These temporary wells will be installed within a Geoprobe boring and will typically be completed with a 5-foot well screen to approximately 4 ft below the water table (estimated to be 2 ft bgs). Samples will be collected from the temporary wells for VOCs and SVOCs analyses, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. Additional temporary wells may be installed as needed based on the groundwater sampling described above.

It is anticipated that existing well M16MW02 will be utilized as a downgradient sentry monitor well for the UST 202D site. New well 202MW02 will be developed. Both new well 202MW02 and existing well M16MW02 will be sampled using low-flow methods; the samples will be analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from monitoring wells 202MW01, 202MW02, M16MW01, and M16MW02 (Figure 3) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 202D.

4. UST 211

UST 211 was a fiberglass 2000-gallon No. 2 fuel oil UST that was removed in November 2001. As presented in Attachment F.1 of Reference 8, one closure soil sample contained 3,968 mg/kg Total Petroleum Hydrocarbons (TPH). A temporary well was sampled at the former UST 211 location in August 2016; multiple analytes were detected at concentrations greater than the GWQCs including 1,2,4-trimethylbenzene (543 J µg/L), benzene (2.8 µg/L), naphthalene (1,450 µg/L), 2-methylnaphthalene (6,680 µg/L), total VOC Tentatively Identified Compounds (TICs; 1,302 µg/L) and total SVOC TICs (14,322 µg/L) (Attachment D of Reference 8). NJDEP stated that additional remedial efforts were required for this site (Reference 19). Additional data are needed to delineate groundwater contamination at UST 211.

To address this data need, multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed near the former UST 211 tank location, as shown on Figure 4. Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 4) will be advanced at locations around the former UST 211 location to provide field verification of the groundwater flow direction, which is assumed to be towards the north-northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be approximately 12 ft bgs based on previous drilling at PAR-72-211-TMW-01. The field screening borings will be logged visually and with a PID, which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to validate the locations for subsequent temporary wells to assist with delineating the groundwater plume.

A total of four additional temporary monitor wells are proposed at UST 211. A line of three temporary monitor wells (TMW-02 through TMW-04) will be installed along Russel Avenue (approximately 60 ft downgradient of the tank) to verify the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-05) will be installed further downgradient to establish the downgradient extent of the plume prior to installing a downgradient permanent sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings (like SCREEN7 on Figure 4) may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5-foot well screen to approximately 4 ft below the water table (estimated at approximately 12 ft bgs). Samples will be collected from each temporary well and analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Based on the analytical results of the temporary well samples, three permanent monitoring wells will be installed for groundwater monitoring: one at the source area (MW-01); one within the plume (MW-02); and one downgradient sentry location (MW-03). The new wells will be developed and sampled using low-flow methods, and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells, and from nearby wells 200MW01 (located south of Building 216; see Attachment A), 200MW06 (located north of Building 228; Figure 5), and B5MW05B (located southeast of Building 261), to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 211.

5. UST 228B

UST 228B is a steel 1,000-gallon No. 2 fuel oil UST that was partially uncovered in December 2010, and then re-buried and left in place. Therefore, UST 228B has not been administratively closed. The Army has conducted soil sampling along the tank to determine if a release has occurred at UST 228B, and the results were described in Attachment G.4 of Reference 8. One soil sample from the 7 to 7.5 foot interval of boring PAR-72-228-SB-03 had a 2-methylnaphthalene concentration of 23.9 mg/kg which exceeded the NJDEP Impact to Ground Water (IGW) screening level, but not the Residential Direct Contact Soil Remediation Standard (RDCSRS). Synthetic Precipitation Leachate Procedure (SPLP) analysis for 2-methylnaphthalene was not performed (as prescribed by NJDEP guidance) on this soil sample due to exceedance of holding times. However, a temporary well located about 10 ft downgradient of boring PAR-72-228-SB-03 was sampled and 2-methylnaphthalene was notably absent in this sample. NJDEP agreed that additional remedial efforts were required (Reference 19). Further evaluation of the soil boring log for PAR-72-228-SB-03 indicates that groundwater was encountered at approximately 7 ft bgs, and therefore this sample may have been from the saturated zone and, if so, IGW screening levels would not apply, and there would be no soil exceedances at this site. Additional data, as described below, are needed to assess the potential for unsaturated soil to exceed the SPLP criteria for 2-methylnaphthalene.

To address this data need, one Geoprobe soil boring (SB-04) will be advanced at the location of the previous boring PAR-72-228-SB-03 where the IGW screening level for 2-methylnaphthalene was exceeded (Figure 5). An unsaturated soil sample (from above the water table) will be collected from approximately 7 to 7.5 ft bgs for 2-methylnaphthalene analysis using the SPLP procedure. A letter report will be prepared for UST 228B that reports the results of this additional investigation.

6. UST 444

UST 444 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in January 2010; an unreported quantity of contaminated soil was removed the following month (Attachment U of Reference 2). NJDEP required a groundwater investigation for the UST 444 area (Reference 13). A temporary well was sampled at the former UST 444 location in August 2016; multiple analytes were detected at concentrations greater than the GWQCs, including benzene (1.7 J µg/L), 2-methylnaphthalene (30.6 J µg/L), and total SVOC TICs (1,758 µg/L) (Reference 10). NJDEP commented that further investigation was necessary for this site (Reference 22). Additional data are needed to delineate groundwater contamination at UST 444.

To address this data need, multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 444 tank location, as shown on Figure 6. Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 6) will be advanced at locations around the former UST 444 location to determine the groundwater flow direction which is assumed to be towards the north based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be at approximately 6 ft bgs based on previous drilling at PAR-79-MP-TMW-02. The field screening borings will be logged visually and with a PID, which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to verify the field locations for subsequent temporary wells to assist with delineating the groundwater plume.

A total of three additional temporary monitor wells are proposed at UST 444. A line of two additional temporary monitor wells (TMW-01 and TMW-02) will be installed approximately 100 ft downgradient of the tank to verify the direction and lateral boundaries of the plume. Results from a temporary well (PAR-79-MP-TMW03) installed in August 2016 for another former UST investigation will be used to complete this line of temporary wells (there were no exceedances of GWQC in this well). A third temporary monitor well (TMW-03) will be installed approximately 100 feet farther downgradient to establish the downgradient extent of the plume prior to installing a permanent downgradient sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will be completed with a 5-foot well screen to approximately 4 feet below the water table (estimated at approximately 6 ft bgs). Each temporary well will be sampled and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed for groundwater monitoring at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; therefore the actual locations may be adjusted from those shown on Figure 6 based on these data. The new wells will be developed and sampled using low-flow methods, and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby well 430MW-1 (Figure 6) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 444.

7. UST 490

UST 490 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in May 1990 (Attachment CC of Reference 2). NJDEP subsequently required additional characterization of groundwater contamination for the UST 490 area (Reference 13). Multiple rounds of Geoprobe soil sampling performed from 2005 through 2016 verified the presence of petroleum contaminated soils near the former UST location. Groundwater was sampled in August 2016 from a temporary well (PAR-79-490-TMW-03) located downgradient of the former UST location and just south of Building 490; 2-methylnaphthalene (63.5 µg/L) and total SVOC TICs (1,323 µg/L) were detected at concentrations greater than the GWQCs (Reference 10). NJDEP commented that additional groundwater investigations must also include analyses for PAHs (Reference 22). As described below, additional data are needed to estimate the nature and extent of groundwater contamination at UST 490.

Previous sampling results have been used to select additional field screening borings, temporary monitoring wells and permanent monitoring wells which will be installed downgradient of the former UST 490 location (Figure 7). Field screening Geoprobe borings will be advanced at two locations (SCREEN1 and SCREEN2; Figure 7) south of Building 490 to determine the groundwater flow direction which is assumed to be towards the southeast based on regional groundwater maps (Attachment A). The field screening borings will be advanced past the water table, which is assumed to be at approximately 3 ft bgs based on previous drilling at PAR-79-490-TMW-03. The field

screening borings will be logged visually and with a PID, which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the field locations of temporary wells to be installed to delineate the groundwater plume.

A total of four additional temporary monitor wells are proposed at UST 490. Two temporary monitor wells (TMW-04 and TMW-05) will be installed approximately 50 ft from the previous PAR-79-490-TMW-03 location to locate the lateral (cross-gradient) boundaries of the plume. Two temporary monitor wells (TMW-06 and TMW-07) will be installed approximately 70 and 120 ft farther downgradient from Building 490 to establish the downgradient extent of the plume, prior to installing a permanent downgradient sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5-ft well screen to approximately 4 ft below the water table (estimated at approximately 3 ft bgs). Samples will be collected from each temporary well for VOC and SVOC analyses, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Existing well 490MW01 will be maintained as a source area well at the former UST 490 location. Two new permanent monitoring wells will be installed for groundwater monitoring within the plume (MW-02) and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; therefore the actual locations may be adjusted from those shown on Figure 7. The two new wells will be developed. These two new wells and existing well 490MW01 will be sampled using low-flow methods and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells, from the new well at former UST 142B (Figure 2), and from existing well M16MW01 (Figure 3) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 490.

8. UST 750J

UST 750J was a steel 1,000-gallon heating oil UST that was removed in August 2009, along with approximately 24 cubic yards of contaminated soil (Attachment M of Reference 6). NJDEP commented that a groundwater investigation was warranted (Reference 21).

One temporary monitoring well (TMW-01) will be installed at the former UST 750J tank location (Figure 8). The well will be installed within a Geoprobe boring and will be completed with a 5 foot well screen to approximately 4 ft below the water table (approximately 6.5 ft bgs). A sample from this well will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. A letter report will be prepared for UST 750J that either requests a NFA determination or recommends additional investigation or action.

9. UST 800-12

UST 800-12 was a steel 1,000-gallon No. 2 fuel oil UST located in the parking lot of the former First Atlantic Credit Union (Building 1006). This UST was removed in May 2003 along with

approximately 18 cubic yards of contaminated soil (Attachment J of Reference 3). NJDEP commented that a groundwater investigation for the UST 800-12 area was necessary (Reference 15). Temporary well ARE-800-TMW-07 was installed and sampled at the former UST 800-12 location in August 2016; 2-methylnaphthalene (148 µg/L) and total SVOC TICs (510 µg/L) were detected at concentrations greater than the GWQCs (Reference 9). Based on these groundwater results, NJDEP (Reference 20) commented that further groundwater investigation was necessary. Further delineation of groundwater contamination at UST 800-12 will be performed as described below.

Multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 800-12 tank location (Figure 9). Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 9) will be advanced at locations around the former UST 800-12 location to determine the local groundwater flow direction, which is assumed to be towards the north-northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be approximately 8.5 ft bgs based on previous drilling at ARE-800-TMW-07 (Reference 9). The field screening borings will be logged visually and the soils will be monitored with a PID which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the field locations for temporary wells to assist with delineating the groundwater plume.

A total of four temporary monitor wells are proposed at UST 800-12. A line of three temporary monitor wells (TMW-01 through TMW-03) will be installed approximately 80 ft downgradient of the location of the former tank to determine the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-04) will be installed approximately 80 ft farther downgradient to establish the downgradient extent of the plume; this temporary well will be installed and sampled prior to installing a permanent downgradient sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5 foot well screen to approximately 4 ft below the water table (approximately 8.5 ft bgs). Each temporary well will be sampled and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; the actual locations may be adjusted from those shown on Figure 9 based on these data. The new permanent wells will be developed and sampled using low-flow methods. The groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby existing wells 812MW05 and 812MW13 (Figure 2 of Attachment A) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 800-12.

10. UST 800-20

UST 800-20 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in July 2003 along with approximately 80 cubic yards of contaminated soil (Attachment O of Reference 3). NJDEP commented that a groundwater investigation for the UST 800-20 area was necessary (Reference 15). A temporary well was sampled at the former UST 800-20 location in August 2016; 1,1,2-trichloroethane (5.5 µg/L), 2-methylnaphthalene (41 µg/L) and total SVOC TICs (724 µg/L) were detected at concentrations greater than the GWQCs (Reference 9). Based on these groundwater results, NJDEP commented that additional groundwater investigation was necessary for this site (Reference 20). Further delineation of groundwater contamination at UST 800-20 will be performed as described below.

Multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 800-20 tank location (Figure 10). Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 10) will be advanced at locations around the former UST 800-20 location to determine the local groundwater flow direction, which is assumed to be towards the north-northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table which is assumed to be at approximately 7 ft bgs based on previous drilling at ARE-800-TMW-08 (Reference 9). The field screening borings will be logged visually and with a PID which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the locations for temporary wells to assist with delineating the groundwater plume.

A total of four additional temporary monitor wells are proposed at former UST 800-20. A line of three temporary monitor wells (TMW-01 through TMW-03) will be installed approximately 60 ft downgradient of the former tank to verify the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-04) will be installed approximately 80 ft farther downgradient to establish the downgradient extent of the plume, prior to installing a downgradient permanent sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5 foot well screen approximately 4 ft below the water table (approximately 7 ft bgs). Samples from each temporary well will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; the actual locations may be adjusted from those shown on Figure 10 based on these data. The new wells will be developed and sampled using low-flow methods. The groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells, and from nearby existing wells 812MW05 and 812MW13 (Figure 2 of Attachment A), to determine the local

groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 800-20.

11. UST 884

UST 884 was a steel 1,000-gallon No. 2 fuel oil UST that was removed in October 2003 along with an unspecified amount of contaminated soil (Attachment U of the Reference 3). NJDEP commented that a groundwater investigation was necessary for the UST 884 area (Reference 15). A temporary well was sampled at the former UST 884 location in April 2016; 2-methylnaphthalene (150 µg/L) and total VOC TICs (981 µg/L) were detected at concentrations greater than the GWQCs (Reference 9). Based on these groundwater results, NJDEP commented additional groundwater investigation was necessary (Reference 20). Further delineation of groundwater contamination at UST 884 will be performed as described below.

Multiple field screening borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 884 tank location (Figure 11). Field screening Geoprobe borings SCREEN1 through SCREEN6 (Figure 11) will be advanced at locations around the former UST 884 location to determine the local groundwater flow direction, which is assumed to be towards the northwest based on regional groundwater maps (Attachment A). These borings will be advanced past the water table, which is assumed to be at approximately 6 ft bgs based on previous drilling at ARE-800-TMW-05 (Reference 9). The field screening borings will be logged visually and with a PID which has proven useful for identifying fuel oil contamination at FTMM. The field results will be used to select the locations for temporary wells to assist with delineating the groundwater plume.

A total of four additional temporary monitor wells are proposed at UST 884. A line of three temporary monitor wells (TMW-01 through TMW-03) will be installed approximately 60 ft downgradient of the tank to verify the direction and lateral boundaries of the plume. A fourth temporary monitor well (TMW-04) will be installed approximately 60 ft farther downgradient to establish the downgradient extent of the plume, prior to installing a downgradient permanent sentry well. As with the field screening borings, the borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5-foot well screen to approximately 4 ft below the water table (approximately 6 ft bgs). Samples will be collected from each temporary well and analyzed for VOCs and SVOCs in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at the source area (MW-01), within the plume (MW-02), and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data for the temporary wells have been evaluated; based on these data, the actual locations may be adjusted from those shown on Figure 11. The new wells will be developed, and sampled using low-flow methods. The samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby existing wells 800MW01 and 800MW02 (located west and north of Building 800), to determine the

local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 884.

12. UST 906A

UST 906A was a steel 1,000-gallon No. 2 fuel oil UST that was removed in June 1990 (Attachment D of Reference 1). NJDEP did not approve the Army's NFA request for UST 906A due to elevated TPH levels in soil and 2-methylnaphthalene in groundwater at a concentration greater than the GWQC (Reference 14). The Army subsequently prepared a Work Plan for the UST 906A area (Reference 4), which was approved by NJDEP (Reference 16).

Field work at the UST 906A site was performed in April, May, and August 2016 and consisted of Geoprobe soil sampling near the former tank area and temporary well sampling from within and downgradient of the former UST 906A tank area. Soil sample results are presented in Table 2 and Figure 12, and as indicated, Extractable Petroleum Hydrocarbons (EPH) concentrations were greater than the NJDEP cleanup criteria of 5,100 mg/kg are present near the former tank area. The soil EPH exceedance has not been delineated in the northwest direction from the former tank site. One soil sample from boring PAR-68-SB-04 (Figure 12) was also analyzed for SVOCs and 2-methylnaphthalene in this sample (35 mg/kg) exceeded the NJDEP IGW screening level.

Groundwater analyses are presented in Table 3 and Figure 13. The groundwater sample at PAR-68-TMW-01 from the former UST 906A source area exceeded the GWQC for 1,2,2-trichloroethane (present at 4.6 µg/L) and total SVOC TICs (present at 2,719 µg/L). The groundwater sample further downgradient at PAR-68-TMW-02 exceeded the GWQC for 1,2,4-trimethylbenzene (102 µg/L), 2-methylnaphthalene (386 µg/L) and total SVOC TICs (2,319 µg/L). Based on these groundwater results, it is apparent that a groundwater plume associated with UST 906A has migrated in the north-northwest direction below Building 906 and farther downgradient an unknown distance. Therefore, additional data, as described below, are needed to delineate groundwater contamination at former UST 906A.

Multiple soil borings, temporary monitoring wells and permanent monitoring wells will be installed around the former UST 906A tank location, as shown on Figures 12 and 13. Field screening Geoprobe borings (locations PAR-68-TMW-2-1 through TMW-2-4 shown on Figure 13) were previously used in April 2016 to verify the north-northwest direction of plume migration; therefore, additional field screening borings are not proposed for the future work.

One additional soil boring (SB-07 on Figure 12) will be advanced to the northwest of the former UST 906A excavation for collection of soil samples to delineate the EPH exceedances in this direction. Three soil samples will be collected from this boring to characterize the soil with depth: one from above, one from within, and one from below the most contaminated soil interval within the boring. The soil samples will be analyzed for EPH and the sample with the highest field indications of contamination will be analyzed for the SVOCs 2-methylnaphthalene and naphthalene, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

A total of three temporary monitoring wells will be installed. A line of two temporary monitoring wells (TMW-03 and TMW-04 on Figure 13) will be installed approximately 100 ft downgradient of the tank to verify the lateral boundaries of the plume. The previous temporary well PAR-68-TMW-02 established the plume migration direction. An additional temporary monitoring well (TMW-05)

will be installed approximately 70 ft further downgradient to verify the downgradient extent of the plume, prior to installing a permanent downgradient sentry well. The borings for temporary wells will be logged visually and with a PID to estimate the extent of the plume in the field. Additional field screening borings may be used to determine the downgradient extent of the plume. The temporary wells will be installed within Geoprobe borings and will typically be completed with a 5 foot well screen to approximately 4 ft below the water table (approximately 5 ft bgs). Groundwater samples will be collected from each temporary well and will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Three new permanent monitoring wells will be installed to monitor groundwater at: the source area (MW-01, same location as new soil boring SB-07); within the plume (MW-02, same location as previous temporary well PAR-68-TMW-02); and at a downgradient sentry location (MW-03). These wells will be installed after the analytical data from the new temporary wells have been evaluated; the actual locations may be adjusted from those shown on Figure 13 based on these data. The new wells will be developed and sampled using low-flow methods and the groundwater samples will be analyzed for VOCs and SVOCs, in accordance with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E.

Water level measurements will be collected from the three new monitoring wells and from nearby existing well M12MW14 (Figure 13) to determine the local groundwater flow direction. It is anticipated that a remedial investigation report will be prepared for UST 906A.

13. UST 3035

UST 3035 was a steel 5,000-gallon No. 2 fuel oil UST that was removed in 1989. The location of former UST 3035 is not well documented and has been estimated based on the location of the former boiler room at Building 3035 (Figure 14).

As described in Reference 5, closure soil samples were not collected when former UST 3035 was removed. The SI Report Addendum was submitted to NJDEP along with a request for a NFA determination NJDEP was unable to approve the NFA request without analytical data (Reference 17) and the Army proposed additional sampling (Reference 7) which was approved by NJDEP (Reference 18) and is the basis of the work described below.

Soil samples will be collected from three borings (SB-01, SB-02, and SB-03) (Figure 14) to support a future NFA request. Two soil samples will be collected from each boring. At each boring, a sample will be collected from approximately 8.0-8.5 ft bgs (or another interval representative of the soil below the removed tank) and from a 6-inch interval just above the water table (approximately 2 ft bgs). One of these two soil samples will be collected from the most contaminated interval encountered based on field evidence (visual, olfactory, or PID screening). If there is no field evidence of petroleum contamination, then the two soil samples will be collected from 8.0-8.5 ft bgs and from just above the water table (approximately 3 ft bgs). Each soil sample will be analyzed for total EPH with additional contingency SVOCs analyses (25 percent) for naphthalene and 2-methylnaphthalene if EPH concentrations exceed 1,000 mg/kg. These soil analyses are consistent with the requirements for No. 2 fuel oil in Table 2-1 of NJAC 7:26E. A letter report will be prepared for UST 3035 that reports the results of this investigation.

14. SUMMARY

We look forward to your review of this Work Plan and approval or comments. The technical Point of Contact (POC) for this matter is Kent Friesen at (732) 383-7201 or by email at kent.friesen@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

William R. Colvin, PMP, PG, CHMM
BRAC Environmental Coordinator

cc: Ashish Joshi, NJDEP (e-mail and 2 hard copies)
William Colvin, BEC (e-mail and 1 hard copy)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

REFERENCES CITED:

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15. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 & 56, Fort Monmouth, Oceanport, Monmouth County.* November 10.

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State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
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P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
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BOB MARTIN
Commissioner

March 29, 2016

William R. Colvin
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Parcel 68 Work Plan Addendum and Response to NJDEP's September24, 3015 Comments on the April 2015 Underground Storage Tanks Within ECP Parcels68, 74 and 77, Fort Monmouth, New Jersey &*
Parcel 68 Work Plan Addendum for a Former UST Site (March 2016)

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (NJDEP) has completed review of the referenced submittals.

March 2, 2016 Response to Comments

Parcel 68
See comments under Work Plan Addendum

Parcel 74
B2. The Army response to not perform sampling if there is no indication of an existing UST (or evidence of a discharge) is acknowledged. The Department's previous comments, however, remain in effect.

March 2016 Parcel Work Plan Addendum for Former UST Site

Sampling as proposed is approved, *except*, it is also strongly advised one additional sample be collected, in a manner as proposed for the others, due east of 906-AE, as based on Figure 2, it appears there may be possible contamination to east/northeast of 906AE. This sample may be held in abeyance pending results of PAR-68-SS-05.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

C: Joe Pearson, Calibre
Rick Harrison, FMERA
Joe Fallon, FMERA
James Moore, USACE
Cris Grill, Parsons,
Frank Barricelli, RAB
Daryl Clark, BGWPA

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

March 2, 2016

Ms. Linda Range
New Jersey Department of Environmental Protection
Bureau of Case Management
401 East State Street
PO Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028

SUBJECT: Parcel 68 Work Plan Addendum and Response to NJDEP's September 24, 2015 Comments on the April 2015 *Underground Storage Tanks Within ECP Parcels 68, 74, and 77, Fort Monmouth, New Jersey*
PIG000000032

Dear Ms. Range:

Fort Monmouth and Parsons have reviewed the New Jersey Department of Environmental Protection (NJDEP) comments on the subject submittal for ECP Parcels 68, 74 and 77, as documented in your letter dated September 24, 2015. We appreciate this opportunity to work with you on Parcels 68, 74 and 77. Responses to your comments are provided below, for your review and concurrence or further comments.

A. <u>Parcel 68</u>

A1. COMMENT: *Of the fourteen (14) USTs formerly present within the Parcel, twelve had previously received an NFA, two had not. Following review of the submitted information, it is agreed no further action is necessary for one of those two USTs, UST 910-148.*

A1. RESPONSE: Agreed.

A2: COMMENT: *The second UST, however, UST-906-146, aka 906A, a 1,000 gallon #2 fuel UST removed in June of '90 and sampled in January of '06, exhibited TPH levels up to 5,634 ppm and 6,699 ppm, with no VOs exceedances. Although below cleanup criteria applicable at the time of remedial activities, there is apparently no record of a designation of NFA by the DEP. The soil levels are above current criterion. Additionally, the January '06 ground water analytical results indicated 2-methylnaphthalene was found well above the standard. The request for NFA cannot be granted.*

A2: RESPONSE: Additional soil and groundwater sampling is proposed at former UST 906A to provide updated assessment of the extent of contaminated soil and the potential for impact to groundwater, as described in the attached ***Parcel 68Work Plan Addendum***. Soil samples from 5 boring locations near the former UST 906A will be sampled to assess the extent of fuel oil contamination in soil. Additional soil borings will be advanced along the western side of existing Building 906. The soil samples will be field screened to assess the potential for groundwater contamination downgradient of the former tank site. Groundwater samples will be collected from one

temporary well within the former tank area, one temporary well downgradient of the former tank area, and existing monitor well M12MW14 (which is located approximately downgradient of former UST 906A).

B. Parcel 74

B1. COMMENT: *In addition to those USTs noted as having been previously granted a designation of NFA, based upon a review of the documentation provided, it is agreed no further action is necessary for the following USTs:*

UST-206-4 – 4000 gallon diesel – Incident #93-10-21-1910-16

UST-287-61 – 2000 gallon #2 fuel – Incident #93-11-29-1745-01

B1. RESPONSE: Agreed.

B2. COMMENT: *However, three USTs were noted on the 1956 Fuel Storage Map, Appendix O of the '07 ECP, and Attachment B of this submittal, which do not appear to have been evaluated. Unless all tanks, former or current, have been evaluated in accordance with the applicable regulations and guidance documents, the DEP cannot comment as to the absence or presence of a petroleum discharge. The three USTs were noted at:*

Building 275 – north side of parcel

Building 282 – easternmost southeastern corner

Building 205 – upper southeastern corner

B2. RESPONSE: The Army has conducted adequate due diligence to assess the presence of USTs within Parcel 74, including the use of geophysical survey techniques, historical maps and metal detectors to locate USTs. Since there were no indications of USTs at these sites, the Army is not proposing additional assessment work at the above locations. If the Army has creditable evidence of a potential release, then we will evaluate these locations to achieve regulatory acceptance and site/parcel closure. However, in absence of any new evidence, we believe that the Army has done an adequate level of due diligence.

C. Parcel 77

C1. COMMENT: *The submittal provided documentation of remedial activity previously performed for a single UST within the parcel. It is agreed no additional action is necessary for the following UST:*

UST-210-8 – Incident #94-01-25-0913-00

C1. RESPONSE: Agreed.

We look forward to your review of these responses and approval or additional comments. The technical Point of Contact (POC) for this matter is Kent Friesen at (732) 383-7201 or by email at kent.friesen@parsons.com. Should you have any questions or require additional information, please contact me by phone at (732) 380-7064 or by email at william.r.colvin18.civ@mail.mil.

Sincerely,

William R. Colvin, PMP, PG, CHMM
BRAC Environmental Coordinator

Attachment:
Parcel 68 Work Plan Addendum for a Former UST Site

cc: Linda Range, NJDEP (e-mail and 3 hard copies)
Delight Balducci, HQDA ACSIM (e-mail)
Joseph Pearson, Calibre (e-mail)
James Moore, USACE (e-mail)
Jim Kelly, USACE (e-mail)
Cris Grill, Parsons (e-mail)

Fort Monmouth
Oceanport, Monmouth County, New Jersey
Parcel 68 Work Plan Addendum for a Former UST Site
Date: March 2016

1.0 PURPOSE

The purpose of this Parcel 68 Work Plan Addendum is to outline the site-specific Scope of Work (SOW) for the environmental investigation of one former No. 2 fuel oil underground storage tank (UST) site within Parcel 68 at Fort Monmouth. In general, this scope consists of supplemental soil and groundwater sampling at the former UST 906A site to determine the extent of contamination. This approach was requested by the New Jersey Department of Environmental Protection (NJDEP) in their comment letter dated September 24, 2015, and agreed to in the Army's letter dated March 1, 2016.

2.0 REFERENCE DOCUMENTS

HEALTH AND SAFETY - All Site personnel are required to read, understand, and comply with the safety guidelines in the Accident Prevention Plan (APP) including the Site Health and Safety Plan (SHASP), which is included as Appendix A of the APP.

FIELD PROCEDURES – The detailed field procedures to be used for the activities described in this sampling plan are described in the March 2013 Final Sampling and Analysis Plan (SAP).

3.0 SITE BACKGROUND

Parcel 68 is located within the central portion of the Main Post at Fort Monmouth, and south of Oceanport Creek (**Figure 1**). Available information for multiple USTs at Parcel 68 was previously provided to NJDEP in the Army's submittal dated April 14, 2015 and entitled *Underground Storage Tanks Within ECP Parcels 68, 74 and 77, Fort Monmouth, New Jersey*. The NJDEP responded in their letter dated September 24, 2015 approving No Further Action (NFA) for multiple USTs. However, due to Total Petroleum Hydrocarbons (TPH) concentrations in soil and 2-methylnaphthalene in groundwater above regulatory criteria, an NFA could not be granted at former UST 906A. Groundwater flow directions are not well known but are interpreted to be towards the northwest at this portion of Parcel 68 (**Figure 2**).

4.0 SAMPLING LOCATIONS AND ANALYSES

Locations for additional sampling are shown on **Figure 2**. A summary of the field sampling and analytical activities is presented in **Table 1**. The field activities will include:

- Advancement of approximately 5 shallow soil borings using a Geoprobe rig in and around the former UST site, and collection of soil samples from select boring intervals for

chemical analysis of petroleum constituents, to determine the extent of soil contamination in the vicinity of the former UST.

- Advancement of approximately 4 shallow soil borings using a Geoprobe rig along the west side of Building 906 to depths below shallow groundwater, and collection of soil samples from near the water table for field screening and visual observations, for field determination of groundwater contamination downgradient of the former UST.
- Installation of temporary monitor wells within 2 Geoprobe borings located within and downgradient of the former UST site, and collection of "grab" groundwater samples for chemical analysis of petroleum constituents.
- Sampling of one existing monitor well located approximately downgradient of the former UST site for chemical analysis of petroleum constituents.

These field activities are described in additional detail below.

4.1 Sampling at Former UST Area

Additional Geoprobe soil and groundwater sampling is proposed for five locations south of Building 906, in the immediate vicinity of the former UST 906A location, as shown on **Figure 2**. The purpose of the central Geoprobe location (PAR-68-SS-01) at the former UST 906A site is to characterize the soil and groundwater in the immediate vicinity of the former tank. The purpose of the other four Geoprobe locations (PAR-68-SS-02, PAR-68-SS-03, PAR-68-SS-04, and PAR-68-SS-05) is to supplement previous samples (906AW, 906AC, and 906AE; see **Figure 2**) for delineation of soil TPH contamination previously found at the former UST 906A site.

Each Geoprobe boring will be completed to at least 4 feet below the water table (estimated at approximately 5 feet below ground surface) to assess current concentrations and vertical extent of extractable petroleum hydrocarbons (EPH), which replaces TPH as the current parameter for petroleum hydrocarbons. Three soil samples will be collected from each boring. Samples will be collected from approximately 2.0-2.5 ft bgs (or another interval representative of clean overburden), from a deeper 6-inch interval that is below any field evidence of contamination to delineate vertical extent, and from the most contaminated intermediate interval encountered (between 2.0-2.5 ft bgs and the deeper vertical extent sample) based on field evidence (visual, olfactory, photoionization detector [PID] screening).

Each soil sample will be analyzed for EPH, with additional contingency semivolatile organic compounds (SVOCs) analysis (25 percent) for naphthalene and 2-methylnaphthalene in the event that EPH concentrations exceed 1,000 mg/kg. A groundwater sample will be collected from a temporary well (PAR-68-TMW-01) installed within the central Geoprobe boring and analyzed for volatile organic compounds (VOCs) and SVOCs plus tentatively identified compounds (TICs). These soil and groundwater analyses are consistent with the requirements for No. 2 fuel oil in Table 2-1 of the NJAC 7:26E Technical Requirements for Site Remediation.

4.2 Sampling Downgradient of Former UST Area

Since groundwater at the former UST site was previously determined in 2006 to exceed the interim Ground Water Quality Criteria (GWQC) for 2-methylnaphthalene, a targeted groundwater sample from a downgradient area will be collected. Additional field screening of Geoprobe soil borings is proposed for four locations along the west end of Building 906 as shown on **Figure 2**. Soil from Geoprobe borings advanced at approximately 20 foot centers along the west edge of Building 906 will undergo field

screening (visual, olfactory, PID screening) only. The purpose of these Geoprobe locations is to detect potential petroleum contamination downgradient of the former UST 906A site. Each Geoprobe boring will be completed to approximately 4 feet below the water table for visual observations and field screening. Groundwater samples from one of the four borings with the greatest field indication of petroleum contamination will be collected from a temporary well installed (designated as PAR-68-TMW-02) within the Geoprobe boring, and then the borings will be abandoned. The groundwater sample will be analyzed for VOCs and SVOCs plus TICs.

Existing monitor well M12MW14 was constructed by the Army at this site in 2010 to monitor groundwater contamination from the FTMM-12 landfill site, but was not sampled for petroleum constituents. This well may be downgradient of the former UST 906A site. Therefore, well M12MW14 will be sampled using the NJDEP low-flow purge and sample method, and analyzed for VOCs and SVOCs plus TICs.

TABLE 1
SAMPLING SUMMARY FOR PARCEL 68 WORK PLAN ADDENDUM
FORT MONMOUTH, NEW JERSEY

Parcel	Location	Field Meter Readings [a/]	VOCs + TICs by Method 8260C [b/]	SVOCs + TICs by Method 8270D [c/]	Non-Fractionated EPH [d/]
Soil					
68	UST 906A (Figure 2) - 5 soil borings, 3 samples each (assume 1 sample in each boring requires contingency SVOC analysis) [e/]. Advance approximately 4 additional borings along the northwest side of Building 906 and provide field screening at the water table to determine the location of 1 temporary well.	9 borings	0	5	15
Groundwater					
68	UST 906A (Figure 2) - 3 groundwater samples from 2 temporary wells and existing monitor well M12MW14	3	3	3	0
QA/QC samples (see SAP for additional details) [f/]					
Field Duplicates (5% Sampling Frequency per media)		NA	1	1	1
Matrix Spike (5% Sampling Frequency per media)		NA	1	1	1
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	1	1
Trip Blank (1 per cooler of VOCs per media)		NA	1	0	0
QA Split (5% per media)		NA	1	1	1
Equipment Blank (5% Sampling Frequency per media)		NA	1	1	1
	TOTAL	**NA**	**9**	**13**	**20**

Notes:

NA = not applicable.

[a/] Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID headspace, pH, temperature, electrical conductivity, dissolved oxygen (DO), oxidation-reduction potential (ORP), and turbidity.

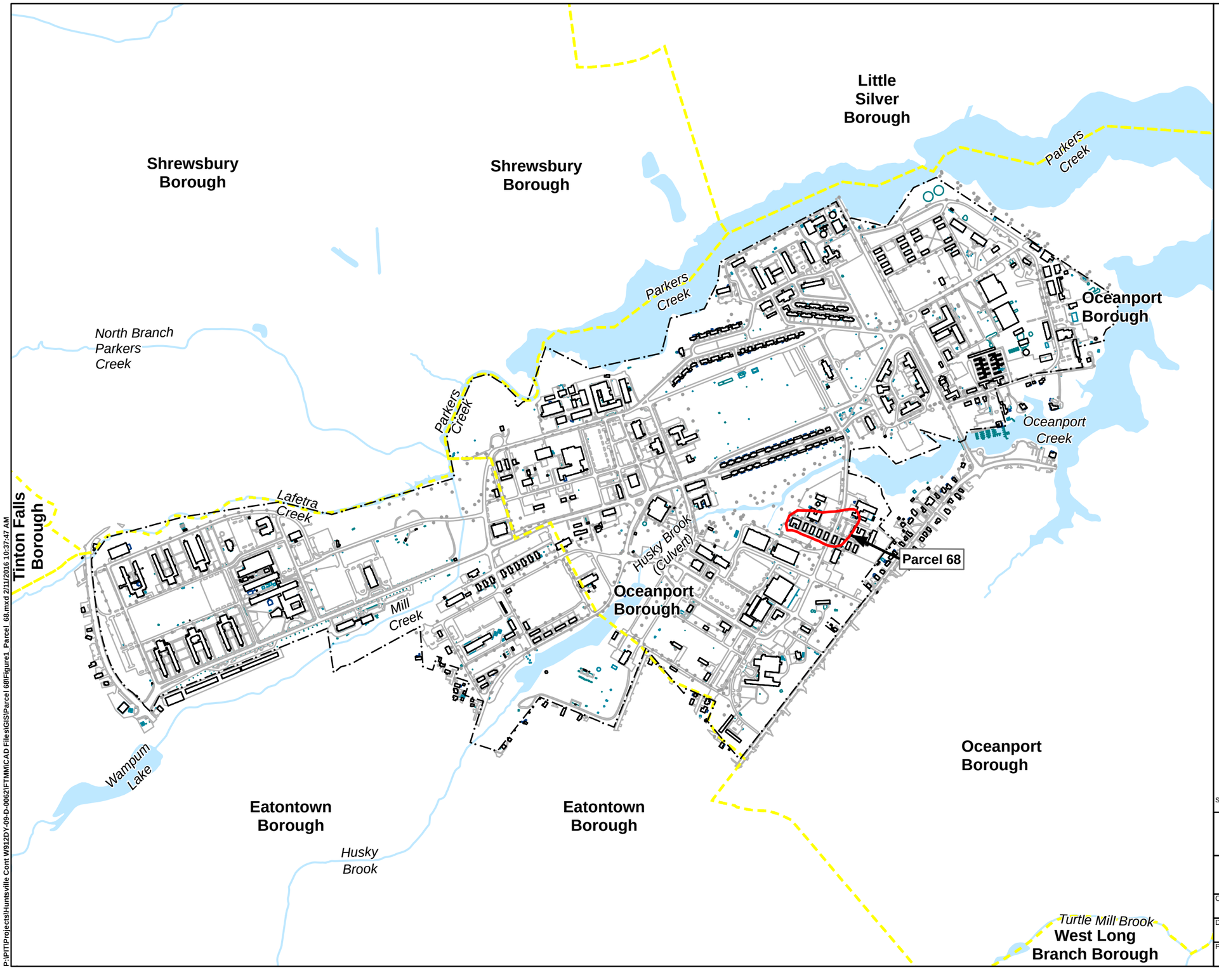
[b/] VOCs = volatile organic compounds; TICs = tentatively identified compounds.

[c/] SVOCs = semivolatile organic compounds; TICs = tentatively identified compounds.

[d/] EPH = extractable petroleum hydrocarbons.

[e/] If any EPH concentrations in soil exceed 1000 mg/kg in any of the site samples, then minimum 25% of the samples where EPH exceeds 1000 mg/kg will also be analyzed for 2-methylnaphthalene and naphthalene.

[f/] QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan. The requirement for QA/QC samples may be fulfilled with samples from other parcels.



LEGEND:

- Parcel Boundary
- Installation Boundary
- Municipal Boundary
- Surface Water Feature

N

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

PARCEL 68 LOCATION

CREATED BY: RR	REVIEWED BY: KF
DATE: FEB. 2016	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-01000	FILE: Figure1_Parcel_68.mxd

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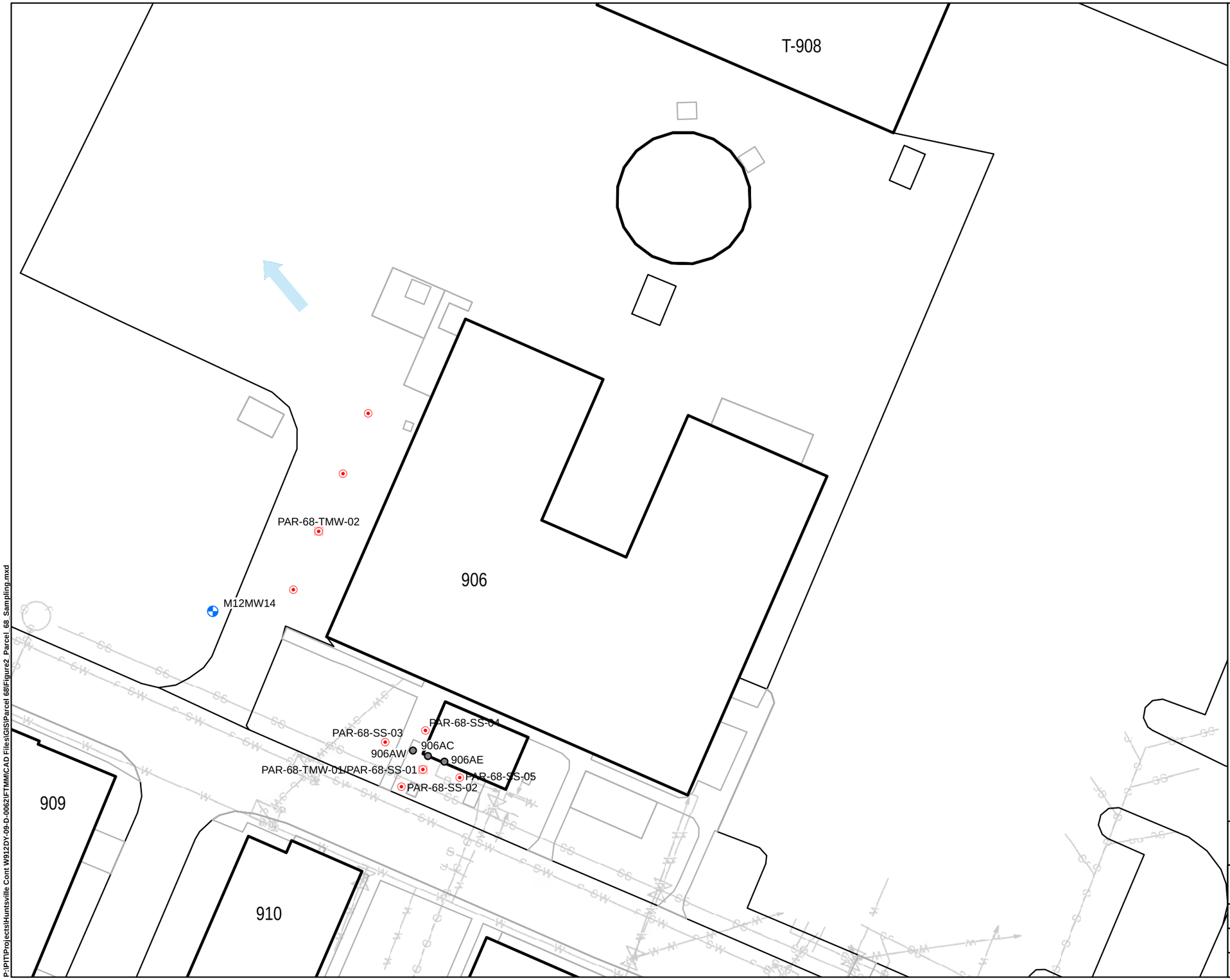

LEGEND:

- Proposed Soil Sample
- Proposed Soil and Groundwater Sample
- Historic Sample Location
- Shallow Monitoring Well
- FTMM-14 Shallow Monitoring Well
- Municipal Boundary
- Installation Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

NOTES:

1. Temporary monitoring well PAR-68-TMW-02 will be installed at one of the four locations along the west side of Building 906 within the greatest field indication of petroleum contamination,

2. Groundwater samples will be collected from temporary wells and from existing monitoring well M12MW14.

N

1 inch = 30 feet

0 15 30 60 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey

PARCEL 68 PROPOSED SAMPLING LOCATIONS

CREATED BY: RR	REVIEWED BY: KF
DATE: FEB. 2016	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-02060	FILE: Figure2_Parcel_68_Sampling.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Parcel 68\Figure2_Parcel_68_Sampling.mxd

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Case Management
401 East State Street
P.O. Box 420/Mail Code 401-05F
Trenton, NJ 08625-0028
Phone #: 609-633-1455
Fax #: 609-633-1439

BOB MARTIN
Commissioner

September 24, 2015

John Occhipinti
BRAC Environmental Coordinator
OACSIM – U.S. Army Fort Monmouth
PO Box 148
Oceanport, NJ 07757

Re: *Underground Storage Tanks Within ECP Parcel 68, 74, and 77 dated April 2015*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Occhipinti:

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, received April 20, 2015, prepared by the Department of the Army's Office of Assistant Chief of Staff for Installation Management to provide documentation of the location and closure status of all USTs identified within the referenced parcels, and more particularly, to allow for designation of No Further Action (NFA) at those former underground storage tanks (USTs) previously removed and remediated, but which did not receive NFA designations.

Parcel 68

Of the fourteen (14) USTs formerly present within the Parcel, twelve had previously received an NFA, two had not. Following review of the submitted information, it is agreed no further action is necessary for one of those two USTs, UST 910-148.

The second UST, however, **UST-906-146**, aka 906A, a 1000 gallon #2 fuel UST removed in June of '90 and sampled in January of '06, exhibited TPH levels up to 5634 ppm and 6699 ppm, with no VOs exceedances. Although below cleanup criteria applicable at the time of remedial activities, there is apparently no record of a designation of NFA by the DEP. The soil levels are above current criterion. Additionally, the January '06 ground water analytical results indicated 2-methylnaphthalene was found well above the standard. The request for NFA cannot be granted.

Parcel 74

In addition to those USTs noted as having been previously granted a designation of NFA, based upon a review of the documentation provided, it is agreed no further action is necessary for the following USTs:

UST-206-4 – 4000 gallon diesel – Incident #93-10-21-1910-16
UST-287-61 – 2000 gallon #2 fuel – Incident #93-11-29-1745-01

However, three USTs were noted on the 1956 Fuel Storage Map, Appendix O of the '07 ECP, and Attachment B of this submittal, which do not appear to have been evaluated. Unless all tanks, former or current, have been evaluated in accordance with the applicable regulations and guidance documents, the DEP cannot comment as to the absence or presence of a petroleum discharge. The three USTs were noted at:

Building 275 – north side of parcel
Building 282 – easternmost southeastern corner
Building 205 – upper southeastern corner

Parcel 77

The submittal provided documentation of remedial activity previously performed for a single UST within the parcel. It is agreed no additional action is necessary for the following UST:

UST-210-8 – Incident #94-01-25-0913-00

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

C: Joe Pearson, Calibre
James Moore, USACE
Rick Harrison, FMERA
Joe Fallon, FMERA
Frank Barricelli, RAB

DEPARTMENT OF THE ARMY

OFFICE OF ASSISTANT CHIEF OF STAFF FOR INSTALLATION MANAGEMENT
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

April 14, 2015

Ms. Linda Range
New Jersey Department of Environmental Protection
Case Manager
Bureau of Southern Field Operations
401 East State Street, 5th Floor
PO Box 407
Trenton, NJ 08625

Re: Underground Storage Tanks within Parcel 68
Fort Monmouth, NJ

Attachments:

A. Summary Table of Parcel 68 Underground Storage Tanks
B. Site Layout Drawings of Parcel 68 (2 drawings)
C. No Further Action Letters from NJDEP
D. UST 906A Report
E. UST 910 File Review and Analyses

Dear Ms. Range:

The U.S. Army Fort Monmouth (FTMM) has reviewed existing file information for underground storage tank (UST) sites at Fort Monmouth within Environmental Condition of Property (ECP) Parcel 68. The purpose of this submittal is to provide comprehensive documentation of the location and closure status of all USTs identified within this parcel, which we believe will be useful for the future Phase II property transfer.

A summary table of USTs identified within Parcel 68 is provided as Attachment A, and the locations of these USTs within Parcel 68 are presented in Attachment B. All of the USTs identified within Parcel 68 have been removed.

Multiple USTs within Parcel 68 have been identified that were previously approved for No Further Action (NFA) by NJDEP; documentation of this approval is provided in Attachment C, and referenced below for specific USTs. In these cases, there is generally a supporting investigation report that was previously submitted to NJDEP that describes the basis for closure. For the sake of brevity, we have not included these reports for USTs where an NFA has already been approved. However, these reports are available within the FTMM environmental records.

In the Attachment A table, the term "Case Closed" has been used (consistent with previous FTMM procedures) to indicate the Army determined that no further sampling or remedial actions were warranted for a specific UST site. All Parcel 68 USTs were designated as “Case Closed.” “Case Open” would indicate that the Army determined that ongoing monitoring, reporting or possibly even remedial action was warranted. In contrast, "No Further Action" has been reserved for NJDEP approval that no further sampling or remedial actions are warranted.

Parcel 68 generally includes the 900 Area of Fort Monmouth. It is an irregularly shaped area centered near the intersection of Murphy Drive and Courier Avenue of the Main Post. It was designated in the ECP Report as the 900 Building Area Former USTs. Several UST sites (901, 916, 917 and 918) were located outside of the Parcel 68 boundary as designated by the ECP Report, but have been included in this submittal based on proximity and similar site histories.

We are submitting the following documentation for the multiple USTs that were previously removed from Parcel 68, and we request a No Further Action determination for each site (sites that have been previously approved by NJDEP are highlighted in green):

- UST 901 NFA was approved by NJDEP on 8/29/2000 (Attachment C).
- UST 902 NFA was approved by NJDEP on 7/10/1998 (Attachment C).
- UST 905 NFA was approved by NJDEP on 1/10/2003 (Attachment C).
- UST 906A investigation report is presented in Attachment D.
- UST 906B NFA was approved by NJDEP on 8/29/2000 (Attachment C).
- UST 907 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 909 NFA was approved by NJDEP on 10/23/2000 (Attachment C).
- UST 910 File Review summary and analyses is presented in Attachment E.
- UST 911 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 912 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 913 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 914 NFA was approved by NJDEP on 10/23/2000 (Attachment C).
- UST 915 NFA was approved by NJDEP on 10/23/2000 (Attachment C).
- UST 916 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 917 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 918 NFA was approved by NJDEP on 2/24/2000 (Attachment C).
- UST 977 NFA was approved by NJDEP on 10/23/2000 (Attachment C).
- UST 979 NFA was approved by NJDEP on 10/23/2000 (Attachment C).

This information supports the conclusion that all UST soil contamination issues identified within Parcel 68 have been adequately addressed by previous environmental activities. One unresolved groundwater issue has been identified:

- Groundwater at UST 906A exceeds the NJDEP Ground Water Quality Criteria for 2-methylnaphthalene.

In summary, we submit that the Army has provided adequate due diligence with regards to the environmental condition of this Parcel, and we request that NJDEP approve No Further Action. Should you have any questions or require additional information, please contact me at (732) 380-7064 or by email at wanda.s.green2.civ@mail.mil.

Sincerely,

Wanda Green

Wanda Green
BRAC Environmental Coordinator

cc: Delight Balducci, HQDA ACSIM
Joseph Pearson, Calibre
James Moore, USACE
Cris Grill, Parsons

ATTACHMENT D

UST 906A Report

U.S. Army Garrison
Fort Monmouth, New Jersey

Underground Storage Tank Closure Report

Main Post – Building 906A
Courier Ave.

NJDEP UST Registration No. 81533-146

February 2008

UNDERGROUND STORAGE TANK REPORT

MAIN POST –BUILDING 906A
NJDEP UST REGISTRATION NO. 81533-146

FEBRUARY 2008

PREPARED FOR:

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

PROJECT NO. 06-34950

PREPARED BY:

TECOM-VINNELL SERVICES, INC.
P.O. BOX 60
FT. MONMOUTH, NJ 07703

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EXECUTIVE SUMMARY

UST Closure

A single wall steel underground storage tank (UST) was closed by removal in accordance with the New Jersey Department of Environmental Protection (NJDEP) guidelines on June 26, 1990. The UST was located on the southwest side of Building 906A in the Main Post area of Fort Monmouth. UST No. 81533-146 was a 1,000-gallon tank containing No. 2 heating oil.

Site Assessment

This site assessment was performed by TECOM-Vinnell Service (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.*

During the time of UST removal, no closure soil samples were collected. Soil sampling was not required at the time. However, in order to confirm that the tank did not leak, this subsurface investigation was conducted. On January 4, 2006, a Geoprobe was utilized to collect soil samples 906AC, 906AE, 906AW and 906AC (groundwater) from a total of three (3) locations along the tank centerline bottom. All soil samples were analyzed for total petroleum hydrocarbons (TPH). Groundwater was encountered at approximately four (4.0) feet below surface grade in the borings. A sample of it was collected and analyzed for volatile organic analysis (VOA) and semi-volatile organic analysis (SVOA).

Findings

The closure soil samples collected from the location associated with UST No. 81533-146, 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). Soil samples 906AC, 906AE and 906AW contained TPH concentrations of 5634 mg/kg, 6699 mg/kg and 195 mg/kg, respectively. Contingent VOA analysis was conducted on soil samples 906AC and 906AE in which there were no compounds detected above the NJDEP Residential Direct Contact Soil Cleanup Criteria.

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 are not present in the location of the UST. A groundwater sample, analyzed for volatile organic analysis and semi-volatile organic analysis, did contain several compounds above the analytical method detection limits. However, all detected compounds were below the NJDEP Class II Groundwater Quality Criteria.

No Further Action is proposed in regard to the closure and site assessment of UST No. 81533-146 at Building 906A.

1.0 UNDERGROUND STORAGE TANK CLOSURE SOIL SAMPLING ACTIVITIES

1.1 OVERVIEW

One underground storage tank (UST), New Jersey Department of Environmental Protection (NJDEP) Registration No. 81533-146, was closed at Building 906A located on the Main Post at the U.S. Army Garrison, Fort Monmouth, New Jersey. Refer to site location map on Figure 1. This report presents the results of soil and groundwater sampling analysis to confirm that the tank did not leak. The UST was a 1,000-gallon, single-wall steel tank containing No. 2 heating oil. The UST was installed in 1954 and the removal was done on June 26, 1990. Archived documents including Removal Procedures, Site Assessment Compliance Statement, NJDEP Standard Reporting Form along with the NJDEP UST Site Investigation Report Form are included in Appendix A.

This UST Closure 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 and revisions dated April 20, 2003).

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

1.2 SITE DESCRIPTION

Building 906A, Courier Ave., is located in the central portion (900 Area) of the Main Post of Fort Monmouth, as shown on Figure 1. A historical map, Figure 2, was used to determine the location of the UST at Building 906A. UST No. 81533-146 was located on the southwest side of Building 906A.

1.2.1 Geological/Hydrogeological Setting

The following is a description of the geological/hydrogeological setting of the 900 Area. 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.

Regional Geology

Monmouth County lies within the New Jersey Section of the Atlantic Coastal Plain physiographic province. The Main Post, Charles Wood 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, sand 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 (Zapecza, 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 Zapecza, 1990).

Local Geology

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).

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.

Based on records of wells drilled in the Main Post area, water is typically encountered at depths of 2 to 9 feet below ground surface (bgs). According to Jablonski, wells drilled in the Red Bank and Tinton Sands may produce 2 to 25 gallons per minute (gpm). Some well owners have reported acidic water that requires treatment to remove iron.

Due to the proximity of the Atlantic Ocean to Fort Monmouth, shallow groundwater may be tidally influenced and may flow toward creeks and brooks as the tide goes out, and away from creeks and brooks as the tide comes in. However, an abundance of clay lenses and sand deposits were noted in borings installed throughout Fort Monmouth. Therefore, the direction of shallow groundwater should be determined on a case by case basis.

Shallow groundwater is locally influenced within the Main Post 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 Main Post area
- presence of clay and silt lenses in the natural overburden deposits
- local groundwater recharge areas (e.g., streams, lakes)

Due to the fluvial nature of the overburden deposits (e.g., sand and clay lenses), shallow groundwater flow direction is best determined on a case-by-case basis. This is consistent with lithologies observed in borings installed within the Main Post area, which primarily consisted of fine-to-medium grained sands, with occasional lenses or laminations of gravel silt and/or clay.

Building 906A is located approximately 400 feet south of Husky Brook, the nearest water body, which flows into Oceanport Creek and then into the Shrewsbury River. Based on the Main Post topography, the groundwater flow in the area of Building 906A is anticipated to be to the north.

1.3 HEALTH AND SAFETY

Work site health and safety hazards were minimized during all site investigation 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).

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 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* (December 17, 2002 and revisions dated February 3, 2003) which was the applicable regulation at the date of the investigation. All records of the Site Investigation activities are maintained by the Fort Monmouth DPW Environmental Office.

The following Parties participated in Closure and Site Assessment Activities.

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

- Subsurface Evaluator: Frank Accorsi
  Employer: TECOM-Vinnell Services, Inc. (TVS)
  Phone Number: (732) 532-5241
  NJDEP License No.: 0010042
  TVS - NJDEP License No.: US252302

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

2.2 FIELD SCREENING/MONITORING

Field screening of the soils 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 January 4, 2006, closure soil samples 906AC (shallow), 906AC (deep), 906AE and 906AW were collected from a total of three (3) locations along the tank centerline bottom of the UST. Groundwater was encountered at approximately four (4.0) feet below surface grade in the borings. All soil samples were analyzed for TPH. A soil sample location map is provided on Figure 3.

The site assessment was performed by TVS 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 soil samples were collected into laboratory prepared glassware using properly decontaminated stainless steel trowels. After collection, the samples were immediately placed on ice in a cooler and delivered to Fort Monmouth Environmental Testing Laboratory for analysis.

2.4 GROUNDWATER SAMPLING

On January 4, 2006, groundwater sample 906AC-GW was collected from soil borehole 906AC to assess the groundwater quality in the location of the tank. A temporary PVC piezometer was installed in the borehole for sample collection. The sample was collected into laboratory prepared glassware using a disposable teflon bailer. The sample was analyzed for volatile organic analysis (VOA) and semi-volatile organic analysis (SVOA).

3.0 CONCLUSIONS AND RECOMMENDATIONS

3.1 SOIL SAMPLING RESULTS

Closure soil samples were collected from a total of three locations on January 4, 2006 to evaluate soil conditions in the location of the UST. 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 B.

Closure soil samples collected on January 4, 2006 from UST 81533-146 contained no concentrations of TPH above the NJDEP health based criterion of 10,000 mg/kg total organic contaminants. Soil samples 906AC, 906AE and 906AW contained TPH concentrations of 5634 mg/kg, 6699 mg/kg and 195 mg/kg, respectively. Contingent VOA analysis was conducted on soil samples 906AC and 906AE. The only compounds detected above the method detection limits were in sample 906AE. Detected were ethylbenzene at 0.6 mg/kg and total xylenes at 0.8 mg/kg, which are below the NJDEP Residential Direct Contact Soil Cleanup Criteria of 1,000 mg/kg and 410 mg/kg, respectively.

3.2 GROUNDWATER SAMPLING RESULTS

One groundwater sample was collected via temporary PVC piezometer installed in soil borehole 906AC. There were two compounds detected above the method detection limits for the volatile organic analysis. Detected were ethylbenzene at 4.7 ug/L and total xylenes at 3.2 ug/L which are below the NJDEP Class II Groundwater Quality Criteria of 700 ug/L and No Limit Established, respectively. There were five compounds detected above the method detection limits for the semi-volatile organic analysis. Naphthalene was detected at 95.1 ug/L, which is below the regulatory level of No Limit Established. 2-Methyl-naphthalene was detected at 169.4 ug/L, which is below the regulatory level of No Limit Established. Phenanthrene was detected at 189.2 ug/L, which is below the regulatory level of No Limit Established. Pyrene was detected at 77.9 ug/L, which is below the regulatory level of 200 ug/L. Bis(2-Ethylhexyl)phthalate, a common laboratory contaminant, was detected at 13.8 ug/L which is below the regulatory level of 30 ug/L.

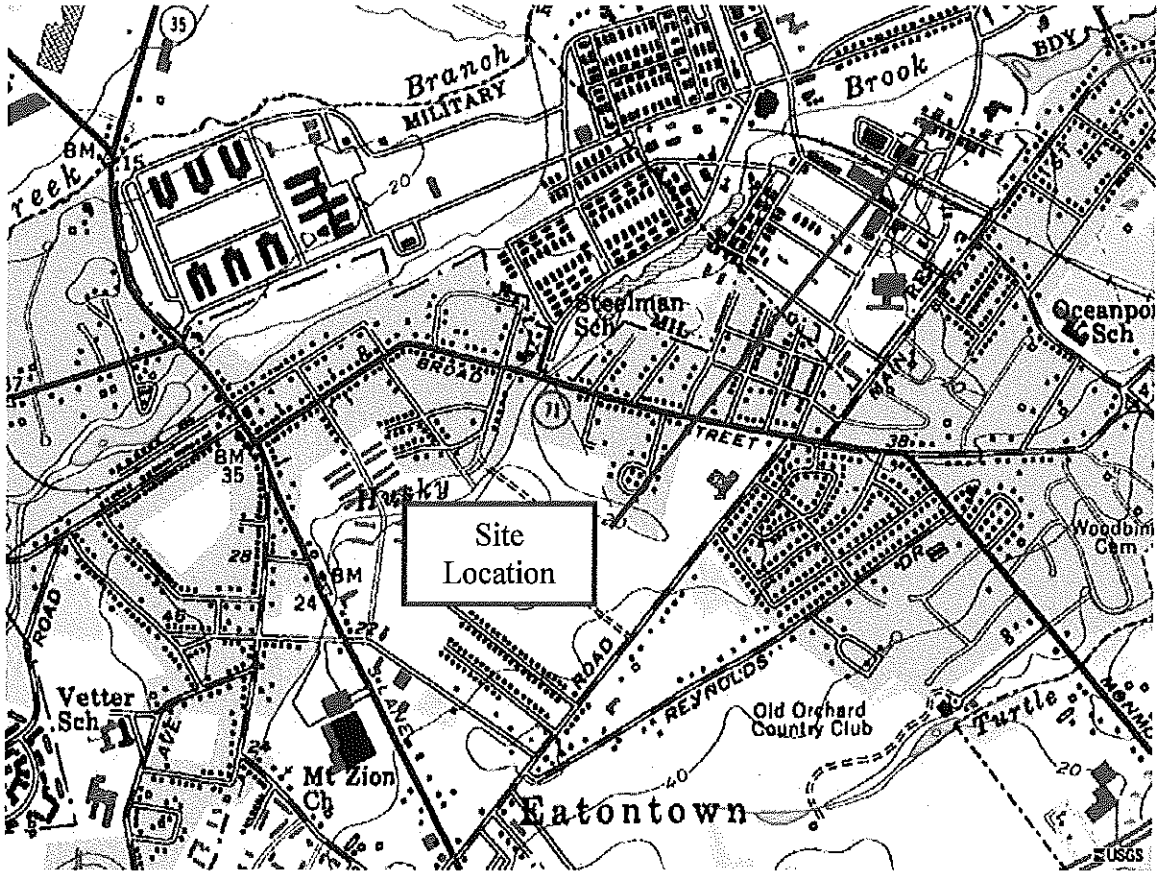
3.3 CONCLUSIONS AND RECOMMENDATIONS

The analytical results for all soil and groundwater samples collected from the UST closure assessment at UST No. 81533-146 were below the regulatory limits.

Based on the closure soil sampling results, soils with TPH concentrations exceeding the NJDEP health based criterion for total organic contaminants of 10,000 mg/kg are not present at the location of UST No. 81533-146.

No Further Action is proposed in regard to the closure and site assessment of UST No. 81533-146 at Building 906A.

FIGURES



SCALE 1:24,000

1 0.5 0 1 MILE

1 0.5 0 1 KILOMETER

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

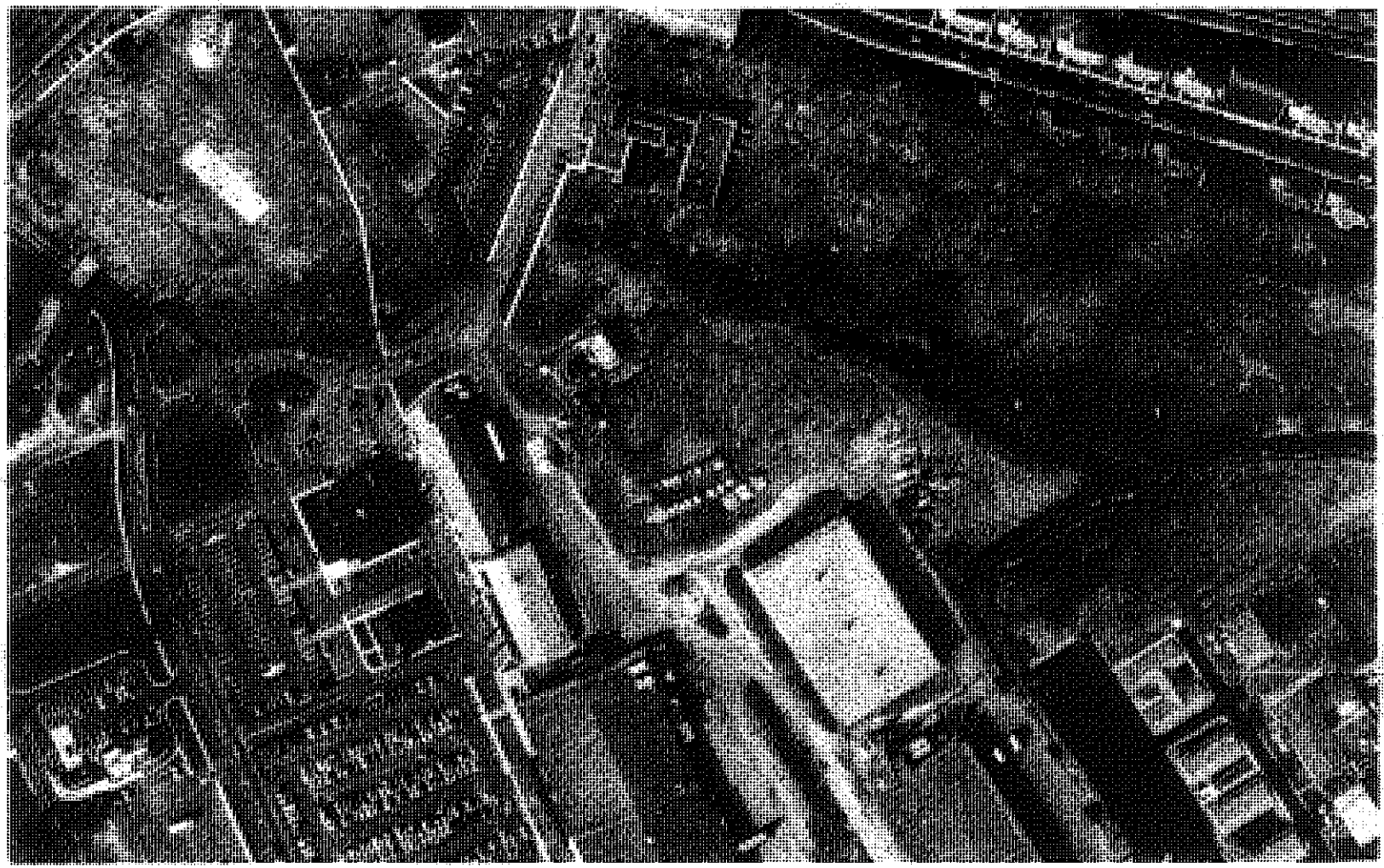
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

N

SOURCE: USGS 7½-MINUTE SERIES (TOPOGRAPHIC)
LONG BRANCH QUADRANGLE, NEW JERSEY, 1981.

FIGURE 1

SITE LOCATION MAP
BUILDING 906
UST NO. 81533-146
FT. MONMOUTH, NJ

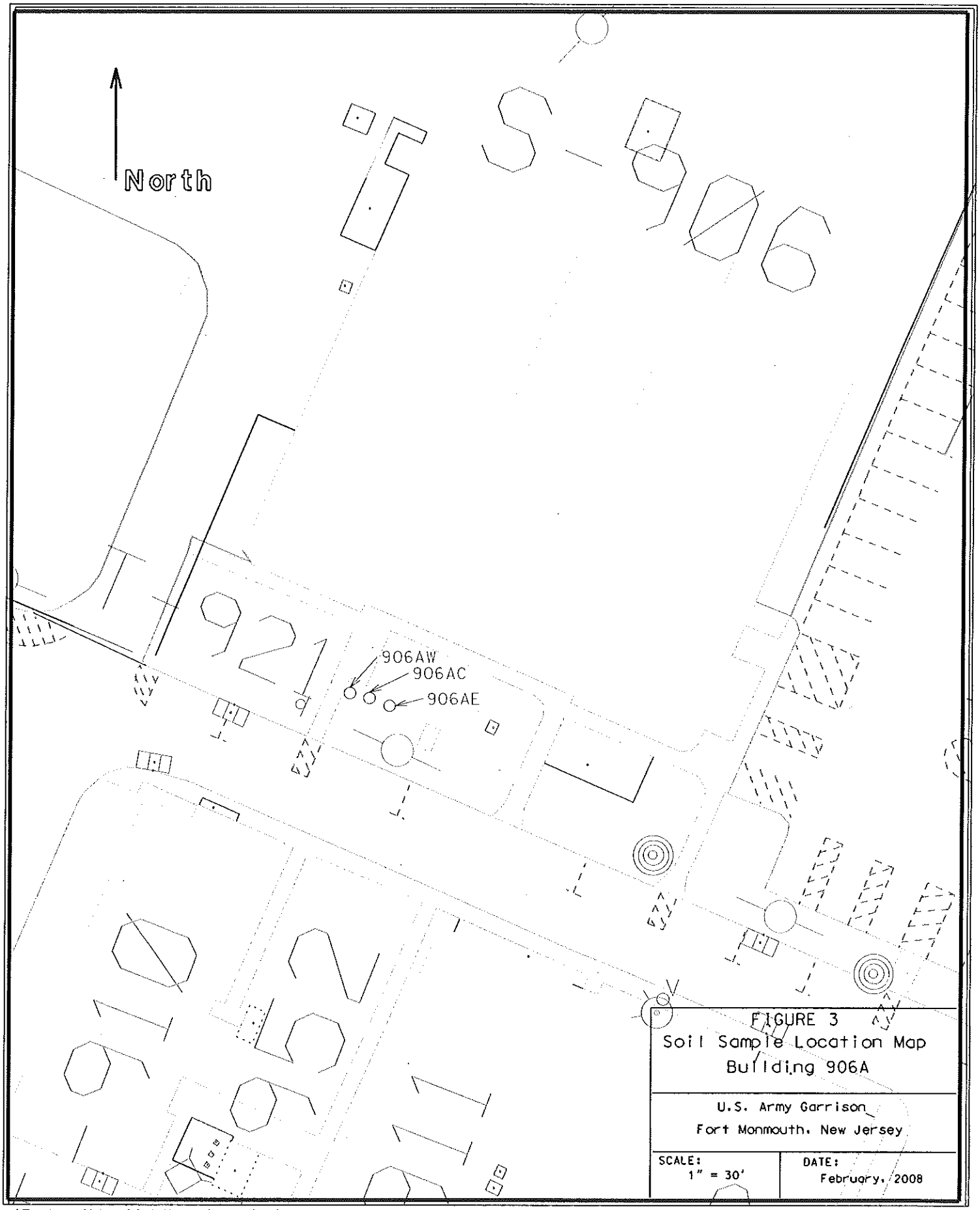


Robinson Aerial Surveys, Inc.
43 Sparks Ave., Hanton, N.J. 07960
Phone (201) 362-3011

DIRECTORATE OF ENGINEERING & HOUSING
Fort Monmouth, New Jersey
"AN ARMY COMMUNITY OF EXCELLENCE"

Photo Date 12/20/01	1" = 50' PHOTO MAP
Flying Height 3000'	Fort Monmouth Area
Focal Length 6"	(MAIN POST)
Drawing No. [illegible]	Scales 1" = 50' Sheet 17 of 20

NJ DEP COPY
DO NOT DUPLICATE



...\Projects\bim_MainPost.dgn 2/29/2008 2:17:24 PM

TABLES

TABLE 1

SUMMARY OF LABORATORY ANALYSIS

FT. MONMOUTH, BUILDING 906A, UST No. 81533-146
4 January 2006

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE DATE	SAMPLE MATRIX	ANALYTICAL PARAMETER	ANALYTICAL METHOD
906AC	6000701	4-Jan-06	SOIL	TPH	OQA-QAM-25
906AC	6000702	4-Jan-06	SOIL	TPH	OQA-QAM-25
906AE	6000704	4-Jan-06	SOIL	TPH	OQA-QAM-25
906AW	6000703	4-Jan-06	SOIL	TPH	OQA-QAM-25
906AC-Groundwater	6000705	4-Jan-06	AQUEOUS	VOA, SVOA	SW-846, EPA 625
Trip Blank	6004806	4-Jan-06	AQUEOUS	VOA	SW-846
Trip Blank	6004807	4-Jan-06	METHANOL	VOA	SW-846

ABBREVIATIONS:
TPH = Total Petroleum Hydrocarbons, Method NJDEP OQA-QAM-25
VOA = Volatile Organic Analysis, EPA SW-846 Method 8260
SVOA = Semi-Volatile Organic Analysis in Water, EPA Method 625

TABLE 2

SUMMARY OF LABORATORY ANALYTICAL RESULTS-SOIL

FT. MONMOUTH, BUILDING 906A, UST No. 81533-146
4 January 2006

TOTAL PETROLEUM HYDROCARBONS

SAMPLE ID	LABORATORY SAMPLE ID	SAMPLE LOCATION	SAMPLE DEPTH	MATRIX	TPH RESULTS
			(in feet)		mg/kg
906AC	6000701	CENTER UST	3.5 – 4.0	Soil	693
906AC	6000702	CENTER UST	6.0 – 6.5	Soil	5635*
906AE	6000704	EAST END UST	3.5 – 4.0	Soil	6699*
906AW	6000705	WEST END UST	6.0 – 6.5	Soil	195

ABBREVIATIONS:
mg/kg = milligrams per kilogram = parts per million
ND = Compound Not Detected
NA = Compound Not Analyzed
*= Further Analyzed for Volatile Organic Compounds

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

TABLE 3

SUMMARY OF LABORATORY ANALYTICAL RESULTS-SOIL

FT. MONMOUTH, BUILDING 906A, UST No. 81533-146
4 January 2006

VOLATILE ORGANIC COMPOUNDS

SAMPLE ID	LAB SAMPLE ID	Benzene	Toluene	Ethylbenzene	Xylenes (total)
UNITS		mg/kg	mg/kg	mg/kg	mg/kg
906AC	6000702	ND	ND	ND	ND
906AE	6000703	ND	ND	0.6	0.8
Trip Blank		ND	ND	ND	ND
NJDEP Criteria	Residential	1	1,000	1,000	410

ABBREVIATIONS:
mg/kg = milligrams per kilogram = parts per million (ppm)
ND = Compound Not Detected
NA = Compound Not Analyzed

Notes:
Gray shading indicates exceedance of NJDEP
Residential Direct Contact Soil Cleanup Criteria

TABLE 4

SUMMARY OF LABORATORY ANALYTICAL RESULTS-GROUNDWATER

FT. MONMOUTH, BUILDING 906A, UST No. 81533-146

4 January 2006

VOLATILE ORGANIC COMPOUNDS

SAMPLE ID	LAB SAMPLE ID	Benzene	Ethyl-benzene	Toluene	Total Xylenes
	UNITS	ug/L	ug/L	ug/L	ug/L
906AC-Groundwater	6000705	ND	4.7	ND	3.2
Trip Blank		ND	ND	ND	ND
NJDEP Criteria	Ground Water Quality Crireria	1	700	1000	NLE

SEMI-VOLATILE ORGANIC COMPOUNDS

SAMPLE ID	LAB SAMPLE ID	Naphtha-lene	2-Methyl-naphthalene	Phenan-threne	Pyrene	Bis(2Ethylhexyl) phthalate
UNITS		ug/L	ug/L	ug/L	ug/L	ug/L
906AC-Groundwater	6000705	95.1	169.4	189.2	77.9	3.2
NJDEP Criteria	Ground Water Quality Crireria	NLE	NLE	NLE	200	30

ABBREVIATIONS:
ug/L = Micrograms Per Liter = parts per billion
ND = Compound Not Detected
NA = Compound Not Analyzed
NLE= No Limit Established

Notes:
Gray shading indicates exceedance of NJDEP
Class II Ground Water Quality Criteria

APPENDIX A

CERTIFICATIONS

Let's preserve our earth

Bldg 906

For State Use Only	
Date Rec'd.	
Auth	
Routing	
UST NO.	

State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 028
TRENTON, NEW JERSEY 08625
ATTN: BUST Program
(609) 984-3156

STANDARD REPORTING FORM
for the:
Installation/Abandon/Remove/Sale-Transfer/Substantial Modification
Circle Only One — Use One Form Per Activity

(More than one tank can be listed per tank activity)

Answer questions 1 through 5 and others as applicable:

1. Company name and address: (as it appears on registration questionnaire)

U.S. Army
DEH Bldg. #167
Attn: SELFM-EH
Fort Monmouth, NJ 07703

2. Facility name and location: (if different from above)

U.S. Army Fort Monmouth
Main Post West

3. Contact person for this activity:

Mr. Joseph M. Fallon

Telephone Number: (908) 532-6223

4. The identification number of the affected tank as it appears in Question Number 12 on the Registration Questionnaire: Tank No. 58, 88, 95, 104, 110, 113, (146), 148, 158, & 163
Bldgs. 283A, 614, 622, 676, 692, 701A, (906), 910, 1004, 1103

5. Registration Number (if known): UST - # 0081533

(OVER)

6. For TRANSFER OF OWNERSHIP:

New Company Name _____

New Facility Name _____

Address _____

_____

New owner/operator (print) _____

Signature _____

7. For ABANDONMENT or REMOVAL:

a. Describe the proposed procedure in detail on an attached sheet.

b. Specify the product last stored in the tank: #2 Heating Oil

c. Date abandoned or removed: May and June of 1990

d. Is Site Assessment Compliance Statement being completed? (YES) or NO. Form MUST be completed and returned within 90 days of tank closure. (per 40 CFR 280.72)

8. For SUBSTANTIAL MODIFICATIONS:

a. Describe the reason for the modification and, in detail, the proposed procedure to be used on an attached sheet.

b. Specify the product presently stored in the tank: _____

c. Specify the product to be stored in the tank: _____

9. For NEW OR REPLACEMENT INSTALLATIONS:

a. Attach the specifications as required by the attached instructions.

b. Specify the product (s) to be stored in the tank: _____

NOTE: All appropriate and applicable permits, licenses and certificates from any local, state and/or federal agency must be obtained separately from this notification as required by the above stated activity.

CERTIFICATION

**** This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility. (7:14B-2.3 (a) 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 civil and criminal penalties for submitting false, inaccurate or incomplete information, including fines and/or imprisonment."

Signature: James Ott

Name (print or type): JAMES OTT
Acting Director

Title: Dir, Engineering and Housing Date: 22 NOV 1991

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Underground Storage Tanks
CN-029, Trenton, NJ 08625

Date Rec'd
Auth
Routing
UST NO.

SITE ASSESSMENT COMPLIANCE STATEMENT

Supplement to the New Jersey Standard Reporting Form (Complete for ALL regulated UST abandonments or removals)

Within ninety (90) days of completing the UST closure of any State or Federally-regulated tank, the owner or operator must submit this completed form to the NJDEP Bureau of Underground Storage Tanks. If the facility is located in one of the counties listed on the back, a copy of this form must also be sent to the Health Agency indicated.

The owner or operator of any Federally-regulated tank must also comply with the following:

40 CFR Part 280.72 Assessing the site at closure or change-in-service

"(a) Before permanent closure or a change-in-service is completed, owners and operators must measure for the presence of a release where contamination is most likely to be present at the UST site. In selecting sample types, sample locations, and measurement methods, owners and operators must consider the method of closure, the nature of the stored substance, the type of backfill, the depth to ground water, and other factors appropriate for identifying the presence of a release."

FACILITY U.S. Army Fort Monmouth UST # 0081533 Tank No. 58, 88, 95, 104, 110, 113, (146), 148, 158, 163.

Check off the following items as appropriate for the site.

✓ The UST facility is only regulated by State law, therefore a site assessment is not mandatory.

____ The UST facility is regulated by Federal law and a site assessment was conducted.

The results of the site assessment indicate:

✓ There was NO release from the UST system.

____ There was a release from the UST system and it was reported to the DEP Environmental Hotline (609-292-7172).

NOTE: The results of the site assessment are not to be submitted to the DEP or Health Agency unless requested to do so. The results are to be available for inspection at the UST facility.

Questions can be directed to the Bureau at (609) 984-3156.

*** This registration form shall be signed by the highest ranking individual at the facility with overall responsibility for that facility (7:14B-2.3 (a) 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 civil and criminal penalties for submitting false, inaccurate or incomplete information, including fines and/or imprisonment.

SACS-2,1/89

James Ott (Signature) Date 22 NOV 1991

JAMES OTT
Acting Director
Div, Engineering and Housing

(Title)

DEPARTMENT OF THE ARMY
Headquarters, U.S. Army Garrison Fort Monmouth
Fort Monmouth, New Jersey 07703-5000

REPLY TO
ATTENTION OF

Directorate of Engineering
and Housing

22 NOV 1991

SUBJECT: Removal Procedure:

U.S. Army Fort Monmouth
Main Post West
Site Registration #0081533
Tank #58, 88, 95, 104, 110, 113, 146, 148, 158, 163
POC: Joseph M. Fallon (908) 532-6223

The remaining product inside each tank was removed for disposal by Lionetti Oil Recovery Co., Inc. Lionetti is a licensed hazardous waste transporter and treatment, storage, and disposal facility (USEPA ID #NJD084044064).

The top of each tank was excavated and cut open across the entire length of the tank. In addition, the inside of each tank was hand cleaned and thoroughly wiped down. The soil from the top of each excavation was visually inspected and analyzed using a HNU Model PI-101 photoionizer. No contamination was detected.

After each tank was cleaned, a visual inspection was made inside the tanks for signs of leakage. No corrision was found inside the tanks.

Each tank was then removed from the ground and disposed of through a metal recycler. No contamination was discovered at the sites upon removing the tanks.

Each site was then backfilled with the excavated soil to close out the project.

APPENDIX B

SOIL AND GROUNDWATER ANALYTICAL DATA PACKAGE

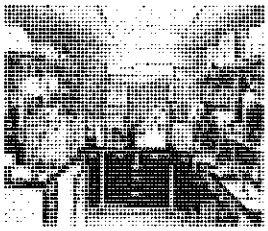
FORT MONMOUTH ENVIRONMENTAL TESTING LABORATORY

DIRECTORATE OF PUBLIC WORKS

PHONE: (732) 532-4359 FAX: (732) 532-6263

WET-CHEM - METALS - ORGANICS - FIELD SAMPLING

CERTIFICATIONS: NJDEP #13461, NYSDOH #11699



ANALYTICAL DATA REPORT
Fort Monmouth Environmental Laboratory
ENVIRONMENTAL DIVISION
Fort Monmouth, New Jersey
PROJECT: BLDG. 906A

Bldg. 906A

Field Sample Location	Laboratory Sample ID#	Matrix	Date and Time of Collection	Date Received
906A C 3.5-4.0'	6000701	Soil	04-Jan-06 13:44	01/04/06
906A C 6.0-6.5'	6000702	Soil	04-Jan-06 13:54'	01/04/06
906A E 3.5-4.0'	6000703	Soil	04-Jan-06 14:18	01/04/06
906A W 6.0-6.5'	6000704	Soil	04-Jan-06 14:35	01/04/06
906A C	6000705	Aqueous	04-Jan-06 15:02	01/04/06

ANALYSIS:
FORT MONMOUTH ENVIRONMENTAL LAB
VOA+15, BN+15, TPHC, % SOLIDS

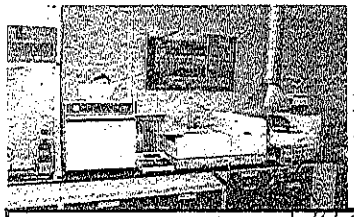
ENCLOSURE:
CHAIN OF CUSTODY
RESULTS

(QC and raw data not included for brevity)

1-27-06
Daniel Wright/Date
Laboratory Director

Table of Contents

CHAIN OF CUSTODY



Fort Monmouth Environmental Testing Laboratory

Bldg. 173, SELFM-PW-EV, Fort Monmouth, NJ 07703
Tel (732)532-4359 Fax (732)532-6263 EMail:wrightd@mail1.monmouth.army.mil
NJDEP Certification #13461

Chain of Custody Record

Customer: John McCarthy
Phone: X2 6224
( )DERA ( )OMA ( )Other:_____

Project No: 06-34880
Location: 906A (Former UST)

Samplers Name / Company: George Boyce TVS

LIMS/Work Order #	Sample Location	Date	Time	Sample Type	# bottles	TPH	VO+10	BN+15					Remarks / Preservation Method
60007 01	906AC 3.5-4.0	1/4/06	1344	Soil	2	X							4397 across water
02	906AC 6.0-6.5		1354		2	X							4398 Stained soil
03	906AE 3.5-4.0		1418		2	X							4399 Across water
04	906AW 6.0-6.5		1435		2	X							4400
05	906AC		1502	Ag	3		X	X					

Analysis Parameters

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
George Boyce	1-4-06 1600				
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, (✓)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: (✓)Standard 3 wks, ( )Rush___Days, ( )ASAP Verbal ___Hrs.

Remarks: VO+10 on 25% >1000 PPM TPH
Shared TRIP with 63975 1/20/06

print legibly

COC.XLS10/11/2005

SAMPLE RECEIPT FORM

Date Received: 1-4-06 Work Order ID#: 60007

Site/Proj. Name: Bldg 906A UST Cooler Temp (°C): 3.0°

Received By: T. Deguia Sign: T. Deguia
(Print name)

Check the appropriate box

1. Did the samples come in a cooler? ☑ yes ☐ no ☐ n/a
2. Were samples rec'd in good condition? ☑ yes ☐ no
3. Was the chain of custody filled out correctly and legibly? ☑ yes ☐ no
4. Was the chain of custody signed in the appropriate place? ☑ yes ☐ no
5. Did the labels agree with the chain of custody? ☑ yes ☐ no
6. Were the correct containers/preservatives used? ☑ yes ☐ no
7. Was a sufficient amount of sample supplied? ☑ yes ☐ no
8. Were air bubbles present in VOA vials? ☐ yes ☑ no ☐ n/a
9. Were samples received on ice? ☑ yes ☐ no
10. Were analyze-immediately tests perform within 15 minutes ☐ yes ☐ no ☑ n/a

Fill out the following table for each sample bottle

Lims ID	pH	Preservative	Sample ID	pH	Preservative

Comments: _____

Change of Chain of Custody

Lab Project ID#: 60007
Date Received: 1/4/06
Requested by: *(print)* [illegible]
Turnaround Time: Std.

Site/Project Name: Bldg 906A
Date of Change: 1/10/06
Sign: [illegible]

1. Were the correct containers and/or preservatives used for the tests indicated? (Yes) No
2. Was sufficient amount of sample sent for the tests indicated? (Yes) No
3. Are samples within holding time for new analysis? (Yes) No
4. Was the change documented in the receipt logbook? (Yes) No

Received by: *(print)* _____ Sign: _____

Sample ID#	New Analysis	Sample ID#	New Analysis
60007 02	VOA + 15		
03			
Also run Methanol TB		60006 02	

Comments: _____

Former UST 906A Sample Location GPS Positions

US State Plane 1983 New Jersey (NY East) 2900
NAD 1983 (Conus)
Geoid 96 (Conus)

(In US Survey Feet)

Position	Northing (Y Coord.)	Easting (X Coord.)
906A E	539090.168	621094.799
906A C	539088.953	621099.520
906A W	539087.046	621104.447

METHOD SUMMARY

Methodology Summary

EPA Method 624
Gas Chromatographic Determination of Volatiles in Water

Surrogates and internal standards are added to a 5-ml aliquot of sample. The sample is then purged and desorbed into a GC/MS system. The organic compounds are separated by the gas chromatograph and detected using the mass spectrometer. Volatiles are identified and quantitated.

EPA SW-846 Method 8260
Gas Chromatographic Determination of Volatiles in Methanol

A 10-gram volume of soil is combined with 25-ml of Methanol and surrogates in the field. Internal standards are added and the sample is placed on a purge and trap concentrator. The sample as purged and desorbed into a GC/MS system. Volatiles are identified and quantitated. The final concentration is calculated using soil weight, percent moisture and concentration.

EPA Method 625
Gas Chromatographic Determination of Semi-volatiles in Water

Surrogates are added to a measured volume of sample, usually 1 liter, at a specified pH. The sample is serially extracted with Methylene Chloride using a separatory funnel. The extract is concentrated and internal standards are added. The sample is injected into a GC/MS system. Semi-volatiles are identified and quantitated.

NJDEP Method OQA-QAM-025 10/97
Gas Chromatographic Determination of Total Petroleum Hydrocarbons in Soil

Fifteen grams (15g) of soil is added to a 125-ml acid cleaned and solvent rinsed capped Erlenmeyer flask. 15g anhydrous Sodium Sulfate is added to dry the sample. Surrogate standard spiking solution is then added to the flask.
Twenty-five ml of Methylene Chloride is added to the flask and it is secured on an orbital shaker table. The agitation rate is set to 400 rpm and the sample is shaken for 30 minutes. The flask is removed from the table and the particulate matter is allowed to settle. The extract is transferred to a Teflon capped vial. A second 25-ml of Methylene Chloride is added to the flask and shaken for an additional 30 minutes. The flask is again removed and allowed to settle. The extracts are combined in the vial then transferred to a 1-ml auto-sampler vial.

The extract is then injected directly into a GC-FID for analysis. The sample is analyzed for Petroleum Hydrocarbons covering a range of C8-C42, including Pristane and Phytane. Total Petroleum Hydrocarbon concentration is determined by integrating between 5 minutes and 22 minutes. The baseline is established by starting the integration after the end of the solvent peak and stopping after the last peak. The final concentration of Total Petroleum Hydrocarbons is calculated using percent moisture, sample weight and concentration.

LABORATORY CHRONICLE

Laboratory Chronicle

Lab ID: 60007

Site: UST
Bldg. 906A

	Date	Hold Time
Date Sampled	01/04/06	NA
Receipt/Refrigeration	01/04/06	NA
Extractions		
1. BN	01/09/06	7 days
2. TPHC	01/06/06	14 days
Analyses		
1. VOA	01/11,17/06	14 days
2. BN	01/17/06	40 days
3. TPHC	01/07/06	40 days

CONFORMANCE/ NON-CONFORMANCE SUMMARY

GC/MS ANALYSIS CONFORMANCE/NON-CONFORMANCE SUMMARY FORMAT

	Indicate Yes, No, N/A
1. Chromatograms labeled/Compounds identified (Field samples and method blanks)	yes
2. Retention times for chromatograms provided	yes
3. GC/MS Tune Specifications	
a. BFB Meet Criteria	yes
b. DFTPP Meet Criteria	yes
4. GC/MS Tuning Frequency – Performed every 24 hours for 600 series and 12 hours for 8000 series	yes
5. GC/MS Calibration – Initial Calibration performed before sample analysis and continuing calibration performed within 24 hours of sample analysis for 600 series and 12 hours for 8000 series	yes
6. GC/MS Calibration requirements	
a. Calibration Check Compounds Meet Criteria	yes
b. System Performance Check Compounds Meet Criteria	yes
7. Blank Contamination – If yes, List compounds and concentrations in each blank:	NO
a. VOA Fraction_____	
b. B/N Fraction_____	
c. Acid Fraction_____	
8. Surrogate Recoveries Meet Criteria	NO
If not met, list those compounds and their recoveries, which fall outside the acceptable range:	
a. VOA Fraction_____	
b. B/N Fraction All low in dilution	
c. Acid Fraction_____	
If not met, were the calculations checked and the results qualified as "estimated"?	yes
9. Matrix Spike/Matrix Spike Duplicate Recoveries Meet Criteria (If not met, list those compounds and their recoveries, which fall outside the acceptable range)	NO
a. VOA Fraction Naphthalene MS+MSD low	
b. B/N Fraction Benzidine MSD low RPD high	
c. Acid Fraction_____	
Various out on Soil VOA see form	

GC/MS ANALYSIS CONFORMANCE/NON-CONFORMANCE SUMMARY FORMAT (cont.)

Indicate
Yes, No, N/A

10. Internal Standard Area/Retention Time Shift Meet Criteria — yes
(If not met, list those compounds, which fall outside the acceptable range)

    a. VOA Fraction _____
    b. B/N Fraction _____
    c. Acid Fraction _____

11. Extraction Holding Time Met — yes

If not met, list the number of days exceeded for each sample: _____

12. Analysis Holding Time Met — yes

If not met, list the number of days exceeded for each sample: _____

Additional Comments:

Laboratory Manager: _____ Date: 1-27-06

TPHC CONFORMANCE/NON–CONFORMANCE SUMMARY REPORT

		Indicate Yes, No, N/A
1.	Method Detection Limits Provided	yes
2.	Method Blank Contamination – If yes, list the sample and the corresponding concentrations in each blank	NO
3.	Matrix Spike Results Summary Meet Criteria (If not met, list the sample and corresponding recovery which falls outside the acceptable range)	yes
4.	Duplicate Results Summary Meet Criteria	yes
5.	IR Spectra submitted for standards, blanks and samples	NA
6.	Chromatograms submitted for standards, blanks and samples if GC fingerprinting was conducted	yes
7.	Analysis holding time met (If not met, list number of days exceeded for each sample)	yes

Additional comments: _____

Laboratory Manager: _____ Date: 1-27-06

VOLATILE ORGANICS (AQUEOUS)

US ARMY FT. MONMOUTH ENVIRONMENTAL LABORATORY
NJDEP CERTIFICATION # 13461

Definition of Qualifiers

U: The compound was analyzed for but not detected.

B: Indicates that the compound was found in the associated method blank as well as in the sample.

J: Indicates an estimated value. This flag is used:
(1) When the mass spec and retention time data indicate the presence of a compound however the result is less than the MDL but greater than zero.
(2) When estimating the concentration of a tentatively identified compound (TIC), where a 1:1 response is assumed.

D: This flag is used to identify all compounds (target or TIC) that required a dilution.

E: Indicates the compound's concentration exceeds the calibration range of the instrument for that specific analysis.

N: This flag is only used for TICs. It indicates the presumptive evidence of a compound. For a generic characterization of a TIC, such as unknown hydrocarbon, the flag is not used.

Volatile Analysis Report
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification #13461

Data File	VB021318.D	Sample Name	MB 11Jan2006
Operator	Skelton	Field ID	MB 11Jan2006
Date Acquired	11 Jan 2006 8:48 pm	Sample Multiplier	1

CAS#	Compound Name	R.T.	Response	Result	Regulatory Level (ug/l)*	MDL	RL	Qualifiers
107028	Acrolein			not detected	5	2.01 ug/L	5.00 ug/L	
107131	Acrylonitrile			not detected	5	1.23 ug/L	5.00 ug/L	
75650	tert-Butyl alcohol			not detected	100	5.70 ug/L	10.00 ug/L	
1634044	Methyl-tert-Butyl ether			not detected	70	0.21 ug/L	2.00 ug/L	
108203	Di-isopropyl ether			not detected	20000	0.26 ug/L	2.00 ug/L	
75718	Dichlorodifluoromethane			not detected	1000	0.20 ug/L	2.00 ug/L	
74-87-3	Chloromethane			not detected	nle	0.24 ug/L	2.00 ug/L	
75-01-4	Vinyl Chloride			not detected	1	0.23 ug/L	2.00 ug/L	
74-83-9	Bromomethane			not detected	10	0.26 ug/L	2.00 ug/L	
75-00-3	Chloroethane			not detected	nle	0.29 ug/L	2.00 ug/L	
75-69-4	Trichlorofluoromethane			not detected	2000	0.23 ug/L	2.00 ug/L	
75-35-4	1,1-Dichloroethene			not detected	1	0.19 ug/L	2.00 ug/L	
67-64-1	Acetone			not detected	6000	0.36 ug/L	2.00 ug/L	
75-15-0	Carbon Disulfide			not detected	700	0.24 ug/L	2.00 ug/L	
75-09-2	Methylene Chloride			not detected	3	0.21 ug/L	2.00 ug/L	
156-60-5	trans-1,2-Dichloroethene			not detected	100	0.24 ug/L	2.00 ug/L	
75-34-3	1,1-Dichloroethane			not detected	50	0.24 ug/L	2.00 ug/L	
108-05-4	Vinyl Acetate			not detected	7000	0.20 ug/L	2.00 ug/L	
78-93-3	2-Butanone			not detected	300	0.26 ug/L	2.00 ug/L	
156-59-2	cis-1,2-Dichloroethene			not detected	70	0.20 ug/L	2.00 ug/L	
67-66-3	Chloroform			not detected	70	0.22 ug/L	2.00 ug/L	
71-55-6	1,1,1-Trichloroethane			not detected	30	0.20 ug/L	2.00 ug/L	
56-23-5	Carbon Tetrachloride			not detected	1	0.24 ug/L	2.00 ug/L	
71-43-2	Benzene			not detected	1	0.24 ug/L	2.00 ug/L	
107-06-2	1,2-Dichloroethane			not detected	2	0.23 ug/L	2.00 ug/L	
79-01-6	Trichloroethene			not detected	1	0.26 ug/L	2.00 ug/L	
78-87-5	1,2-Dichloropropane			not detected	1	0.24 ug/L	2.00 ug/L	
75-27-4	Bromodichloromethane			not detected	1	0.22 ug/L	2.00 ug/L	
110-75-8	2-Chloroethyl vinyl ether			not detected	nle	0.23 ug/L	2.00 ug/L	
10061-01-5	cis-1,3-Dichloropropene			not detected	1	0.22 ug/L	2.00 ug/L	
108-10-1	4-Methyl-2-Pentanone			not detected	nle	0.35 ug/L	2.00 ug/L	
108-88-3	Toluene			not detected	1000	0.26 ug/L	2.00 ug/L	
10061-02-6	trans-1,3-Dichloropropene			not detected	1	0.25 ug/L	2.00 ug/L	
79-00-5	1,1,2-Trichloroethane			not detected	3	0.28 ug/L	2.00 ug/L	
127-18-4	Tetrachloroethene			not detected	1	0.20 ug/L	2.00 ug/L	
591-78-6	2-Hexanone			not detected	nle	0.43 ug/L	2.00 ug/L	
124-48-1	Dibromochloromethane			not detected	1	0.22 ug/L	2.00 ug/L	
108-90-7	Chlorobenzene			not detected	50	0.28 ug/L	2.00 ug/L	
100-41-4	Ethylbenzene			not detected	700	0.27 ug/L	2.00 ug/L	
1330-20-7	m+p-Xylenes			not detected	nle	0.43 ug/L	4.00 ug/L	
95-47-6	o-Xylene			not detected	nle	0.21 ug/L	2.00 ug/L	
100-42-5	Styrene			not detected	100	0.21 ug/L	2.00 ug/L	
75-25-2	Bromoform			not detected	4	0.27 ug/L	2.00 ug/L	
79-34-5	1,1,2,2-Tetrachloroethane			not detected	1	0.45 ug/L	2.00 ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	600	0.36 ug/L	2.00 ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	75	0.35 ug/L	2.00 ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	600	0.45 ug/L	2.00 ug/L	

*Resuks between MDL and RL are estimated values

*Higher of PQL's and Interim Criteria as per N.J.A.C. 7:9C 07Nov2005

Qualifiers

B = Compound found in related blank
E = Value above linear range
D = Value from dilution
PQL = Practical Quantitation Limit
MDL = Method Detection Limit
NLE = No Limit Established
R.T. = Retention Time
R.L. = Reporting Limit

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VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **MB 11Jan2006**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) WATER Lab Sample ID: MB 11Jan2006

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: VB021318.D

Level: (low/med) LOW Date Received: 1/4/2006

% Moisture: not dec. _____ Date Analyzed: 1/11/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	12.47	4	JN

Volatile Analysis Report
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification #13461

Data File	VB021320.D	Sample Name	6000606
Operator	Skelton	Field ID	Trip Blank
Date Acquired	11 Jan 2006 10:10 pm	Sample Multiplier	1

CAS#	Compound Name	R.T.	Response	Result	Regulatory Level (ug/l)*	MDL	RL	Qualifiers
107028	Acrolein			not detected	5	2.01 ug/L	5.00 ug/L	
107131	Acrylonitrile			not detected	5	1.23 ug/L	5.00 ug/L	
75650	tert-Butyl alcohol			not detected	100	5.70 ug/L	10.00 ug/L	
1634044	Methyl-tert-Butyl ether			not detected	70	0.21 ug/L	2.00 ug/L	
108203	Di-isopropyl ether			not detected	20000	0.26 ug/L	2.00 ug/L	
75718	Dichlorodifluoromethane			not detected	1000	0.20 ug/L	2.00 ug/L	
74-87-3	Chloromethane			not detected	nle	0.24 ug/L	2.00 ug/L	
75-01-4	Vinyl Chloride			not detected	1	0.23 ug/L	2.00 ug/L	
74-83-9	Bromomethane			not detected	10	0.26 ug/L	2.00 ug/L	
75-00-3	Chloroethane			not detected	nle	0.29 ug/L	2.00 ug/L	
75-69-4	Trichlorofluoromethane			not detected	2000	0.23 ug/L	2.00 ug/L	
75-35-4	1,1-Dichloroethene			not detected	1	0.19 ug/L	2.00 ug/L	
67-64-1	Acetone			not detected	6000	0.36 ug/L	2.00 ug/L	
75-15-0	Carbon Disulfide			not detected	700	0.24 ug/L	2.00 ug/L	
75-09-2	Methylene Chloride			not detected	3	0.21 ug/L	2.00 ug/L	
156-60-5	trans-1,2-Dichloroethene			not detected	100	0.24 ug/L	2.00 ug/L	
75-34-3	1,1-Dichloroethane			not detected	50	0.24 ug/L	2.00 ug/L	
108-05-4	Vinyl Acetate			not detected	7000	0.20 ug/L	2.00 ug/L	
78-93-3	2-Butanone			not detected	300	0.26 ug/L	2.00 ug/L	
156-59-2	cis-1,2-Dichloroethene			not detected	70	0.20 ug/L	2.00 ug/L	
67-66-3	Chloroform			not detected	70	0.22 ug/L	2.00 ug/L	
71-55-6	1,1,1-Trichloroethane			not detected	30	0.20 ug/L	2.00 ug/L	
56-23-5	Carbon Tetrachloride			not detected	1	0.24 ug/L	2.00 ug/L	
71-43-2	Benzene			not detected	1	0.24 ug/L	2.00 ug/L	
107-06-2	1,2-Dichloroethane			not detected	2	0.23 ug/L	2.00 ug/L	
79-01-6	Trichloroethene			not detected	1	0.26 ug/L	2.00 ug/L	
78-87-5	1,2-Dichloropropane			not detected	1	0.24 ug/L	2.00 ug/L	
75-27-4	Bromodichloromethane			not detected	1	0.22 ug/L	2.00 ug/L	
110-75-8	2-Chloroethyl vinyl ether			not detected	nle	0.23 ug/L	2.00 ug/L	
10061-01-5	cis-1,3-Dichloropropene			not detected	1	0.22 ug/L	2.00 ug/L	
108-10-1	4-Methyl-2-Pentanone			not detected	nle	0.35 ug/L	2.00 ug/L	
108-88-3	Toluene			not detected	1000	0.26 ug/L	2.00 ug/L	
10061-02-6	trans-1,3-Dichloropropene			not detected	1	0.25 ug/L	2.00 ug/L	
79-00-5	1,1,2-Trichloroethane			not detected	3	0.28 ug/L	2.00 ug/L	
127-18-4	Tetrachloroethene			not detected	1	0.20 ug/L	2.00 ug/L	
591-78-6	2-Hexanone			not detected	nle	0.43 ug/L	2.00 ug/L	
124-48-1	Dibromochloromethane			not detected	1	0.22 ug/L	2.00 ug/L	
108-90-7	Chlorobenzene			not detected	50	0.28 ug/L	2.00 ug/L	
100-41-4	Ethylbenzene			not detected	700	0.27 ug/L	2.00 ug/L	
1330-20-7	m+p-Xylenes			not detected	nle	0.43 ug/L	4.00 ug/L	
95-47-6	o-Xylene			not detected	nle	0.21 ug/L	2.00 ug/L	
100-42-5	Styrene			not detected	100	0.21 ug/L	2.00 ug/L	
75-25-2	Bromoform			not detected	4	0.27 ug/L	2.00 ug/L	
79-34-5	1,1,2,2-Tetrachloroethane			not detected	1	0.45 ug/L	2.00 ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	600	0.36 ug/L	2.00 ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	75	0.35 ug/L	2.00 ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	600	0.45 ug/L	2.00 ug/L	

*Results between MDL and RL are estimated values

*Higher of PQL's and Interim Criteria as per N.J.A.C. 7:9C 07Nov2005

Qualifiers

B = Compound found in related blank
E = Value above linear range
D = Value from dilution
PQL = Practical Quantitation Limit
MDL = Method Detection Limit
NLE = No Limit Established
R.T. = Retention Time
R.L. = Reporting Limit

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **Trip Blank**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60006 Location: 637 SDG No.: UST

Matrix: (soil/water) WATER Lab Sample ID: 6000606

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: VB021320.D

Level: (low/med) LOW Date Received: 1/4/2006

% Moisture: not dec. Date Analyzed: 1/11/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 1

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	12.47	4	JN

Volatile Analysis Report
U.S. Army, Fort Monmouth Environmental Laboratory
NJDEP Certification #13461

Data File	VB021321.D	Sample Name	6000705
Operator	Skelton	Field ID	906AC
Date Acquired	11 Jan 2006 10:51 pm	Sample Multiplier	1

CAS#	Compound Name	R.T.	Response	Result	Regulatory Level (ug/l)*	MDL	RL	Qualifiers
107028	Acrolein			not detected	5	2.01 ug/L	5.00 ug/L	
107131	Acrylonitrile			not detected	5	1.23 ug/L	5.00 ug/L	
75650	tert-Butyl alcohol			not detected	100	5.70 ug/L	10.00 ug/L	
1634044	Methyl-tert-Butyl ether			not detected	70	0.21 ug/L	2.00 ug/L	
108203	Di-isopropyl ether			not detected	20000	0.26 ug/L	2.00 ug/L	
75718	Dichlorodifluoromethane			not detected	1000	0.20 ug/L	2.00 ug/L	
74-87-3	Chloromethane			not detected	nle	0.24 ug/L	2.00 ug/L	
75-01-4	Vinyl Chloride			not detected	1	0.23 ug/L	2.00 ug/L	
74-83-9	Bromomethane			not detected	10	0.26 ug/L	2.00 ug/L	
75-00-3	Chloroethane			not detected	nle	0.29 ug/L	2.00 ug/L	
75-69-4	Trichlorofluoromethane			not detected	2000	0.23 ug/L	2.00 ug/L	
75-35-4	1,1-Dichloroethene			not detected	1	0.19 ug/L	2.00 ug/L	
67-64-1	Acetone			not detected	6000	0.36 ug/L	2.00 ug/L	
75-15-0	Carbon Disulfide			not detected	700	0.24 ug/L	2.00 ug/L	
75-09-2	Methylene Chloride			not detected	3	0.21 ug/L	2.00 ug/L	
156-60-5	trans-1,2-Dichloroethene			not detected	100	0.24 ug/L	2.00 ug/L	
75-34-3	1,1-Dichloroethane			not detected	50	0.24 ug/L	2.00 ug/L	
108-05-4	Vinyl Acetate			not detected	7000	0.20 ug/L	2.00 ug/L	
78-93-3	2-Butanone			not detected	300	0.26 ug/L	2.00 ug/L	
156-59-2	cis-1,2-Dichloroethene			not detected	70	0.20 ug/L	2.00 ug/L	
67-66-3	Chloroform			not detected	70	0.22 ug/L	2.00 ug/L	
71-55-6	1,1,1-Trichloroethane			not detected	30	0.20 ug/L	2.00 ug/L	
56-23-5	Carbon Tetrachloride			not detected	1	0.24 ug/L	2.00 ug/L	
71-43-2	Benzene			not detected	1	0.24 ug/L	2.00 ug/L	
107-06-2	1,2-Dichloroethane			not detected	2	0.23 ug/L	2.00 ug/L	
79-01-6	Trichloroethene			not detected	1	0.26 ug/L	2.00 ug/L	
78-87-5	1,2-Dichloropropane			not detected	1	0.24 ug/L	2.00 ug/L	
75-27-4	Bromodichloromethane			not detected	1	0.22 ug/L	2.00 ug/L	
110-75-8	2-Chloroethyl vinyl ether			not detected	nle	0.23 ug/L	2.00 ug/L	
10061-01-5	cis-1,3-Dichloropropene			not detected	1	0.22 ug/L	2.00 ug/L	
108-10-1	4-Methyl-2-Pentanone			not detected	nle	0.35 ug/L	2.00 ug/L	
108-88-3	Toluene			not detected	1000	0.26 ug/L	2.00 ug/L	
10061-02-6	trans-1,3-Dichloropropene			not detected	1	0.25 ug/L	2.00 ug/L	
79-00-5	1,1,2-Trichloroethane			not detected	3	0.28 ug/L	2.00 ug/L	
127-18-4	Tetrachloroethene			not detected	1	0.20 ug/L	2.00 ug/L	
591-78-6	2-Hexanone			not detected	nle	0.43 ug/L	2.00 ug/L	
124-48-1	Dibromochloromethane			not detected	1	0.22 ug/L	2.00 ug/L	
108-90-7	Chlorobenzene			not detected	50	0.28 ug/L	2.00 ug/L	
100-41-4	Ethylbenzene	25.72	865653	4.71 ug/L	700	0.27 ug/L	2.00 ug/L	
1330-20-7	m+p-Xylenes	26.01	70702	1.05 ug/L	nle	0.43 ug/L	4.00 ug/L	
95-47-6	o-Xylene	26.84	299933	2.16 ug/L	nle	0.21 ug/L	2.00 ug/L	
100-42-5	Styrene			not detected	100	0.21 ug/L	2.00 ug/L	
75-25-2	Bromoform			not detected	4	0.27 ug/L	2.00 ug/L	
79-34-5	1,1,2,2-Tetrachloroethane			not detected	1	0.45 ug/L	2.00 ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	600	0.36 ug/L	2.00 ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	75	0.35 ug/L	2.00 ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	600	0.45 ug/L	2.00 ug/L	

*Results between MDL and RL are estimated values

*Higher of PQL's and Interim Criteria as per N.J.A.C. 7:9C 07Nov2005

Qualifiers

B = Compound found in related blank
E = Value above linear range
D = Value from dilution
PQL = Practical Quantitation Limit
MDL = Method Detection Limit
NLE = No Limit Established
R.T. = Retention Time
R.L. = Reporting Limit

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1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: 906AC

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60006 Location: 637 SDG No.: UST

Matrix: (soil/water) WATER Lab Sample ID: 6000705

Sample wt/vol: 5.0 (g/ml) ML Lab File ID: VB021321.D

Level: (low/med) LOW Date Received: 1/4/2006

% Moisture: not dec. Date Analyzed: 1/11/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: (uL) Soil Aliquot Volume: (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 10

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000526-73-8	Benzene, 1,2,3-trimethyl-	29.36	39	JN
2. 000496-11-7	Indane	30.51	77	JN
3. 000933-98-2	Benzene, 1-ethyl-2,3-dimethyl-	31.14	15	JN
4. 000527-84-4	Benzene, 1-methyl-2-(1-methylet	31.32	25	JN
5. 000767-58-8	Indan, 1-methyl-	31.59	29	JN
6. 000095-93-2	Benzene, 1,2,4,5-tetramethyl-	32.12	13	JN
7. 000095-93-2	Benzene, 1,2,4,5-tetramethyl-	32.23	23	JN
8. 000824-22-6	1H-Indene, 2,3-dihydro-4-methyl-	32.69	20	JN
9. 002039-89-6	Benzene, 2-ethenyl-1,4-dimethyl-	33.09	67	JN
10. 000119-64-2	Naphthalene, 1,2,3,4-tetrahydro-	33.42	19	JN

VOLATILE ORGANICS (SOIL)

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

FIELD ID: MB 17Jan2006

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: MB 17Jan2006

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB021392.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 0 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	1000	U
107131	Acrylonitrile	1000	U
75650	tert-Butyl alcohol	1000	U
1634044	Methyl-tert-Butyl ether	100	U
108203	Di-isopropyl ether	100	U
75718	Dichlorodifluoromethane	100	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	100	U
74-83-9	Bromomethane	100	U
75-00-3	Chloroethane	100	U
75-69-4	Trichlorofluoromethane	100	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	100	U
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	100	U
156-60-5	trans-1,2-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	100	U
78-93-3	2-Butanone	100	U
156-59-2	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
71-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	100	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	100	U
79-01-6	Trichloroethene	100	U
78-87-5	1,2-Dichloropropane	100	U
75-27-4	Bromodichloromethane	100	U
110-75-8	2-Chloroethyl vinyl ether	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
79-00-5	1,1,2-Trichloroethane	100	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	100	U
124-48-1	Dibromochloromethane	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	100	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

FIELD ID: **MB 17Jan2006**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: MB 17Jan2006

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB021392.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 0 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	200	U
95-47-6	o-Xylene	100	U
100-42-5	Styrene	100	U
75-25-2	Bromoform	100	U
79-34-5	1,1,2,2-Tetrachloroethane	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
95-50-1	1,2-Dichlorobenzene	100	U
91-20-3	Naphthalene	100	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: MB 17Jan2006

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: MB 17Jan2006

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB021392.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 0 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 0

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

FIELD ID: **Trip Blank**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000606

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB021393.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 0 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	1000	U
107131	Acrylonitrile	1000	U
75650	tert-Butyl alcohol	1000	U
1634044	Methyl-tert-Butyl ether	100	U
108203	Di-isopropyl ether	100	U
75718	Dichlorodifluoromethane	100	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	100	U
74-83-9	Bromomethane	100	U
75-00-3	Chloroethane	100	U
75-69-4	Trichlorofluoromethane	100	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	440	
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	100	U
156-60-5	trans-1,2-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	100	U
78-93-3	2-Butanone	100	U
156-59-2	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
71-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	100	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	100	U
79-01-6	Trichloroethene	100	U
78-87-5	1,2-Dichloropropane	100	U
75-27-4	Bromodichloromethane	100	U
110-75-8	2-Chloroethyl vinyl ether	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
79-00-5	1,1,2-Trichloroethane	100	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	100	U
124-48-1	Dibromochloromethane	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	100	U

VOLATILE ORGANICS ANALYSIS DATA SHEET

FIELD ID: **Trip Blank**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000606

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB021393.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 0 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	200	U
95-47-6	o-Xylene	100	U
100-42-5	Styrene	100	U
75-25-2	Bromoform	100	U
79-34-5	1,1,2,2-Tetrachloroethane	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
95-50-1	1,2-Dichlorobenzene	100	U
91-20-3	Naphthalene	100	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **Trip Blank**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000606

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB021393.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 0 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 2

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000079-20-9	Acetic acid, methyl ester	12.50	330	JN
2. 001112-39-6	Silane, dimethoxydimethyl-	17.39	460	JN

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

906AC

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000702

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB021394.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 5.94 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	1000	U
107131	Acrylonitrile	1000	U
75650	tert-Butyl alcohol	1000	U
1634044	Methyl-tert-Butyl ether	100	U
108203	Di-isopropyl ether	100	U
75718	Dichlorodifluoromethane	100	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	100	U
74-83-9	Bromomethane	100	U
75-00-3	Chloroethane	100	U
75-69-4	Trichlorofluoromethane	100	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	430	
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	100	U
156-60-5	trans-1,2-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	100	U
78-93-3	2-Butanone	100	U
156-59-2	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
71-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	100	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	100	U
79-01-6	Trichloroethene	100	U
78-87-5	1,2-Dichloropropane	100	U
75-27-4	Bromodichloromethane	100	U
110-75-8	2-Chloroethyl vinyl ether	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
79-00-5	1,1,2-Trichloroethane	100	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	100	U
124-48-1	Dibromochloromethane	100	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	57	J

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

906AC

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000702

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB021394.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 5.94 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	26	J
95-47-6	o-Xylene	96	J
100-42-5	Styrene	100	U
75-25-2	Bromoform	100	U
79-34-5	1,1,2,2-Tetrachloroethane	100	U
541-73-1	1,3-Dichlorobenzene	100	U
106-46-7	1,4-Dichlorobenzene	100	U
95-50-1	1,2-Dichlorobenzene	100	U
91-20-3	Naphthalene	100	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **906AC**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000702

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB021394.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 5.94 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 10

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000526-73-8	Benzene, 1,2,3-trimethyl-	29.36	13000	JN
2. 000493-02-7	Naphthalene, decahydro-, trans-	30.36	11000	JN
3. 001074-43-7	Benzene, 1-methyl-3-propyl-	30.47	8200	JN
4. 000141-93-5	Benzene, 1,3-diethyl-	30.56	6900	JN
5. 000933-98-2	Benzene, 1-ethyl-2,3-dimethyl-	31.32	8100	JN
6.	unknown	31.54	5400	J
7.	unknown	31.60	8800	J
8. 002958-76-1	Naphthalene, decahydro-2-methyl	32.02	6100	JN
9. 000527-84-4	Benzene, 1-methyl-2-(1-methylet	32.23	6200	JN
10.	unknown	33.09	8000	J

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

906AE

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000703

Sample wt/vol: 10.2 (g/ml) G Lab File ID: VB021395.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 11.21 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
107028	Acrolein	1100	U
107131	Acrylonitrile	1100	U
75650	tert-Butyl alcohol	1100	U
1634044	Methyl-tert-Butyl ether	110	U
108203	Di-isopropyl ether	110	U
75718	Dichlorodifluoromethane	110	U
74-87-3	Chloromethane	110	U
75-01-4	Vinyl Chloride	110	U
74-83-9	Bromomethane	110	U
75-00-3	Chloroethane	110	U
75-69-4	Trichlorofluoromethane	110	U
75-35-4	1,1-Dichloroethene	110	U
67-64-1	Acetone	450	
75-15-0	Carbon Disulfide	110	U
75-09-2	Methylene Chloride	110	U
156-60-5	trans-1,2-Dichloroethene	110	U
75-34-3	1,1-Dichloroethane	110	U
108-05-4	Vinyl Acetate	110	U
78-93-3	2-Butanone	110	U
156-59-2	cis-1,2-Dichloroethene	110	U
67-66-3	Chloroform	110	U
71-55-6	1,1,1-Trichloroethane	110	U
56-23-5	Carbon Tetrachloride	110	U
71-43-2	Benzene	110	U
107-06-2	1,2-Dichloroethane	110	U
79-01-6	Trichloroethene	110	U
78-87-5	1,2-Dichloropropane	110	U
75-27-4	Bromodichloromethane	110	U
110-75-8	2-Chloroethyl vinyl ether	110	U
10061-01-5	cis-1,3-Dichloropropene	110	U
108-10-1	4-Methyl-2-Pentanone	110	U
108-88-3	Toluene	110	U
10061-02-6	trans-1,3-Dichloropropene	110	U
79-00-5	1,1,2-Trichloroethane	110	U
127-18-4	Tetrachloroethene	110	U
591-78-6	2-Hexanone	110	U
124-48-1	Dibromochloromethane	110	U
108-90-7	Chlorobenzene	110	U
100-41-4	Ethylbenzene	600	

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

906AE

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000703

Sample wt/vol: 10.2 (g/ml) G Lab File ID: VB021395.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 11.21 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CONCENTRATION UNITS:

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
1330-20-7	m+p-Xylenes	700	
95-47-6	o-Xylene	100	J
100-42-5	Styrene	110	U
75-25-2	Bromoform	110	U
79-34-5	1,1,2,2-Tetrachloroethane	110	U
541-73-1	1,3-Dichlorobenzene	110	U
106-46-7	1,4-Dichlorobenzene	110	U
95-50-1	1,2-Dichlorobenzene	110	U
91-20-3	Naphthalene	110	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **906AE**

Lab Name: FMETL NJDEP#: 13461

Project: 0634880 Case No.: 60007 Location: 906A SDG No.: UST

Matrix: (soil/water) SOIL Lab Sample ID: 6000703

Sample wt/vol: 10.2 (g/ml) G Lab File ID: VB021395.D

Level: (low/med) MED Date Received: 1/4/2006

% Moisture: not dec. 11.21 Date Analyzed: 1/17/2006

GC Column: RTX502. ID: 0.25 (mm) Dilution Factor: 1.0

Soil Extract Volume: 25000 (uL) Soil Aliquot Volume: 125 (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 10

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown	28.13	6000	J
2. 000095-36-3	1,2,4-Trimethylbenzene	29.36	13000	JN
3. 000493-02-7	Naphthalene, decahydro-, trans-	30.36	9000	JN
4. 001074-43-7	Benzene, 1-methyl-3-propyl-	30.48	8200	JN
5. 001758-88-9	Benzene, 2-ethyl-1,4-dimethyl-	30.56	6100	JN
6. 000874-41-9	Benzene, 1-ethyl-2,4-dimethyl-	31.32	5100	JN
7. 002958-76-1	Naphthalene, decahydro-2-methyl	31.61	7800	JN
8. 002958-76-1	Naphthalene, decahydro-2-methyl	32.02	5400	JN
9. 000099-87-6	Benzene, 1-methyl-4-(1-methylet	32.23	5300	JN
10.	unknown	33.08	7200	J

SEMI-VOLATILE ORGANICS

Semi-Volatile Analysis Report

U.S. Army, Fort Monmouth Environmental Laboratory

NJDEP Certification #13461

Data File Name	BNA11446.D	Sample Name	MB 01090601
Operator	Skelton	Misc Info	MB 01090601
Date Acquired	17-Jan-06	Sample Multiplier	1

CAS#	Name	R.T.	Response	Result	Regulatory Level (ug/L)*	MDL	RL		Qualifiers
110-86-1	Pyridine			not detected	NLE	1.13	10.00	ug/L	
62-75-9	N-nitroso-dimethylamine			not detected	20	0.60	10.00	ug/L	
62-53-3	Aniline			not detected	NLE	2.38	10.00	ug/L	
111-44-4	bis(2-Chloroethyl)ether			not detected	10	0.71	10.00	ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	600	1.02	10.00	ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	75	0.99	10.00	ug/L	
100-51-6	Benzyl alcohol			not detected	NLE	0.66	10.00	ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	600	0.96	10.00	ug/L	
39638-32-9	bis(2-chloroisopropyl)ether			not detected	300	0.88	10.00	ug/L	
621-64-7	n-Nitroso-di-n-propylamine			not detected	20	0.76	10.00	ug/L	
67-72-1	Hexachloroethane			not detected	10	0.96	10.00	ug/L	
98-95-3	Nitrobenzene			not detected	10	0.86	10.00	ug/L	
78-59-1	Isophorone			not detected	100	0.76	10.00	ug/L	
111-91-1	bis(2-Chloroethoxy)methane			not detected	NLE	0.79	10.00	ug/L	
120-82-1	1,2,4-Trichlorobenzene			not detected	9	0.89	10.00	ug/L	
91-20-3	Naphthalene			not detected	NLE	0.76	10.00	ug/L	
106-47-8	4-Chloroaniline			not detected	NLE	1.37	10.00	ug/L	
87-68-3	Hexachlorobutadiene			not detected	1	0.99	10.00	ug/L	
91-57-6	2-Methylnaphthalene			not detected	NLE	1.01	10.00	ug/L	
77-47-4	Hexachlorocyclopentadiene			not detected	50	0.92	10.00	ug/L	
91-58-7	2-Chloronaphthalene			not detected	NLE	0.72	10.00	ug/L	
88-74-4	2-Nitroaniline			not detected	NLE	0.77	10.00	ug/L	
131-11-3	Dimethylphthalate			not detected	7000	0.78	10.00	ug/L	
208-96-8	Acenaphthylene			not detected	NLE	0.67	10.00	ug/L	
606-20-2	2,6-Dinitrotoluene			not detected	NLE	0.71	10.00	ug/L	
99-09-2	3-Nitroaniline			not detected	NLE	1.18	10.00	ug/L	
83-32-9	Acenaphthene			not detected	400	0.73	10.00	ug/L	
132-64-9	Dibenzofuran			not detected	NLE	0.69	10.00	ug/L	
121-14-2	2,4-Dinitrotoluene			not detected	10	0.81	10.00	ug/L	
84-66-2	Diethylphthalate			not detected	5000	0.96	10.00	ug/L	
86-73-7	Fluorene			not detected	300	0.71	10.00	ug/L	
7005-72-3	4-Chlorophenyl-phenylether			not detected	NLE	0.73	10.00	ug/L	
100-01-6	4-Nitroaniline			not detected	NLE	1.11	10.00	ug/L	
86-30-6	n-Nitrosodiphenylamine			not detected	20	0.62	10.00	ug/L	
103-33-3	Azobenzene			not detected	NLE	0.72	10.00	ug/L	
101-55-3	4-Bromophenyl-phenylether			not detected	NLE	0.92	10.00	ug/L	
118-74-1	Hexachlorobenzene			not detected	10	0.95	10.00	ug/L	
85-01-8	Phenanthrene			not detected	NLE	0.81	10.00	ug/L	
120-12-7	Anthracene			not detected	2000	0.76	10.00	ug/L	
84-74-2	Di-n-butylphthalate			not detected	900	0.92	10.00	ug/L	
206-44-0	Fluoranthene			not detected	300	0.82	10.00	ug/L	

Semi-Volatile Analysis Report
Page 2

Data File Name	**BNA11446.D**	Sample Name	**MB 01090601**
Operator	**Skelton**	Misc Info	**MB 01090601**
Date Acquired	**17-Jan-06**	Sample Multiplier	1

CAS#	Name	R.T.	Response	Result	Regulatory Level (ug/L)*	MDL	RL		Qualifiers
92-87-5	Benzidine			not detected	50	0.98	10.00	ug/L	
129-00-0	Pyrene			not detected	200	0.79	10.00	ug/L	
85-68-7	Butylbenzylphthalate			not detected	100	0.86	10.00	ug/L	
56-55-3	Benzo[a]anthracene			not detected	10	0.82	10.00	ug/L	
91-94-1	3,3'-Dichlorobenzidine			not detected	60	1.31	10.00	ug/L	
218-01-9	Chrysene			not detected	20	0.77	10.00	ug/L	
117-81-7	bis(2-Ethylhexyl)phthalate			not detected	30	1.28	10.00	ug/L	
117-84-0	Di-n-octylphthalate			not detected	100	1.02	10.00	ug/L	
205-99-2	Benzo[b]fluoranthene			not detected	10	0.98	10.00	ug/L	
207-08-9	Benzo[k]fluoranthene			not detected	2	0.92	10.00	ug/L	
50-32-8	Benzo[a]pyrene			not detected	20	0.71	10.00	ug/L	
193-39-5	Indeno[1,2,3-cd]pyrene			not detected	20	0.76	10.00	ug/L	
53-70-3	Dibenz[a,h]anthracene			not detected	20	0.76	10.00	ug/L	
191-24-2	Benzo[g,h,i]perylene			not detected	NLE	0.80	10.00	ug/L	

* Higher of PQL's and Ground Water Criteria as per NJAC 7:9-6 2-Sept-97

Qualifiers

E= Value Exceeds Linear Range
D= Value from dilution
B= Compound in Related Blank
MDL= Method Detection Limit
NLE= No Limit Established
R.T.=Retention Time
RL= Reporting Limit. The values between the MDL and RL are considered estimated.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

MB-010906-01

Lab Name: FMETL Lab Code 13461

Project: 06-34880 Case No.: 60007 Location: UST SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: MB 01090601

Sample wt/vol: 1000 (g/ml) ML Lab File ID: BNA11446.D

Level: (low/med) LOW Date Received: 1/4/2006

% Moisture: decanted: (Y/N) N Date Extracted: 1/9/2006

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 1/17/2006

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	unknown hydrocarbon	6.82	7	J

Semi-Volatile Analysis Report

U.S. Army, Fort Monmouth Environmental Laboratory

NJDEP Certification #13461

Data File Name	**BNA11451.D**	Sample Name	**6000705**
Operator	**Skelton**	Misc Info	**906AC**
Date Acquired	**17-Jan-06**	Sample Multiplier	**1**

CAS#	Name	R.T.	Response	Result	Regulatory Level (ug/L)*	MDL	RL		Qualifiers
110-86-1	Pyridine			not detected	NLE	1.13	10.00	ug/L	
62-75-9	N-nitroso-dimethylamine			not detected	20	0.60	10.00	ug/L	
62-53-3	Aniline			not detected	NLE	2.38	10.00	ug/L	
111-44-4	bis(2-Chloroethyl)ether			not detected	10	0.71	10.00	ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	600	1.02	10.00	ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	75	0.99	10.00	ug/L	
100-51-6	Benzyl alcohol			not detected	NLE	0.66	10.00	ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	600	0.96	10.00	ug/L	
39638-32-9	bis(2-chloroisopropyl)ether			not detected	300	0.88	10.00	ug/L	
621-64-7	n-Nitroso-di-n-propylamine			not detected	20	0.76	10.00	ug/L	
67-72-1	Hexachloroethane			not detected	10	0.96	10.00	ug/L	
98-95-3	Nitrobenzene			not detected	10	0.86	10.00	ug/L	
78-59-1	Isophorone			not detected	100	0.76	10.00	ug/L	
111-91-1	bis(2-Chloroethoxy)methane			not detected	NLE	0.79	10.00	ug/L	
120-82-1	1,2,4-Trichlorobenzene			not detected	9	0.89	10.00	ug/L	
91-20-3	Naphthalene	13.45	6130404	95.10 ug/L	NLE	0.76	10.00	ug/L	
106-47-8	4-Chloroaniline			not detected	NLE	1.37	10.00	ug/L	
87-68-3	Hexachlorobutadiene			not detected	1	0.99	10.00	ug/L	
91-57-6	2-Methylnaphthalene	15.13	7596989	181.73 ug/L	NLE	1.01	10.00	ug/L	B
77-47-4	Hexachlorocyclopentadiene			not detected	50	0.92	10.00	ug/L	
91-58-7	2-Chloronaphthalene			not detected	NLE	0.72	10.00	ug/L	
88-74-4	2-Nitroaniline			not detected	NLE	0.77	10.00	ug/L	
131-11-3	Dimethylphthalate			not detected	7000	0.78	10.00	ug/L	
208-96-8	Acenaphthylene			not detected	NLE	0.67	10.00	ug/L	
606-20-2	2,6-Dinitrotoluene			not detected	NLE	0.71	10.00	ug/L	
99-09-2	3-Nitroaniline			not detected	NLE	1.18	10.00	ug/L	
83-32-9	Acenaphthene			not detected	400	0.73	10.00	ug/L	
132-64-9	Dibenzofuran			not detected	NLE	0.69	10.00	ug/L	
121-14-2	2,4-Dinitrotoluene			not detected	10	0.81	10.00	ug/L	
84-66-2	Diethylphthalate			not detected	5000	0.96	10.00	ug/L	
86-73-7	Fluorene			not detected	300	0.71	10.00	ug/L	
7005-72-3	4-Chlorophenyl-phenylether			not detected	NLE	0.73	10.00	ug/L	
100-01-6	4-Nitroaniline			not detected	NLE	1.11	10.00	ug/L	
86-30-6	n-Nitrosodiphenylamine			not detected	20	0.62	10.00	ug/L	
103-33-3	Azobenzene			not detected	NLE	0.72	10.00	ug/L	
101-55-3	4-Bromophenyl-phenylether			not detected	NLE	0.92	10.00	ug/L	
118-74-1	Hexachlorobenzene			not detected	10	0.95	10.00	ug/L	
85-01-8	Phenanthrene	21.38	20596979	233.39 ug/L	NLE	0.81	10.00	ug/L	E
120-12-7	Anthracene			not detected	2000	0.76	10.00	ug/L	
84-74-2	Di-n-butylphthalate			not detected	900	0.92	10.00	ug/L	
206-44-0	Fluoranthene			not detected	300	0.82	10.00	ug/L	

Semi-Volatile Analysis Report
Page 2

Data File Name	**BNA11451.D**	Sample Name	**6000705**
Operator	**Skelton**	Misc Info	**906AC**
Date Acquired	**17-Jan-06**	Sample Multiplier	**1**

CAS#	Name	R.T.	Response	Result	Regulatory Level (ug/L)*	MDL	RL		Qualifiers
92-87-5	Benzidine			not detected	50	0.98	10.00	ug/L	
129-00-0	Pyrene	24.71	4308044	77.93 ug/L	200	0.79	10.00	ug/L	
85-68-7	Butylbenzylphthalate			not detected	100	0.86	10.00	ug/L	
56-55-3	Benzo[a]anthracene			not detected	10	0.82	10.00	ug/L	
91-94-1	3,3'-Dichlorobenzidine			not detected	60	1.31	10.00	ug/L	
218-01-9	Chrysene			not detected	20	0.77	10.00	ug/L	
117-81-7	bis(2-Ethylhexyl)phthalate	27.71	107539	3.15 ug/L	30	1.28	10.00	ug/L	
117-84-0	Di-n-octylphthalate			not detected	100	1.02	10.00	ug/L	
205-99-2	Benzo[b]fluoranthene			not detected	10	0.98	10.00	ug/L	
207-08-9	Benzo[k]fluoranthene			not detected	2	0.92	10.00	ug/L	
50-32-8	Benzo[a]pyrene			not detected	20	0.71	10.00	ug/L	
193-39-5	Indeno[1,2,3-cd]pyrene			not detected	20	0.76	10.00	ug/L	
53-70-3	Dibenz[a,h]anthracene			not detected	20	0.76	10.00	ug/L	
191-24-2	Benzo[g,h,i]perylene			not detected	NLE	0.80	10.00	ug/L	

* Higher of PQL's and Ground Water Criteria as per NJAC 7:9-6 2-Sept-97

Qualifiers

E= Value Exceeds Linear Range
D= Value from dilution
B= Compound in Related Blank
RL= Reporting Limit. The values between the MDL and RL are considered estimated.

MDL= Method Detection Limit
NLE= No Limit Established
R.T.=Retention Time

Semi-Volatile Analysis Report

U.S. Army, Fort Monmouth Environmental Laboratory

NJDEP Certification #13461

Data File Name	**BNA11466.D**	Sample Name	**6000705**
Operator	**Skelton**	Misc Info	**906AC 1:5 Dilution**
Date Acquired	**18-Jan-06**	Sample Multiplier	**5**

CAS#	Name	R.T.	Response	Result	Regulatory Level (ug/L)*	MDL	RL		Qualifiers
110-86-1	Pyridine			not detected	NLE	5.65	50.00	ug/L	
62-75-9	N-nitroso-dimethylamine			not detected	20	3.00	50.00	ug/L	
62-53-3	Aniline			not detected	NLE	11.90	50.00	ug/L	
111-44-4	bis(2-Chloroethyl)ether			not detected	10	3.55	50.00	ug/L	
541-73-1	1,3-Dichlorobenzene			not detected	600	5.10	50.00	ug/L	
106-46-7	1,4-Dichlorobenzene			not detected	75	4.95	50.00	ug/L	
100-51-6	Benzyl alcohol			not detected	NLE	3.30	50.00	ug/L	
95-50-1	1,2-Dichlorobenzene			not detected	600	4.80	50.00	ug/L	
39638-32-9	bis(2-chloroisopropyl)ether			not detected	300	4.40	50.00	ug/L	
621-64-7	n-Nitroso-di-n-propylamine			not detected	20	3.80	50.00	ug/L	
67-72-1	Hexachloroethane			not detected	10	4.80	50.00	ug/L	
98-95-3	Nitrobenzene			not detected	10	4.30	50.00	ug/L	
78-59-1	Isophorone			not detected	100	3.80	50.00	ug/L	
111-91-1	bis(2-Chloroethoxy)methane			not detected	NLE	3.95	50.00	ug/L	
120-82-1	1,2,4-Trichlorobenzene			not detected	9	4.45	50.00	ug/L	
91-20-3	Naphthalene	13.34	668694	59.03 ug/L	NLE	3.80	50.00	ug/L	D
106-47-8	4-Chloroaniline			not detected	NLE	6.85	50.00	ug/L	
87-68-3	Hexachlorobutadiene			not detected	1	4.95	50.00	ug/L	
91-57-6	2-Methylnaphthalene	15.02	1244682	169.44 ug/L	NLE	5.05	50.00	ug/L	D
77-47-4	Hexachlorocyclopentadiene			not detected	50	4.60	50.00	ug/L	
91-58-7	2-Chloronaphthalene			not detected	NLE	3.60	50.00	ug/L	
88-74-4	2-Nitroaniline			not detected	NLE	3.85	50.00	ug/L	
131-11-3	Dimethylphthalate			not detected	7000	3.90	50.00	ug/L	
208-96-8	Acenaphthylene			not detected	NLE	3.35	50.00	ug/L	
606-20-2	2,6-Dinitrotoluene			not detected	NLE	3.55	50.00	ug/L	
99-09-2	3-Nitroaniline			not detected	NLE	5.90	50.00	ug/L	
83-32-9	Acenaphthene			not detected	400	3.65	50.00	ug/L	
132-64-9	Dibenzofuran			not detected	NLE	3.45	50.00	ug/L	
121-14-2	2,4-Dinitrotoluene			not detected	10	4.05	50.00	ug/L	
84-66-2	Diethylphthalate			not detected	5000	4.80	50.00	ug/L	
86-73-7	Fluorene			not detected	300	3.55	50.00	ug/L	
7005-72-3	4-Chlorophenyl-phenylether			not detected	NLE	3.65	50.00	ug/L	
100-01-6	4-Nitroaniline			not detected	NLE	5.55	50.00	ug/L	
86-30-6	n-Nitrosodiphenylamine			not detected	20	3.10	50.00	ug/L	
103-33-3	Azobenzene			not detected	NLE	3.60	50.00	ug/L	
101-55-3	4-Bromophenyl-phenylether			not detected	NLE	4.60	50.00	ug/L	
118-74-1	Hexachlorobenzene			not detected	10	4.75	50.00	ug/L	
85-01-8	Phenanthrene	21.20	3207875	189.24 ug/L	NLE	4.05	50.00	ug/L	D
120-12-7	Anthracene			not detected	2000	3.80	50.00	ug/L	
84-74-2	Di-n-butylphthalate			not detected	900	4.60	50.00	ug/L	
206-44-0	Fluoranthene			not detected	300	4.10	50.00	ug/L	

Semi-Volatile Analysis Report
Page 2

Data File Name	**BNA11466.D**	Sample Name	**6000705**
Operator	**Skelton**	Misc Info	**906AC 1:5 Dilution**
Date Acquired	**18-Jan-06**	Sample Multiplier	**5**

CAS#	Name	R.T.	Response	Result	Regulatory Level (ug/L)*	MDL	RL		Qualifiers
92-87-5	Benzidine			not detected	50	4.90	50.00	ug/L	
129-00-0	Pyrene	24.59	466137	41.04 ug/L	200	3.95	50.00	ug/L	D
85-68-7	Butylbenzylphthalate			not detected	100	4.30	50.00	ug/L	
56-55-3	Benzo[a]anthracene			not detected	10	4.10	50.00	ug/L	
91-94-1	3,3'-Dichlorobenzidine			not detected	60	6.55	50.00	ug/L	
218-01-9	Chrysene			not detected	20	3.85	50.00	ug/L	
117-81-7	bis(2-Ethylhexyl)phthalate			not detected	30	6.40	50.00	ug/L	
117-84-0	Di-n-octylphthalate			not detected	100	5.10	50.00	ug/L	
205-99-2	Benzo[b]fluoranthene			not detected	10	4.90	50.00	ug/L	
207-08-9	Benzo[k]fluoranthene			not detected	2	4.60	50.00	ug/L	
50-32-8	Benzo[a]pyrene			not detected	20	3.55	50.00	ug/L	
193-39-5	Indeno[1,2,3-cd]pyrene			not detected	20	3.80	50.00	ug/L	
53-70-3	Dibenz[a,h]anthracene			not detected	20	3.80	50.00	ug/L	
191-24-2	Benzo[g,h,i]perylene			not detected	NLE	4.00	50.00	ug/L	

* Higher of PQL's and Ground Water Criteria as per NJAC 7:9-6 2-Sept-97

Qualifiers

E= Value Exceeds Linear Range
D= Value from dilution
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MDL= Method Detection Limit
NLE= No Limit Established
R.T.=Retention Time
RL= Reporting Limit. The values between the MDL and RL are considered estimated.

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

906AC

Lab Name: FMETL Lab Code 13461

Project: 06-34880 Case No.: 60007 Location: UST SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 6000705

Sample wt/vol: 1000 (g/ml) ML Lab File ID: BNA11451.D

Level: (low/med) LOW Date Received: 1/4/2006

% Moisture: decanted: (Y/N) N Date Extracted: 1/9/2006

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 1/17/2006

Injection Volume: 1.0 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH:

Number TICs found: 15 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		unknown hydrocarbon	7.20	6	J
2.		unknown hydrocarbon	7.53	6	J
3.	003728-57-2	Cyclopentane, 1-methyl-2-propyl-	7.86	5	JN
4.		unknown hydrocarbon	8.34	10	J
5.		unknown hydrocarbon	8.61	12	J
6.		unknown hydrocarbon	8.82	38	J
7.		unknown hydrocarbon	9.36	23	J
8.		unknown hydrocarbon	9.54	12	J
9.	004291-79-6	Cyclohexane, 1-methyl-2-propyl-	9.84	16	JN
10.	000526-73-8	Benzene, 1,2,3-trimethyl-	10.01	9	JN
11.		unknown hydrocarbon	10.30	5	J
12.	017302-28-2	Nonane, 2,6-dimethyl-	10.49	40	JN
13.		unknown hydrocarbon	10.78	11	J
14.		unknown hydrocarbon	10.99	12	J
15.		unknown hydrocarbon	12.49	40	J

TPHC

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

Client :	U.S. Army DPW. SELFM-PW-EV Bldg. 173 Ft. Monmouth, NJ 07703	**Project # :**	60007
		Location :	906A
		UST Reg. # :	
Analysis :	OQA-QAM-025	**Date Received :**	03-Jan-06
Matrix :	Soil	**Date Extracted :**	06-Jan-06
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	Shake
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	07-Jan-06
Injection Volume :	1uL	**Analyst :**	P.Skelton

Lab ID	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	RL	TPHC Result (mg/kg)
6000701	906AC	1.00	15.78	85.66	71	370	693.23
6000702	906AC	1.00	15.26	94.06	67	348	5634.52
6000703	906AE	1.00	15.43	88.79	70	365	6699.15
6000704	906AW	1.00	15.06	86.57	74	384	195.12
METHOD BLANK	MB-01060601	1.00	15.00	100.00	64	333	ND

ND = Not Detected

MDL = Method Detection Limit

RL = Reporting Limits

Note : The TPHC result between the MDL and RL are considered an estimated value

LABORATORY DELIVERABLES CHECKLIST AND NON-CONFORMANCE SUMMARY

THIS FORM MUST BE COMPLETED BY THE LABORATORY OR ENVIRONMENTAL CONSULTANT AND ACCOMPANY ALL DATA SUBMISSIONS

The following Laboratory Deliverables Checklist and Non-Conformance Summary shall be included in the data submission. All deviations from the accepted methodology and procedures, of performance values outside acceptable ranges shall be summarized in the Non-Conformance Summary. The Technical Requirements for Site Remediation, effective June 7, 1993, provides further details. The document shall be bound and paginated, contain a table of contents, and all pages shall be legible. Incomplete data packages will be returned or held without review until the data package is completed.

It is recommended that the analytical results summary sheets listing all targeted and non-targeted compounds with the method detection limits, practical quantitation limits, and the laboratory and/or sample numbers be included in one section of the data package and in the main body of the report.

1.	Cover Page, Title Page listing Lab Certification #, facility name and address, & date of report submitted.	✓
2.	Table of Contents submitted.	✓
3.	Summary Sheets listing analytical results for all targeted and non-targeted compounds submitted.	✓
4.	Document paginated and legible.	✓
5.	Chain of Custody submitted.	✓
6.	Samples submitted to lab within 48 hours of sample collection.	✓
7.	Methodology Summary submitted.	✓
8.	Laboratory Chronicle and Holding Time Check submitted.	✓
9.	Results submitted on a dry weight basis.	✓
10.	Method Detection Limits submitted.	✓
11.	Lab certified by NJDEP for parameters of appropriate category of parameters or a member of the USEPA CLP.	✓

Laboratory Manager or Environmental Consultant's Signature _____

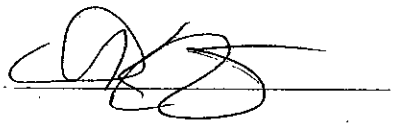
Date: 1/27/06

Laboratory Certification # 13461

*Refer to NJAC 7:26E – Appendix A, Section IV – Reduced Data Deliverables – Non-USEPA/CLP Methods for further guidance.

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.



Daniel K. Wright
Laboratory Manager

Attachment B
Boring Logs and Well Construction Details

PARSONS

Well Construction Detail (Single Cased - Road Box)

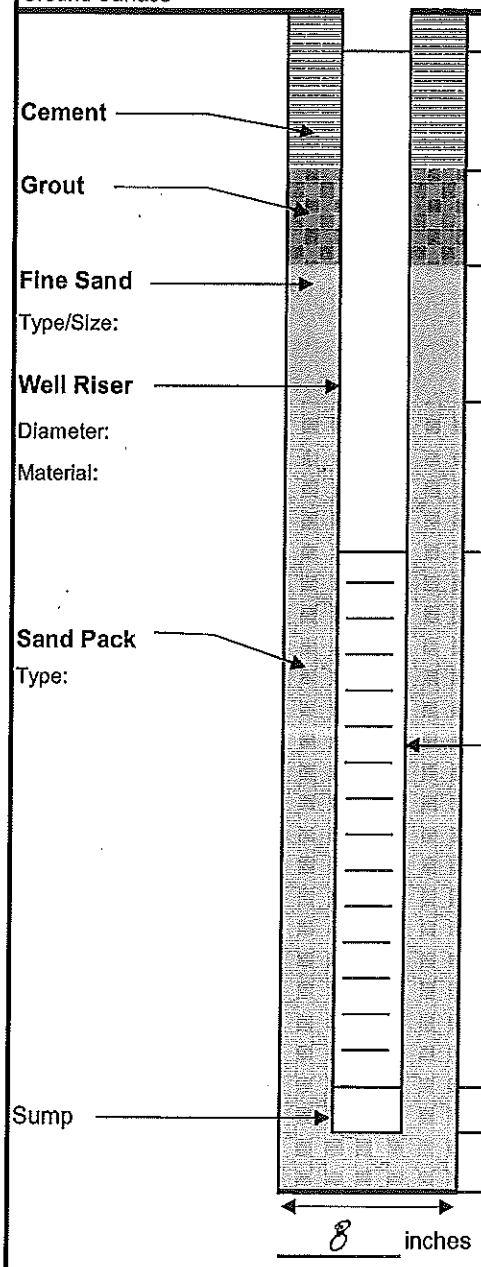
Client: USACE

Well ID: 906A-MW-01
PAR-68-

NJBWA Permit No.

Date Well Installed: 11-22-17

Location: PAR-68-906A-MW-01



	Depth Below Ground Surface (ft)
Ground Surface	0.0
Top of Well Casing _____ ft	0.25
Top of Grout	1.0
Top of Fine Sand	4.0
Top of Sand Pack	5.0
Top of Screen	05.0
Well Screen Diameter: 2" Slot Size: 10-SLOT Material: PVC	
Bottom of Screen	15.0
Bottom of Sump	15.25
Bottom of Borehole	16.0

Top of Confining Unit (if present): _____

PARSONS

Well Construction Detail (Single Cased - Road Box)

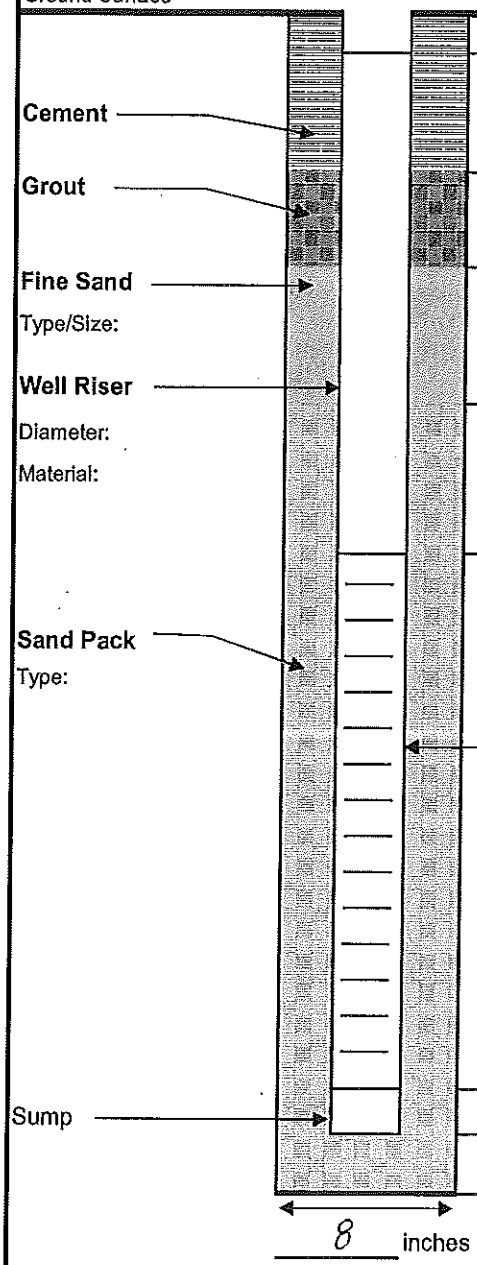
Client: USACE

Well ID: ~~68-MW-02~~ PAR-68-906A-

NJBWA Permit No.

Date Well Installed: 11-22-17

Location: PAR-68-~~MW-02~~ 906A-MW-02



	Depth Below Ground Surface (ft)
Ground Surface	0.0
Top of Well Casing _____ ft	0.25
Top of Grout	1.0
Top of Fine Sand	4.0
Top of Sand Pack	5.0
Top of Screen	5.0
Well Screen Diameter: 2" Slot Size: 10-SLOT Material: PVC	
Bottom of Screen	15.0
Bottom of Sump	15.25
Bottom of Borehole	16.0

Top of Confining Unit (if present): _____

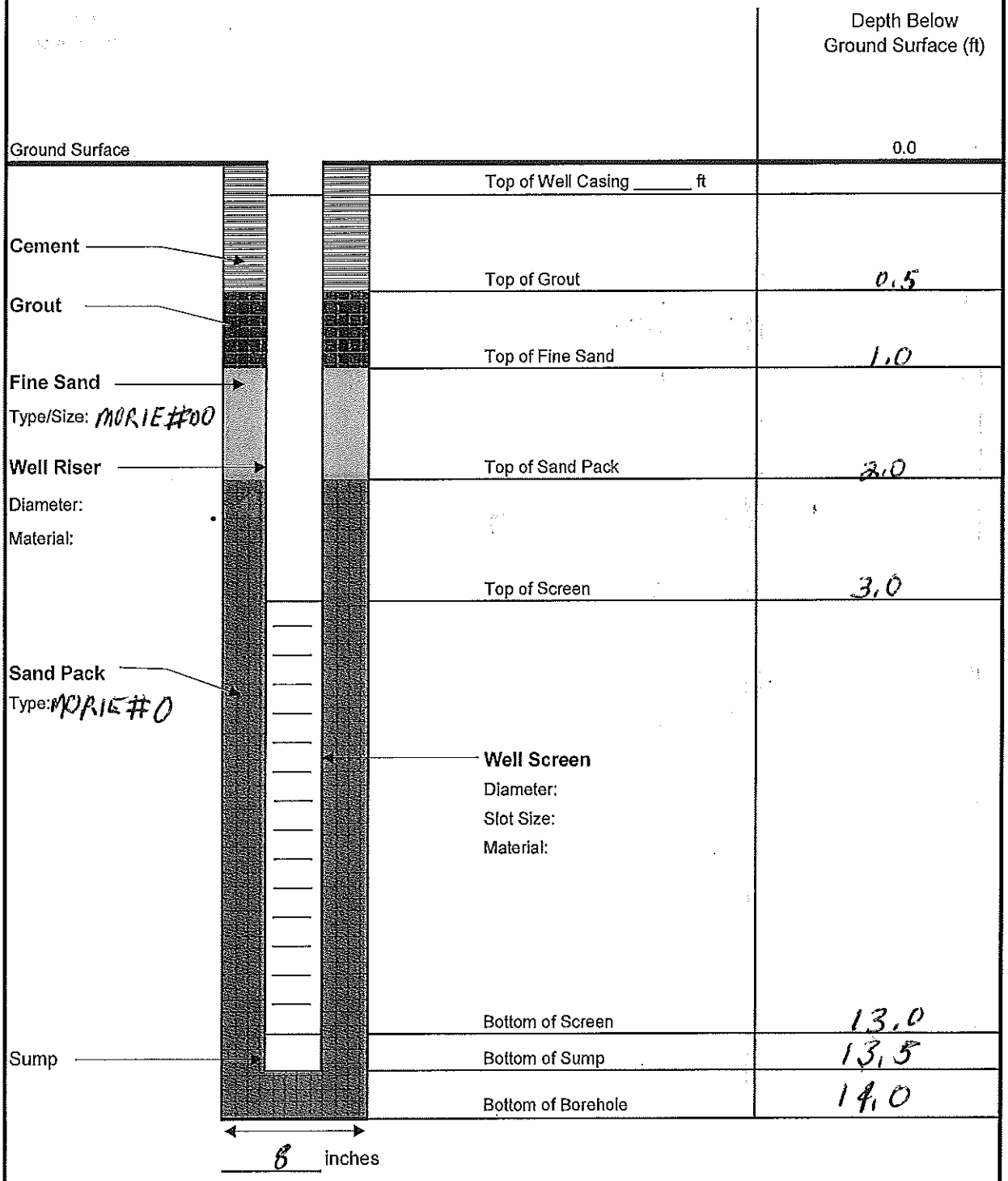
PARSONS

Well Construction Detail (Single Cased - Road Box)

Client: USACE

Well ID: PAR-68-906A-MW-03 NJBWA Permit No.

Date Well Installed: 12-15-17 Location: PARCEL 68- UST 906A



Top of Confining Unit (if present): _____

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 68-906A
PROJECT NUMBER: 748810-

INSPECTOR: F. ACCORSI
DRILLER: K. ATWOOD, T. McNAKY
WEATHER: 30°, CLDY, FLURRIES
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 12-15-17 0900
DATE/TIME FINISH: 12-15-17 1000
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-906A-MW-03
LOCATION DESCRIPTION:
LOCATION PLAN: Oceanport, New Jersey

GROUNDWATER OBSERVATIONS
WATER LEVEL: 6.6' @ MW-01, 6.4' @ MW-02, 6.4' @ MW12, MW14
DATE: 12-15-17
TIME:
MEAS. FROM: GROUND SURFACE

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0					HOLLOW STEM AUGER TO 14 FT		
					SET SCREEN FROM 3' TO 13'		
1					BROWN TO GREEN BROWN SANDY		
					SILTY CLAY		
2					PID READINGS FROM CUTTINGS-		WET @ 7'
					0 PPM		
3							
4							
5					END OF BORING @ 14 FT		
					SEE WELL CONSTRUCTION DETAIL		
6							
7							
8							
9							
10							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)		
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15	
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30	
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30	

and - 35 -50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5'
DATE: 8/1/16
TIME: 1025
MEAS. FROM: GS

INSPECTOR: C. Watson
DRILLER: J. BARNAK
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/1/16 1010
DATE/TIME FINISH: 8/1/16 1020
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-TMW01
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			54/60	0	0-10" Moist, Brown, MF loose SAND, little silt	I	
1					10"-18" Moist, orange/brown, MF, M. Dense SAND little silt		
2					18"-54" Moist, Brown, M. Dense MF SAND, little silt, Saturated @ 54"	II	
3							
4						▽	
			54/60	NR			
5				26.1	0-37" Saturated, green/gray M. Dense, MF SAND, little silt	II	
				24.6			
6				27.2			
				30.8	37"-50" wet, Brown/orange/ light gray MF SAND little Fine gravel, trace silt		
7				82.4			
				6.7			
8				0			
				0			
9				0			
				NR			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~6
DATE: 8/1/16
TIME: 0950
MEAS. FROM: BGS

INSPECTOR: C. WATSON
DRILLER: T. BARNAK
WEATHER: 75°F overcast
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 8/1/16 0830
DATE/TIME FINISH: 8/1/16 0950
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAL-62-TMW01
LOCATION DESCRIPTION: Parcel 62
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/56	0	0-8" Asphalt + milling;	I	
				0	8-39" Brown, MF, M. dense SAND, trace silt		
1				0			
				0			
2				0	39"-56" wet, gray/green, MF SAND, little silt	VI	
				25			
3				24.3			
				40.2			
4				NF			
				NF			
5			51/60	24.3	0-15" SAA, wet		
				36.4	15-38" saturated, gray/green/ black MF SAND, little silt	V	
6				38.6			
				46.7			
7				45.1	38-51" wet, Brown/orange/ light grey mottled MF SAND, little f gravel, little silt	II	
				0.3			
8				0			
				0			
9				0			
				0			
10							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 68-906A
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈6.5 FT
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: OCC. RAIN 40's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-7-17 1340
DATE/TIME FINISH: 11-7-17 1400
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-906A-TMW-03
LOCATION DESCRIPTION:

LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/52"	0	TOPSOIL 0-9"		
				0	9"-52" moist, cmf SAND, L. Mf Gravel, L. silt		COAL @ 6"
1				0			BRICK + SLAG @ 12"
				0			
2				0			
				0			
3				0			
				0			
4				0			
5			60/50	0	0-50" moist, brn-dk brn Mf SAND L. silt, mottled		WET @ 6.5'
				0			
6				0			
				0			
7				0			
				0			
8				0			
				0			
9							
10							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS Page _____ of _____

Soil Boring Log

CLIENT: USACE
PROJECT NAME: ~~FTMM~~ PARCEL 18-906A
PROJECT LOCATION:
PROJECT NUMBER: 748810-

INSPECTOR: F. ACCORSI
DRILLER:
WEATHER:
CONTRACTOR: Cascade

BORING/WELL ID: PAR-68-906A-TMW-03
LOCATION DESCRIPTION

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-7-17
DATE/TIME FINISH: 11-7-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

LOCATION PLAN
Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/60	0	0-60" WET, brn-grey, M SAND, some Silt		
				0			
1	PAR-68-906A-TMW-03-11			0			
				0			
2				0			
				0			
3				0			
				0			
4				0			
				0			
5					END OF BORING @ 15 FT. SET TMW SCREEN (10 FT.) FROM 5'-15'		
6							
7							
8							
9							
0							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 68-906A
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈5.5'
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-7-17 1515
DATE/TIME FINISH: 11-7-17 1600
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-906A-TMW-04
LOCATION DESCRIPTION:
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/50	0	0-3" ASPHALT 3"-6" ROAD STONE		
				0	6"-50" Moist, brn, c-m f SAND, L. m f Gravel		
1				0			
				0			
2				0			
				0			
3				0			
				0			
4				0			
5			60/50	0	0-50" wet, brn, f SAND and SILT		WET@5.5ft
				0			
6				0			
				0			
7				0			
				0			
8				0			
				0			
9				0			
10	PAR-68-906A-TMW-04-10'						

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS Page 1 of

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 68-906A
PROJECT NUMBER: 748810-

INSPECTOR: F. ACCORSI
DRILLER:
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-07-17 1430
DATE/TIME FINISH: 11-07-17 1510
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-906A-TMW-05
LOCATION DESCRIPTION:

LOCATION PLAN
Oceanport, New Jersey

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈5 FT
DATE:
TIME:
MEAS. FROM:

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/48	0	0-3" ASPHALT 3"-7" ROAD STONE 7"-36" Brn, cmpct SAND, some cmpct Gravel, moist		
				0			
1				0			
				0			
2				0			
				0			
3				0	36"-48" brn, moist, cmpct SAND, tr. silt		
				0			
4							
5			60/34	0	0-24" SAME		WET @ 5 FT.
				0			
6				0			
				0			
7				0	24"-34" wet, brn-gray brown, f SAND, some silt		
				0			
8				0			
				0			
9				0			
10	PAR-68-906A-TMW-05-10'						

Remarks:

Sample Types	Consistency vs. Blowcount / Foot				
S -- Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		and - 35-50%
U -- Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	some - 20-35%
C -- Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	little - 10-20%
A -- Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30	trace - <10%
					moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5.5
DATE: 4/14/16
TIME:
MEAS. FROM:

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 50°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16
DATE/TIME FINISH: 4/14/16
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-TMW02-1
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/50	0	0-5" Asphalt + millings		
					5"-10" moist, Brown/orange, M. Dense mf SAND, trace silt, trace f gravel	I	
1							
2					10"-45" moist, Brown, M. Dense mf SAND, trace silt		
3					45-50" moist, grey-green, M. Dense mf SAND, little silt	VI	
4							
				19.8			
5			60/60	10.9	0-57" BAA, Saturated @ 7"		▼
				12.6			
6				23.1	57"-60" wet, Brown/orange/light grey mottled, mf SAND, little f gravel, trace silt	II	
				0			
7				0			
				0			
8				6			
				0			
9				0			
				0			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR:
DRILLER:
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START:
DATE/TIME FINISH:
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-TMW02-1
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/60	0	0-60" SAA, some silt	I	
1							
2							
3							
4							
5					End of Boring @ 15'		
6							
7							
8							
9							
0							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)		
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15	
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30	
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30	

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~~0950~~ 5.75'
DATE: 4/14/16
TIME: 0950
MEAS. FROM: BGS

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 40's rain
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16 0935
DATE/TIME FINISH: 4/14/16 0950
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-TMW01-2
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/49"	0	0-5" Asphalt + fillings		
					5-21" moist, Brown/orange, M. Dense mf SAND, little silt, trace f gravel	I	
1							
2					21"-30" moist, gray, M. dense, mf SAND, little silt		
3					30"-47" moist, Brown, M. Dense, mf SAND, trace silt		
4					47-49" moist, gray-green, mf SAND, little silt	VI	
5			60/60	0	0-56" SAA, saturated @ 8"		▼
				0			
6				12.1	56"-60" wet, Brown/orange/light gray mf SAND, little f gravel, trace silt	II	
				53.6			
7				24.9			
				0			
8				0			
				0			
9				0			
				0			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE	INSPECTOR: N/A
PROJECT NAME: FTMM - ECP	DRILLER: N/A
PROJECT LOCATION: FTMM Parcel	WEATHER: N/A
PROJECT NUMBER: 748810-	CONTRACTOR: East Coast Drilling, Inc. (ECDI)
	RIG TYPE: Geoprobe(R) 7822DT
	DATE/TIME START: N/A
	DATE/TIME FINISH: N/A
	WEIGHT OF HAMMER: N/A
	DROP OF HAMMER: N/A
	TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-TMW02-2

LOCATION DESCRIPTION

Parcel 68

LOCATION PLAN

Oceanport, New Jersey

GROUNDWATER OBSERVATIONS

WATER LEVEL: N/A
DATE: N/A
TIME: N/A
MEAS. FROM: N/A

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/60	0	0-60" Moist, brown/orange/light gray mottled m-f SAND, some silt	II	
1							
2							
3							
4							
5					end of boring @ 15'		
6							
7							
8							
9							
0							

Remarks:

Sample Types	Consistency vs. Blowcount / Foot		
S – Split-Spoon	Granular (Sand & Gravel)	Fine Grained (Silt & Clay)	and - 35-50%
U – Undisturbed Tube	V. Loose: 0-4; Dense: 30-50	V. Soft: <2; Stiff: 8-15	some - 20-35%
C – Rock Core	Loose: 4-10; V. Dense: >50	Soft: 2-4; V. Stiff: 15-30	little - 10-20%
A – Auger Cuttings	M. Dense: 10-30	M. Stiff: 4-8; Hard: > 30	trace - <10%
			moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 5.5'
DATE: 4/14/16
TIME: 0920 0925
MEAS. FROM: ~~0925~~ BGS

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 39°F Clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16 0910
DATE/TIME FINISH: 4/14/16 0926
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-TMW01-3
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/48	0	0-6" Asphalt, millings		
					6-28" moist, mf, moderate SAND (Brown) trace f gravel, trace silt	I	
1							
					28"-44" moist, mf, moderate, Brown-gray SAND, trace silt		
2							
					44"-48" moist, gray-green, mf SAND little silt		
3							
4						VI	
5			00/60	0	0-60" SAA, saturated @ 6"	VI	
6							
7							
8							
9							
0							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5
DATE: 4/4/16
TIME: 0905
MEAS. FROM: BGS

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 38°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16 0850
DATE/TIME FINISH: 4/14/16 0905
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: FAL-68-TMW02-4
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/51	0	0-4" Asphalt + millings		
					4"-46" Brown, mf, M. Dense SAND trace f gravel, trace silt	I	
1							
					46"-51" wet, grey/green, mf SAND, little silt		
2							
					saturated @ bottom of boring - 51"	VI	
3				26.4			
				13.8			
4				NR			
				NR			
5			60/60	12.6	0-~~8~~46" SAA, saturated		
				76.9	46"-60" Wet, Brown/orange/light grey mottled, mf SAND, little f gravel, trace silt	II	
6			6	103			
				64.9			
7				17.8			
				10.1			
8				0			
				0			
9				0			
				0			
10							

Remarks:

Sample Types
S -- Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5'
DATE: 4/14/16
TIME: 1200
MEAS. FROM:

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 56°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16 1225
DATE/TIME FINISH: 4/14/16 1245
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAP-68-SB-01
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

	DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
	0			60/60	0	0-12" Moist, Brown, mf, loose SAND, little silt, trace grass/roots	I	
	1							
	2					12"-20" Moist, orange-Brown, M. Dense, mf SAND, little silt, trace f gravel		
1300	3	3-3.5			64.6		II	
					107	20-39" wet, Brown, M. Dense, mf SAND, little silt, trace f. gravel		
1305	4	4-4.5			164		~~St~~	Strong odor
					122	39"-60" wet, green-grey, M. Dense. mf SAND, little silt		
	5				26.8			
					20.9	0-45" saturated, SAA		ODOR
	6				91.4	45"-60" wet, Brown/orange/light grey mf SAND, little f gravel, trace silt	~~III~~ II	
					84.6			
	7				80.2			
					0			
	8				0			
					0			
	9				0			
1310		9.5-10			0			
	10					End of Boring 10'		

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~7'
DATE: 4/14/16
TIME: 1440
MEAS. FROM:

INSPECTOR: Cal
DRILLER: Joe Barnak
WEATHER: 60°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16 1415
DATE/TIME FINISH: 4/14/16 1430
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAP-68-SB-01
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/49	0	0-6" Asphalt + Asphalt millings		
					6"-20" Orange, M. Dense, MC SAND, Brick, Rock Frags	I	
1							
2							
					20-49" moist, Dark gray, mf SAND, little silt, trace f gravel		
1430 3	3-3.5						
						II	
4							
5			60/60	0	0-13" SAA		
				0			
1435 6	6-6.5			37.6	13"-24" moist, Brown-green, mf SAND, little silt, little f gravel		▼
				12.1			Odor
7				1.8	24"-60" Saturated, Brown/orange/light gray, Mottled mf SAND little f gravel, trace silt	II	
				0			
8							
9							
1440	9.5-10						
0							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5'
DATE:
TIME:
MEAS. FROM:

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 56°F clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 1150
DATE/TIME FINISH: 1205
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-SB-03
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/58	0	0-25" wet, brown, mf SAND, little silt, trace f gravel	I	
1					25"-54" wet, orange-brown, mf SAND, some silt, trace f gravel		
2							
1205 3	3-3.5				54"-68" wet, green-gray, mf SAND, little silt		
				0			
4				0		VI	
				10.1			▽
5			60/60	0	0-48" SAA, saturated	~~ODor~~	ODor
				0			
6				0	48"-60" Saturated, Dark gray-green, Mf SAND, some silt, trace clay	VI	
				13.9			
7				51.4			
				68.6			Strong ODOR
1210 8	8-8.5			263			
				63.7			
9				48.6			
				66.9			
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: P.1
DATE:
TIME:
MEAS. FROM:

INSPECTOR: P.1
DRILLER:
WEATHER:
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START:
DATE/TIME FINISH: P.1
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAF-68-OB-03
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				18.6	0-50" SAA		
				0	50-60" moist, Black, mf SAND, little silt, micah	II	
1							
2							
3							
1345	13.5-14						
4							
5							
6							
7							
8							
9							
0							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~4.5'
DATE: 4/14/16
TIME:
MEAS. FROM:

INSPECTOR: CW
DRILLER: JOE BARNAS
WEATHER: 50's Clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16 1120
DATE/TIME FINISH: 4/14/16 1140
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-SB-04
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/55	0	0-3" Concrete		
					3"-23" ~~Wet~~, orange-brown, mf SAND, some silt, trace f gravel	II	
1							
2					23"-~~55~~ 60" moist, gray-green, mf SAND, saturated @ 50", little silt		
				2.8			
3	3-3.5			10.3		~~ODOR~~	ODOR
	3.5-4			80.4		~~IV~~ VI	
4				64.5			
				6.7			▼
5				20.1	0-60" SAA, saturated		
				12.1			
6				1.2			
				0			
7				0			
				6			
8				0			
				0			
9				0			
	9.5-10			0			
10					end of boring @ 10		

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~6'
DATE: 4/14/16
TIME:
MEAS. FROM:

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 58°F Clear
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 4/14/16
DATE/TIME FINISH: 4/14/16
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-SB-05
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

	DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
	0			60/48	0	0-39" Brown, m. dense, mf SAND, little silt, trace f gravel	I	
	1							
	2					39"-48" wet, Brown-green, mf SAND, little silt		
1400	3	3-3.5					VI	
	4							
	5				10.1	0-24" SAA, saturated @ 12"		▼
	6				16.6			
1405		6.5-7			123	24-60" Saturated, Brown/orange/light gray mottled mf SAND, little f gravel, trace silt	III	Odor
	7				101			
	8				19.8		II	
	9				0			
1410	10	9.5-10			0			
					0			
					0			
					0	end of Boring @ 10'		

Remarks:

Sample Types
S – Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)			Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50		V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50		Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30			M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of 1

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5
DATE: 4/14/16
TIME: 1500
MEAS. FROM:

INSPECTOR: CW
DRILLER: JOE BARNAK
WEATHER: 60°F
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R)7822DT
DATE/TIME START: 4/14/16 1445
DATE/TIME FINISH: 4/14/16 1500
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-SB-06
LOCATION DESCRIPTION: Parcel 68
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/60	0	0-18" Brown, m. Dense, mf SAND, little silt	I	
1					18"-60" moist, m. Dense, mf Brown/orange/light gray, mottled SAND, trace silt, trace fgravel		
2							
1500 3	3-3.5					II	
4							
1505	4.5-5						
5			6/6	0	0-60" saturated SAND	III	
6						II	
7							
8							
9							
1510	9.5-10						
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page 1 of _____

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: ~~FTMM~~ Parcel 68-906A
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈ 6 FT.
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: CLDY, 50'S, RAIN
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-7-17
DATE/TIME FINISH: 11-7-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-906A-SB-07
LOCATION DESCRIPTION:
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/48	0	0-5" TOPSOIL		
				0	5"-30" moist, cm f SAND, some f. gravel		
1				0			
	PAR-68-906A-SB-07-1.5'-2.0'			0			
2				0			
				0	30"-48" Moist, grn, cm f SAND some clayey silt		
3				81			STRONG PETROLEUM ODORS
				45			
4							
5			60/36	65	0-36" moist, grn, cm f SAND,		STRONG PETROLEUM ODORS WET & STAINING
	PAR-68-906A-SB-07-5.5'-6.0'			124			
6				125			
				7			
7				96			
				2.4			
8							
9							
10							

Remarks:

Sample Types
S – Split-Spoon
U – Undisturbed Tube
C – Rock Core
A – Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Page _____ of _____

Soil Boring Log

CLIENT: USACE
PROJECT NAME: ~~FTMM~~ PARCEL 68-906A
PROJECT LOCATION:
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR: FRANK ACCORSI
DRILLER: S. FOSTER
WEATHER: RAIN, 50's
CONTRACTOR: ~~Cascade~~ ECDI
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-7-17
DATE/TIME FINISH: 11-7-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-906A-SB-07
LOCATION DESCRIPTION:
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0			60/54	8	0-54" WET, BRN, f SAND and SILT		
				1			
1				0.8			
	PAR-68-906A-SB-07-11.5-12.0			0			
2				0			
				0			
3				0			
				0			
4				0			
					END OF BORING @ 15FT.		
5					BACKFILLED HOLE W/ DRILL CUTINGS.		
6							
7							
8							
9							
0							

Remarks:

Sample Types
S -- Split-Spoon
U -- Undisturbed Tube
C -- Rock Core
A -- Auger Cuttings

Consistency vs. Blowcount / Foot

Granular (Sand & Gravel)		Fine Grained (Silt & Clay)	
V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15
Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30
M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30

and - 35-50%
some - 20-35%
little - 10-20%
trace - <10%
moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 68
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR: Kevin McMill
DRILLER: Andrew
WEATHER: Low 80's Overcast
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 7/11-19 / 1508
DATE/TIME FINISH: 7-11-19 / 1515
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: FAR-68-906A-W3
LOCATION DESCRIPTION: Asphalt
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-18" - Asphalt + Millg,		@ Hand cleared 5' bgs
				0	18-60" - Moist, Mid dense, Brn, F-M, Sand, Some Silt + Clay, Moderate Petrol like Odor		
1				1.1			
				1.3			
2				40			
				37			
3				38			
				27			
4				21			
				31			
5			0/1.0	33	0-60" - Wet, M-dense, Brn with Green hues, F-M, Sand, Some Clay, Some Silt, Moderate Petrol like Odor		
				8.8			
6				35			
	FAR68906A-W3			33			
7	6.5-7.0			60			
				8			
8				7.4	EOB @ 10' bgs		
				5			
9				4.5			
	FAR68-906A-W3			3.8			
10	9.5-10			4.9			

Remarks: All soil Screened with PID. Soil Cuttings Used to backfill boring

Sample Types	Consistency vs. Blowcount / Foot				
S – Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		and - 35-50%
U – Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	some - 20-35%
C – Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	little - 10-20%
A – Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30	trace - <10%
					moisture, density, color, gradation

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 63
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL:
DATE:
TIME:
MEAS. FROM:

INSPECTOR: Kevin McMillen
DRILLER: Andon
WEATHER: Low 80s Overcast
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 7-11-19 1535
DATE/TIME FINISH: " 1595
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-68-9064-W4
LOCATION DESCRIPTION: Asphalt
LOCATION PLAN: Oceanport, New Jersey

DEPTH (feet)	SAMPLE I.D.	BLOWS per 6"	ADV/ REC.	PID (ppm)	FIELD IDENTIFICATION OF MATERIAL	STRATA	COMMENTS
0				0	0-18- Asphalt millings		
				0			
1				0	18-60" - Moist, M dense, Brn with green hues, F-M Sand, little Silt and clay, moderate petroliliic odd		
				0			
2				5			
				42			
3				40			
				71			
4				54			
			6/60	52			
5				84	0-60" - Wet, M dense, Brn with		V O G K
				12			
6				22	Green hue, F-M Sand, Some Silt,		
	PAR-68-9064-W4			3.8	little Clay, faint Petrol odor in top		
7	6.5-7.0			3.4	2' Feet.		
				1.5			
8				1.1	EOB @ 10' bgs		
				1.2			
9				1.1			
	PAR-68-9064-W4			1.3			
10	9.5-10		6/60	1.6			

Remarks: All Soil Screened with PID. Soil cuttings Used to backfill boring

Sample Types	Consistency vs. Blowcount / Foot				
S -- Split-Spoon	Granular (Sand & Gravel)		Fine Grained (Silt & Clay)		and - 35-50%
U -- Undisturbed Tube	V. Loose: 0-4	Dense: 30-50	V. Soft: <2	Stiff: 8-15	some - 20-35%
C -- Rock Core	Loose: 4-10	V. Dense: >50	Soft: 2-4	V. Stiff: 15-30	little - 10-20%
A -- Auger Cuttings	M. Dense: 10-30		M. Stiff: 4-8	Hard: > 30	trace - <10%
					moisture, density, color, gradation

Attachment C
Field Notes

Location PARCEL 68-906A UST Date 10-3-18

Project / Client EXCAVATION OF EPH IMPACTED SOILS

66-75° SUNNY

1030 ONSITE TO EXCAVATE EPH IMPACTED SOILS ON THE WEST SIDE. REMOVED 6 FT. HIGH PILE OF CLEAN OVERBURDEN AND PLACE ONTO OTHER SIDE OF EXCAVATION

BZ=0-0.5ppm REMOVED TOP 3FT. OF CLEAN OVERBURDEN AND PLACED IN OTHER SIDE (EAST + NORTH) OF EXCAVATION, WHILE MAINTAINING A BERM OF MATERIAL TO KEEP WATER OUT OF EXCAV. AREA. FIELD SCREENING OF EXCAV. SOILS (50 TO 220 PPM) NECESSITATED GOING DOWN TO 10 FT. (8 TO 12 PPM). CONTINUED WEST WALL EXCAV. APPROX. 20 FT. BEYOND PREVIOUS EXCAVATION LIMITS. EXCAVATED MORE SOIL ON NORTH WALL BECAUSE SCREENED PID READINGS (88 TO 138 PPM) WERE V. HIGH

1410 PAR-68-906A-W2-9.5-10 PID: 3 PPM
GRAY m# SAND, some Silt, wet

1420 PAR-68-906A-W2-6.5-7 PID: 48 PPM
GRAY m# SAND, Little Silt

1530 PAR-68-906A-N2-8.5-9 PID: 4 PPM
GRAY f SAND, some silt, wet

1555 PAR-68-906A-N2-6-6.5 PID: 12 PPM
GRAY m# SAND, Little silt

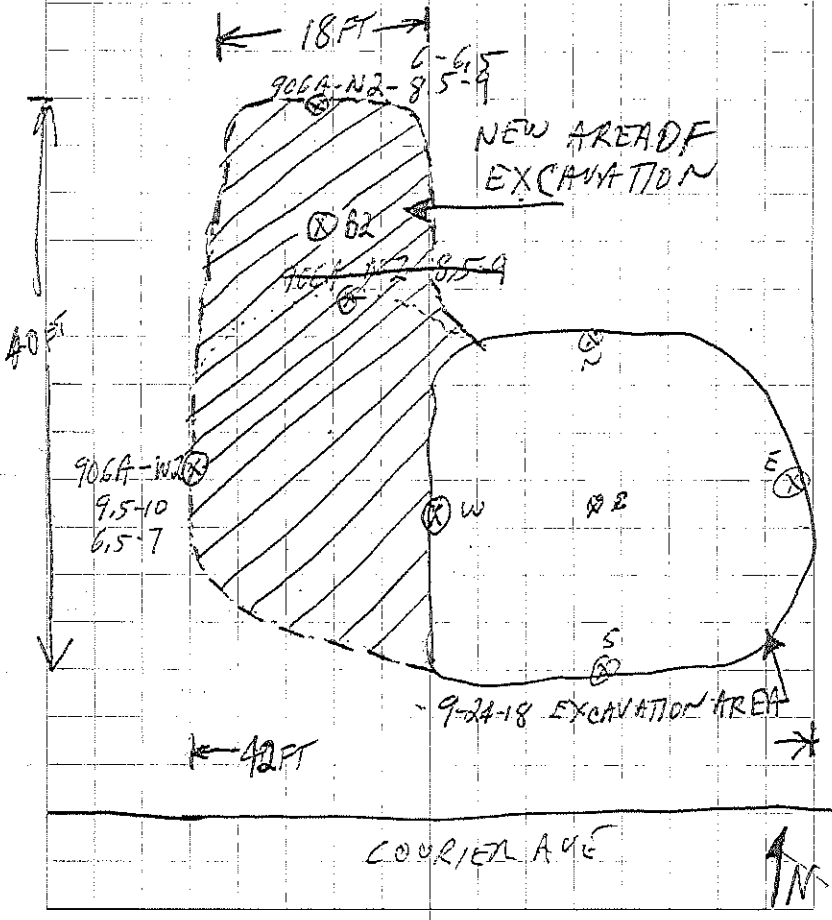
Location PARCEL 68-906A UST Date 10-3-18

Project / Client

GRAY-GRN-BRN f SAND, some silt

1610 PAR-68-906A-B2-10-10.5 PID: 6 PPM

TOTAL AMOUNT OF ADDITIONAL SOILS TO STOCKPILE APPROX. 120 CUBIC YARDS ≈ 180 TON



ALS Environmental
34 Dogwood Lane
Middletown, PA 07057
(717) 944-5541

CHAIN OF CUSTODY/ REQUEST FOR ANALYSIS

ALL SHADED AREAS MUST BE COMPLETED BY THE CLIENT / SAMPLER. INSTRUCTIONS ON THE BACK.

COC #: P68-01-20191003 — 1 of 1

ALS Quote #:

Client Name: Parsons Federal
Address: 100 High St. 4th Floor, Boston, MA 02110
Contact: Lorraine Weber
Phone#: 315-552-9745
Project Name/#:
Bill To: Parsons Federal

TAT: [ ] Normal-Standard TAT is 10-12 business days. [X] Rush-Subject to ALS approval and surcharges.
Date Required: 5 DAY TAT Approved?
Email? [X] -Y lorraine.weber@parsons.com
Fax? [ ] -Y No.:

Sample Description/Location (as it will appear on the lab report)	Sample Date	Time	*G or C	**Matrix	Container Type	Container Size	Preservative	EPH (Modified Unfrac)	Naphthalene	2-Methyl-Naphth.	TOTAL # of CONTAINERS	AUTHORIZED TO RUN
					GLASS	8 OZ	NONE	ANALYSES/METHOD REQUESTED. Enter Number of Containers Per Sample or Field Results Below.				
1 PAR-68-906A-W2-6.5-7	10-3-18	1430	G	SO				X	X		1	X
2 PAR-68-906A-W2-9.5-10	"	1410	"	"				X	X		1	X
3 PAR-68-906A-N2-6-6.5	"	1555	"	"				X	X		1	X
4 PAR-68-906A-N2-8.5-9	"	1530	"	"				X	X		1	X
5 PAR-68-906A-B2-10-10.5	"	1610	"	"				X	X		1	X
6												X
7												X
8												X
9												X
10												X

Receipt Information (completed by Receiving Lab)

Cooler Temp: ____ Therm ID: ____
No. of Coolers: ____

	Y	N	Initial
Custody Seals Present?			
(if present) Seals Intact?			
Received on Ice?			
COC/Labels Complete/Accurate?			
Cont. in Good Cond.?			
Correct Containers?			
Correct Sample Volumes?			
Correct Preservation?			
Headspace/Volatiles?			

Courier/Tracking #:

Sample/COC Comments

ALS Field Services: [X] Pickup __Labor __Composite Sampling __Rental Equipment __Other:

Project Comments: 748810
MDL Must Meet NJDEP Soil Cleanup Criteria and/or Groundwater Quality Standards

LOGGED BY(signature): E. Accorsi DATE 10-4-18 TIME 0710
REVIEWED BY(signature): DATE TIME

Relinquished By / Company Name	Date	Time	Received By / Company Name	Date	Time
1 E. ACCORSI / PARSONS	10-4-18	1023	2 ALS	10/4/18	1023
3			4		
5			6		
7			8		
9			10		

Data Deliverables: [ ] Standard [X] CLP-like [ ] USACE [ ]

Special Processing: USACE [ ] Navy [ ]

State Samples Collected In: [ ] NY [X] NJ [ ] PA [ ] NC

Reportable to PADEP? Yes [ ]
PWSID #

Sample Disposal: Lab [ ] Special [ ]

EDDS: Format Type- ERPIMS & HAZSITE

* G=Grab; C=Composite
**Matrix - AI=Air; DW=Drinking Water; GW=Groundwater; OI=Oil; OL=Other Liquid; SL=Sludge; SO=Soil; WP=Wipe; WW=Wastewater

D: Oceanography

F: FWM/USACE

7-11-19

1413 - Drill PAR-51-SB-01-1424 - Finish
1425 - Collect ↓ 5.5-6.0
RID area, Clean Site. Mob to 906A
KM Contact Julian Chambers, Confirm Sampling for 906A
1505 - Start Drilling PAR-68-906A-W3 1515 - Finish
Hand Cleared to 5' bgs
1528 - Collect PAR-68-906A-W3-6.5-7.0
1530 - ↓ ↓ -9.5-10
1535 - Drill PAR-68-906A-W4, 1545 - Finish
Hand Cleared to 5' bgs
1548 - Collect PAR-68-906A-W4-6.5-7.0
1550 ↓ ↓ -9.5-10.0
EODI Clean Area. Offsite @ 1600
1600 - KM + FA inventory ~~COC + Paperwork~~ Samples
Finalize paperwork, and get ice for samples
1630 - All offsite

Attachment D
Compliance Averaging Technical Memo

Technical Memorandum

To: US Army Corps of Engineers, New York District
From: Parsons Fort Monmouth Team
Subject: Compliance Averaging at UST 906A
Date: 30 August 2019
CC: Parsons File

INTRODUCTION

This Technical Memorandum (TM) summarizes the results of a compliance averaging effort requested by the US Army Corps of Engineers (USACE) for the UST 906A site at Fort Monmouth (FTMM) in Oceanport, New Jersey. New Jersey Department of Environmental Protection (NJDEP) technical guidance (2012) provides a 95% UCL approach for use in planning an excavation to remediate soils. At UST 906A, the site has already been investigated and soils containing extractable petroleum hydrocarbon (EPH) and 2-methylnaphthalene have been excavated during previous remedial actions. Compliance averaging is used herein to determine whether the current residential remedial goal for EPH and 2-methylnaphthalene has been achieved at UST 906A.

COMPLIANCE AVERAGING APPROACH

Regulatory Approach: New Jersey Department of Environmental Protection (NJDEP) technical guidance (2012) provides an averaging approach that can be used for all exposure pathways in the remedial investigation or remedial action phases. At UST 906A, the site soils contain EPH in excess of the NJDEP Residential Direct Contact Soil Remediation Standards (RDCSRS) and 2-methylnaphthalene in excess of the NJDEP Impact to Groundwater Screening Level (IGW SL). Compliance averaging is used to support the recommendations of the UST 906A Site Inspection Report.

NJDEP's "Technical Guidance for Attainment of Remediation Standards and Site-Specific Criteria" (2012) notes in Section 9.0 that the requirements for investigating EPH are found in the "Protocol for Addressing Extractable Petroleum Hydrocarbons" (NJDEP, 2010), which provides remedial standards for petroleum hydrocarbons. It is Parsons understanding that NJDEP will accept a compliance averaging approach for EPH if the two following criteria are met: 1) the petroleum hydrocarbons are Category 1 (i.e., No. 2 fuel oil and/or diesel fuel) discharges; and 2) EPH concentrations are less than the 8,000 parts per million (ppm) residual product/free product limit. It is Parsons professional judgment that the site conditions meet the intent of the NJDEP policy criteria for EPH. Compliance averaging was used herein to determine whether the current residential remedial goal for EPH has been achieved at UST 906A.

Approach to Applying Compliance Averaging: There was a sufficient number of samples (i.e., 10 or more) for ProUCL to calculate meaningful and reliable upper confidence limit (UCL) statistics. Therefore, the 95% UCL method for compliance averaging was applied at UST 906A for both EPH and 2-methynaphthalene. The horizontal and vertical definition of each functional area was drawn using the data points where soil samples results exceeded the NJDEP RDCSRS for EPH, NJDEP IGW SL for 2-methylnaphthalene, and the guidelines provided in Appendix A of the NJDEP attainment guidance (2012). There are sample results associated with soil at the UST 906A site that was excavated during previous remedial actions. Only *in situ* soil was evaluated. Therefore, samples associated with excavated

soil were excluded from the compliance averaging calculations. One functional area was defined at UST 906A (0.15 acres) (**Figure 1**). The functional area had two vertical zones, per NJDEP guidance (2012): the surface zone, less than two feet bgs (0 to 2 feet bgs), designated with "A"; and the subsurface zone (greater than 2 feet bgs), designated with "B".

The size of the functional areas is constrained horizontally by the NJDEP attainment guidance. The maximum size of the functional area for residential exposure scenarios is 0.25 acres (for the ingestion-dermal pathway). The NJDEP guidance indicates that this size represents one-half of the residential lot size, and assumes exposure is occurring in either the front yard or the back yard of the residence. The NJDEP guidance indicates that the preferred shape of the functional area is a square, but can vary somewhat based on site configuration and contaminant distribution. Therefore, the guidance allows a rectangular functional area, with a length not more than four times the width. The boundaries of the functional areas include samples used to delineate the boundary of contamination (i.e., where EPH was detected at concentrations less than 5,100 mg/kg).

Therefore, using the naming convention for the functional areas above, the functional areas for UST 906A have names as follows: FA 1A and FA 1B. FA 1A and FA 1B comply with the NJDEP guidance, FA 1 is a rectangle with less than a 4:1 length ratio and is 0.15 acres. At FA 1A, as shown in **Table 1**, the soil within the surface zone in this location has been excavated. Therefore, compliance averaging for this functional area FA 1A was not necessary.

The 95% UCL was calculated for 2-methylnaphthalene and EPH for FA 1B using ProUCL software (version 5.1). The 95% UCL was calculated using in-place sample results (i.e., samples representing soil remaining in place following excavation). The 95% UCL is a conservative estimate because it does not account for placement of clean fill after excavation. All data from single sample locations (i.e., from different depth intervals at the same sample location) within the vertical functional area were included in the UCL calculations. The limit of detection was used for non-detects. The name and definition of each functional area, including acreage and vertical definition, is included on **Table 2**.

RESULTS

The results are summarized in **Table 2**. The supporting documentation for ProUCL is provided in **Attachment A**. The 95% UCL EPH concentration for the functional area (4,689 mg/kg) is less than the RDCSRS of 5,100 mg/kg (**Table 2**). Therefore, the results of the compliance averaging indicate that soil at UST 906A meets the NJDEP RDCSRS for EPH. However, the 95% UCL 2-methynapthalene concentration for FA 1B (12.41 mg/kg) did not meet the IGW SL of 8 mg/kg (**Table 2**). These results are used to support the recommendations of the UST 906A Site Inspection Report

REFERENCES

NJDEP, 2010. Protocol for Addressing Extractable Petroleum Hydrocarbons. Version 5.0, August 9.

NJDEP, 2012. Technical Guidance for the Attainment of Remediation Standards and Site Specific Criteria. September 24.

ATTACHMENTS

Table 1. Soil Data - Comparison to NJDEP Criteria
Table 2. Summary of Compliance Averaging Results
Figure 1. UST 906A Functional Area
Attachment A. ProUCL Output for Functional Area 1B.

TABLE 1
SOIL SAMPLING RESULTS - COMPLIANCE AVERAGING FUNCTIONAL AREAS
UST 906A
FORT MONMOUTH, NEW JERSEY

Functional Area	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Soil Excavated			FA 1B	FA 1B		
Loc ID				PAR-68-SB-01			PAR-68-SB-01	PAR-68-SB-02		
Sample ID				PAR-68-SB-01-3-3.5	PAR-68-SB-101-3-3.5	PAR-68-SB-01-4-4.5	PAR-68-SB-01-9.5-10	PAR-68-SB-02-3-3.5	PAR-68-SB-02-6-6.5	PAR-68-SB-02-9.5-10
Sample Date				4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016
Semivolatile Organic Compounds (mg/kg)										
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)										
EPH (C9-C40)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	NA
Total EPH	SS	SS	SS	**478 J**	**194 J**	**5,310**	**12.4**	**4.3 J**	**287**	**4.3 J**

TABLE 1
SOIL SAMPLING RESULTS - COMPLIANCE AVERAGING FUNCTIONAL AREAS
UST 906A
FORT MONMOUTH, NEW JERSEY

Functional Area	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Soil Excavated		FA 1B	Soil Excavated		FA 1B
Loc ID				PAR-68-SB-03		PAR-68-SB-03	PAR-68-SB-04		PAR-68-SB-04
Sample ID				PAR-68-SB-03-3-3.5	PAR-68-SB-03-8-8.5	PAR-68-SB-03-13.5-14	PAR-68-SB-04-3-3.5	PAR-68-SB-04-3.5-4	PAR-68-SB-04-9.5-10
Sample Date				4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	**35**	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
EPH (C9-C40)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA
Total EPH	SS	SS	SS	**5.7 J**	**2,640**	**3.8 J**	**5,090**	**6,260**	**6.4 J**

TABLE 1
SOIL SAMPLING RESULTS - COMPLIANCE AVERAGING FUNCTIONAL AREAS
UST 906A
FORT MONMOUTH, NEW JERSEY

Functional Area	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	FA 1B			FA 1B			SOIL EXCAVATED
Loc ID				PAR-68-SB-05			PAR-68-SB-06			PAR-68-906A-SB-07
Sample ID				PAR-68-SB-05-3-3.5	PAR-68-SB-05-6.5-7	PAR-68-SB-05-9.5-10	PAR-68-SB-06-3-3.5	PAR-68-SB-06-4.5-5	PAR-68-SB-06-9.5-10	PAR-68-906A-SB-07-1.5-2.0
Sample Date				4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	4/14/2016	11/7/2017
Semivolatile Organic Compounds (mg/kg)										
2-Methylnaphthalene	230	2,400	8	NA	NA	NA	NA	NA	NA	NA
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)										
EPH (C9-C40)	NLE	NLE	NLE	NA	NA	NA	NA	NA	NA	**2.5 J**
Total EPH	SS	SS	SS	**4.8 J**	**852**	**5.1 J**	**3.3 J**	**3.5 J**	< 11.8	NA

TABLE 1
SOIL SAMPLING RESULTS - COMPLIANCE AVERAGING FUNCTIONAL AREAS
UST 906A
FORT MONMOUTH, NEW JERSEY

Functional Area	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	SOIL EXCAVATED	FA 1B	FA 1B	FA 1B	FA 1B	
Loc ID				PAR-68-906A-SB-07	PAR-68-906A-SB-07	PAR-68-906A-B	PAR-68-906A-B2	PAR-68-906A-E	
Sample ID				PAR-68-906A-SB-07-5.5-6.0	PAR-68-906A-SB-07-11.5-12.0	PAR-68-906A-B-8-8.5	PAR-68-906A-B2-10-10.5	PAR-68-906A-E-3.5-4	PAR-68-906A-E-7-7.5
Sample Date				11/7/2017	11/7/2017	9/24/2018	10/3/2018	9/24/2018	9/24/2018
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	**8.7**	NA	< 0.087	**0.052 J**	< 0.077	**3.4**
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
EPH (C9-C40)	NLE	NLE	NLE	**2,870**	**1.5 J**	**931**	**47**	**158**	**2,320**
Total EPH	SS	SS	SS	NA	NA	NA	NA	NA	NA

TABLE 1
SOIL SAMPLING RESULTS - COMPLIANCE AVERAGING FUNCTIONAL AREAS
UST 906A
FORT MONMOUTH, NEW JERSEY

Functional Area	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	FA 1B		FA 1B		FA 1B	
Loc ID				PAR-68-906A-N		PAR-68-906A-N2		PAR-68-906A-S	
Sample ID				PAR-68-906A-N-4-4.5	PAR-68-906A-N-7-7.5	PAR-68-906A-N2-6-6.5	PAR-68-906A-N2-8.5-9	PAR-68-906A-S-3.5-4	PAR-68-906A-S-7-7.5
Sample Date				9/24/2018	9/24/2018	10/3/2018	10/3/2018	9/24/2018	9/24/2018
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	< 0.076	< 0.088	< 0.076	< 0.093	**26.3**	**38.7**
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
EPH (C9-C40)	NLE	NLE	NLE	**703**	**533**	**1,720**	**50.6**	**3,650**	**6,920**
Total EPH	SS	SS	SS	NA	NA	NA	NA	NA	NA

TABLE 1
SOIL SAMPLING RESULTS - COMPLIANCE AVERAGING FUNCTIONAL AREAS
UST 906A
FORT MONMOUTH, NEW JERSEY

Functional Area	NJ Residential Direct Contact SRS	NJ Non-Residential Direct Contact SRS	NJ Impact to GW Soil Screening Level	Soil Excavated	Soil Excavated	FA 1B		FA 1B	
Loc ID				PAR-68-906A-W	PAR-68-906A-W	PAR-68-906A-W2		PAR-68-906A-W3	
Sample ID				PAR-68-906A-W-3.5-4	PAR-68-906A-W-7-7.5	PAR-68-906A-W2-6.5-7	PAR-68-906A-W2-9.5-10	PAR-68-906A-W2-6.5-7	PAR-68-906A-W2-9.5-10
Sample Date				9/24/2018	9/24/2018	10/3/2018	10/3/2018	7/11/2019	7/11/2019
Semivolatile Organic Compounds (mg/kg)									
2-Methylnaphthalene	230	2,400	8	**0.24 J**	**46.8**	**17.9**	< 0.088	**0.077 J**	<0.043
Extractable/Volatile Petroleum Hydrocarbons (mg/kg)									
EPH (C9-C40)	NLE	NLE	NLE	**903**	**8,090**	**7,160**	**121**	**204**	**8.61**
Total EPH	SS	SS	SS	NA	NA	NA	NA	NA	NA

Footnote:

1) All historical data collected prior to 2013 are reported as provided by others.

2) Number of Analyses is the number of detected and non-detected results excluding rejected results. Sample duplicate pairs have not been averaged.

3) NLE = no limit established.

4) ND = not detected in any background sample, no background concentration available.

5) Bold chemical dectection

6) SS = Site Specific action level, see "Specific Chemical Class (or Parameter)" footnote for details.

7) Chemical result qualifiers are assigned by the laboratory and are evaluated and modified (if necessary) during the data validation.

[blank] = detect, i.e. detected chemical result value.

E (or ER) = Estimated result.

B =Compound detected in the sample at a concentration less than or equal to 5 times (10 times for common lab contaminants) the blank concentration.

D = Results from dilution of sample.

R = Rejected, data validation rejected the results.

J-DL = Elevated sample detection limit due to difficult sample matrix.

U = non-detect, i.e. not detected at or above this value.

JN = Tentatively identified compound, estimated concentration.

U-DL = Elevated sample detection limit due to difficult sample matrix.

UJ=The compound was not detected: however, the results is estimated because of discrepancies in meeting certain analyte-specific QC criteria.

U-ND = Analyte not detected in sample, but no detection or reporting limit provided.

J+ = The result is an estimated quantity, but the result may be biased high.

J = estimated detected value due to a concetration below the reporting limit or due to discrepancies in meeting certain analyte-specific quality control.

J- = The result is an estimated quantity, but the result may be biased low.

8) Specific Chemical Classes (or Parameters) comments or notes regarding how data is displayed, compared to Action Levels, or represented in this table.

a) DELETE THIS NOTE BEFORE GOING FINAL: Refer to the NJDEP Protocol for Addressing Extractable Petroleum Hydrocarbons (Version 5.0, August 9, 2010) and the NJDEP Health Based end Ecological Screening Criteria for Petroleum Hydrocarbons (Version 4.0, August 9, 2010) to determine the category of tank being investigated and the appropriate cleanup standards or screening levels for that category of tank.

9) Chemical results greater than or equal to the action level (depending on criteria) are highlighted based on the Criteria that are present.

- Cell Shade values represent a result that is above the NJ Residential Direct Contact Soil Remediation Standard. ####

There are no NJDEP soil standards for individual PCB Aroclors, therefore the total PCB NJDEP standards were used for individual Aroclors.

- Cell Shade values represent a result that is above the NJ Non-Residential Direct Contact Soil Remediation Standard. ###

- Cell Shade values represent a result that is above the NJ Impact to GW Soil Screening Level ###

- Cell Shade values represent a result that is above both the NJ Residential, Non-Residential, AND NJ Impact to GW Soil Screening Level Direct Contact Soil Remediation Standard. ###

- Cell Shade values represent a result that is above both the NJ Residential and Non-Residential Direct Contact Soil Remediation Standard. ###

10) Criteria action level source document and web address.

- The NJ Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards

http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Non-Residential Direct Contact Soil Remediation Standard refers to the NJDEP's Sept 18, 2017 Remediation Standards

http://www.nj.gov/dep/rules/rules/njac7_26d.pdf

- The NJ Impact to GW Soil Screening Level criteria refers to the Development of Site Specific Impact to Ground Water Soil Remediation Standards - Nov 2013 revised

http://www.nj.gov/dep/srp/guidance/rs/partition_equation.pdf

Table 2
Summary of Compliance Averaging Results
UST 906A
Fort Monmouth, New Jersey

FA 1B	Acres	Number of Samples[A]	Functional Area Depth Interval (feet bgs)	NJDEP RDCSRS (mg/kg)	NJDEP IGW (mg/kg)	Maximum Detected Concentration (mg/kg)	Compliance Averaging Result [B] (mg/kg)	UCL Test
2-Methylnapthalene	0.15	12	>2	230	8	38.7	12.41	95% KM (t) UCL
Extractable Petroleum Hydrocarbon	0.15	27	>2	5,100	NLE	7,160	4,689	99% KM (Chebychev) UCL

[A] – Includes only *in situ* soil samples (i.e., excludes excavated soil samples).
Does not include sample locations not analyzed for chemical of concern.

[B] – Upper Confidence Limit (UCL). See Attachment A for ProUCL output.

Value UCL achieves compliance with remedial goal

Abbreviations:
bgs - below ground surface
NLE - no limit established

PAR-68-TMW-2-2

PAR-68-TMW-2-1

PAR-68-906A-N2

PAR-68-906A-B2

M12MW14

PAR-68-906A-W3

PAR-68-906A-W2

UST 906A Functional Area

	PAR-68-906A-W2	
Depth (ft bgs)	3.5-7.0	9.5-10.0
2-Methylnaphthalene	17.9	<0.088
Total EPH	7,160	121

PAR-68-906A-N

PAR-68-906A-MW-01/SB-07

PAR-68-906A-W

Excavated

PAR-68-906A-B

PAR-68-SB-04

PAR-68-SB-03

PAR-68-906A-E

906AW

906AC

68-TMW-01

906AE

PAR-68-SB-01

UST906A

PAR-68-906A-S

PAR-68-SB-05

UST 906B

PAR-68-SB-06

PAR-68-SB-02

	PAR-68-906A-S	
Depth (ft bgs)	3.5-4.0	7.0-7.5
2-Methylnaphthalene	26.3	38.7
Total EPH	3,650	6,920

Former Boiler Building (Demolished 2018)

Electrical Vault

LEGEND:

- 2018 Post-Excavation Sample
- Soil Sample (2017)
- Soil Sample (2016)
- Screening Location (2016)
- Historic Sample Location (2006)
- Temporary Monitoring Well
- Soil Boring
- Former UST Location
- Shallow Monitoring Well
- Excavation Limits
- Approximate FTMM-12 Landfill Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

Analyte	NJDEP RDCSRS	NJDEP IGW Soil Screening Level
2-Methylnaphthalene	230	8
Total EPH	5,100	NLE

N

1 inch = 10 feet

0 5 10 20 Feet

Source: FTMM Supplied CAD, 2013.

PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth New Jersey

UST906A Functional Area

CREATED BY:	REVIEWED BY:
RR	KF
DATE: JUN. 2019	FIGURE NUMBER: FIGURE 6
PROJECT NUMBER: 110015.07000	FILE: FIGURE 5.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2019 Reports\UST906A\FIGURE 5.mxd

Attacment A ProUCL Output - UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.18/19/2019 10:47:37 AM
From File	Pro UCL UST906A input_8.18.2019.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

EPH

General Statistics

Total Number of Observations	27	Number of Distinct Observations	26
Number of Detects	26	Number of Non-Detects	1
Number of Distinct Detects	25	Number of Distinct Non-Detects	1
Minimum Detect	1.5	Minimum Non-Detect	11.8
Maximum Detect	7160	Maximum Non-Detect	11.8
Variance Detects	3916907	Percent Non-Detects	3.704%
Mean Detects	989	SD Detects	1979
Median Detects	85.8	CV Detects	2.001
Skewness Detects	2.521	Kurtosis Detects	5.737
Mean of Logged Detects	4.345	SD of Logged Detects	2.767

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.56	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.92	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.319	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.17	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	952.6	KM Standard Error of Mean	375.5
KM SD	1913	95% KM (BCA) UCL	1621
95% KM (t) UCL	1593	95% KM (Percentile Bootstrap) UCL	1585
95% KM (z) UCL	1570	95% KM Bootstrap t UCL	2372
90% KM Chebyshev UCL	2079	95% KM Chebyshev UCL	2589
97.5% KM Chebyshev UCL	3298	99% KM Chebyshev UCL	4689

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	1.169	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.864	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.189	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.187	Detected Data Not Gamma Distributed at 5% Significance Level

Detected Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.274	k star (bias corrected MLE)	0.268
Theta hat (MLE)	3606	Theta star (bias corrected MLE)	3687
nu hat (MLE)	14.26	nu star (bias corrected)	13.95
Mean (detects)	989		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	952.4
Maximum	7160	Median	50.6
SD	1950	CV	2.047
k hat (MLE)	0.25	k star (bias corrected MLE)	0.247
Theta hat (MLE)	3814	Theta star (bias corrected MLE)	3861
nu hat (MLE)	13.48	nu star (bias corrected)	13.32

Adjusted Level of Significance (β)	0.0401		
Approximate Chi Square Value (13.32, α)	6.108	Adjusted Chi Square Value (13.32, β)	5.797
95% Gamma Approximate UCL (use when n>=50)	2077	95% Gamma Adjusted UCL (use when n<50)	2188

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	952.6	SD (KM)	1913
Variance (KM)	3661331	SE of Mean (KM)	375.5
k hat (KM)	0.248	k star (KM)	0.245
nu hat (KM)	13.38	nu star (KM)	13.23
theta hat (KM)	3844	theta star (KM)	3888
80% gamma percentile (KM)	1373	90% gamma percentile (KM)	2863
95% gamma percentile (KM)	4639	99% gamma percentile (KM)	9379

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (13.23, α)	6.047	Adjusted Chi Square Value (13.23, β)	5.738
95% Gamma Approximate KM-UCL (use when n>=50)	2084	95% Gamma Adjusted KM-UCL (use when n<50)	2196

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.904	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.92	Detected Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.171	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.17	Detected Data Not Lognormal at 5% Significance Level	

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	952.6	Mean in Log Scale	4.253
SD in Original Scale	1950	SD in Log Scale	2.756
95% t UCL (assumes normality of ROS data)	1593	95% Percentile Bootstrap UCL	1632
95% BCA Bootstrap UCL	1816	95% Bootstrap t UCL	2120
95% H-UCL (Log ROS)	55574		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	4.237	KM Geo Mean	69.22
KM SD (logged)	2.72	95% Critical H Value (KM-Log)	5.26
KM Standard Error of Mean (logged)	0.534	95% H-UCL (KM -Log)	46334
KM SD (logged)	2.72	95% Critical H Value (KM-Log)	5.26
KM Standard Error of Mean (logged)	0.534		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	952.6	Mean in Log Scale	4.25
SD in Original Scale	1950	SD in Log Scale	2.758
95% t UCL (Assumes normality)	1593	95% H-Stat UCL	56080

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution at 5% Significance Level

Suggested UCL to Use

99% KM (Chebyshev) UCL 4689

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

2methylnapthalene

General Statistics

Total Number of Observations	14	Number of Distinct Observations	12
Number of Detects	6	Number of Non-Detects	8
Number of Distinct Detects	6	Number of Distinct Non-Detects	6
Minimum Detect	0.052	Minimum Non-Detect	0.043

Maximum Detect	38.7	Maximum Non-Detect	0.093
Variance Detects	251.4	Percent Non-Detects	57.14%
Mean Detects	14.52	SD Detects	15.85
Median Detects	10.65	CV Detects	1.092
Skewness Detects	0.663	Kurtosis Detects	-1.198
Mean of Logged Detects	1.303	SD of Logged Detects	2.55

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.882	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.258	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Normal at 5% Significance Level

Detected Data appear Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	6.25	KM Standard Error of Mean	3.477
KM SD	11.88	95% KM (BCA) UCL	12.54
95% KM (t) UCL	12.41	95% KM (Percentile Bootstrap) UCL	11.96
95% KM (z) UCL	11.97	95% KM Bootstrap t UCL	17.03
90% KM Chebyshev UCL	16.68	95% KM Chebyshev UCL	21.41
97.5% KM Chebyshev UCL	27.97	99% KM Chebyshev UCL	40.85

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.291	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.741	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.237	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.35	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	0.468	k star (bias corrected MLE)	0.345
Theta hat (MLE)	31.06	Theta star (bias corrected MLE)	42.1
nu hat (MLE)	5.611	nu star (bias corrected)	4.139
Mean (detects)	14.52		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	6.229
Maximum	38.7	Median	0.01
SD	12.34	CV	1.981
k hat (MLE)	0.19	k star (bias corrected MLE)	0.197
Theta hat (MLE)	32.77	Theta star (bias corrected MLE)	31.62
nu hat (MLE)	5.322	nu star (bias corrected)	5.515
Adjusted Level of Significance (β)	0.0312		
Approximate Chi Square Value (5.52, α)	1.397	Adjusted Chi Square Value (5.52, β)	1.143
95% Gamma Approximate UCL (use when n>=50)	24.58	95% Gamma Adjusted UCL (use when n<50)	30.05

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	6.25	SD (KM)	11.88
Variance (KM)	141.1	SE of Mean (KM)	3.477
k hat (KM)	0.277	k star (KM)	0.265
nu hat (KM)	7.752	nu star (KM)	7.424
theta hat (KM)	22.57	theta star (KM)	23.57
80% gamma percentile (KM)	9.258	90% gamma percentile (KM)	18.67
95% gamma percentile (KM)	29.72	99% gamma percentile (KM)	58.89

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (7.42, α)	2.406	Adjusted Chi Square Value (7.42, β)	2.045
95% Gamma Approximate KM-UCL (use when n>=50)	19.28	95% Gamma Adjusted KM-UCL (use when n<50)	22.69

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.893	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.788	Detected Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.233	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.325	Detected Data appear Lognormal at 5% Significance Level

Detected Data appear Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	6.233	Mean in Log Scale	-2.107
SD in Original Scale	12.34	SD in Log Scale	3.578
95% t UCL (assumes normality of ROS data)	12.07	95% Percentile Bootstrap UCL	11.57
95% BCA Bootstrap UCL	13.58	95% Bootstrap t UCL	18.65
95% H-UCL (Log ROS)	198119		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	-1.192	KM Geo Mean	0.304
KM SD (logged)	2.645	95% Critical H Value (KM-Log)	5.998
KM Standard Error of Mean (logged)	0.775	95% H-UCL (KM -Log)	816.8
KM SD (logged)	2.645	95% Critical H Value (KM-Log)	5.998
KM Standard Error of Mean (logged)	0.775		

DL/2 Statistics

DL/2 Normal		**DL/2 Log-Transformed**	
Mean in Original Scale	6.245	Mean in Log Scale	-1.305
SD in Original Scale	12.33	SD in Log Scale	2.833
95% t UCL (Assumes normality)	12.08	95% H-Stat UCL	2275

DL/2 is not a recommended method, provided for comparisons and historical reasons

Nonparametric Distribution Free UCL Statistics

Detected Data appear Normal Distributed at 5% Significance Level

Suggested UCL to Use

95% KM (t) UCL	12.41

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

New Jersey Department of Environmental Protection
Site Remediation Program

Report Certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites

These certifications are to be used for reports submitted for RCRA GPRA 2020, CERCLA, and Federal Facility Sites. The Department has developed guidance for report certifications for RCRA GPRA 2020, CERCLA, and Federal Facility Sites under traditional oversight. The "Person Responsible for Conducting the Remediation Information and Certification" is required to be submitted with each report. For those sites that are required or opt to use a Licensed Site Remediation Professional (LSRP) the report must also be certified by the LSRP using the "Licensed Site Remediation Professional Information and Statement". For additional guidance regarding the requirement for LSRPs at RCRA GPRA 2020, CERCLA and Federal Facility Sites see http://www.nj.gov/dep/srp/srra/training/matrix/quick_ref/rcra_cercla_fed_facility_sites.pdf.

Document:

- "UST 906A Site Investigation Report, Fort Monmouth, Monmouth County, Oceanport, New Jersey" (30 September 2019)

PERSON RESPONSIBLE FOR CONDUCTING THE REMEDIATION INFORMATION AND CERTIFICATION

Full Legal Name of the Person Responsible for Conducting the Remediation: William R. Colvin
Representative First Name: William Representative Last Name: Colvin
Title: Fort Monmouth BRAC Environmental Coordinator (BEC)
Phone Number: (732) 383-5104 Ext: Fax:
Mailing Address: P.O. Box 148
City/Town: Oceanport State: NJ Zip Code: 07757
Email Address: william.r.colvin18.civ@mail.mil

This certification shall be signed by the person responsible for conducting the remediation who is submitting this notification in accordance with Administrative Requirements for the Remediation of Contaminated Sites rule at N.J.A.C. 7:26C-1.5(a).

I certify under penalty of law that I have personally examined and am familiar with the information submitted herein, including all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, to the best of my knowledge, I believe that the submitted information is true, accurate and complete. I am aware that there are significant civil penalties for knowingly submitting false, inaccurate or incomplete information and that I am committing a crime of the fourth degree if I make a written false statement which I do not believe to be true. I am also aware that if I knowingly direct or authorize the violation of any statute, I am personally liable for the penalties.

Signature: William R Colvin Date: 30 September 2019

Name/Title: William R. Colvin
Fort Monmouth BRAC Environmental Coordinator

Completed form should be sent to:

Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Bureau of Northern Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, New Jersey 07927-1112