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

12 June 2018

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 884 Site Investigation Report
Request for Unrestricted Use, No Further Action Approval
Fort Monmouth, Monmouth County, Oceanport, New Jersey
PI G000000032

Dear Mr. Joshi:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this Site Investigation (SI) Report to summarize previous investigations and present the results of recent field investigations between November 2017 and January 2018 at former Underground Storage Tank (UST) 884 in Parcel 54.

1.0 SITE DESCRIPTION

Former UST 884 (steel 1,000-gallon capacity) was used to store No. 2 fuel oil. The tank was removed in October 2003 along with an unspecified amount of contaminated soil. NJDEP was contacted in October 2003 and Discharge Investigation and Corrective Action Report (DICAR) No. 03-10-07-1347-49 was assigned. Former UST 884 was located west of Building 1005 in the southern portion of the Main Post (MP) as shown on **Figure 1**.

1.1 Site Land Use

Former UST 884 is located in an unoccupied open field surrounded by roads and paved parking areas (**Figure 2**). Future land use is designated as open space according to the FTMM Reuse and Redevelopment Plan (EDAW, 2008).

1.2 Site Geology and Hydrogeology

The Hornerstown Formation underlies much of the MP including the former UST 884 area and is approximately 25 to 30 feet (ft) 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.

During the November 2017 field investigation at former UST 884, soil borings encountered primarily brown, fine to coarse sand with some clay and gravel. Deeper soils below approximately 10 ft typically consisted of brown fine-grained sand. Soil borings logs are provided in **Attachment B**. The depth to groundwater at former UST 884 ranges from approximately 5 to 6 ft below ground surface (bgs) in the

soil borings, and 5.1 to 5.4 ft bgs in monitoring wells (**Table 1**). Groundwater flows northwest towards Husky Brook (**Figure 3).**

2.0 PREVIOUS INVESTIGATIONS

UST 884 was removed in October 2003. Post-excavation soil samples were collected along the sidewalls and bottom of the excavation and analyzed for total petroleum hydrocarbons (TPH). The initial soil samples contained TPH concentrations above the then-current NJDEP 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). After further soil excavation, the post-excavation soil sample results ranged from non-detect (ND) to 1,758 mg/Kg for TPH. The Army requested NJDEP approval of a No Further Action (NFA) determination in June 2015; however, NJDEP concluded that a groundwater investigation was necessary (**Attachment A, Correspondence 7 and 8**).

In April 2016, the Army performed initial groundwater investigation work under the NJDEP approved work plan (**Attachment A, Correspondences 5 and 6**). Temporary well ARE-800-TMW-05 was installed downgradient from former UST 884, sampled, and subsequently abandoned. As shown on **Table 2**, the sum of volatile organic compound (VOC) tentatively identified compounds (TICs) concentrations and the semi volatile organic compound (SVOC) 2-methylnapthalene exceeded the respective NJDEP Ground Water Quality Criteria (GWQC).

Based on the April 2016 results, NJDEP indicated that additional groundwater remedial efforts were necessary (**Attachment A, Correspondences 3 and 4**). The Army conducted additional investigations in 2017 and 2018 to delineate groundwater contamination as described below.

3.0 2017 AND 2018 SITE INVESTIGATION RESULTS

On 13 October 2017, NJDEP approved the Army's work plan for additional groundwater investigation of the former UST 884 area (**Attachment A, Correspondences 1 and 2**).

In November 2017, six field screening borings (PAR-54-884-SCREEN1 through PAR-54-884-SCREEN6) were logged visually and with a photoionization detector (PID). Petroleum odors and elevated PID readings were observed during the boring operations for PAR-54-884-SCREEN1 through PAR-54-884-SCREEN3 near the groundwater at depths from 6 to 9 ft bgs (**Attachment B**). The field observations were consistent with a northwesterly plume migration direction from the former tank.

Boring logs and field notes are provided in **Attachments B and C**. Analytical results were compared to applicable NJDEP criteria in accordance with guidance for No. 2 fuel oil petroleum hydrocarbon mixtures (NJDEP, 2010 and Table 2-1 of NJDEP, 2012).

3.1 Groundwater Results

In December 2017, four temporary monitor wells (PAR-54-884-TMW-01 through 04) were installed, sampled and abandoned downgradient of former UST 884 (**Figure 2**). Based on the results of the temporary wells, three permanent monitoring wells were installed to collect more representative samples of the actual site conditions (**Table 1**, **Figure 2** and **Attachment B**):

- PAR-54-884-MW-01 was placed in the vicinity of the former UST
- PAR-54-884-MW-02 was placed approximately 60 ft downgradient of the former UST
- PAR-54-884-MW-03 was placed approximately 120 ft downgradient of the former UST

Monitoring well PAR-54-884-MW-01 was sampled at two different depths in accordance with NJDEP well profiling requirements (10.5 and 15.5 ft from top of casing). Potentiometric surface elevation contours are also presented on **Figure 3.**

3.1.1 Exceedances of NJDEP Comparison Criteria

An exceedance of the NJDEP GWQC occurred at only one of the temporary wells sampled during the 2017 sampling event (see **Table 2**). The total SVOC TICs concentration of 630.9 JN µg/L (where "JN" indicates an estimated TIC concentration) in temporary well PAR-54-884-TMW-02 exceeded the GWQC of 500 µg/L.

There were "no" exceedances of the NJDEP GWQC at any of the permanent wells during the 2018 sampling (**Table 3**).

3.1.2 Significance of Groundwater Results

The VOC TICs and 2-methylnapthalene exceedances encountered at the former UST 884 location in 2016 in temporary well ARE-800-TMW-05 (**Table 2**) were not observed in the permanent well analytical results from PAR-54-884-MW-01 (**Table 3**).

Total SVOCs TICs slightly exceeded the NJDEP GWQC at temporary well PAR-54-884-TMW-02 (see **Table 2**). However, these results were not observed in permanent well PAR-54-884-MW-02, which was subsequently installed at the same location as this temporary well. There were no exceedances at either permanent well PAR-54-884-MW-02 or at the downgradient permanent well PAR-54-884-MW-03. In comparison to temporary well results, the results from permanent wells are much more representative of groundwater conditions because permanent wells are properly developed and purged prior to low flow groundwater sampling.

4.0 SUMMARY AND RECOMMENDATIONS

There were no GWQC exceedances in groundwater samples collected from the permanent wells at former UST 884. Based on the information in this report, the Army has determined that further remedial efforts are not warranted and an Unrestricted Use, NFA determination is requested for former UST 884.

Thank you for reviewing this request; we look forward to your approval and/or comments. Our technical Point of Contact is Kent Friesen at (732) 383-7201; kent.friesen@parsons.com. I can be reached at (732) 380-7064; william.r.colvin18.civ@mail.mil.

Sincerely,

William R. Colvin
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 884 Site Location
Figure 2 – Parcel 54 UST 884 Site Layout and Sample Locations
Figure 3 – Parcel 54 UST 884 Groundwater Contours – January 15, 2018

Table 1 – Groundwater Gauging Data and Elevations (January 15, 2018)
Table 2 – Groundwater Sampling Results for Temporary Wells – Comparison to NJDEP Ground Water Quality Criteria
Table 3 – Groundwater Sampling Results for Permanent Wells – Comparison to NJDEP Ground Water Quality Criteria

Attachment A – Regulatory Correspondence
Attachment B – Soil Boring Logs and Well Construction Details
Attachment C – Field Notes

REFERENCES CITED:

EDAW, Inc., 2008. *Fort Monmouth Reuse and Redevelopment Plan, Final Plan.* Prepared for Fort Monmouth Economic Revitalization Planning Authority. August 22.

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 884 Site Investigation Report, Request for Unrestricted Use, No Further Action Approval, Fort Monmouth, Monmouth County, Oceanport, New Jersey" (12 June 2018)

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) 380-7064 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: 12 June 2018

Name/Title: William R. Colvin
BRAC Environmental Coordinator

Completed form should be sent to:

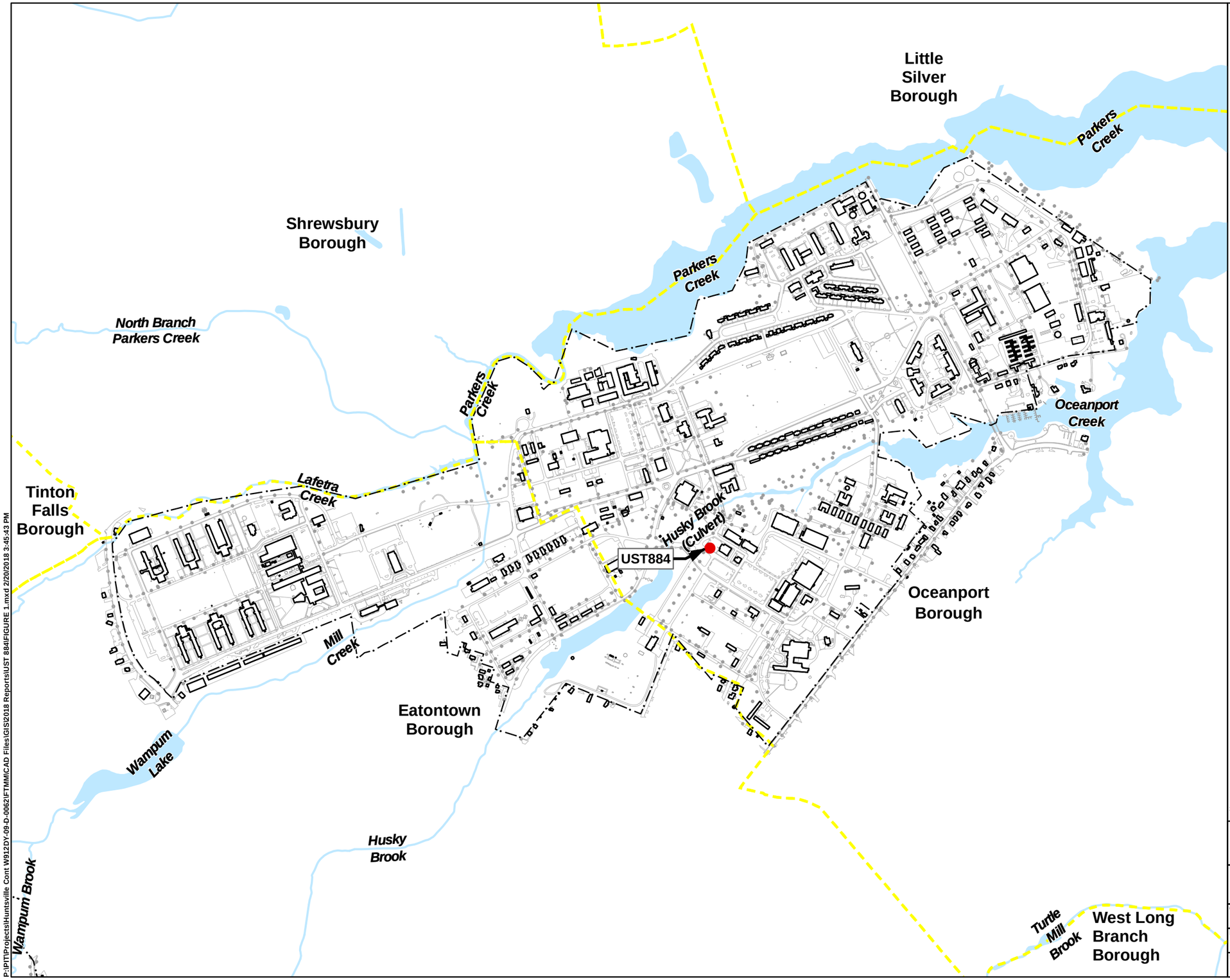
Mr. Ashish Joshi
New Jersey Department of Environmental Protection
Division of Remediation Management & Response
Bureau of Northern Field Operations
7 Ridgedale Avenue (2nd Floor)
Cedar Knolls, New Jersey 07927-1112

FIGURES

Figure 1 – UST 884 Site Location

Figure 2 – Parcel 54 UST 884 Site Layout and Sampling Location

Figure 3 – Parcel 54 UST 884 Groundwater Contours – January 15, 2018



LEGEND:

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

N

1 inch = 1,000 feet

0 500 1,000 2,000 Feet

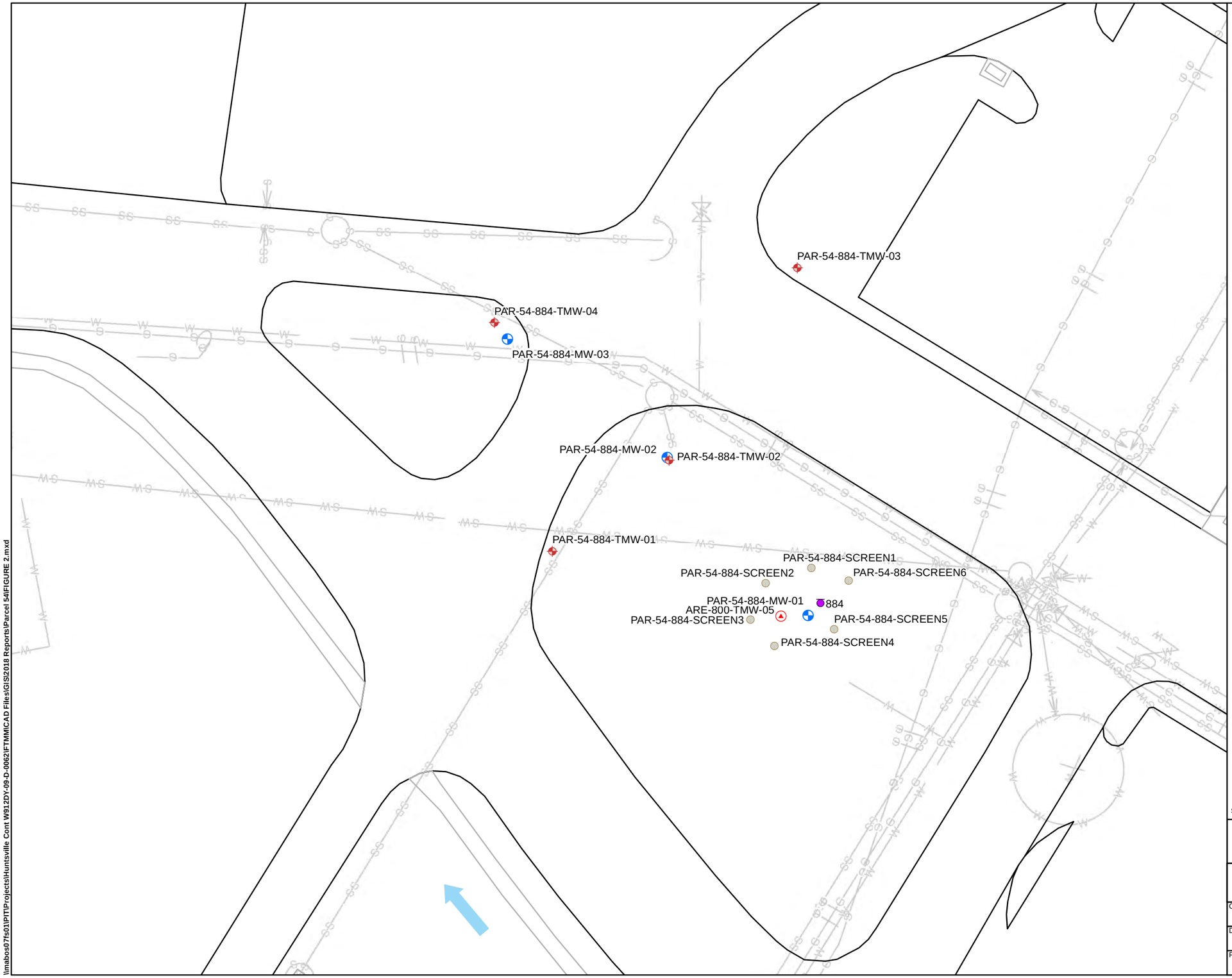
Source: FTMM Supplied CAD, 2013; ESRI Data and Maps, 2011; USGS NHD, 2012.

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

UST884 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 884\FIGURE 1.mxd 2/20/2018 3:45:43 PM



LEGEND:

- TEMPORARY MONITORING WELL
- SOIL BORING
- Groundwater Sample (2016)
- Former UST Location
- Shallow Monitoring Well
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction

N

1 inch = 30 feet

0 15 30 60 Feet

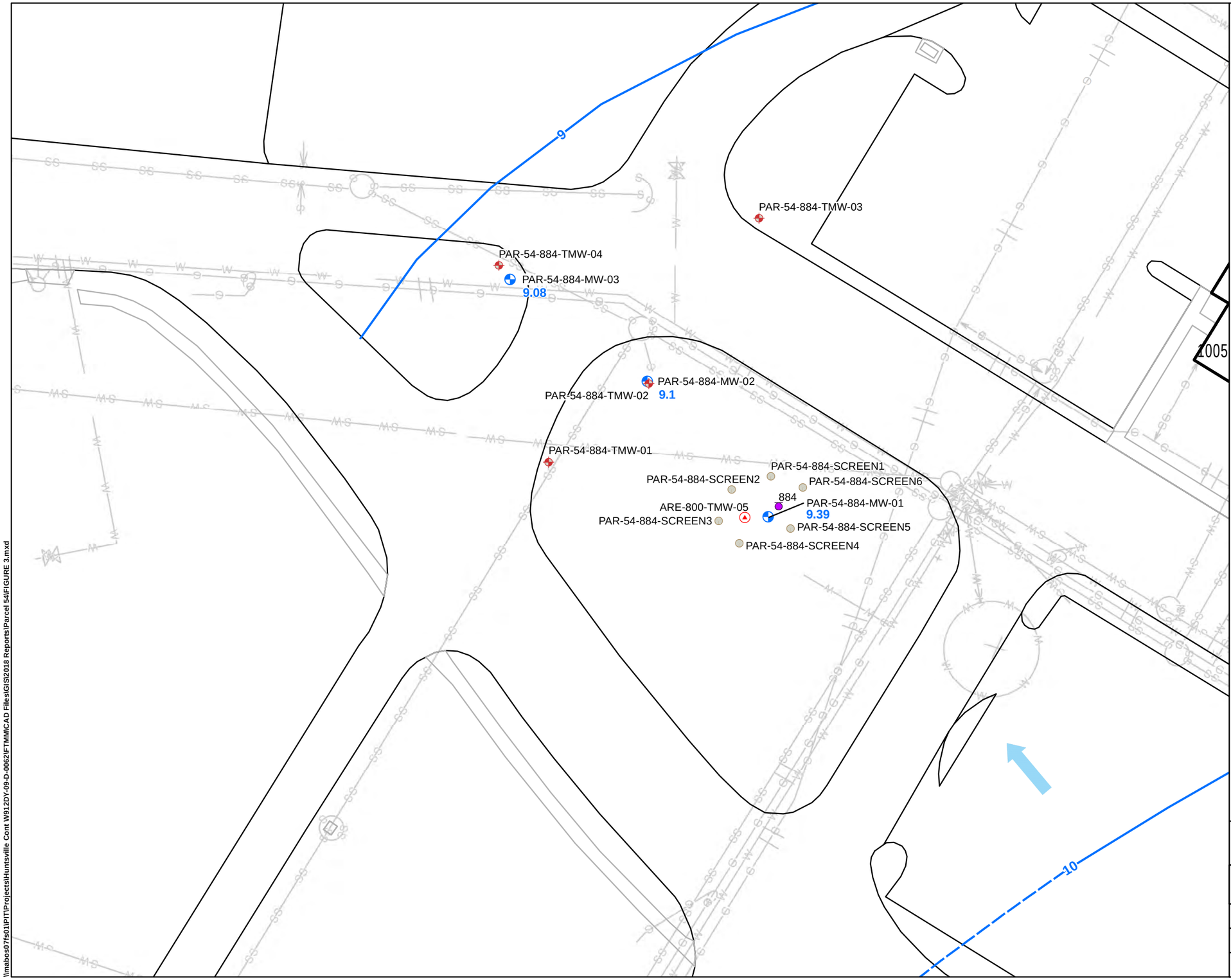
Source: FTMM Supplied CAD, 2013.

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

PARCEL 54 UST 884 SITE LAYOUT AND SAMPLE LOCATION

CREATED BY: RR	REVIEWED BY: KF
DATE: MAY. 2018	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06031	FILE: FIGURE 2.mxd

\\mabos07fs01\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\Parcel 54\FIGURE 2.mxd



LEGEND:

- TEMPORARY MONITORING WELL
- SOIL BORING
- Groundwater Sample (2016)
- Former UST Location
- Shallow Monitoring Well
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Groundwater Flow Direction
- Potentiometric Surface Elevation Contour
- Inferred Potentiometric Surface Elevation Contour
- 9.03 Groundwater Elevation Recorded on January 15, 2018 (NAD88) (ft)

N

1 inch = 35 feet

0 17.5 35 70 Feet

Source: FTMM Supplied CAD, 2013.

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

PARCEL 54 - UST 884 GROUNDWATER CONTOURS - JANUARY 15, 2018

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

\\mabos07fs01\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\2018 Reports\Parcel 54\FIGURE 3.mxd

TABLES

Table 1 - Groundwater Gauging Data and Elevations (January 15, 2018)

Table 2 – Groundwater Sampling Results for Temporary Wells – Comparison to NJDEP Ground Water Quality Criteria

Table 3 – Groundwater Sampling Results for Permanent Wells – Comparison to NJDEP Ground Water Quality Criteria

Table 1
Groundwater Gauging Data and Elevations (January 15, 2018)
Parcel 54 UST 884
Fort Monmouth, New Jersey

Site	Well Permit #	Y Coord. (North)	X Coord. (East)	Installation Date	Depth	Well Riser Pipe Casing Length	Well Screen Length	Screen Interval	Slot Size	Flush Mount or Stick Up Protective Casing	Top of PVC Well Casing Elevation	Protective Casing Elevation	Ground Surface Elevation	Gauged Depth to Water	Gauged Depth to Bottom	Calculated Groundwater Elevation	Sampling Date
					(ft. bgs)		(ft.)	(ft. bgs)	inches	(FM or SU)	(ft.)			(ft. TOC)	(ft. TOC)	(ft.)	
PAR-54-884-MW-01	E201713110	538562.6	619705.4	11/20/2017	18.00	8.00	10.00	8-18	0.01	SU	17.09	17.98	14.52	7.70	17.94	9.39	1/16/2018
PAR-54-884-MW-02	E201713772	538611.3	619661.9	12/14/2017	15.00	5.00	10.00	5-15	0.01	SU	16.37	16.72	14.52	7.27	15.25	9.10	1/16/2018
PAR-54-884-MW-03	E201713773	538647.9	619612.6	12/14/2017	15.00	5.00	10.00	5-15	0.01	SU	15.81	16.03	14.52	6.73	15.39	9.08	1/17/2018

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
- bgs = below ground surface
- TOC = Top of Casing
- Elevation = feet above mean sea level

TABLE 2
GROUNDWATER SAMPLING RESULTS for TEMPORARY WELLS - COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
SITE AREA 800, PARCEL 54 UST 884
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	A800-TMW-05	PAR-54-884-TMW-01	PAR-54-884-TMW-02	PAR-54-884-TMW-03	PAR-54-884-TMW-04
Sample ID		ARE-800-TMW05	PAR-54-884-TMW-01-10	PAR-54-884-TMW-02-10	PAR-54-884-TMW-03-8	PAR-54-884-TMW-04-10
Sample Date		4/19/2016	11/10/2017	11/10/2017	11/10/2017	11/10/2017
Filtered		Total	Total	Total	Total	Total
Volatile Organic Compounds (µg/l)						
1,1,1,2-Tetrachloroethane	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,1,1-Trichloroethane	30	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,1,2,2-Tetrachloroethane	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,1,2-Trichloroethane	3	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,1-Dichloroethane	50	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,1-Dichloroethene	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,1-Dichloropropene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,2,3-Trichlorobenzene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,2,3-Trichloropropane	0.03	< 5	< 2.5	< 12.5 UJ	< 2.5	< 2.5
1,2,4-Trichlorobenzene	9	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,2,4-Trimethylbenzene	100	**55**	**0.34 J**	< 3.8 UJ	< 0.75	< 0.75
1,2-Dibromo-3-chloropropane	0.02	< 5	< 2.5	< 12.5 UJ	< 2.5	< 2.5
1,2-Dibromoethane	0.03	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,2-Dichlorobenzene	600	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,2-Dichloroethane	2	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,2-Dichloropropane	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,3,5-Trimethylbenzene	100	**11**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,3-Dichlorobenzene	600	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,3-Dichloropropane	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
1,4-Dichlorobenzene	75	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
2,2-Dichloropropane	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
2-Chlorotoluene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Acetone	6,000	**7.7 J**	**4.5 J**	< 18.8 UJ	**5.3**	**4.9 J**
Benzene	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Bromobenzene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Bromochloromethane	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Bromodichloromethane	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Bromoform	4	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Carbon tetrachloride	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Chlorobenzene	50	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Chlorodibromomethane	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Chloroethane	5	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Chloroform	70	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Cis-1,2-Dichloroethene	70	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Cis-1,3-Dichloropropene	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Cymene	100	**1.9 J**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Dichlorodifluoromethane	1,000	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Ethyl benzene	700	**3 J**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Hexachlorobutadiene	1	< 5	< 3.8 UJ	< 18.8 UJ	< 3.8 UJ	< 3.8 UJ
Isopropylbenzene	700	**8.3**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Meta/Para Xylene	1,000	< 5	< 1.5	< 7.5 UJ	< 1.5	< 1.5
Methyl bromide	10	< 5	< 0.75	**3 J**	< 0.75	< 0.75
Methyl butyl ketone	300	< 10	< 3.8	< 18.8 UJ	< 3.8	< 3.8
Methyl chloride	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Methyl ethyl ketone	300	**1.1 J**	< 3.8	< 18.8 UJ	< 3.8	< 3.8
Methyl isobutyl ketone	100	< 10	< 3.8	< 18.8 UJ	< 3.8	< 3.8
Methyl Tertbutyl Ether	70	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Methylene chloride	3	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Naphthalene	300	**140**	**1.2**	< 3.8 UJ	< 0.75	< 0.75
n-Butylbenzene	100	**5.7**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Ortho Xylene	1,000	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
p-Chlorotoluene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Propylbenzene	100	**10**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
sec-Butylbenzene	100	**7.4**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Styrene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Tert Butyl Alcohol	100	< 100	< 12.5	< 62.5 UJ	< 12.5	< 12.5
tert-Butylbenzene	100	**1.2 J**	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Tetrachloroethene	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Toluene	600	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Total Xylenes	1,000	NA	< 2.3	< 11.3 UJ	< 2.3	< 2.3
Trans-1,2-Dichloroethene	100	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Trans-1,3-Dichloropropene	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Trichloroethene	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Trichlorofluoromethane	2,000	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
Vinyl chloride	1	< 5	< 0.75	< 3.8 UJ	< 0.75	< 0.75
TIC VOCs (µg/l)						
Total TICs	500	**981 JN**	NA	15.2 R	NA	NA
Semivolatile Organic Compounds (µg/l)						
1,2,4-Trichlorobenzene	9	< 19	< 1.1	< 0.93	< 1	< 0.94
1,2-Dichlorobenzene	600	< 19	< 1.1	< 0.93	< 1	< 0.94
1,2-Diphenylhydrazine	20	< 19	< 1.1	< 0.93	< 1	< 0.94
1,3-Dichlorobenzene	600	< 19	< 1.1	< 0.93	< 1	< 0.94
1,4-Dichlorobenzene	75	< 19	< 1.1	< 0.93	< 1	< 0.94
2,4,5-Trichlorophenol	700	< 19	< 3.4	< 2.8	< 3	< 2.8
2,4,6-Trichlorophenol	20	< 19	< 1.1	< 0.93	< 1	< 0.94
2,4-Dichlorophenol	20	< 19	< 1.1	< 0.93	< 1	< 0.94
2,4-Dimethylphenol	100	< 19	< 5.7	< 4.7	< 5.1	< 4.7
2,4-Dinitrophenol	40	< 94	< 9.1	< 7.5	< 8.1	< 7.5
2,4-Dinitrotoluene	10	< 19	< 1.1	< 0.93	< 1	< 0.94
2,6-Dinitrotoluene	10	< 19	< 1.1	< 0.93	< 1	< 0.94
2-Chloronaphthalene	600	< 19	< 1.1	< 0.93	< 1	< 0.94
2-Chlorophenol	40	< 19	< 2.3	< 1.9	< 2	< 1.9
2-Methylnaphthalene	30	**150**	< 1.1	< 0.93	< 1	< 0.94
2-Methylphenol	100	< 19	< 1.1	< 0.93	< 1	< 0.94
2-Nitroaniline	100	< 94	< 1.1	< 0.93	< 1	< 0.94
2-Nitrophenol	100	< 19	< 2.3	< 1.9	< 2	< 1.9
3,3'-Dichlorobenzidine	30	< 19	< 3.4	< 2.8	< 3	< 2.8
3-Nitroaniline	100	< 94	< 2.3	< 1.9	< 2	< 1.9
4,6-Dinitro-2-methylphenol	1	< 94	< 5.7	< 4.7	< 5.1	< 4.7
4-Bromophenyl phenyl ether	100	< 19	< 1.1	< 0.93	< 1	< 0.94
4-Chloro-3-methylphenol	100	< 19	< 1.1	< 0.93	< 1	< 0.94
4-Chloroaniline	30	< 19	< 1.1	< 0.93	< 1	< 0.94
4-Chlorophenyl phenyl ether	100	< 19	< 1.1	< 0.93	< 1	< 0.94
4-Nitroaniline	5	< 94	< 1.1	< 0.93	< 1	< 0.94
4-Nitrophenol	100	< 94	< 5.7	< 4.7	< 5.1	< 4.7
Acenaphthene	400	**7.2 J**	< 1.1	**13.8**	< 1	< 0.94
Acenaphthylene	100	< 19	< 1.1	< 0.93	< 1	< 0.94
Anthracene	2,000	< 19	< 1.1	< 0.93	< 1	< 0.94
Benzidine	20	< 200 UJ	< 34.1	< 28	< 30.3	< 28.3
Benzo(a)anthracene	0.1	< 19	< 1.1	< 0.93	< 1	< 0.94
Benzo(a)pyrene	0.1	< 19	< 1.1	< 0.93	< 1	< 0.94
Benzo(b)fluoranthene	0.2	< 19	< 1.1	< 0.93	< 1	< 0.94
Benzo(ghi)perylene	100	< 19	< 1.1	< 0.93	< 1	< 0.94
Benzo(k)fluoranthene	0.5	< 19	< 1.1	< 0.93	< 1	< 0.94
Benzyl alcohol	2,000	< 19	< 2.3	< 1.9	< 2	< 1.9
Bis(2-Chloroethoxy)methane	100	< 19	< 1.1	< 0.93	< 1	< 0.94

Loc ID	NJ Ground Water Quality Criteria	A800-TMW-05		PAR-54-884-TMW-01		PAR-54-884-TMW-02		PAR-54-884-TMW-03		PAR-54-884-TMW-04	
Sample ID		ARE-800-TMW05		PAR-54-884-TMW-01-10		PAR-54-884-TMW-02-10		PAR-54-884-TMW-03-8		PAR-54-884-TMW-04-10	
Sample Date		4/19/2016		11/10/2017		11/10/2017		11/10/2017		11/10/2017	
Filtered		Total		Total		Total		Total		Total	
Bis(2-Chloroethyl)ether	7	< 19		< 1.1		< 0.93		< 1		< 0.94	
Bis(2-Chloroisopropyl)ether	300	< 19		< 1.1		< 0.93		< 1		< 0.94	
Bis(2-Ethylhexyl)phthalate	3	< 19		< 1.1		< 0.93		**0.32**	**J**	**0.27**	**J**
Butyl benzyl phthalate	100	< 19		< 1.1		< 0.93		< 1		< 0.94	
Carbazole	100	**3.6**	**J**	< 1.1		< 0.93		< 1		< 0.94	
Chrysene	5	< 19		< 1.1		< 0.93		< 1		< 0.94	
Cresol	NLE	< 20		< 1.1		< 0.93		< 1		< 0.94	
Dibenz(a,h)anthracene	0.3	< 19		< 1.1		< 0.93		< 1		< 0.94	
Dibenzofuran	100	**5**	**J**	< 1.1		< 0.93		< 1		< 0.94	
Diethyl phthalate	6,000	< 19		< 1.1		< 0.93		< 1		< 0.94	
Dimethyl phthalate	100	< 19		< 1.1		< 0.93		< 1		< 0.94	
Di-n-butylphthalate	700	< 19		< 1.1		< 0.93		< 1		< 0.94	
Di-n-octylphthalate	100	< 19	UJ	< 1.1		< 0.93		< 1		< 0.94	
Fluoranthene	300	< 19		< 1.1		< 0.93		< 1		**0.27**	**J**
Fluorene	300	**6.2**	**J**	< 1.1		**23.2**		< 1		< 0.94	
Hexachlorobenzene	0.02	< 19		< 1.1		< 0.93		< 1		< 0.94	
Hexachlorobutadiene	1	< 19		< 1.1		< 0.93		< 1		< 0.94	
Hexachlorocyclopentadiene	40	< 19	UJ	< 2.3		< 1.9		< 2		< 1.9	
Hexachloroethane	7	< 19		< 1.1		< 0.93		< 1		< 0.94	
Indeno(1,2,3-cd)pyrene	0.2	< 19		< 1.1		< 0.93		< 1		< 0.94	
Isophorone	40	< 19		< 1.1		< 0.93		< 1		< 0.94	
Naphthalene	300	**86**		< 1.1		< 0.93		< 1		< 0.94	
Nitrobenzene	6	< 19		< 2.3		< 1.9		< 2		< 1.9	
N-Nitrosodimethylamine	0.8	< 19		< 2.3		< 1.9		< 2		< 1.9	
N-Nitroso-di-n-propylamine	10	< 19		< 1.1		< 0.93		< 1		< 0.94	
N-Nitrosodiphenylamine	10	< 19		< 2.3		< 1.9		< 2		< 1.9	
Pentachlorophenol	0.3	< 94	UJ	< 9.1		< 7.5		< 8.1		< 7.5	
Phenanthrene	100	**8.2**	**J**	< 1.1		**26.8**		< 1		**0.19**	**J**
Phenol	2,000	< 19		< 1.1		< 0.93		< 1		< 0.94	
Pyrene	200	< 19		< 1.1		**7.5**		< 1		**0.36**	**J**
TIC SVOCs (µg/l)											
Total TICs	500	NA		**14.8**	**JN**	**630.9**	**JN**	**76.4**	**JN**	**19.2**	**JN**

Footnotes:

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 detection

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.

E (or ER) = Estimated result.

D = Results from dilution of sample.

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

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.

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
GROUNDWATER SAMPLING RESULTS for PERMANENT WELLS - COMPARISON TO NJDEP GROUND WATER QUALITY CRITERIA
SITE AREA 800, PARCEL 54 UST 884
FORT MONMOUTH, NEW JERSEY

Loc ID	NJ Ground Water Quality Criteria	PAR-54-884-MW-01		PAR-54-884-MW-02	PAR-54-884-MW-03
Sample ID		PAR-54-884-GW-MW-01-10.5	PAR-54-884-GW-MW-01-15.5	PAR-54-884-GW-MW-02-10	PAR-54-884-GW-MW-03-10
Sample Date		1/16/2018	1/16/2018	1/16/2018	1/17/2018
Filtered		Total	Total	Total	Total
Volatile Organic Compounds (µg/l)					
1,1,1,2-Tetrachloroethane	1	< 0.75	< 0.75	< 0.75	< 0.75
1,1,1-Trichloroethane	30	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2,2-Tetrachloroethane	1	< 0.75	< 0.75	< 0.75	< 0.75
1,1,2-Trichloroethane	3	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethane	50	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75
1,1-Dichloropropene	100	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichlorobenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
1,2,3-Trichloropropane	0.03	< 2.5	< 2.5	< 2.5	< 2.5
1,2,4-Trichlorobenzene	9	< 0.75	< 0.75	< 0.75	< 0.75
1,2,4-Trimethylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dibromo-3-chloropropane	0.02	< 2.5	< 2.5	< 2.5	< 2.5
1,2-Dibromoethane	0.03	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichlorobenzene	600	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloroethane	2	< 0.75	< 0.75	< 0.75	< 0.75
1,2-Dichloropropane	1	< 0.75	< 0.75	< 0.75	< 0.75
1,3,5-Trimethylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichlorobenzene	600	< 0.75	< 0.75	< 0.75	< 0.75
1,3-Dichloropropane	100	< 0.75	< 0.75	< 0.75	< 0.75
1,4-Dichlorobenzene	75	< 0.75	< 0.75	< 0.75	< 0.75
2,2-Dichloropropane	100	< 0.75 UJ	< 0.75 UJ	< 0.75 UJ	< 0.75 UJ
2-Chlorotoluene	100	< 0.75	< 0.75	< 0.75	< 0.75
Acetone	6,000	**3.4 J**	< 3.8	**4 J**	< 3.8
Benzene	1	< 0.75	< 0.75	< 0.75	< 0.75
Bromobenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
Bromochloromethane	100	< 0.75	< 0.75	< 0.75	< 0.75
Bromodichloromethane	1	< 0.75	< 0.75	< 0.75	< 0.75
Bromoform	4	< 0.75	< 0.75	< 0.75	< 0.75
Carbon tetrachloride	1	< 0.75	< 0.75	< 0.75	< 0.75
Chlorobenzene	50	< 0.75	< 0.75	< 0.75	< 0.75
Chlorodibromomethane	1	< 0.75	< 0.75	< 0.75	< 0.75
Chloroethane	5	< 0.75	< 0.75	< 0.75	< 0.75
Chloroform	70	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,2-Dichloroethene	70	< 0.75	< 0.75	< 0.75	< 0.75
Cis-1,3-Dichloropropene	1	< 0.75	< 0.75	< 0.75	< 0.75
Cymene	100	< 0.75	< 0.75	< 0.75	< 0.75
Dichlorodifluoromethane	1,000	< 0.75	< 0.75	< 0.75	< 0.75
Ethyl benzene	700	< 0.75	< 0.75	< 0.75	< 0.75
Hexachlorobutadiene	1	< 3.8	< 3.8	< 3.8	< 3.8
Isopropylbenzene	700	< 0.75	< 0.75	< 0.75	< 0.75
Meta/Para Xylene	1,000	< 1.5	< 1.5	< 1.5	< 1.5
Methyl bromide	10	< 0.75	< 0.75	< 0.75	< 0.75
Methyl butyl ketone	300	< 3.8	< 3.8	< 3.8	< 3.8
Methyl chloride	100	< 0.75	< 0.75	< 0.75	< 0.75
Methyl ethyl ketone	300	< 3.8	< 3.8	< 3.8	< 3.8
Methyl isobutyl ketone	100	< 3.8	< 3.8	< 3.8	< 3.8
Methyl Tertbutyl Ether	70	< 0.75	< 0.75	< 0.75	< 0.75
Methylene chloride	3	< 0.75	< 0.75	< 0.75	< 0.75
Naphthalene	300	**3.8 J+**	**2.8**	< 0.75	< 0.75
n-Butylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
Ortho Xylene	1,000	< 0.75	< 0.75	< 0.75	< 0.75
p-Chlorotoluene	100	< 0.75	< 0.75	< 0.75	< 0.75
Propylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
sec-Butylbenzene	100	**0.52 J**	**0.38 J**	**0.41 J**	< 0.75
Styrene	100	< 0.75	< 0.75	< 0.75	< 0.75
Tert Butyl Alcohol	100	< 12.5	< 12.5	< 12.5	< 12.5
tert-Butylbenzene	100	< 0.75	< 0.75	< 0.75	< 0.75
Tetrachloroethene	1	< 0.75	< 0.75	< 0.75	< 0.75
Toluene	600	< 0.75	< 0.75	< 0.75	< 0.75
Total Xylenes	1,000	< 2.3	< 2.3	< 2.3	< 2.3
Trans-1,2-Dichloroethene	100	< 0.75	< 0.75	< 0.75	< 0.75
Trans-1,3-Dichloropropene	1	< 0.75	< 0.75	< 0.75	< 0.75
Trichloroethene	1	< 0.75	< 0.75 `	< 0.75	< 0.75
Trichlorofluoromethane	2,000	< 0.75	< 0.75	< 0.75	< 0.75
Vinyl chloride	1	< 0.75	< 0.75	< 0.75	< 0.75
TIC VOCs (µg/l)					
Total TICs	500	**6.6 JN**	**2.2 JN**	**1.8 JN**	NA
Semivolatile Organic Compounds (µg/l)					
1,2,4-Trichlorobenzene	9	< 0.96	< 0.97	< 0.91	< 0.99
1,2-Dichlorobenzene	600	< 0.96	< 0.97	< 0.91	< 0.99
1,2-Diphenylhydrazine	20	< 0.96	< 0.97	< 0.91	< 0.99
1,3-Dichlorobenzene	600	< 0.96	< 0.97	< 0.91	< 0.99
1,4-Dichlorobenzene	75	< 0.96	< 0.97	< 0.91	< 0.99
2,4,5-Trichlorophenol	700	< 2.9	< 2.9	< 2.7	< 3
2,4,6-Trichlorophenol	20	< 0.96	< 0.97	< 0.91	< 0.99
2,4-Dichlorophenol	20	< 0.96	< 0.97	< 0.91	< 0.99
2,4-Dimethylphenol	100	< 4.8	< 4.9	< 4.6	< 5
2,4-Dinitrophenol	40	< 7.7	< 7.8	< 7.3	< 7.9
2,4-Dinitrotoluene	10	< 0.96	< 0.97	< 0.91	< 0.99
2,6-Dinitrotoluene	10	< 0.96	< 0.97	< 0.91	< 0.99
2-Chloronaphthalene	600	< 0.96	< 0.97	< 0.91	< 0.99
2-Chlorophenol	40	< 1.9	< 1.9	< 1.8	< 2
2-Methylnaphthalene	30	< 0.96	**0.86 J**	< 0.91	< 0.99
2-Methylphenol	100	< 0.96	< 0.97	< 0.91	< 0.99
2-Nitroaniline	100	< 0.96	< 0.97	< 0.91	< 0.99
2-Nitrophenol	100	< 1.9	< 1.9	< 1.8	< 2
3,3'-Dichlorobenzidine	30	< 2.9	< 2.9	< 2.7	< 3
3-Nitroaniline	100	< 1.9	< 1.9	< 1.8	< 2
4,6-Dinitro-2-methylphenol	1	< 4.8	< 4.9	< 4.6	< 5
4-Bromophenyl phenyl ether	100	< 0.96	< 0.97	< 0.91	< 0.99
4-Chloro-3-methylphenol	100	< 0.96	< 0.97	< 0.91	< 0.99
4-Chloroaniline	30	< 0.96	< 0.97	< 0.91	< 0.99
4-Chlorophenyl phenyl ether	100	< 0.96	< 0.97	< 0.91	< 0.99
4-Nitroaniline	5	< 0.96	< 0.97	< 0.91	< 0.99
4-Nitrophenol	100	< 4.8	< 4.9	< 4.6	< 5
Acenaphthene	400	**0.28 J**	< 0.97	< 0.91	< 0.99
Acenaphthylene	100	< 0.96	< 0.97	< 0.91	< 0.99
Anthracene	2,000	< 0.96	< 0.97	< 0.91	< 0.99
Benzidine	20	< 28.8	< 29.1	< 27.4	< 29.7
Benzo(a)anthracene	0.1	< 0.96	< 0.97	< 0.91	< 0.99
Benzo(a)pyrene	0.1	< 0.96	< 0.97	< 0.91	< 0.99
Benzo(b)fluoranthene	0.2	< 0.96	< 0.97	< 0.91	< 0.99
Benzo(ghi)perylene	100	< 0.96	< 0.97	< 0.91	< 0.99

Loc ID	NJ Ground Water Quality Criteria	PAR-54-884-MW-01		PAR-54-884-MW-02		PAR-54-884-MW-03	
Sample ID		PAR-54-884-GW-MW-01-10.5	PAR-54-884-GW-MW-01-15.5	PAR-54-884-GW-MW-02-10		PAR-54-884-GW-MW-03-10	
Sample Date		1/16/2018	1/16/2018	1/16/2018		1/17/2018	
Filtered		Total	Total	Total		Total	
Benzo(k)fluoranthene	0.5	< 0.96	< 0.97	< 0.91		< 0.99	
Benzyl alcohol	2,000	< 1.9	< 1.9	< 1.8		< 2	
Bis(2-Chloroethoxy)methane	100	< 0.96	< 0.97	< 0.91		< 0.99	
Bis(2-Chloroethyl)ether	7	< 0.96	< 0.97	< 0.91		< 0.99	
Bis(2-Chloroisopropyl)ether	300	< 0.96	< 0.97	< 0.91		< 0.99	
Bis(2-Ethylhexyl)phthalate	3	< 0.96	< 0.97	< 0.91		< 0.99	
Butyl benzyl phthalate	100	< 0.96	**0.18** J	< 0.91		< 0.99	
Carbazole	100	< 0.96	< 0.97	< 0.91		< 0.99	
Chrysene	5	< 0.96	< 0.97	< 0.91		< 0.99	
Cresol	NLE	**0.4** J	**0.69** J	< 0.91		< 0.99	
Dibenz(a,h)anthracene	0.3	< 0.96	< 0.97	< 0.91		< 0.99	
Dibenzofuran	100	< 0.96	< 0.97	**0.43** J		< 0.99	
Diethyl phthalate	6,000	< 0.96	< 0.97	< 0.91		< 0.99	
Dimethyl phthalate	100	< 0.96	< 0.97	< 0.91		< 0.99	
Di-n-butylphthalate	700	< 0.96	< 0.97	< 0.91		< 0.99	
Di-n-octylphthalate	100	< 0.96	< 0.97	< 0.91		< 0.99	
Fluoranthene	300	< 0.96	< 0.97	< 0.91		< 0.99	
Fluorene	300	**0.28** J	**0.25** J	**0.76** J		< 0.99	
Hexachlorobenzene	0.02	< 0.96	< 0.97	< 0.91		< 0.99	
Hexachlorobutadiene	1	< 0.96	< 0.97	< 0.91		< 0.99	
Hexachlorocyclopentadiene	40	< 1.9	< 1.9	< 1.8		< 2	
Hexachloroethane	7	< 0.96	< 0.97	< 0.91		< 0.99	
Indeno(1,2,3-cd)pyrene	0.2	< 0.96	< 0.97	< 0.91		< 0.99	
Isophorone	40	< 0.96	**0.55** J	< 0.91		< 0.99	
Naphthalene	300	**0.98** J	**1.5** J	< 0.91		< 0.99	
Nitrobenzene	6	< 1.9	< 1.9	< 1.8		< 2	
N-Nitrosodimethylamine	0.8	< 1.9	< 1.9	< 1.8		< 2	
N-Nitroso-di-n-propylamine	10	< 0.96	< 0.97	< 0.91		< 0.99	
N-Nitrosodiphenylamine	10	< 1.9	< 1.9	< 1.8		< 2	
Pentachlorophenol	0.3	< 7.7	< 7.8	< 7.3		< 7.9	
Phenanthrene	100	< 0.96	< 0.97	< 0.91		**0.14** J	
Phenol	2,000	< 0.96	< 0.97	< 0.91		< 0.99	
Pyrene	200	< 0.96	< 0.97	< 0.91		< 0.99	
TIC SVOCs (µg/l)							
Total TICs	500	**30.1** JN	**24.8** JN	**5.8** J		**NA**	

Footnotes:

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 detection

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.

E (or ER) = Estimated result.

D = Results from dilution of sample.

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

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.

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

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). 2017. Letter to the Army, RE: *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum, Fort Monmouth, Oceanport, Monmouth County.* March 16.
4. Department of the Army. 2017. *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. January 23.
5. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *800 Area Work Plan Addendum and Response to NJDEP's November 10, 2015 Comments on the June 2015 No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 & 56, Fort Monmouth & 800 Area Work Plan Addendum for Former UST Sites (March 2016), Fort Monmouth, Oceanport, Monmouth County.* April 4.
6. Department of the Army. 2016. Letter to the Army, *800 Area Work Plan Addendum and Response to NJDEP's November 10, 2015 Comments on the June 2015 No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 & 56, Fort Monmouth, Oceanport, Monmouth County.* March 3.
7. 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.
8. Department of the Army. 2015. *No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. June 12.

State of New Jersey

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Northern Field Operations
7 Ridgedale Avenue
Cedar Knolls, NJ 07927
Phone #: 973-631-6401
Fax #: 973-656-4440

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
U.S. ARMY FORT MONMOUTH
P.O. 148
OCEANPORT, NEW JERSEY 07757

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

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:

1. Department of the Army. 2015. *Underground Storage Tanks Within Parcel 68, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 14.
2. Department of the Army. 2015. *Underground Storage Tanks Within ECP Parcel 79, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 22.
3. Department of the Army. 2015. *No Further Action Request, Site Investigation Report Addendum for the 800 Area Including, ECP Parcels 55 and 56, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. June 12.
4. Department of the Army. 2016. *Parcel 68 Work Plan Addendum for a Former UST Site, Fort Monmouth, Oceanport, Monmouth County, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. March 2.
5. Department of the Army. 2016. *No Further Action Request, Site Investigation Report Addendum for the Howard Commons Underground Storage Tanks, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. April 26.
6. Department of the Army. 2016. *No Further Action Request, Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. October 28.
7. Department of the Army. 2016. *Clarification of Underground Storage Tanks at Howard Commons, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. December 6.
8. Department of the Army. 2016. *No Further Action Request, Site Investigation Report Addendum, ECP Parcel 72 Underground Storage Tanks, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. December 13.
9. Department of the Army. 2017. *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum, Fort Monmouth, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. January 23.
10. Department of the Army. 2017. *Request for No Further Action at Multiple Parcel 79 Storage Tank Site Investigation Report Addendum, Fort Monmouth, Oceanport, New Jersey*. Prepared by the Office of Assistant Chief of Staff for Installation Management, U.S. Army Fort Monmouth. February 8.

11. New Jersey Department of Environmental Protection (NJDEP). 2007. Letter to the Army, RE: *Underground Storage Tank Closure & Remedial Investigation Reports, 800 Area UST No. 9, 800 Area UST No. 12, Fort Monmouth, NJ.* December 31.

12. New Jersey Department of Environmental Protection (NJDEP). 2010. *Protocol for Addressing Extractable Petroleum Hydrocarbons.* Site Remediation Program. Version 5.0. August 9.

13. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Underground Storage Tanks Within ECP Parcel 79 dated April 2015, Fort Monmouth, Oceanport, Monmouth County.* August 25.

14. New Jersey Department of Environmental Protection (NJDEP). 2015. Letter to the Army, RE: *Underground Storage Tanks Within ECP Parcel 68, 74, and 77 dated April 2015, Fort Monmouth, Oceanport, Monmouth County.* September 24.

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.

16. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *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 & Parcel 68 Work Plan Addendum for a Former UST Site (March 2016).* March 29.

17. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *No Further Action Request Site Investigation Report Addendum for the Howard Commons Underground Storage Tanks dated April 2016, Fort Monmouth, Oceanport, Monmouth County.* November 28.

18. New Jersey Department of Environmental Protection (NJDEP). 2016. Letter to the Army, RE: *Clarification of Underground Storage Tanks at Howard Commons dated December 6, 2016, Fort Monmouth, Oceanport, Monmouth County.* December 20.

19. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *No Further Action Request Site Investigation Report Addendum ECP Parcel 72 Underground Storage Tanks dated December 13, 2016, Fort Monmouth, Oceanport, Monmouth County.* February 7.

20. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum, Fort Monmouth, Oceanport, Monmouth County.* March 16.

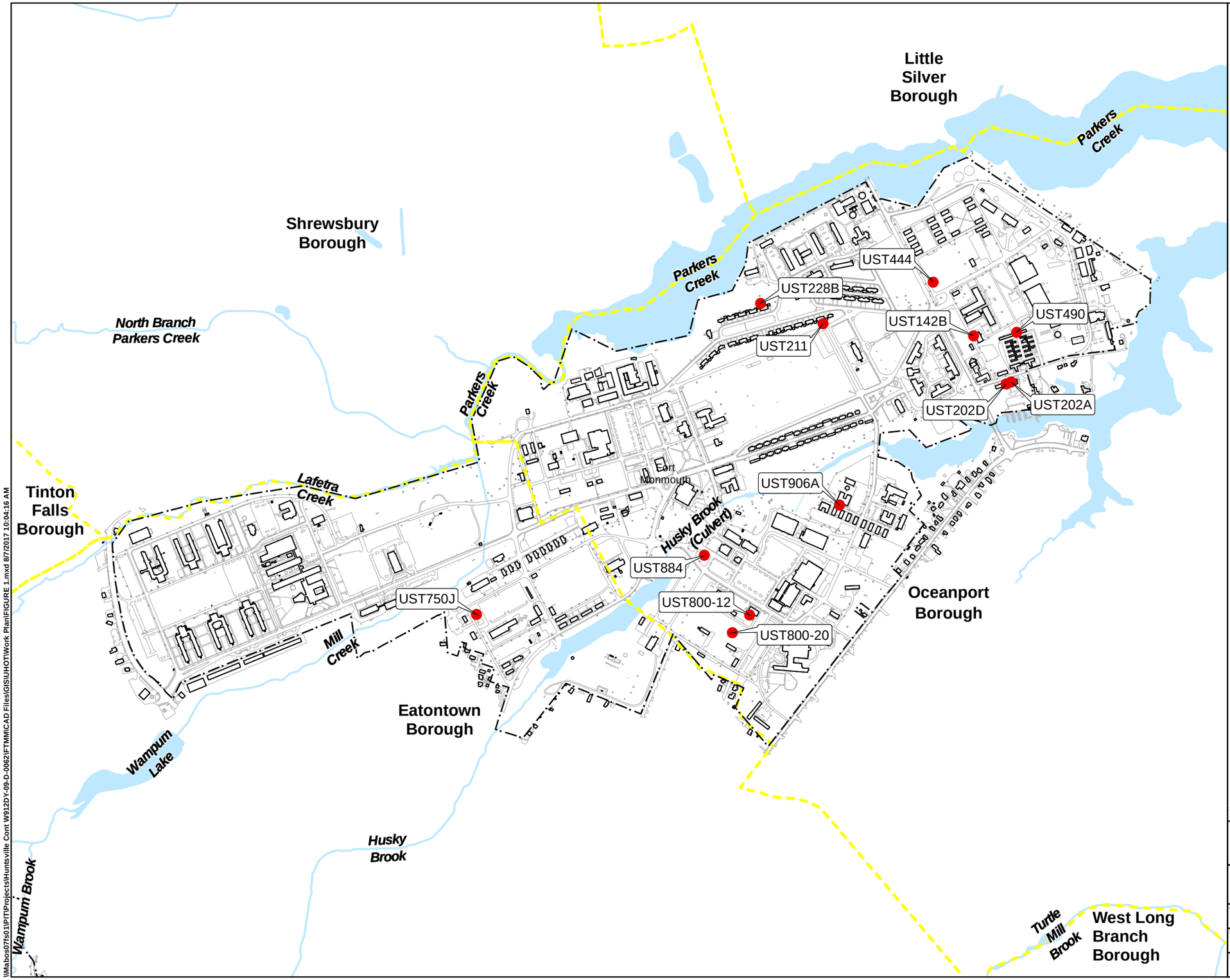
21. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *No Further Action Request Site Investigation Report Addendum for the Building 750 Motor Pool Area Including Underground Storage Tanks, Fort Monmouth, Oceanport, Monmouth County.* April 4.

22. New Jersey Department of Environmental Protection (NJDEP). 2017. Letter to the Army, RE: *Request for No Further Action at Multiple Parcel 79 Storage Tanks Site Investigation Report Addendum, Fort Monmouth, Oceanport, Monmouth County.* May 8.

23. Parsons. 2013. *Final Sampling and Analysis Plan, Remedial Investigation/Feasibility Study/Decision Documents, Fort Monmouth, Oceanport, Monmouth County, New Jersey.* Prepared for the U.S. Army Engineering and Support Center, Huntsville, AL. Revision 0. March.

24. Parsons. 2015. *Final Environmental Condition of Property Supplemental Phase II Site Investigation Work Plan for Parcels 28, 38, 39, 49, 57, 61 and 69.* Prepared for the U.S. Army Engineering and Support Center, Huntsville, AL. Revision 1. August.

25. Parsons. 2016. *Final Accident Prevention Plan, Remedial Investigation/Feasibility Study/Decision Documents, Fort Monmouth, Oceanport, Monmouth County, New Jersey.* Prepared for the U.S. Army Engineering and Support Center, Huntsville, AL. Revision 1. November.



LEGEND:

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

NOTE:

UST3035 is located within the Charles Woods area, see text.

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**

UHOT LOCATIONS

CREATED BY: RR	REVIEWED BY: KF
DATE: AUG. 2017	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06031	FILE: FIGURE 1.mxd

\\Mabos07fs01\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\UHOT\Work Plan\FIGURE 1.mxd 8/7/2017 10:04:16 AM

TABLE 1
SAMPLING SUMMARY FOR SUPPLEMENTAL UHOT WORK PLAN
FORT MONMOUTH, NEW JERSEY

Parcel	Location and General Rationale (see text)	Field Installation				Field Meter Readings [a/]	VOCs + TICs by Method 8260C [b/]	SVOCs + TICs by Method 8270D [c/]	Non-Fractionated EPH [d/ e/]
		SCRN	TMW	MW	SB				
Groundwater									
79	UST 142B (Figure 2) - 1 permanent well for low turbidity groundwater sample for release detection	--	--	1	--	1	1	1	0
81	USTs 202A and 202D (Figure 3) - Multiple groundwater samples for release detection (UST 202A) and delineation (UST 202D)	1	3	1	--	5	5	5	0
72	UST 211 (Figure 4) - multiple field screening borings and groundwater samples for delineation	7	4	3	--	14	7	7	0
79	UST 444 (Figure 6) - multiple field screening borings and groundwater samples for delineation	6	3	3	--	12	6	6	0
79	UST 490 (Figure 7) - multiple field screening borings and groundwater samples for delineation	2	4	2	--	7	7	7	0
51	UST 750J (Figure 8) - One groundwater sample for release detection	--	1	--	--	1	1	1	0
55	UST 800-12 (Figure 9) - multiple field screening borings and groundwater samples for delineation	6	4	3	--	13	7	7	0
56	UST 800-20 (Figure 10) - multiple field screening borings and groundwater samples for delineation	6	4	3	--	13	7	7	0
54	UST 884 (Figure 11) - multiple field screening borings and groundwater samples for delineation	6	4	3	--	13	7	7	0
68	UST 906A (Figure 13) - multiple groundwater samples for delineation	0	3	3	--	6	6	6	0
Soil									
72	UST 228B (Figure 5) - 1 soil sample for 2-methylnaphthalene analysis by SPLP [f/]	--	--	--	1	1	0	1 (SPLP)	0
68	UST 906A (Figure 12) - 1 additional soil boring for delineation	--	--	--	1	1	0	1	3
1	UST 3035 (Figure 14) - 3 soil borings for release detection	--	--	--	3	3	0	2	6
QA/QC samples (see SAP for additional details) [g/]									
Field Duplicates (5% Sampling Frequency per media)		NA [h/]	NA	NA	NA	NA	3	4	1
Matrix Spike (5% Sampling Frequency per media)		NA	NA	NA	NA	NA	3	4	1
Matrix Spike Duplicate (5% Sampling Frequency per m		NA	NA	NA	NA	NA	3	4	1
Trip Blank (1 per cooler of VOCs per media)		NA	NA	NA	NA	NA	3	0	0
QA Split (5% per media)		NA	NA	NA	NA	NA	3	4	1
Equipment Blank (5% Sampling Frequency per media)		NA	NA	NA	NA	NA	3	4	1
	TOTAL	**34**	**30**	**22**	**10**	**NA**	**72**	**77**	**14**

Notes:

[a/] SCRN = Geoprobe boring for field screening; TMW = temporary monitor well; MW = Permanent monitor well; SB = soil boring for soil analyses

[a/] Field meter readings include, in soil samples: photoionization detector (PID) readings along entire soil column; and in groundwater: PID headspac 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 m

[f/] SPLP = Synthetic Precipitation Leachate Procedure method SW1312

[g/] QA/QC = quality assurance/quality control; SAP = Sampling and Analysis Plan.

[h/] NA = not applicable.

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 #: 609-292-2117

BOB MARTIN
Commissioner

March 16, 2017

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

Re: *Request for No Further Action at Multiple 800 Area Underground Storage Tanks, Site Investigation Report Addendum*
Fort Monmouth
Oceanport, Monmouth County
PI G000000032

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (Department) has completed review of the referenced report, received January 25, 2017, prepared by the Department of the Army's Office of Assistant Chief of Staff for Installation Management in response to the NJDEP letter correspondence of November 10, 2015 and to present the results of additional field sampling at nine former underground storage tanks (USTs). A ground water investigation was performed at each of the nine former UST locations, as required. The report is approved; comments are as follows:

USTs Requiring No Additional Action

Following review of the information provided in the referenced submittal, it is agreed no further action is necessary for the following #2 fuel USTs:

UST 800-1
UST 800-9
UST 800-21
UST 813
UST 814
UST 888

USTs Requiring Additional Remedial Efforts

The ground water analytical results from temporary well points at each of the following former UST locations exceed applicable Ground Water Quality Standards, N.J.A.C. 7:9-6. As indicated in the submittal, additional remediation is necessary at each of the following USTs:

UST 800-12
UST 800-20
UST 884

This office looks forward to receipt of your anticipated course of action to address the elevated levels of ground water.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

C: James Moore, USACE
Joseph Pearson, Calibre
Joseph Fallon, FMERA
Rick Harrison, FMERA

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

23 January 2017

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

Re: Request for No Further Action at Multiple 800 Area Underground Storage Tanks
Site Investigation Report Addendum
Fort Monmouth, New Jersey

Attachments:

A. Figure 1 Study Area Location (800 Area) and Figure 2 – Study Area 800 Sample Locations (showing exceedances)
B. Tables: Validated Laboratory Data Results for Groundwater, Area 800
C. Field Notes
D. Boring Logs
E. Analytical Data

Previous Correspondence (not attached):

1. Army letter to NJDEP dated 12 June 2015, re: *No Further Action Request Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey.*
2. NJDEP letter to the Army dated 10 November 2015, re: *Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 & 56 Fort Monmouth, Oceanport, Monmouth County.*
3. Army letter to NJDEP dated 3 March 2016, Subject: *800 Area Work Plan Addendum and Response to NJDEP's November 10, 2015 Comments on the June 2015 No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey.*
4. NJDEP letter to Army dated 4 April 2016, re: *800 Area Work Plan Addendum and Response to NJDEP's November 10, 2015 Comments on the June 2015 No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey.*

Dear Ms. Range:

The U.S. Army Fort Monmouth (FTMM) Team has prepared this addendum to present the results of additional field sampling at nine former Underground Storage Tanks (USTs) 800-1, 800-9, 800-12, 800-20, 800-21, 813, 814, 884, and 888). These USTs were unregulated heating oil tanks (UHOTs) and were located within Environmental Condition of Property (ECP) Parcels 54, 55, 56 and 57 (designated as the 800 Area). In the previous 1993 through 2011 field investigations, soil contamination was found to extend within the proximity of the groundwater table. The Army's 03 March 2016 Work Plan (Correspondence 3) that described the groundwater investigation to be performed in April 2016 was determined to be acceptable by the NJDEP (Correspondence 4). The Work Plan did not include additional soil sampling at the nine UST locations.

One temporary groundwater monitoring well was installed with a Geoprobe® rig immediately downgradient of the limits of excavation at each of the nine UST locations. Temporary monitoring wells ARE-800-TMW05 and ARE-800-TMW06 were sampled on 18 and 19 April 2016. Temporary monitoring wells ARE-800-TMW01, ARE-800-TMW02, ARE-800-TMW03, ARE-800-TMW04, ARE-800-TMW07, ARE-800-TMW08, and ARE-800-TMW09 were sampled on 1, 2, and 4 August 2016. A groundwater sample was collected from each temporary well and analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) plus tentatively identified compounds (TICs), in accordance with the requirements for No. 2 fuel oil in Table 2-1 of the New Jersey Administrative Code (NJAC) 7:26E Technical Requirements for Site Remediation.

The locations of the field samples are presented in **Attachment A**. The analytical results and exceedances of applicable NJDEP criteria are provided in **Attachment B**. Field notes are provided in **Attachment C**, and boring logs are provided in **Attachment D**. The samples were analyzed by ALS Environmental; analytical data packages are provided in **Attachment E**.

The results of the groundwater sampling and analyses are provided below for each of the nine UST sites.

UST 800-1

UST 800-1 was a residential fuel oil tank that was removed in 2003 as described in Attachment F of Correspondence 1. Temporary well ARE-800-TMW-04 was installed, sampled, and subsequently abandoned (**Attachment A**). Groundwater was encountered at approximately 4 feet below ground surface (bgs); please see **Attachment D.** As shown on Table 2 of **Attachment B**, there were no exceedances of the NJDEP Ground Water Quality Criteria (GWQC).

UST 800-9

UST 800-9 was a residential fuel oil tank that was removed in 2004 as described in Attachment H of Correspondence 1. Temporary well ARE-800-TMW-06 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was

encountered at approximately 9 feet below ground surface (bgs). As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 800-12

UST 800-12 was a residential fuel oil tank that was removed in 2004 as described in Attachment J of Correspondence 1. Temporary well ARE-800-TMW-07 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was encountered at approximately 8.5 feet bgs. As shown on Table 2 of **Attachment B**, two SVOCs (2-methylnaphthalene and benzo[a]anthracene) exceeded the GWQC. SVOC TICs also exceeded the GWQC.

UST 800-20

UST 800-20 was a residential fuel oil tank that was removed in 2003 as described in Attachment O of Correspondence 1. Temporary well ARE-800-TMW-08 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D,** groundwater was encountered at approximately 7 feet bgs. As shown on Table 2 of Attachment B, one VOC (1,1,2-trichloroethane) and six SVOCs (2-methylnaphthalene, benzo[a]anthracene, benzo[a]pyrene, benzo[ghi]perylene, benzo[k]fluoranthene, and indeno[1,2,3-cd]pyrene) exceeded the GWQC. SVOC TICs also exceeded the GWQC.

UST 800-21

UST 800-21 was a residential fuel oil tank that was removed in 2003 as described in Attachment P of Correspondence 1. Temporary well ARE-800-TMW-09 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was encountered at approximately 8.5 feet bgs. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 813

UST 813 was a residential fuel oil tank that was removed in 2010 as described in Attachment R of Correspondence 1. Temporary well ARE-800-TMW-02 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was encountered at approximately 5.5 feet bgs. As shown on Table 2 of **Attachment B**, the SVOC benzo(a)anthracene (0.2 µg/l) and benzo(a)pyrene (0.11 µg/l) slightly exceeded the GWQC (0.1 µg/l). However, this detection was estimated ("J" flagged) due to the low concentrations encountered. These analytes are polycyclic aromatic hydrocarbons (PAHs) that have been encountered at other FTMM locations within surficial soils and fill. These low level groundwater exceedances are considered to have resulted from entrainment of soil from other anthropogenic, non-UST related sources (such as surficial soils or fill) resulting in sample turbidity which is common with temporary well groundwater samples. There were no exceedances of the GWQC indicative of fuel oil.

UST 814

UST 814 was a residential fuel oil tank that was removed in 1990 as described in Attachment S of Correspondence 1. Temporary well ARE-800-TMW-01 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was encountered at approximately 5 feet bgs. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

UST 884

UST 884 was a residential fuel oil tank that was removed in 2003 as described in Attachment U of Correspondence 1. Temporary well ARE-800-TMW-05 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was encountered at approximately 6 feet bgs. As shown on Table 2 of **Attachment B**, the sum of VOC TICs concentrations (981 µg/l) and the SVOC 2-methynapthalene (150 µg/l) exceeded the GWQC (500 and 30 µg/l, respectively). The SVOC naphthalene was also detected (86 µg/l), but it did not exceed the GWQC (300 µg/l).

UST 888

UST 888 was a residential fuel oil tank that was removed in 2011 as described in Attachment V of Correspondence 1. Temporary well ARE-800-TMW-03 was installed, sampled, and subsequently abandoned (**Attachment A**). As indicated in **Attachment D**, groundwater was encountered at approximately 5 feet bgs. As shown on Table 2 of **Attachment B**, there were no exceedances of the GWQC.

In summary, we request No Further Action determinations for USTs 800-1, 800-9, 800-21, 813, 814, and 888. Additional work would be needed for NFA determinations to be made for USTs 800-12, 800-20, and 884. Our technical Point of Contact (POC) is Kent Friesen; (732) 383-7201 or 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: 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)

Attachment A
Figure 1 Study Area Location (800 Area) and Figure 2 Study Area 800 Sample Locations (showing exceedances)

Little Silver Borough

Shrewsbury Borough

Tinton Falls Borough

Eatontown Borough

Oceanport Borough

West Long Branch Borough

Parkers Creek

North Branch Parkers Creek

Lafetra Creek

Mill Creek

Oceanport Creek

Wampum Lake

Wampum Brook

Husky Brook

Turtle Mill Brook

Study Area

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.

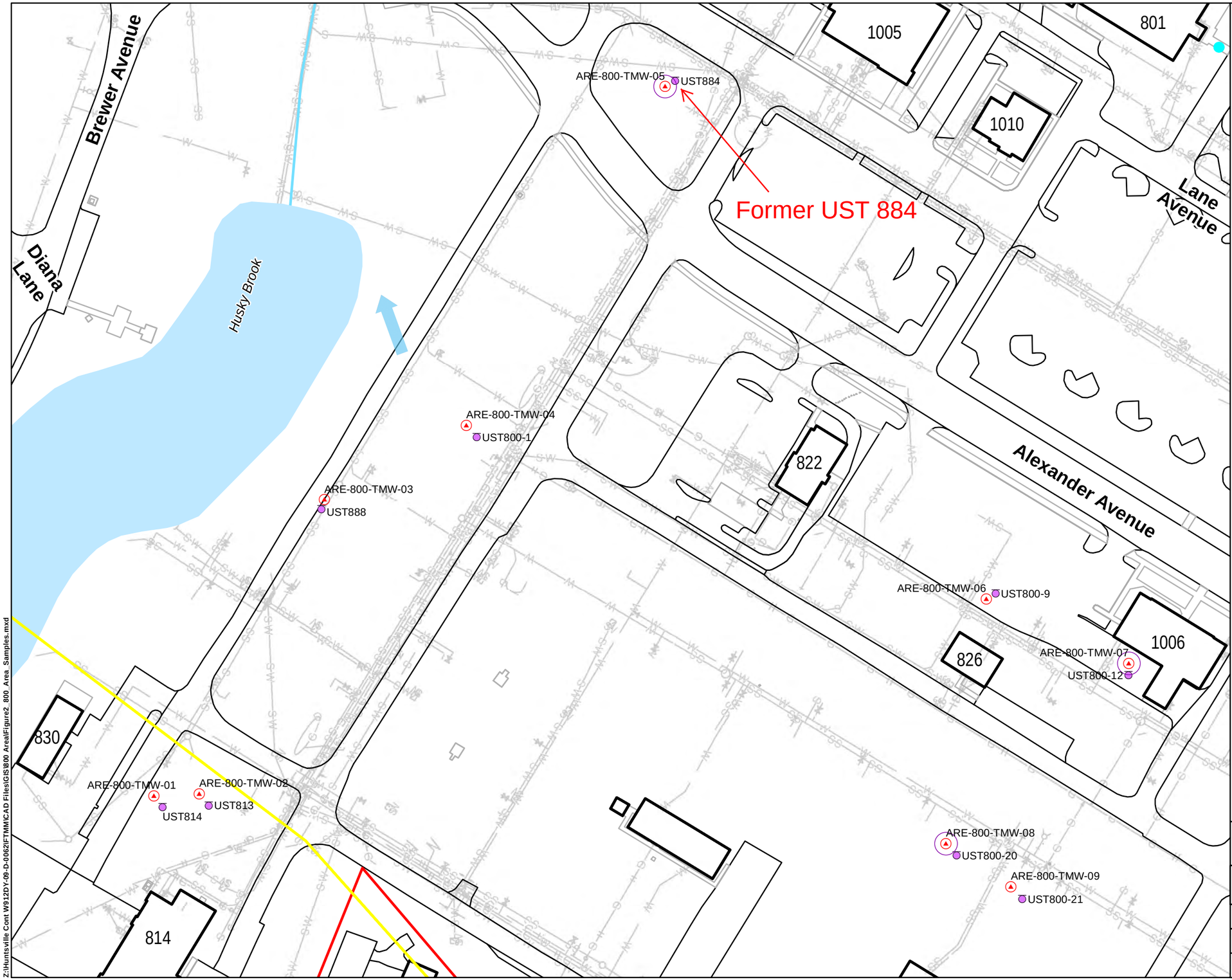
PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth
New Jersey

STUDY AREA LOCATION (800 AREA)

CREATED BY:	REVIEWED BY:
RR	KF
DATE:	FIGURE NUMBER:
FEB. 2016	FIGURE 1
PROJECT NUMBER:	FILE:
748810-01000	Figure1_800_Area.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\800 Area\Figure1_800_Area.mxd 2/11/2016 1:10:09 PM



LEGEND:

- Groundwater Sample
- Exceedance of Groundwater Quality Criteria
- Former UST Location
- Shallow Monitoring Well
- Municipal Boundary
- Installation Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction

NOTE:

1. Groundwater samples will be collected from temporary wells.

N

1 inch = 100 feet

0 50 100 200 Feet

Source: FTMM Supplied CAD, 2013.

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

STUDY AREA 800
SAMPLE LOCATIONS

CREATED BY: TS	REVIEWED BY: KF
DATE: JAN. 2017	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-02060	FILE: Figure2_800_Area_Samples.mxd

Z:\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\800 Area\Figure2_800_Area_Samples.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

April 4, 2016

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

Re: *800 Area Work Plan Addendum and Response to NJDEP's November 10, 2015 Comments on the June 2015 No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcel 55 and 56, Fort Monmouth & 800 Area Work Plan Addendum for Former UST Sites (March 2016)*

Dear Mr. Colvin,

The New Jersey Department of Environmental Protection (NJDEP) has completed review of the referenced submittals. The ground water investigation as proposed for the USTs referenced in Section 4.0 of the Work Plan is acceptable.

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

C: Joe Pearson, Calibre
Rick Harrison, FMERA
Joe Fallon, FMERA
James Moore, USACE
Cris Grill, Parsons,
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

March 3, 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: 800 Area Work Plan Addendum and Response to NJDEP's November 10, 2015 Comments on the June 2015 *No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey*
PI G000000032

Dear Ms. Range:

Fort Monmouth and Parsons have reviewed the New Jersey Department of Environmental Protection (NJDEP) comments on the subject submittal for the 800 Area including ECP Parcels 55 and 56, as documented in your letter dated November 10, 2015. We appreciate this opportunity to work with you on the 800 Area. Responses to your comments are provided below:

A. <u>USTs Requiring No Additional Action</u>

A1. COMMENT: *Underground storage tanks within these parcels previously granted a designation of no further action (NFA) include the following:*

Parcel 55
UST 1006-159
UST 826-134
UST 828-136
Parcel 56
UST 875-234
UST 876-139
UST 876-138
UST 864-136
UST 866-137

A1. RESPONSE: Agreed.

A2: COMMENT: *Following review of the referenced information, it is agreed no further action is necessary for the following #2 fuel USTs:*

UST 800-2 (Attachment G)

UST-800-10 (Attachment I)

UST-800-14 (Attachment K)

UST 800-15 (Attachment L)

UST-800-16 (Attachment M)

UST-800-19 (Attachment N)

UST 800-22 (Attachment Q)

UST 850 (Attachment T)

A2: RESPONSE: Agreed.

B. USTs Requiring Additional Remedial Efforts

B1. COMMENT: *Based upon soil contamination extending to within 2' of, and in some cases, into the ground water table (GWT), a ground water investigation in accordance with Technical Rules for Site Remediation is necessary at the following UST locations. Unless otherwise indicated, analytical parameters are to include VOs+TICs and SVOs+TICs (N.J.A.C. 7:26E-2.1, Table 2-1).*

UST 800-1 – Attachment F – Parcel 55 - #03-07-30-1431

UST 800-9 – Attachment H – Parcel 55 - #04-05-20-1615-42

UST 800-12 – Attachment J – Parcel 55 - #04-05-25-1623-31

UST-800-20 – Attachment O – Parcel 56 - #03-07-30-1431

UST 800-21 – Attachment P – Parcel 56 - #03-09-11-0906-50

UST 813 – Attachment R – Parcel 54 - #10-12-17-1533-15

UST 814 – Attachment S – Parcel 54 – It is agreed the submitted soil analytical results, which indicate no exceedences are present, were likely collected at Building 814. Although ground water analytical results indicate no exceedances of #2 fuel related constituents, the anomalous Oct '92 GW results cannot be dismissed. Therefore, collection of a ground water sample for VOs+TICs analyses is required.

UST 884 – Attachment U – Parcel 57 - #03-10-07-1347-49

UST 888 – Attachment V – Parcel 56 - #11-01-05-1416-41

B1. RESPONSE: Additional groundwater sampling is proposed to assess the potential for impacts to groundwater from each of the nine UST sites listed above, as described in the attached ***800 Area Work Plan Addendum***. A total of nine groundwater samples will be collected from temporary well locations downgradient of these former USTs.

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 e-mail at william.r.colvin18.civ@mail.mil.

Sincerely,

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

Attachment:
800 Area Work Plan Addendum for Former UST Sites

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
800 Area Work Plan Addendum for Former UST Sites
Date: March 2016

1.0 PURPOSE

The purpose of this 800 Area Work Plan Addendum is to outline the site-specific Scope of Work (SOW) for the environmental investigation of former No. 2 fuel oil underground storage tank (UST) sites within the 800 Area (which includes Parcels 55 and 56) at Fort Monmouth. In general, the scope consists of groundwater sampling at nine UST sites to assess the potential for impacts to groundwater. The field activities will involve installation of temporary monitor wells within Geoprobe borings at 9 former UST sites, and collection of "grab" groundwater samples for chemical analysis for petroleum constituents.

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

The 800 Area is located within the south-central portion of the Main Post at Fort Monmouth (**Figure 1**). Available information for multiple USTs at the 800 Area was previously provided to NJDEP in the Army's submittal dated June 12, 2015 and entitled *No Further Action Request, Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey*. The NJDEP determined No Further Action (NFA) was required for 16 USTs in their letter dated November 10, 2015; however, they also required assessment of groundwater at an additional nine UST sites that are the subject of this work plan addendum. Groundwater flow directions are interpreted to be towards the north-northwest in this area (**Figure 2**).

4.0 SAMPLING LOCATIONS

Locations for sampling are shown on **Figure 2**. A summary of the field sampling and analytical activities is presented in **Table 1**. Sampling of groundwater is proposed from immediately downgradient of the limits of excavation at former tank locations UST 800-1, 800-9, 800-12, 800-20, 800-21, 813, 814, 884, and 888. A Geoprobe® boring will be completed to approximately 4 feet below the water table at each location shown on **Figure 2**. Groundwater from these locations will be sampled using temporary wells

within the Geoprobe borings, and then the borings will be abandoned. Eight groundwater samples will be analyzed for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) plus tentatively identified compounds (TICs), as specified in Table 2-1 of the NJAC 7:26E Technical Requirements for Site Remediation. The groundwater sample from UST 814 will only be analyzed for VOCs plus TICs.

TABLE 1
SAMPLING SUMMARY FOR 800 AREA 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/]
Groundwater					
54, 55, 56, 57	USTs 800-1, 800-9, 800-12, 800-20, 800-21, 813, 814, 884, and 888 (Figure 2) - 1 groundwater sample each; VOCs only for UST 814	9	9	8	0
QA/QC samples (see SAP for additional details) [e/]					
Field Duplicates (5% Sampling Frequency per media)		NA	1	1	0
Matrix Spike (5% Sampling Frequency per media)		NA	1	1	0
Matrix Spike Duplicate (5% Sampling Frequency per media)		NA	1	1	0
Trip Blank (1 per cooler of VOCs per media)		NA	1	0	0
QA Split (5% per media)		NA	1	1	0
Equipment Blank (5% Sampling Frequency per media)		NA	1	1	0
	TOTAL	**NA**	**15**	**13**	**0**

Notes:

NA = not applicable.

TBD = to be determined.

[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/] 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.

Little Silver Borough

Shrewsbury Borough

Tinton Falls Borough

Eatontown Borough

Oceanport Borough

West Long Branch Borough

Parkers Creek

North Branch Parkers Creek

Lafetra Creek

Mill Creek

Oceanport Creek

Wampum Lake

Wampum Brook

Husky Brook

Turtle Mill Brook

Study Area

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.

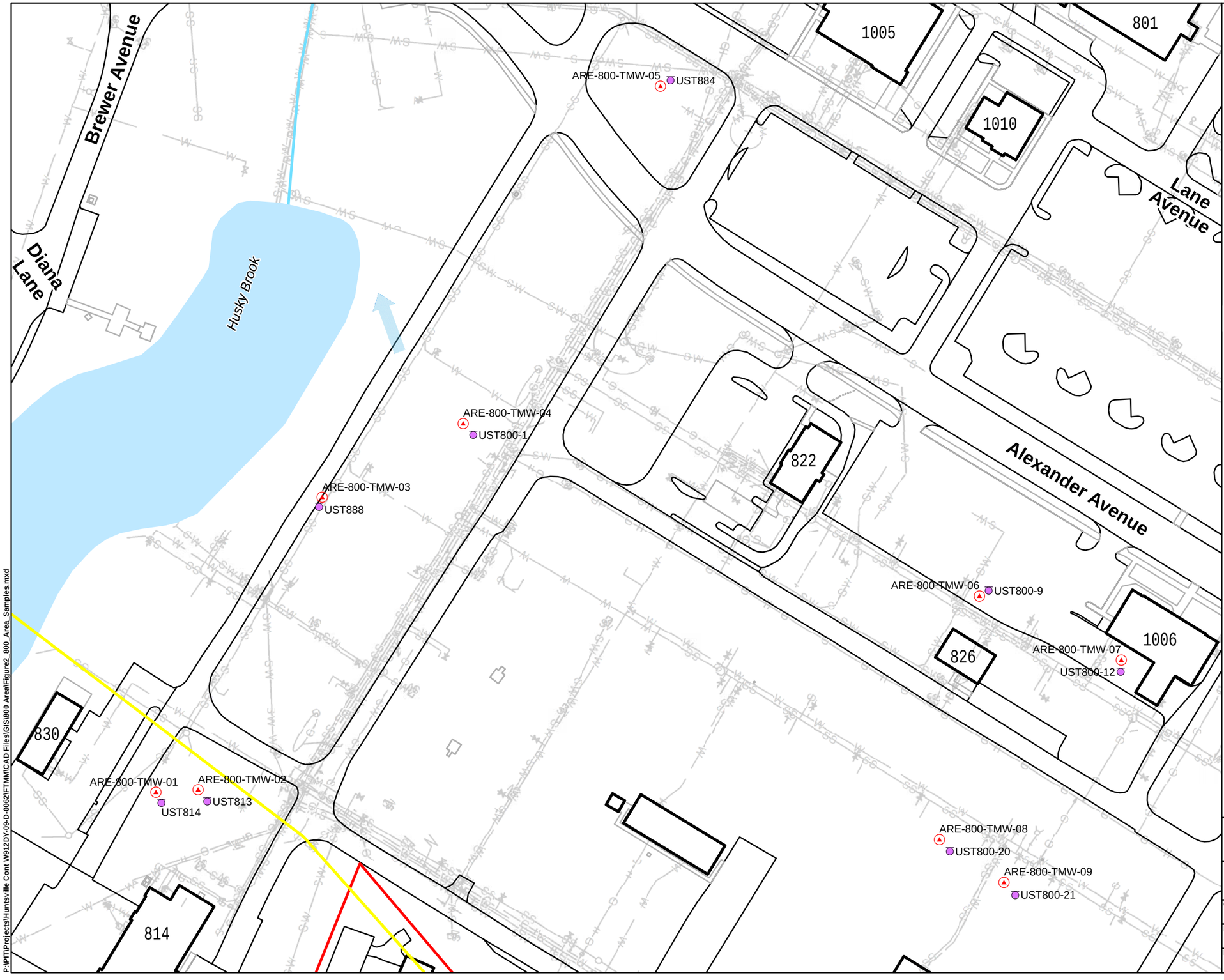
PARSONS
401 Diamond Drive NW, Huntsville AL

Fort Monmouth
New Jersey

STUDY AREA LOCATION (800 AREA)

CREATED BY:	REVIEWED BY:
RR	KF
DATE:	FIGURE NUMBER:
FEB. 2016	FIGURE 1
PROJECT NUMBER:	FILE:
748810-01000	Figure1_800_Area.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\800 Area\Figure1_800_Area.mxd 2/11/2016 1:10:09 PM



LEGEND:

- Proposed Groundwater Sample
- Former UST Location
- Shallow Monitoring Well
- Municipal Boundary
- Installation Boundary
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Estimated Groundwater Flow Direction

NOTE:

1. Groundwater samples will be collected from temporary wells.

N

1 inch = 100 feet

0 50 100 200 Feet

Source: FTMM Supplied CAD, 2013.

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

STUDY AREA 800 PROPOSED SAMPLE LOCATIONS

CREATED BY: TS	REVIEWED BY: KF
DATE: FEB. 2016	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-02060	FILE: Figure2_800_Area_Samples.mxd

P:\PITT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\800 Area\Figure2_800_Area_Samples.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

November 10, 2015

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

Re: *Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 & 56*
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 June 22, 2015, prepared by the Department of the Army's Office of Assistant Chief of Staff for Installation Management to provide responses to NJDEP letters of September 5, 2007 and December 31, 2007.

USTs Requiring No Additional Action

Underground storage tanks within these parcels previously granted a designation of no further action (NFA) include the following:

Parcel 55

UST 1006-159
UST 826-134
UST 828-136

Parcel 56

UST 875-234
UST 876-139
UST 876-138
UST 864-136
UST 866-137

Following review of the referenced information, it is agreed no further action is necessary for the following #2 fuel USTs:

UST 800-2 (Attachment G)
UST-800-10 (Attachment I)
UST-800-14 (Attachment K)
UST 800-15 (Attachment L)
UST-800-16 (Attachment M)
UST-800-19 (Attachment N)
UST 800-22 (Attachment Q)
UST 850 (Attachment T)

USTs Requiring Additional Remedial Efforts

Based upon soil contamination extending to within 2' of, and in some cases, into the ground water table (GWT), a ground water investigation in accordance with the Technical Rules for Site Remediation is necessary at the following UST locations. Unless otherwise indicated, analytical parameters are to include VOs+TICs and SVOs+TICs (N.J.A.C. 7:26E-2.1, Table 2-1).

UST 800-1 – Attachment F – Parcel 55 - #03-07-30-1431
UST 800-9 – Attachment H – Parcel 55– #04-05-20-1615-42
UST 800-12 – Attachment J – Parcel 55 - #04-05-25-1623-31
UST-800-20 – Attachment O – Parcel 56 - #03-07-30-1431
UST 800-21 – Attachment P – Parcel 56 - #03-09-11-0906-50
UST 813 – Attachment R – Parcel 54 - #10-12-17-1533-15
UST 814 – Attachment S – Parcel 54 – It is agreed the submitted soil analytical results, which indicate no exceedences are present, were likely collected at Building 814. Although ground water analytical results indicate no exceedances of #2 fuel related constituents, the anomalous Oct '92 GW results cannot be dismissed. Therefore, collection of a ground water sample for VOs+TICs analyses is required.
UST 884 – Attachment U – Parcel 57 - #03-10-07-1347-49
UST 888 – Attachment V – Parcel 56 - #11-01-05-1416-41

Please contact this office if you have any questions.

Sincerely,

Linda S. Range

Linda S. Range

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

June 12, 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: No Further Action Request
Site Investigation Report Addendum for the 800 Area Including ECP Parcels 55 and 56, Fort Monmouth, New Jersey

Attachments:

A. Correspondence
B. Site Layout Drawings of 800 Area (Recent and Historical)
C. Summary Table of 800 Area Underground Storage Tanks
D. No Further Action Letters from NJDEP
E. Geophysical Survey Reports
F. UST 800-1 Report
G. UST 800-2 File Review and Analyses
H. UST 800-9 Report
I. UST 800-10 File Review and Analyses
J. UST 800-12 Report
K. UST 800-14 File Review and Analyses
L. UST 800-15 File Review and Analyses
M. UST 800-16 File Review and Analyses
N. UST 800-19 File Review and Analyses
O. UST 800-20 File Review and Analyses
P. UST 800-21 Report
Q. UST 800-22 File Review and Analyses
R. UST 813 File Review and Analyses
S. UST 814 File Review and Analyses
T. UST 850 File Review and Analyses
U. UST 884 File Review and Analyses
V. UST 888 File Review and Analyses
W. 800 Area Excerpts from the 2005 Residential Communities Initiative (RCI) Remedial Action Report
X. 800 Area Groundwater Monitoring Results

Previous Correspondence:

1. NJDEP letter to the Army dated September 5, 2007, re: *Remedial Action Report for the 800, 700, and 400 Areas, Ft Monmouth, NJ.*
2. NJDEP letter to the Army dated December 31, 2007, re: *Underground Storage Tank Closure & Remedial Investigation Reports, 800 Area UST No. 9, 800 Area UST No. 12, Ft Monmouth, NJ.*

References Cited:

1. Tetra Tech EM Inc. 2005. *Final Remedial Action Report for the 800, 700, and 400 Areas, U.S. Army Installation Fort Monmouth, Fort Monmouth, New Jersey*. October.

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) Parcels 55, 56, and the surrounding 800 Area (which also includes portions of Parcels 54, 57, 58, 59, 63, 64, and 65). The purpose of this submittal is to provide comprehensive documentation of the location and updated closure status of all USTs identified within this parcel. Previous investigation results associated with the Residential Communities Initiative (RCI) activities within Parcel 56 (also referred to as the RCI 800 Area) have been reviewed, as well as the 2007 New Jersey Department of Environmental Protection (NJDEP) comments on the RCI Report (Correspondence 1; provided in Attachment A). This submittal provides a comprehensive response to NJDEP's previous comments on the RCI 800 Area (Correspondence 1). This information may be useful for the future Phase II property transfer.

The 800 Area includes that portion of the Main Post generally bounded by Razor Avenue to the north, Todd Avenue to the west, Cockayne Avenue and the Base boundary to the south, and Stephenson Avenue to the east (see recent and historical layout drawings presented in Attachment B). There are three designated Installation Restoration Program (IRP) sites located within the 800 Area, including the following:

- FTMM-47 Building 1002 Former PCB Transformer Site (located within Parcel 55),
- FTMM-64 Site 812 Former Leaking UST Site (also designated as Parcel 64), and
- FTMM-66 Site 886 Former Aboveground Storage Tank (also designated as Parcel 65).

These IRP sites are not specifically addressed within this submittal, although reference has been made to the sites as appropriate within the context of the 800 Area USTs.

Extensive soil sampling and numerous UST removals were conducted as part of the Army's RCI and Enhanced Use Leasing (EUL) programs within Parcel 56. Currently there are no buildings within Parcel 56; however, historically there were up to 28 barracks and other buildings within this area (see the historical layout map in Attachment B). The purpose of the RCI and EUL programs was to assess specific Fort Monmouth site areas for privatized housing and associated support buildings; subsequently the program was discontinued after closure of Fort Monmouth was announced in 2005.

A final report was prepared in 2005 under the RCI program that summarized the results of soils investigation and remediation activities within the 400, 700, and 800 Areas of Fort Monmouth, and requested No Further Action (NFA) for all three areas. In 2007, NJDEP commented

(Attachment A) that NFA could not be approved for the following reasons (***current Army responses concerning the 800 Area are provided in bold italics***):

- There was no documentation provided concerning the remediation and closure of USTs removed from the site (***documentation of UST closure activities for the entire 800 Area is presented in Section 1.0 below***); and
- A site investigation for groundwater was required (***a description of the 800 Area groundwater investigations is presented in Section 4.0 below***).

1.0 UNDERGROUND STORAGE TANKS

The locations of the USTs within the 800 Area are presented in Attachment B, and a summary table of these USTs is provided in Attachment C. All of the USTs identified within the 800 Area have been removed. Most of these USTs were either used for residential heating oil, or were less than 2000 gallons in size and used to store heating oil for nonresidential buildings, and are therefore considered unregulated heating oil tanks (UHOTs).

Multiple UHOTs within the 800 Area were previously approved for No Further Action (NFA) by NJDEP; documentation of this approval is provided in Attachment D, and referenced below. In these cases, there is generally a supporting investigation report that was previously submitted to NJDEP and that describes the basis for closure. For the sake of brevity, we have not included these reports for UHOTs where NFA has already been approved. However, these reports are available within the FTMM environmental records.

In the Attachment C 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. “Case Open” indicates the Army previously 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. “Case Open” sites previously identified within the 800 Area in Attachment C can now be considered as “Closed” by this submittal.

Most of the 800 Area UHOTs were steel fuel oil tanks associated with previously demolished former barracks. Geophysical surveys were performed to locate potential UHOTs that may have remained after the buildings were removed, as described in Attachment E. A combination of geophysical surveys as well as historical maps and field use of metal detectors were used to locate multiple UHOTs within the 800 Area, which were subsequently removed.

We are submitting the following documentation for the multiple UHOTs that were previously removed from the 800 Area, and we request a No Further Action determination for each site (sites that have been previously approved for NFA by NJDEP are highlighted in green):

- UST 800A NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 800-1 investigation report is presented in Attachment F.
- UST 800-2 File Review summary and analyses is presented in Attachment G.
- UST 800-9 investigation report is presented in Attachment H. NJDEP’s comment letter of 12/31/2007 (provided in Attachment A) indicated that additional groundwater analysis was required; see Section 4.0 below.
- UST 800-10 File Review summary and analyses is presented in Attachment I.

- UST 800-12 investigation report is presented in Attachment J. NJDEP's comment letter of 12/31/2007 (provided in Attachment A) indicated that additional groundwater analysis was required; see Section 4.0 below.
- UST 800-14 File Review summary and analyses is presented in Attachment K.
- UST 800-15 File Review summary and analyses is presented in Attachment L.
- UST 800-16 File Review summary and analyses is presented in Attachment M.
- UST 800-19 File Review summary and analyses is presented in Attachment N.
- UST 800-20 File Review summary and analyses is presented in Attachment O.
- UST 800-21 investigation report is presented in Attachment P.
- UST 800-22 File Review summary and analyses is presented in Attachment Q.
- UST 801A NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 801B NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 804A NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 804B NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 810 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 811 NFA was approved by NJDEP on 8/29/2000 (Attachment D).
- UST 812 NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 813 File Review summary and analyses is presented in Attachment R.
- UST 814 investigation report is presented in Attachment S.
- UST 826 NFA was approved by NJDEP on 7/10/1998 (Attachment D).
- UST 828 NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 850 File Review summary and analyses is presented in Attachment T.
- UST 864 NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 866 NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 875 NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 876A NFA was approved by NJDEP on 2/24/2000 (Attachment D).
- UST 876B NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 884 File Review summary and analyses is presented in Attachment U.
- UST 886 NFA was approved by NJDEP on 1/10/2003 (Attachment D).
- UST 888 File Review summary and analyses is presented in Attachment V.
- UST 1006 NFA was approved by NJDEP on 8/29/2000 (Attachment D).

2.0 RESIDENTIAL COMMUNITIES INITIATIVE ACTIVITIES AT THE 700 AREA

Extensive soil sampling was performed in 2003 under the RCI to support an evaluation of privatized housing (Reference 1; see excerpts of this report pertaining to the 800 Area in Attachment W). Three areas of the Main Post were evaluated: the 400 Area, the 700 Area, and the 800 Area (see Figure 2 of Attachment W). The 800 Area as designated by the RCI program consisted of a 33 acre area that generally corresponds to ECP Parcel 56. The RCI studies included environmental assessment of soil using Geoprobe borings (at 100 ft centers; see Figure 3 of Attachment M), and full-suite analysis of soil samples for VOCs, SVOCs, pesticides, PCBs, and metals (provided in Appendix C of Reference 1). In addition, geophysical investigations were performed to delineate UHOTs historically used for fuel oil from former barracks that had been previously demolished, as discussed in Section 1.0 above (see also Attachment E). As a

result, multiple UHOTs were removed from the 800 Area from 2004 to 2011 with associated site assessment sampling, as discussed in Section 1.0 above.

Under the RCI program, the analytical results from the 75 initial 800 Area Geoprobe soil sampling locations were compared to then-current (2003) NJDEP Residential Direct Contact Soil Cleanup Criteria (RDCSCC), as reported in Attachment W. The rationale for residential criteria was based on the planned future use of the 800 Area for residential housing under the RCI/EUL. SVOCs, pesticides, and PCBs were found to exceed the RDCSCCs in certain discrete areas within the 800 Area (see Figures 4a and 4b in Attachment W), and therefore the impacted soils were excavated and removed for offsite disposal. Multiple rounds of additional step-out characterization sampling, soil excavation, and post-excavation sampling were performed to ensure that adequate soil was removed to meet the RDCSCCs. Final post-excavation soil sample results confirm that soils with SVOCs, pesticides, and PCBs concentrations in excess of the 2003 RDCSCCs were removed for offsite disposal (see Figures 5a and 5b in Attachment W).

The RCI/EUL results confirm that NFA is appropriate for the Parcel 56 soils.

3.0 GROUNDWATER INVESTIGATION AT 800 AREA

As previously described above, a report (Reference 1; see Attachment W) was submitted to NJDEP in 2005 that requested No Further Action for the RCI sites, including Parcel 56 which was designated as the 800 Area under the RCI. In 2007, NJDEP commented (Attachment A) that NFA could not be granted for the 800 Area because the USTs were not adequately addressed (this requirement has been met in Section 1.0), and because additional groundwater monitoring was required for the 800 Area (discussed in this Section). Attachment X includes documentation of previous groundwater monitoring activities for the 800 Area.

Well construction information for two groundwater monitoring wells (800MW01 and 800MW02) located downgradient of the 800 Area is presented in Enclosure 1 of Attachment X. Enclosure 2 of Attachment X presents the result of 2010 groundwater modeling and water elevation measurements for the area of Ft. Monmouth encompassing the 800 Area, which demonstrate that these two wells are located downgradient of the 800 Area. Shallow groundwater flow direction was primarily towards the north-northwest from the 800 Area towards these wells. Monitor well records and boring logs are provided in Enclosure 3 of Attachment X; shallow groundwater was typically encountered at approximately 6 to 9 ft bgs.

Monitoring well 800MW01 was installed in 2000 to evaluate the adequacy of closure of UST 800A. This well was monitored quarterly for VOCs and SVOCs from 2000 to 2001, and UST 800A was subsequently approved for NFA by NJDEP on 1/10/2003 (Attachment D). Well 800MW01 was more recently sampled in May 2010, and analytical results were non-detected for all VOC and SVOC analytes (Enclosure 4 of Attachment X).

Monitoring well 800MW02 was installed in 2010 and was sampled in February 2011. Analytical results were non-detected for all VOCs and for most SVOC analytes. Select Ion Monitoring (SIM) analysis of polynuclear aromatic hydrocarbons (PAHs) was performed for more sensitive detection of PAHs. The only analytes detected by SVOC-SIM were naphthalene (0.150 µg/L) and phenanthrene (0.136 µg/L), which were well below the applicable NJDEP groundwater quality criteria of 300 and 100 µg/L, respectively.

In summary, there were no indications of a contaminant release to groundwater from the 800 area. This conclusion is based on two shallow monitoring wells completed within a UST source area and in a downgradient portion of the parcels. Groundwater contamination associated with USTs 812 (FTMM-64) and 886 (FTMM-66) will be addressed under separate cover.

4.0 SUMMARY

This information supports the conclusion that UHOTs and RCI program issues identified within the 800 Area have been adequately addressed by previous environmental activities. Multiple UHOT sites were identified within Parcels 55 and 56, as well as adjoining areas of Parcels 54, 57, 58, and 59 that comprise the 800 Area, that were addressed under the FTMM tank removal and assessment program. The RCI program identified several areas where individual sample results for PCBs and SVOCs exceeded the residential cleanup criteria in soils; however, the affected soils were subsequently excavated and removed from the site for offsite disposal.

In summary, we submit that the Army has provided adequate due diligence with regards to the environmental condition of the Parcels represented within the 800 Area, and we request that NJDEP approve No Further Action. 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) 383-5104 or by email at john.e.occhipinti.civ@mail.mil.

Sincerely,

John E. Occhipinti
Fort Monmouth Site Manager

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

Summary Table of 800 Area USTs

Site Name	RESIDENTIAL	RegistrationID	DICAR	Tank Size and Type	Product	Army Case Status	Parcel	Comments on Current or Requested NJDEP Status
811	NO	81533-132	97-11-05-1445-58	2000 gallon fiberglass	#2 FUEL OIL	Case Closed	54	NFA approved per 8/29/2000 NJDEP letter
812	NO	81533-133		2000 gallon fiberglass	#2 FUEL OIL	Case Closed	64/ FTMM-64	NFA approved per 2/24/2000 NJDEP letter
813	YES	-	10-12-17-1533-15	1000 gallon steel	#2 FUEL OIL	Case Open	54	Submit review summary and data; request NFA
814	NO			1,500 gallon steel	#2 FUEL OIL		54	Submit Weston report and request NFA.
826	NO	81533-134		550 gallon steel	#2 FUEL OIL	Case Closed	56	NFA approved per 7/10/1998 NJDEP letter
828	NO	81533-135		1000 gallon steel	#2 FUEL OIL	Case Closed	55	NFA approved per 2/24/2000 NJDEP letter
850	YES	-		-	#2 FUEL OIL	Case Closed	56	Submit review summary and data; request NFA
864	NO	81533-136		1000 gallon fiberglass	#2 FUEL OIL	Case Closed	56	NFA approved per 2/24/2000 NJDEP letter
866	NO	81533-137		1000 gallon steel	#2 FUEL OIL	Case Closed	56	NFA approved per 2/24/2000 NJDEP letter
875	NO	81533-234		1000 gallon steel	#2 FUEL OIL	Case Closed	56	NFA approved per 1/10/2003 NJDEP letter
876A	NO	81533-138		550 gallon steel	#2 FUEL OIL	Case Closed	56	NFA approved per 2/24/2000 NJDEP letter
876B	NO	81533-139	98-06-02-1047-31	550 gallon steel	#2 FUEL OIL	Case Closed	56	NFA approved per 1/10/2003 NJDEP letter
884	YES	-	03-10-07-1347-49	1000 gallon steel	#2 FUEL OIL	Case Open	57	Submit review summary and data; request NFA.
886	NO	81533-140		1000 gallon steel	#2 FUEL OIL	Case Closed	65/ FTMM-66	NFA approved per 1/10/2003 NJDEP letter
888	YES	-	11-01-05-1416-41	1000 gallon steel	#2 FUEL OIL	Case Open	56	Submit review summary and data; request NFA.
1006	NO	81533-159		2000 gallon steel	#2 FUEL OIL	Case Closed	55	NFA approved per 8/29/2000 NJDEP letter

ATTACHMENT U

UST 884 File Review and Analyses

PARSONS

UNDERGROUND STORAGE TANK FILE REVIEW
FORT MONMOUTH BRAC 05 FACILITY
OCEANPORT, NEW JERSEY

Date: *June 5, 2015* Review Performed By: *Kent Friesen, Parsons*

Site ID: ***Bldg. 884*** Registration ID: *None*

Recommended Status of Site: ***Change to Case Closed***

UST Probability (from May 2014 "Addendum 1 ECP UHOT Report"): ***None***

Based on the file review, were there indications of a contaminant release? [X] Yes [ ] No

NJDEP Release No. or DICAR (If applicable): 30-10-07-1347-49

Did NJDEP approve No Further Action (NFA) for this site? [ ] Yes [X] No [ ] Not Applicable

Tank Description: [X] Steel [ ] Fiberglass Size: 1000 gals. Contents: No. 2 Fuel Oil

[X] Residential [ ] Commercial/Industrial

Tank Removed? [X] Yes [ ] No If "yes," removal date: 10/7/2003

Were closure soil samples taken? [X] Yes [ ] No Analyses: TPH

Comparison criteria: 5,100 mg/kg TPH

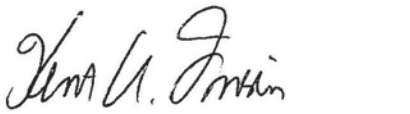
Were closure soil sample results less than comparison criteria? ? [X] Yes [ ] No

Brief Narrative

Following tank removal in 2003, soil samples were collected from the tank excavation and analyzed by the Fort Monmouth Environmental Laboratory for total petroleum hydrocarbons (TPH). Three soil samples and one field duplicate were initially collected from the excavation on October 7, 2003, and two additional samples were collected on October 9, 2003. The sample results ranged from not detected to 31,558 mg/kg for TPH. Contaminated soil was removed from the excavation, and four additional soil samples plus one field duplicate were collected. Sample results from the later samples ranged from ND to 1758 mg/kg for TPH. Samples exceeding 1000 mg/kg were also analyzed for volatile organic compounds (VOCs); the only VOCs detected were acetone (840 to 1300 ug/kg), ethyl benzene (290 to 670 ug/kg) and xylenes (700 to 3300 ug/kg). The final results were less than 5,100 mg/kg for TPH, which is the current remediation criterion. Also, the detected VOCs were below the current Residential Direct Contact Soil Remediation Standards (RDCSRS). Therefore, no additional sampling or remedial action was warranted.

In conclusion, the analytical results support changing the UST Case Status to "Case Closed."

Recommendations (if any): Change to "Case Closed"; Request NFA from NJDEP

Signed: 

Kent A. Friesen, Parsons

Fort Monmouth UST Status Summary Report

UST REGISTRATION INFORMATION SUMMARY

LOCATION: 884 ***NJDEP REG ID:*** -

RESIDENTIAL? YES

UST CONSTRUCTION INFORMATION SUMMARY

SIZE (GALLONS): 1000 ***CONSTRUCTION:*** STEEL

PRODUCT: #2 FUEL OIL ***YEAR INSTALLED:*** 1940

UST REMOVAL/INVESTIGATION SUMMARY

REMOVAL DATE: 11/2/2003 ***REMOVAL CONTRACTOR:*** TVS

SRF SEND DATE: ***TMS:***

DICAR NO. 03-10-07-1347-49 ***LEAK DETECT:***

REMEDIATION COMMENTS: UST found during cable installation. In front of Post Office. UST removed. Soil overexcavation performed. Closure soil samples below NJDEP criteria. Closure report being prepared by TVS. CA 3-16-2011 TPH cont soils excavated Post ex samples below Criteria at time of removal, no groundwater encountered.

REGISTRATION COMMENTS: Historical residential from Barracks. No registration. CA 3-16-2010 real property record review done, bldg is Motor repair school, Rpt required.

SAS DONE: NO ***CONSULTANT:*** Frank Accorsi

MWs NEEDED: 0 ***MONITORING WELLS:*** 0

SUB-SURFACE EVALUATOR: Frank Accorsi

CURRENT UST STATUS

UST STATUS: REMOVED CLEAN SITE SAS REQ ***CASE STATUS:*** Case Open

SUBMITTAL DATE: ***APPROVAL DATE:***

FINALIZED: No

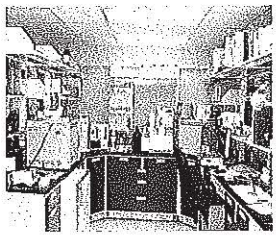
FORT MONMOUTH ENVIRONMENTAL TESTING LABORATORY

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: 04-10123

Post Office @ Malterer Ave.

Field Sample Location	Laboratory Sample ID	Matrix	Date and Time of Collection	Date Received
B1	3063201	Soil	06-Oct-03 13:00	10/06/03
884-A Southeast Wall	3063901	Soil	07-Oct-03 14:10	10/08/03
884-B Bottom	3063902	Soil	07-Oct-03 14:40	10/08/03
884-C Northeast Wall	3063903	Soil	08-Oct-03 14:50	10/08/03
884-D Duplicate	3063904	Soil	08-Oct-03 14:50	10/08/03
Trip Blank	3063905	Methanol	08-Oct-03	10/08/03
884-E Southwest Wall	3064201	Soil	09-Oct-03 11:00	10/09/03
884-F Northwest Wall	3064202	Soil	09-Oct-03 11:30	10/09/03
Trip Blank	3064203	Methanol	09-Oct-03	10/09/03
Trip Blank	3064501	Methanol	10-Oct-03	10/10/03
B2	3064502	Soil	10-Oct-03 10:10	10/10/03
B3	3064503	Soil	10-Oct-03 10:55	10/10/03
884-G Southwest Wall	3067301	Soil	22-Oct-03 09:50	10/22/03
884-H Southwest Wall	3067302	Soil	22-Oct-03 10:35	10/22/03
884-I Bottom	3067303	Soil	22-Oct-03 11:00	10/22/03
884-J Duplicate	3067304	Soil	22-Oct-03 10:35	10/22/03
884-K Northwest Wall	3067305	Soil	22-Oct-03 11:30	10/22/03
Trip Blank	3067306	Methanol	22-Oct-03	10/22/03

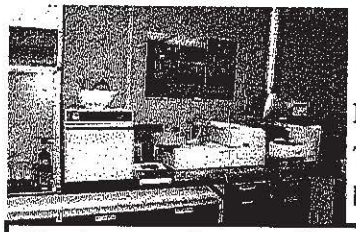
ANALYSIS:

FORT MONMOUTH ENVIRONMENTAL LAB
VOA+15, TPHC, % SOLIDS

12-3-03

Daniel Wright/Date
Laboratory Director

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: Doug Guenther
Phone #:
( )DERA ( )OMA ( )Other:_____
Project No:
Location: post Office
Samplers Name / Company:

LIMS/Work Order #	Sample Location	Date	Time	Sample Type	# bottles	TPH	%Solids							Comments: Remarks / Preservation Method
30632.01	B1	10/6/03	13:00	Soil	1	✓	✓							

Analysis Parameters

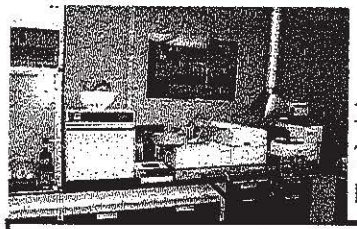
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
George T. Boyce	10-6-03 1405	J. Wright			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, (X)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: ( )Standard 3 wks, (X)Rush 2 Days, ( )ASAP Verbal ___Hrs.

Remarks:

print legibly

COC.XLS6/17/2003



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: JOE FALLON
Phone #: X26223
( )DERA ( )OMA ( )Other:_____

Project No: 04-10123
Location: MALTERER AVE. @ POST OFFICE (FORMER B.884)

Samplers Name / Company: FRANK ACCORSI / TVS

LIMS/Work Order #	Sample Location	Date	Time	Sample Type	# bottles	TPH	VOA * 15				VOA #	PID (ppm)	DEPTH (FT.)	Remarks / Preservation Method
30639 01	884-A, SOUTHEAST WALL	10-7-03	1410	SOIL	2	X	X				3538	0	13-13.5	ICE
02	884-B, BOTTOM	"	1440			X	X				3539	0	15-15.5	
03	884-C, NORTHEAST WALL	10-8-03	1450			X	X				3540	22	8-8.5	
04	884-D, DUPLICATE		1450			X	X				3541	20	8-8.5	
05	TRIP BLANK		—	AQ.			X				3542	—	—	

Analysis Parameters

Comments:

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
Frank Accorsi	10-8-03 1545	J. Ulrich			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, (X)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: ( )Standard 3 wks, (X)Rush 3 Days, ( )ASAP Verbal ___ Hrs.

Remarks: * VOA * 15 ON 25% > 1,000 PPM TPH, ON HIGHEST, MIN. ONE

print legibly

COC.XLS8/29/2003

Change of Chain of Custody

Lab Project ID#: 30639 Site/Project Name: Post Office

Date Received: 10/7+8/05 Date of Change: 10/16

Requested by: print D Guenther Sign: _____

Turnaround Time: Standard

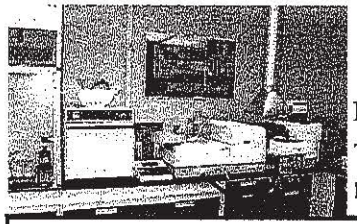
1. Were the correct containers and/or preservatives used for the tests indicated? Yes No
2. Was a sufficient amount of sample sent for the tests indicated? Yes No
3. Are samples Within Holding time for new analysis? Yes No
4. Was the change documented in the sample receipt log book? Yes No

Received by: print _____ Sign: _____

Sample ID#	New Analysis		Sample ID#	New Analysis
30639 02	VOA+15 sampled		10/7	
03	VOA+15		10/8	

Comments:

As per Doug G. no VOAs on 30642 or 30645 there will be more samples taken



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: JOE FALLON
Phone #: X26223
( )DERA ( )OMA ( )Other:_____

Project No: 04 10123
Location: MALTERER AVE. (FORMER B. 884)

Samplers Name / Company: FRANK ACCORSI / TVS

LIMS/Work Order #	Sample Location	Date	Time	Sample Type	# bottles	TPH	VOA 15*					PID (ppm)	DEPTH (FT.)	Remarks / Preservation Method
30642 01	884-E, SOUTHWEST WALL	10-9-03	1100	SOIL	2	X	X					325	9.5-10	ICE
02	884-F, NORTHWEST WALL	↓	1130	—	2	X	X					305	8-8.5	
03	TRIP BLANK	↓	—	AQ.			X					—	—	

Comments:

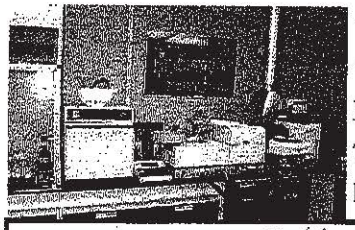
Analysis Parameters: TPH; VOA 15*; PID (ppm); DEPTH (FT.)

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
Frank Accorsi	10-9-03 1540	J. Wright			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, (X)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: ( )Standard 3 wks, (X)Rush 2 Days, ( )ASAP Verbal ____Hrs.

Remarks: VOA 15 ON 25% > 4000 ppm TPH

print legibly



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: Joe Fallon
Phone #: x 26223
( )DERA ( )OMA ( )Other:_____

Project No: 04-10123
Location: Malter Ave Post office Former B 884

Samplers Name / Company: George Boyce (TVS)

LIMS/Work Order #	Sample Location	Date	Time	Sample Type	# bottles	TPH	VO +15							Comments: / Remarks / Preservation Method
						Analysis Parameters								
30645 1	Trip	10/10/03			1		X							Meth 3547
2	B2 7'-7½'	10/10/03	1010	Soil	2	X	X							HNU 50 HG 3548
3	B3 7'-7½'	10/10/03	1055	Soil	2	X	X							HNu 100 3549

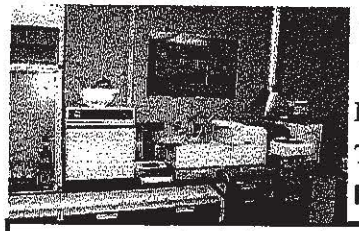
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
George Boyce	10-10-03 1155	J. Vaughn			
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, (X)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: ( )Standard 3 wks, (X)Rush 7 Days, ( )ASAP Verbal ___Hrs.

Remarks:

print legibly

COC.XLS8/29/2003



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: DOUG. GUENTHER
Phone #:
( )DERA ( )OMA (X)Other:_____
Project No: 04-10123
Location: (FORMER) B. 884 MARTELER AVE.
Samplers Name / Company: FRANK ACCORSI / TVS

LIMS/Work Order #	Sample Location	Date	Time	Sample Type	# bottles	TPH	* 1O+15				VOA#	PID (PPM)	DEPTH (FT)	Comments: Remarks / Preservation Method
30673 01	884G - SOUTHWEST WALL	10-22-03	0950	SOIL	2	X	X				3351	0	8-8.5	ICE
02	884H - " "		1035		2	X	X				3352	28	9-9.5	
03	884I - BOTTOM		1100		2	X	X				3353	0	10-10.5	
04	884J - DUPLICATE		1035		2	X	X				3354	50	9-9.5	
05	884K - NORTHWEST WALL		1130		2	X	X				3355	62	8-8.5	
06	TRIP BLANK		-	AQ	1		X				3350	-	-	

Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):
Frank Accorsi	10/22/03 1510				
Relinquished by (signature):	Date/Time:	Received by (signature):	Relinquished by (signature):	Date/Time:	Received by (signature):

Report Type: ( )Full, (X)Reduced, ( )Standard, ( )Screen / non-certified, ( )EDD
Turnaround time: ( )Standard 3 wks, (X)Rush 3 Days, ( )ASAP Verbal ___ Hrs.

Remarks: * VO+15 ON 25% > 1000 PPM TPH, ON HIGHEST, MIN. ONE

print legibly

COC.XLS9/2/2003

Change of Chain of Custody

Lab Project ID#: 30673 Site/Project Name: Post Office

Date Received: 10/22 Date of Change: 10/28

Requested by: print Sign:

Turnaround Time: 1 wk

1. Were the correct containers and/or preservatives used for the tests indicated? Yes No
2. Was a 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 sample receipt log book? Yes No

Received by: print Sign:

Sample ID#	New Analysis		Sample ID#	New Analysis
30673 02	VOA+15			
04	1			
06				

Comments:

US ARMY - FT. MONMOUTH, NJ

(former)BUILDING 884-UST SOIL SAMPLE GPS POSITIONS & COORDINATES

US STATE PLANE 1983, NJ (NY EAST) 2900, NAD 1983 (CONUS)

(IN US SURVEY FEET)

SAMPLE POINTS

POSITION/DESCRIPTION	Y COORDINATE (NORTHING)	X COORDINATE (EASTING)
884A SOUTHEAST WALL	538554.506	619722.959
884B BOTTOM	538568.244	619707.098
884C NORTHEAST WALL	538584.667	619727.892
884E SOUTHWEST WALL	538556.812	619695.412
884F NORTHWEST WALL	538575.933	619689.843
884G SOUTHWEST WALL	538545.676	619696.861
884H SOUTHWEST WALL	538549.199	619673.331
884I BOTTOM	538565.144	619675.106
884K NORTHWEST WALL	538565.02	619651.916

REFERENCE POINTS

POSITION/DESCRIPTION	Y COORDINATE (NORTHING)	X COORDINATE (EASTING)
B1005 WEST CORNER	538617.815	619855.146
B1005 NORTH CORNER	538685.363	619913.201
B1005 EAST CORNER	538638.453	619989.181
B1005 SOUTH CORNER	538560.397	619945.931

CASE NARRATIVE

CASE NARRATIVE

Site: Post Office at Malterer Ave.
Lab ID: 30632, 30639, 30642, 30645, 30673

The Field Duplicate sampled on 10/08/03 was performed on 884-C Northeast Wall (Lab ID 3063903).

The Field Duplicate sampled on 10/22/03 was performed on 884-H Southwest Wall (Lab ID 3067302).

All samples were analyzed for Total Petroleum Hydrocarbons (Method OQA-QAM-025-10/91).

Additionally, the following samples were also analyzed for Volatile Organics (Method 8260):

Lab ID	Field ID
3063902	884-B Bottom
3063903	884-C Northeast Wall
3063905	Trip Blank
3067302	884-H Southwest Wall
3067304	884-J Duplicate
3067306	Trip Blank

At the clients request, no Volatile Organics were performed on Work Orders 30642 and 30645.

VOLATILE ORGANICS

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.

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 20Oct03

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB 20Oct03

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014613.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 0 Date Analyzed: 10/20/2003

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	700	U
107131	Acrylonitrile	700	U
75650	tert-Butyl alcohol	1300	U
1634044	Methyl-tert-Butyl ether	300	U
108203	Di-isopropyl ether	200	U
	Dichlorodifluoromethane	400	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	300	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	300	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	200	U
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	300	U
78-93-3	2-Butanone	300	U
	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
75-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	200	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	200	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 20Oct03

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB 20Oct03

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014613.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 0 Date Analyzed: 10/20/2003

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	300	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	300	U
106-46-7	1,4-Dichlorobenzene	300	U
95-50-1	1,2-Dichlorobenzene	300	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **MB 20Oct03**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB 20Oct03

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014613.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 0 Date Analyzed: 10/20/2003

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

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 29Oct03

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB 29Oct03

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014738.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 0 Date Analyzed: 10/29/2003

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	700	U
107131	Acrylonitrile	700	U
75650	tert-Butyl alcohol	1300	U
1634044	Methyl-tert-Butyl ether	300	U
108203	Di-isopropyl ether	200	U
	Dichlorodifluoromethane	400	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	300	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	300	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	200	U
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	300	U
78-93-3	2-Butanone	300	U
	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
75-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	200	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	200	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

MB 29Oct03

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB 29Oct03

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014738.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 0 Date Analyzed: 10/29/2003

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	300	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	300	U
106-46-7	1,4-Dichlorobenzene	300	U
95-50-1	1,2-Dichlorobenzene	300	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **MB 29Oct03**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: MB 29Oct03

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014738.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 0 Date Analyzed: 10/29/2003

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

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Trip Blank

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063905

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014616.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 0 Date Analyzed: 10/20/2003

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	700	U
107131	Acrylonitrile	700	U
75650	tert-Butyl alcohol	1300	U
1634044	Methyl-tert-Butyl ether	300	U
108203	Di-isopropyl ether	200	U
	Dichlorodifluoromethane	400	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	300	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	300	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	660	
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	300	U
78-93-3	2-Butanone	300	U
	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
75-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	200	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	200	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Trip Blank

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063905

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014616.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 0 Date Analyzed: 10/20/2003

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	300	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	300	U
106-46-7	1,4-Dichlorobenzene	300	U
95-50-1	1,2-Dichlorobenzene	300	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **Trip Blank**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063905

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014616.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 0 Date Analyzed: 10/20/2003

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	26.50	2000	J
2.	unknown	27.78	3400	J
3.	unknown	28.54	1400	J
4.	unknown	28.88	1900	J
5.	unknown	29.70	1400	J
6.	unknown	30.53	2100	J
7.	unknown	30.83	1200	J
8.	unknown	30.98	950	J
9. 000091-57-6	Naphthalene, 2-methyl-	31.48	3700	JN
10. 000091-57-6	Naphthalene, 2-methyl-	32.16	4300	JN

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Trip Blank

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067306

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014744.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 0 Date Analyzed: 10/29/2003

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	700	U
107131	Acrylonitrile	700	U
75650	tert-Butyl alcohol	1300	U
1634044	Methyl-tert-Butyl ether	300	U
108203	Di-isopropyl ether	200	U
	Dichlorodifluoromethane	400	U
74-87-3	Chloromethane	100	U
75-01-4	Vinyl Chloride	300	U
74-83-9	Bromomethane	200	U
75-00-3	Chloroethane	300	U
75-69-4	Trichlorofluoromethane	200	U
75-35-4	1,1-Dichloroethene	100	U
67-64-1	Acetone	1000	
75-15-0	Carbon Disulfide	100	U
75-09-2	Methylene Chloride	200	U
156-60-5	trans-1,2-Dichloroethene	200	U
75-35-3	1,1-Dichloroethane	100	U
108-05-4	Vinyl Acetate	300	U
78-93-3	2-Butanone	300	U
	cis-1,2-Dichloroethene	100	U
67-66-3	Chloroform	100	U
75-55-6	1,1,1-Trichloroethane	100	U
56-23-5	Carbon Tetrachloride	200	U
71-43-2	Benzene	100	U
107-06-2	1,2-Dichloroethane	200	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	200	U
10061-01-5	cis-1,3-Dichloropropene	100	U
108-10-1	4-Methyl-2-Pentanone	200	U
108-88-3	Toluene	100	U
10061-02-6	trans-1,3-Dichloropropene	200	U
79-00-5	1,1,2-Trichloroethane	200	U
127-18-4	Tetrachloroethene	100	U
591-78-6	2-Hexanone	200	U
126-48-1	Dibromochloromethane	200	U
108-90-7	Chlorobenzene	100	U
100-41-4	Ethylbenzene	200	U

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

Trip Blank

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067306

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014744.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 0 Date Analyzed: 10/29/2003

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	300	U
1330-20-7	o-Xylene	200	U
100-42-5	Styrene	200	U
75-25-2	Bromoform	200	U
79-34-5	1,1,2,2-Tetrachloroethane	200	U
541-73-1	1,3-Dichlorobenzene	300	U
106-46-7	1,4-Dichlorobenzene	300	U
95-50-1	1,2-Dichlorobenzene	300	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **Trip Blank**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067306

Sample wt/vol: 10.0 (g/ml) G Lab File ID: VB014744.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 0 Date Analyzed: 10/29/2003

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: 9

CAS NO.	COMPOUND NAME	RT	EST. CONC.	Q
1. 000091-20-3	Naphthalene	24.90	1400	JN
2. 006682-71-9	1H-Indene, 2,3-dihydro-4,7-dimet	26.41	1400	JN
3.	unknown	27.72	2000	J
4. 001073-06-9	Benzene, 1-bromo-3-fluoro-	28.08	45000	JN
5. 000582-16-1	Naphthalene, 2,7-dimethyl-	29.64	5100	JN
6.	unknown	30.49	1100	J
7. 000582-16-1	Naphthalene, 2,7-dimethyl-	30.84	1900	JN
8. 000090-12-0	Naphthalene, 1-methyl-	31.44	6700	JN
9. 000091-57-6	Naphthalene, 2-methyl-	32.13	4300	JN

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884-B

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063902

Sample wt/vol: 9.8 (g/ml) G Lab File ID: VB014614.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 25.81 Date Analyzed: 10/20/2003

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	970	U
107131	Acrylonitrile	970	U
75650	tert-Butyl alcohol	1800	U
1634044	Methyl-tert-Butyl ether	410	U
108203	Di-isopropyl ether	280	U
	Dichlorodifluoromethane	550	U
74-87-3	Chloromethane	140	U
75-01-4	Vinyl Chloride	410	U
74-83-9	Bromomethane	280	U
75-00-3	Chloroethane	410	U
75-69-4	Trichlorofluoromethane	280	U
75-35-4	1,1-Dichloroethene	140	U
67-64-1	Acetone	890	
75-15-0	Carbon Disulfide	140	U
75-09-2	Methylene Chloride	280	U
156-60-5	trans-1,2-Dichloroethene	280	U
75-35-3	1,1-Dichloroethane	140	U
108-05-4	Vinyl Acetate	410	U
78-93-3	2-Butanone	410	U
	cis-1,2-Dichloroethene	140	U
67-66-3	Chloroform	140	U
75-55-6	1,1,1-Trichloroethane	140	U
56-23-5	Carbon Tetrachloride	280	U
71-43-2	Benzene	140	U
107-06-2	1,2-Dichloroethane	280	U
79-01-6	Trichloroethene	140	U
78-87-5	1,2-Dichloropropane	140	U
75-27-4	Bromodichloromethane	140	U
110-75-8	2-Chloroethyl vinyl ether	280	U
10061-01-5	cis-1,3-Dichloropropene	140	U
108-10-1	4-Methyl-2-Pentanone	280	U
108-88-3	Toluene	140	U
10061-02-6	trans-1,3-Dichloropropene	280	U
79-00-5	1,1,2-Trichloroethane	280	U
127-18-4	Tetrachloroethene	140	U
591-78-6	2-Hexanone	280	U
126-48-1	Dibromochloromethane	280	U
108-90-7	Chlorobenzene	140	U
100-41-4	Ethylbenzene	280	U

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884-B

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063902

Sample wt/vol: 9.8 (g/ml) G Lab File ID: VB014614.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 25.81 Date Analyzed: 10/20/2003

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	410	U
1330-20-7	o-Xylene	280	U
100-42-5	Styrene	280	U
75-25-2	Bromoform	280	U
79-34-5	1,1,2,2-Tetrachloroethane	280	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
95-50-1	1,2-Dichlorobenzene	410	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **884-B**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063902

Sample wt/vol: 9.8 (g/ml) G Lab File ID: VB014614.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 25.81 Date Analyzed: 10/20/2003

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

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884-C

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063903

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB014615.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 25.61 Date Analyzed: 10/20/2003

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	900	U
107131	Acrylonitrile	900	U
75650	tert-Butyl alcohol	1700	U
1634044	Methyl-tert-Butyl ether	390	U
108203	Di-isopropyl ether	260	U
	Dichlorodifluoromethane	510	U
74-87-3	Chloromethane	130	U
75-01-4	Vinyl Chloride	390	U
74-83-9	Bromomethane	260	U
75-00-3	Chloroethane	390	U
75-69-4	Trichlorofluoromethane	260	U
75-35-4	1,1-Dichloroethene	130	U
67-64-1	Acetone	840	
75-15-0	Carbon Disulfide	130	U
75-09-2	Methylene Chloride	260	U
156-60-5	trans-1,2-Dichloroethene	260	U
75-35-3	1,1-Dichloroethane	130	U
108-05-4	Vinyl Acetate	390	U
78-93-3	2-Butanone	390	U
	cis-1,2-Dichloroethene	130	U
67-66-3	Chloroform	130	U
75-55-6	1,1,1-Trichloroethane	130	U
56-23-5	Carbon Tetrachloride	260	U
71-43-2	Benzene	130	U
107-06-2	1,2-Dichloroethane	260	U
79-01-6	Trichloroethene	130	U
78-87-5	1,2-Dichloropropane	130	U
75-27-4	Bromodichloromethane	130	U
110-75-8	2-Chloroethyl vinyl ether	260	U
10061-01-5	cis-1,3-Dichloropropene	130	U
108-10-1	4-Methyl-2-Pentanone	260	U
108-88-3	Toluene	130	U
10061-02-6	trans-1,3-Dichloropropene	260	U
79-00-5	1,1,2-Trichloroethane	260	U
127-18-4	Tetrachloroethene	130	U
591-78-6	2-Hexanone	260	U
126-48-1	Dibromochloromethane	260	U
108-90-7	Chlorobenzene	130	U
100-41-4	Ethylbenzene	260	U

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884-C

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063903

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB014615.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 25.61 Date Analyzed: 10/20/2003

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	390	U
1330-20-7	o-Xylene	260	U
100-42-5	Styrene	260	U
75-25-2	Bromoform	260	U
79-34-5	1,1,2,2-Tetrachloroethane	260	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **884-C**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30639 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3063903

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB014615.D

Level: (low/med) MED Date Received: 10/8/2003

% Moisture: not dec. 25.61 Date Analyzed: 10/20/2003

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. 000108-67-8	Benzene, 1,3,5-trimethyl-	29.43	6800	JN
2.	unknown	30.59	3900	J
3. 000135-01-3	Benzene, 1,2-diethyl-	30.93	2800	JN
4.	unknown	31.39	2800	J
5.	unknown	31.67	5000	J
6.	unknown	32.19	3100	J
7.	unknown	32.31	5200	J
8.	unknown	32.76	3600	J
9.	unknown	32.92	2200	J
10.	unknown	33.16	7600	J

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884H

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067302

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB014742.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 22.85 Date Analyzed: 10/29/2003

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	860	U
107131	Acrylonitrile	860	U
75650	tert-Butyl alcohol	1600	U
1634044	Methyl-tert-Butyl ether	370	U
108203	Di-isopropyl ether	250	U
	Dichlorodifluoromethane	490	U
74-87-3	Chloromethane	120	U
75-01-4	Vinyl Chloride	370	U
74-83-9	Bromomethane	250	U
75-00-3	Chloroethane	370	U
75-69-4	Trichlorofluoromethane	250	U
75-35-4	1,1-Dichloroethene	120	U
67-64-1	Acetone	1200	
75-15-0	Carbon Disulfide	120	U
75-09-2	Methylene Chloride	250	U
156-60-5	trans-1,2-Dichloroethene	250	U
75-35-3	1,1-Dichloroethane	120	U
108-05-4	Vinyl Acetate	370	U
78-93-3	2-Butanone	370	U
	cis-1,2-Dichloroethene	120	U
67-66-3	Chloroform	120	U
75-55-6	1,1,1-Trichloroethane	120	U
56-23-5	Carbon Tetrachloride	250	U
71-43-2	Benzene	120	U
107-06-2	1,2-Dichloroethane	250	U
79-01-6	Trichloroethene	120	U
78-87-5	1,2-Dichloropropane	120	U
75-27-4	Bromodichloromethane	120	U
110-75-8	2-Chloroethyl vinyl ether	250	U
10061-01-5	cis-1,3-Dichloropropene	120	U
108-10-1	4-Methyl-2-Pentanone	250	U
108-88-3	Toluene	120	U
10061-02-6	trans-1,3-Dichloropropene	250	U
79-00-5	1,1,2-Trichloroethane	250	U
127-18-4	Tetrachloroethene	120	U
591-78-6	2-Hexanone	250	U
126-48-1	Dibromochloromethane	250	U
108-90-7	Chlorobenzene	120	U
100-41-4	Ethylbenzene	670	

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884H

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067302

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB014742.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 22.85 Date Analyzed: 10/29/2003

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	3300	
1330-20-7	o-Xylene	1800	
100-42-5	Styrene	250	U
75-25-2	Bromoform	250	U
79-34-5	1,1,2,2-Tetrachloroethane	250	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **884H**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067302

Sample wt/vol: 10.5 (g/ml) G Lab File ID: VB014742.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 22.85 Date Analyzed: 10/29/2003

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. 002425-54-9	Tetradecane, 1-chloro-	28.21	7900	JN
2. 000620-14-4	Benzene, 1-ethyl-3-methyl-	28.48	6800	JN
3. 000095-36-3	1,2,4-Trimethylbenzene	29.43	13000	JN
4. 001120-21-4	Undecane	30.48	7900	JN
5. 001074-43-7	Benzene, 1-methyl-3-propyl-	30.55	4300	JN
6. 000934-74-7	Benzene, 1-ethyl-3,5-dimethyl-	30.65	4900	JN
7.	unknown	31.68	4200	J
8. 000527-84-4	Benzene, 1-methyl-2-(1-methylet	32.31	6900	JN
9. 000112-40-3	Dodecane	32.55	4700	JN
10. 002039-89-6	Benzene, 2-ethenyl-1,4-dimethyl-	33.17	10000	JN

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884J

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067304

Sample wt/vol: 9.9 (g/ml) G Lab File ID: VB014743.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 24.77 Date Analyzed: 10/29/2003

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	940	U
107131	Acrylonitrile	940	U
75650	tert-Butyl alcohol	1700	U
1634044	Methyl-tert-Butyl ether	400	U
108203	Di-isopropyl ether	270	U
	Dichlorodifluoromethane	540	U
74-87-3	Chloromethane	130	U
75-01-4	Vinyl Chloride	400	U
74-83-9	Bromomethane	270	U
75-00-3	Chloroethane	400	U
75-69-4	Trichlorofluoromethane	270	U
75-35-4	1,1-Dichloroethene	130	U
67-64-1	Acetone	1300	
75-15-0	Carbon Disulfide	130	U
75-09-2	Methylene Chloride	270	U
156-60-5	trans-1,2-Dichloroethene	270	U
75-35-3	1,1-Dichloroethane	130	U
108-05-4	Vinyl Acetate	400	U
78-93-3	2-Butanone	400	U
	cis-1,2-Dichloroethene	130	U
67-66-3	Chloroform	130	U
75-55-6	1,1,1-Trichloroethane	130	U
56-23-5	Carbon Tetrachloride	270	U
71-43-2	Benzene	130	U
107-06-2	1,2-Dichloroethane	270	U
79-01-6	Trichloroethene	130	U
78-87-5	1,2-Dichloropropane	130	U
75-27-4	Bromodichloromethane	130	U
110-75-8	2-Chloroethyl vinyl ether	270	U
10061-01-5	cis-1,3-Dichloropropene	130	U
108-10-1	4-Methyl-2-Pentanone	270	U
108-88-3	Toluene	130	U
10061-02-6	trans-1,3-Dichloropropene	270	U
79-00-5	1,1,2-Trichloroethane	270	U
127-18-4	Tetrachloroethene	130	U
591-78-6	2-Hexanone	270	U
126-48-1	Dibromochloromethane	270	U
108-90-7	Chlorobenzene	130	U
100-41-4	Ethylbenzene	290	

1A

FIELD ID:

VOLATILE ORGANICS ANALYSIS DATA SHEET

884J

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067304

Sample wt/vol: 9.9 (g/ml) G Lab File ID: VB014743.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 24.77 Date Analyzed: 10/29/2003

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	1400	
1330-20-7	o-Xylene	700	
100-42-5	Styrene	270	U
75-25-2	Bromoform	270	U
79-34-5	1,1,2,2-Tetrachloroethane	270	U
541-73-1	1,3-Dichlorobenzene	400	U
106-46-7	1,4-Dichlorobenzene	400	U
95-50-1	1,2-Dichlorobenzene	400	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FIELD ID: **884J**

Lab Name: FMETL NJDEP#: 13461

Project: 04-10123 Case No.: 30673 Location: B884 SDG No.:

Matrix: (soil/water) SOIL Lab Sample ID: 3067304

Sample wt/vol: 9.9 (g/ml) G Lab File ID: VB014743.D

Level: (low/med) MED Date Received: 10/28/2003

% Moisture: not dec. 24.77 Date Analyzed: 10/29/2003

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.	006682-71-9	1H-Indene, 2,3-dihydro-4,7-dimet	26.44	4800	JN
2.	056253-64-6	Benzene, (2-methyl-1-butenyl)-	27.74	7400	JN
3.	000620-14-4	Benzene, 1-ethyl-3-methyl-	28.48	5800	JN
4.	002847-72-5	Decane, 4-methyl-	28.85	5100	JN
5.	000095-36-3	1,2,4-Trimethylbenzene	29.43	6300	JN
6.	001120-21-4	Undecane	30.49	8700	JN
7.	000090-12-0	Naphthalene, 1-methyl-	31.46	21000	JN
8.	000090-12-0	Naphthalene, 1-methyl-	32.14	13000	JN
9.	000112-40-3	Dodecane	32.55	4800	JN
10.	002039-89-6	Benzene, 2-ethenyl-1,4-dimethyl-	33.17	5700	JN

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 # :**	30632
		Location :	Post Office
		UST Reg. # :	

Analysis :	OQA-QAM-025	**Date Received :**	06-Oct-03
Matrix :	Soil	**Date Extracted :**	08-Oct-03
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	Shake
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	08-Oct-03
Injection Volume :	1uL	**Analyst :**	Skelton

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3063201	B1	1.00	15.33	82.54	179	2079.99
METHOD BLANK	MB-100803	1.00	15.00	100.00	151	ND

ND = Not Detected

MDL = Method Detection Limit

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 # :**	30639
		Location :	Malterer Ave
		UST Reg. # :	

Analysis :	OQA-QAM-025	**Date Received :**	08-Oct-03
Matrix :	Soil	**Date Extracted :**	10-Oct-03
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	Shake
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	10-Oct-03
Injection Volume :	1uL	**Analyst :**	Skelton

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3063901	884-A	1.00	14.96	80.64	188	ND
3063902	884-B	1.00	15.08	74.19	202	4653.44
3063903	884-C	1.00	15.11	74.39	202	4637.89
3063904	884-D	1.00	15.39	82.17	179	ND
METHOD BLANK	MB-101003	1.00	15.00	100.00	151	ND

ND = Not Detected

MDL = Method Detection Limit

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 # :**	30642
		Location :	Malterer Ave
		UST Reg. # :	
Analysis :	OQA-QAM-025	**Date Received :**	09-Oct-03
Matrix :	Soil	**Date Extracted :**	10-Jan-00
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	10-Jan-00
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	14-Oct-03
Injection Volume :	1uL	**Analyst :**	Skelton

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3064201	884-E	20.00	15.03	79.84	189	21985.17
3064202	884-F	20.00	15.33	85.11	174	31558.79
METHOD BLANK	MB-101003	1.00	15.00	100.00	151	ND

ND = Not Detected

MDL = Method Detection Limit

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 # :**	30645
		Location :	Malterer Ave
		UST Reg. # :	
Analysis :	OQA-QAM-025	**Date Received :**	10-Oct-03
Matrix :	Soil	**Date Extracted :**	10-Jan-00
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	10-Jan-00
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	14-Oct-03
Injection Volume :	1uL	**Analyst :**	Skelton

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3064502	B2	20.00	14.98	82.48	183	14936.50
3064503	B3	1.00	15.04	84.19	179	551.62
METHOD BLANK	MB-101003	1.00	15.00	100.00	151	ND

ND = Not Detected

MDL = Method Detection Limit

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 # :**	30673
		Location :	B.884
		UST Reg. # :	
Analysis :	OQA-QAM-025	**Date Received :**	22-Oct-03
Matrix :	Soil	**Date Extracted :**	24-Oct-03
Inst. ID. :	GC TPHC INST. #1	**Extraction Method :**	Shake
Column Type :	RTX-5, 0.32mm ID, 30M	**Analysis Complete :**	24-Oct-03
Injection Volume :	1uL	**Analyst :**	Skelton

Sample	Field ID	Dilution Factor	Weight (g)	% Solid	MDL (mg/kg)	TPHC Result (mg/kg)
3067301	884G	1.00	15.12	77.32	194	209.40
3067302	884H	1.00	15.01	77.15	196	1758.91
3067303	884I	1.00	15.43	73.72	199	ND
3067304	884J	1.00	15.83	75.23	190	1676.45
3067305	884K	1.00	15.54	77.17	189	1221.15
METHOD BLANK	MB-102403	1.00	15.00	100.00	151	ND

ND = Not Detected

MDL = Method Detection Limit

Attachment B
Soil Boring Logs and Well Construction Details

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54-884
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈ 6 FT.
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: W/WDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-TMW-01
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			6"/48"	0	0-3" TOPSOIL 3"-48" moist, brn, cmt SAND, tr. Silt		
				0			
1				0			
				0			
2				0			
				0			
3				0			
				0			
4							
5			60"/48"	~~0~~ 0	0-48" SAME		
				0			
6				0	WET @ 6'		
				0			
7				0			
				0			
8				0			
				0			
9							
10	PAR-54-884-TMW-01-10'						

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

Soil Boring Log

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

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

INSPECTOR: F. ACCORSI
DRILLER:
WEATHER:
CONTRACTOR: ~~Cascade~~ ECDI
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PARC-54 884-TMW-01
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
1 0			0	—	BORING OPENED TO 15 FT. W/PUSH POINT TO SET WELL.		
				—			
1 1				—			
				—			
1 2				—			
				—			
1 3				—			
				—			
1 4				—			
				—			
1 5					END OF BORING @ 15 FT TMW (10 FT. SCREEN) SET FROM 5' TO 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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 54
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈ 5.1 FT
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-TMW-02
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	0	0-3" TOPSOIL		
				0	3"-54" moist, brn, c-f SAND, tr. silt, tr. f Gravel		
1				0			
				0			
2				0			
				0			
3				0			
				0			
4				0			
5			60/48	0	0-36" (SAME) WET @ 5.5 FT		
				0			
6				0			
				0			
7			23	0			PETROLEUM ODORS
			11	0			
8				0	36-42 moist, brn-yelbrn, silty Clay		
				0	42"-48" WET, brn m-f SAND, Li silt		
9							
10	PAR-54-884-TMW-02-10'				END OF BORING @ 10 FT.		

Remarks: SET TMW (10 FT SCREEN) FROM 0'-10'

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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 54
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~6'
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: J. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-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			60/48	0	0-3" TOPSOIL		
				0	3"-36" Moist, brn, cm-f SAND, l. f Gravel, l. silt		
1				0			COAL @ 1.5'
				0			
2				0			
				0			
3				0	36"-48" Moist, brn, cm-f SAND, tr. silt		
				0			
4							
5			60/48	0	0-30" SAME		
				0			WET @ 6'
6				0			
				0			
7				0			
				0	30"-48" wet, brn, mf SAND, l. silt		~~WET @ 8'~~
8	PAR-54-884-TMW-03-8'			0			
				0			
9							
10	~~PAR-54-884-TMW-03-10.5'~~				END OF BORING @ 10 FT.		

Remarks: SET TMW (10FT. SCREEN) FROM 0'-10'

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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 34.6
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884 - 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			60/42	0	0-3" TOPSOIL 3"-42" moist, brn, cmf SAND and cmf Gravel, Lsilt		
				0			
1				0			
				0			
2				0			
				0			
3				0			
4							
5			60/42	0	0-12" SAME		wet @ 5'
				0			
6				0	12"-42" wet, brn-yel/brn mf SAND some silty clay		
				0			
7				0			
				0			
8				0			
9							
10	PAR-54-884-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

Soil Boring Log

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

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

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER:
CONTRACTOR: ~~Cascade~~
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-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				—	BORING ADVANCED TO 15 FT. W/ POINT*, SET TMW (10FT. SCREEN) FROM 5' TO 15'		
				—			
1				—			
				—			
2				—			
				—			
3				~			
				~			
4				~			
				~			
5					END OF BORING @ 15 FT.		
6					*FIELD SCREEING FROM 0' TO 10' WAS 0' ON PID READINGS, NO ODORS, WELL INTO SATURATED ZONE, HENCE, ~~ART~~ CORE SAMPLING NOT NEEDED.		
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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM Parcel 54-884
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~6
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30'S
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-SCREEN 1
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			60/42	0	0-3" TOPSOIL		
				0	3"-42" Moist, cm f SAND, brn, L. f Gravel		
1				0			
				0			
2				0			
				0			
3				0			
4							
5			60/48	0	0-48" Same		
				0			
6				0			WET @ 6'
				4			
7				52			PETROLEUM ODORS
				0			
8				0			
				0			
9							
10					END OF BORING @ 10 FT.		

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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54-884
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈6 FT
DATE:
TIME:
MEAS. FROM:

INSPECTOR: E. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-SCREEN 2
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	TOPSOIL 0-3"		
				0	4"-48" moist, brn crse SAND, L.f. Gravel		
1				0			
				0			
2				0			
				0			
3				0			
				0			
4							
5			60/54	0	0-54" (SAME AS ABOVE, BECOMING gry-brn)		
				0			
6				0			WET @ 6
				0			
7				7			SLIGHT PETROLEUM ODORS
				9			
8				0			
				0			
9				0			
10					END OF BORING @ 10 FT.		

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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54-884
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈6'
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-SCREEN3
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	0-3" TOPSOIL		
				0	3"-48" moist, brn, cmf SAND l. f Gravel, tr. silt		
1				0			
				0			
2				0			
				0			
3				0			
				0			
4							
5			60/54	0	0-36" SAME		
				0			
6				12	PETROLEUM ODORS		WET @ 6'
				0			
7				0			
				0			
8				50	36"-54" wet, brn-gry-grn f. SAND some silt		PETROLEUM ODORS
				44			
9				5			
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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: ~~ETMM~~ PARCEL 54
PROJECT LOCATION:
PROJECT NUMBER: 748810-

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

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER:
CONTRACTOR: Cascade
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-SCREEN 3
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
1 0			60/60	10	0-6" SAME		
				6	6"-40"; wet, gray-or. brn f SAND, some silt, mottled		
1 1				0			
				0			
1 2				0			
				0			
1 3				0			
				0	40"-60" wet, blk, f SAND, some silt, organic		
1 4				0			
				0			
1 5					END OF BORING @ 15 FT.		
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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54-884
PROJECT NUMBER: 748810-

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

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-34 884- SCREEN 4
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	0-3" TOPSOIL		
				0	3"-48" Moist, brn, crs SAND, L. f Gravel, tr. silt		
1				0			
				0			
2				0			
				0			
3				0			
				0			
4							
5			60/48	0	0-30" (SAME)		
				0			
6				13			
				7			
7				7			
				14	30"-48" wet, brn-gray mPSAND, some silt		
8				5			
				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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: ~~FTMM~~ PARCEL 54-884
PROJECT LOCATION:
PROJECT NUMBER: 748810-

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

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER:
CONTRACTOR: ~~Cascade~~ ECDI
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884- SCREEN 4
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			60/60	1	0-42" SAME		
				0			
1				0			
				0			
2				0			
				0			
3				0			
				0	12'-16' WET, blk, mf SAND		
4				0			
				0			
5					END OF BORING @ ~~16~~ 15 FT.		
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

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ≈ 6 FT
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: W, WNW, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-SCREEN5
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	0-3" TOPSOIL 3"-5" ASPHALT 5"-48" Moist, brn-grnbrn crs f SAND L, f Gravel		
				0			
1				0			
				0			
2				0			
				0			
3				0			
				0			
4							
5			60/48	0	0-48" SAME		
				0			WET @ 6'
6				0			
				0			
7				0			
				0			
8				0			
				0			
9					END OF BORING @ 10 FT		
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 524
PROJECT NUMBER: 748810-

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

INSPECTOR: F. ACCORSI
DRILLER: S. FOSTER
WEATHER: WINDY, 30's
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 11-10-17
DATE/TIME FINISH: 11-10-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-SCREEN 6
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	0-3" TOPSOIL 3"-48" Moist, brn, c-m SAND, l. f Gravel, tr. silt		
				0			
1				0			
				0			
2				0			
				0			
3				7			
				0			
4							
5			60/48	0	~~4~~ 0-48" SAME		
				0			
6				0	WET @ 6'		
				0			
7				0			
				0			
8				0			
				0			
9							
10					END OF BORING @ 10FT		

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

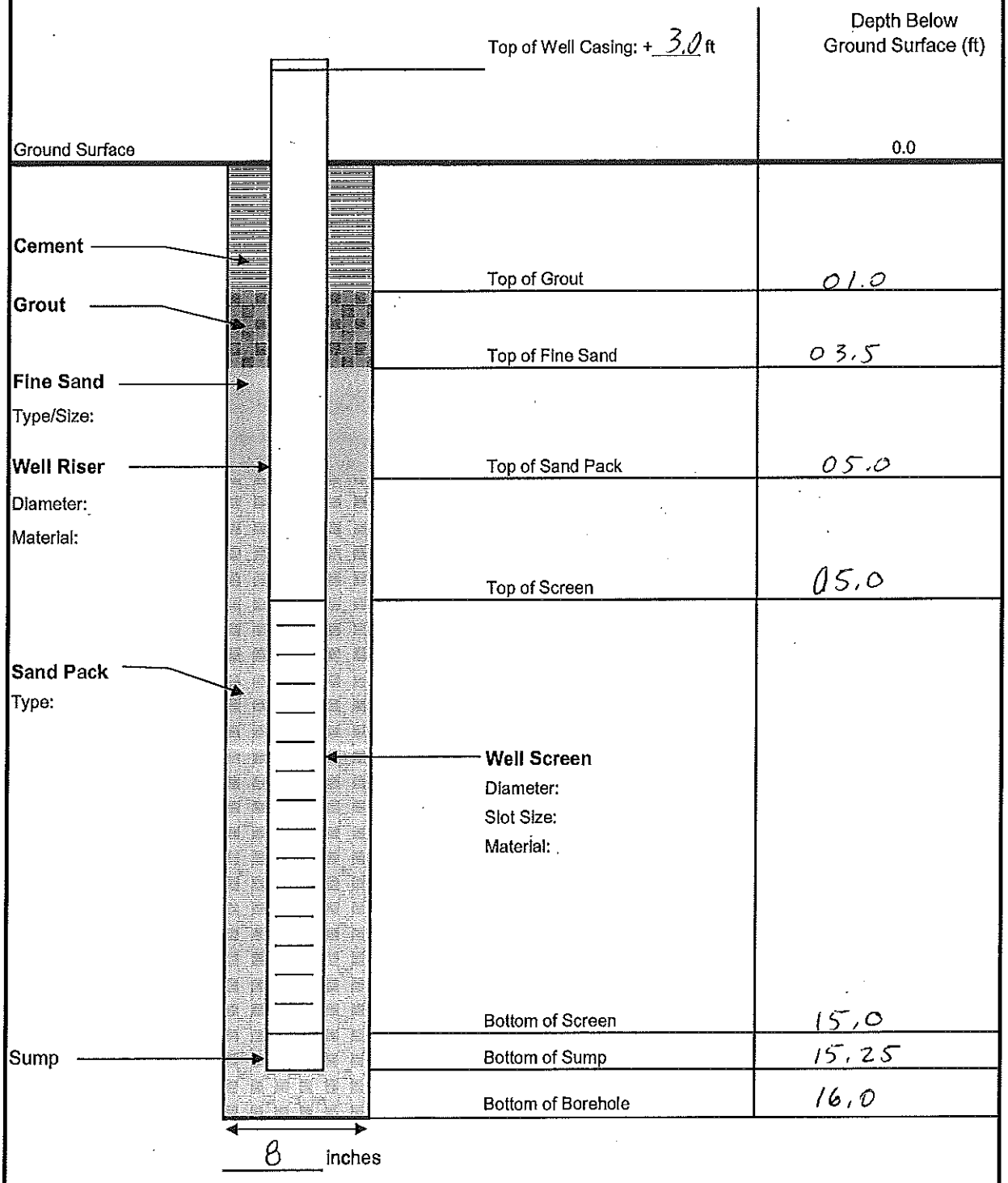
PARSONS

Well Construction Detail (Single Cased - Stickup)

Client: USACE

Well ID: 884-mw-01 NJBWA Permit No.

Date Well Installed: 11-20-17 Location: PAR-54-884-mw-01



Top of Confining Unit (if present): _____

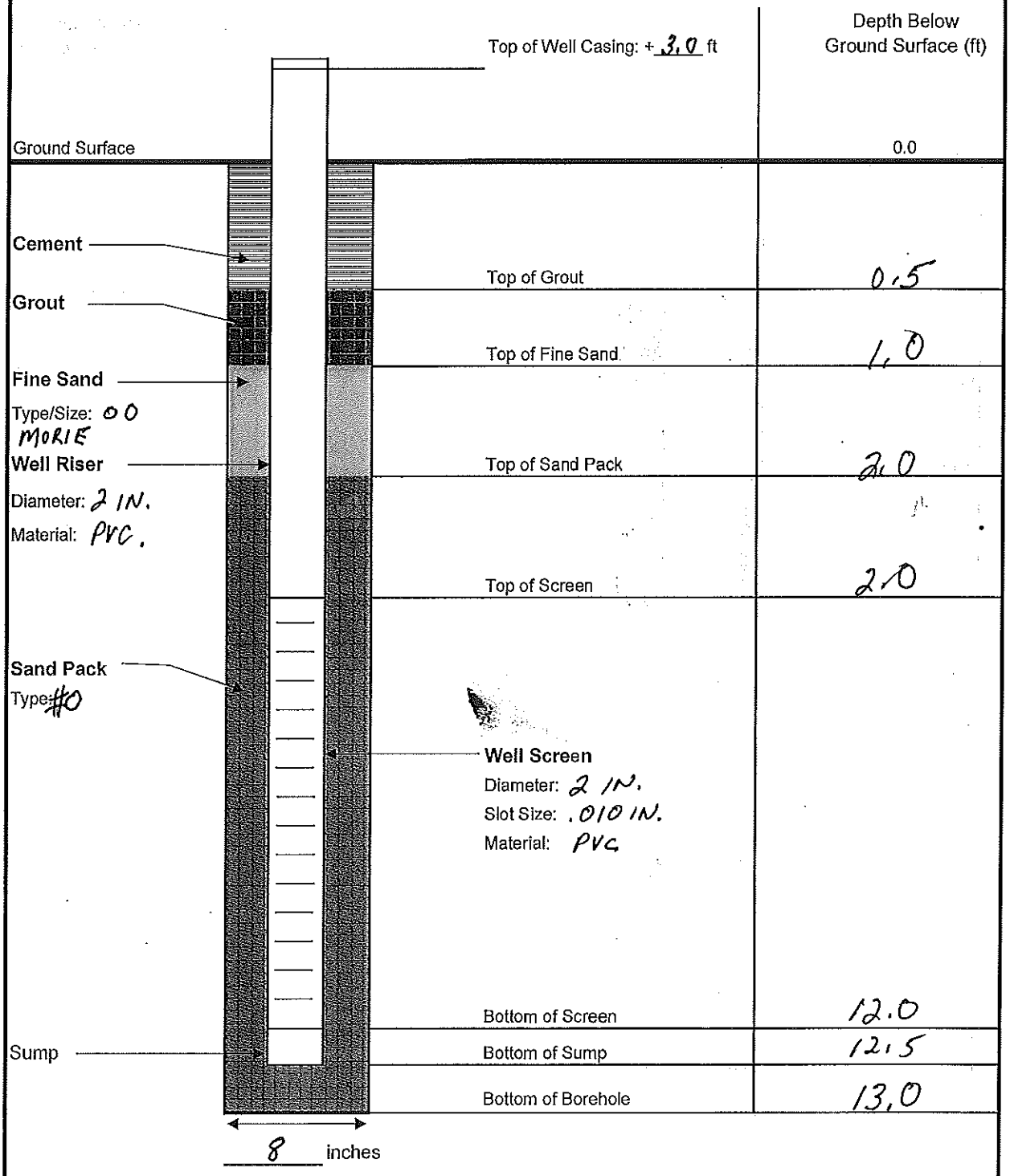
PARSONS

Well Construction Detail (Single Cased - Stickup)

Client: USACE

Well ID: PAR-54-884-MW-02 NJBWA Permit No. E201713772

Date Well Installed: 12-14-17 Location: PARCEL 54, UST 884



Top of Confining Unit (if present): _____

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) #54-884
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: ~5.1' FROM TMW-02
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: K. ATWOOD, T. MCNALLY
WEATHER: 30's PT. CLDY, FLURRIES
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 12-14-17
DATE/TIME FINISH: 12-14-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: PAR-54-884-MW-02
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					HOLLOW STEM AUGER DRILLING TO 13 FT. SOILS: BROWN-GRN BROWN COARSE TO FINE SAND, LITTLE ~~SOME~~ MED TO FINE GRAVEL SOME SILTY CLAY. PID READINGS FROM SOIL CUTTINGS 0 PPM		
1							
2							
3							
4							
5					END OF BORING AT 13 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

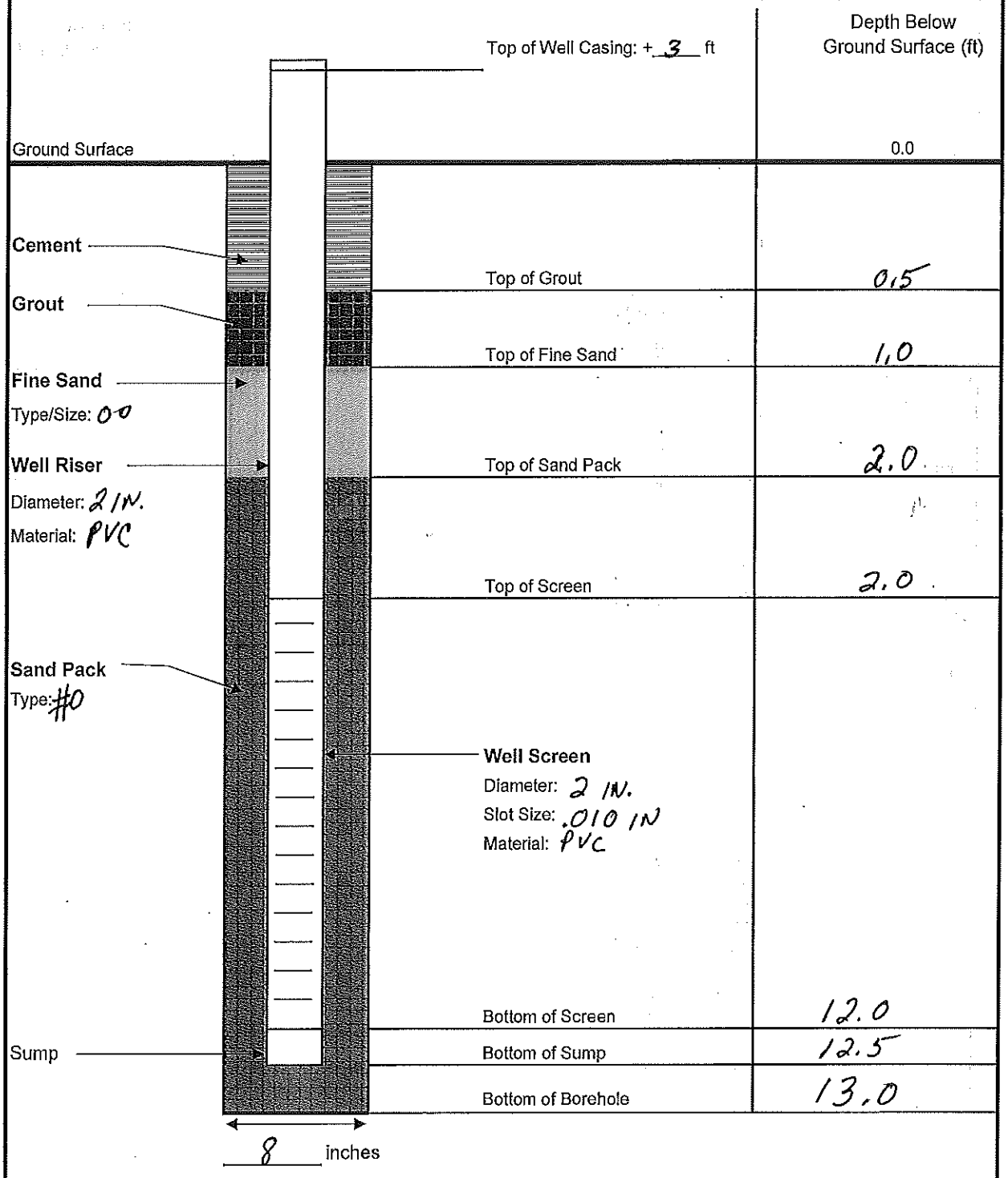
PARSONS

Well Construction Detail (Single Cased - Stickup)

Client: USACE

Well ID: PAR-54-884-MW-03 NJBWA Permit No. E201713773

Date Well Installed: 12-14-17 Location: PARCEL 84, UST 884



Top of Confining Unit (if present): _____

PARSONS

Soil Boring Log

CLIENT: USACE
PROJECT NAME: FTMM - ECP
PROJECT LOCATION: FTMM (Parcel) 54-884
PROJECT NUMBER: 748810-

GROUNDWATER OBSERVATIONS
WATER LEVEL: 4.6' FROM TMW-04
DATE:
TIME:
MEAS. FROM:

INSPECTOR: F. ACCORSI
DRILLER: K. ATWOOD, T. McNALLY
WEATHER: 30'S, PT. CLDY
CONTRACTOR: East Coast Drilling, Inc. (ECDI)
RIG TYPE: Geoprobe(R) 7822DT
DATE/TIME START: 12-14-17 1030
DATE/TIME FINISH: 12-14-17
WEIGHT OF HAMMER: N/A
DROP OF HAMMER: N/A
TYPE OF HAMMER: N/A

BORING/WELL ID: BAR-54-884-MW-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					HOLLOW STEM AUGER DRILLING TO 13 FT.		
1					BROWN TO YELLOW BROWN COARSE TO FINE SAND, SOME MED TO FINE GRAVEL SOME SILT & CLAY		WET ≈ 5'
2							
3					PID READINGS FROM SOIL CUTTINGS 0 PPM		
4							
5					END OF BORING AT 13 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

Attachment C
Field Notes

Nov 9 2017 (cont)

~~1610~~ 1605 (25): Collect samples, PAR-55-800-12-TMW-01-13', VOC + TICs & SVOC + TICs (Dark Grey, Petroleum Odor, Slight Sheen)

1620 (26): Collect samples, PAR-55-800-12-TMW-04-12.5', VOCs + TICs & SVOC + TICs (High NTU - ~~orange~~ - brown color)

1630: Mob back to office, COCs, Quality Control Report

11/09/2017 BD

Nov 10 2017

personnel: F. Accorsi, B. Dietert, C. Grill, T. Hoca
ECDI (Joe, Ramon, Sean, Justin)

Weather: 40-28°, cloudy, windy, & cold.

Agenda: GW Sampling & Soil Boring Screening at PAR-54-884 (UST) & possibly PAR-51-UST-750I

0715: ECDI on-site

0730: H&S Meeting, Discuss Agenda

0740: Load Equipt, Coolers, & Supplies, Calibrate PID, Geoprobe (ECDI), Disposable Teflon Bailers, Decon drums & bags

- All GW samples collected using disposable teflon bailers.

0745: mob to PAR-54-884 (UST Site)

0800: Set-up, Warm-up Geoprobe.

0830: Start drilling 884-SCREEN1

0840: Begin PID screening SCREEN1, decon Geoprobe. WL = 6'
6.5' = 4ppm, 7' = 52ppm, 7'-10' = 0ppm
0-6' = 0ppm. Decon equipt.

0900: Start drilling SCREEN2

0906: Begin PID screening SCREEN2 WL = 6'

0915: 0-6.5' = 0ppm, 7' = 7ppm, 7.5' = 9ppm
7.6'-10' = 0ppm. Decon equipt.

0927: Start drilling SCREEN3

0935: Begin PID Screening SCREEN3

0937: Decommision SCREEN2, backfilled with soil cuttings.

~~SCREEN3~~ SCREEN3 Nov 10 2017 (cont)

0942: 6' = 42 ppm, 8' = 50 ppm; 8.5' = 43 ppm, 9' = 5 ppm, 0-5.5' = 0 ppm

0950: Drillers advancing another 5' (10-15'). Decon. WL = 6'

10-10.5' = 10 ppm, 11'-15' = 0 ppm. Decon

0955: Decommision SCREEN1, backfill with soil cuttings.

1002: Decommision SCREEN3, backfilled with soil cuttings.

1016: Start drilling SCREEN4.

1022: Begin PID screening SCREEN4 WL = 6'

~0-5' = 0 ppm 7-10' = 0 ppm

8.5' = 5 ppm, 8' = 14 ppm, 7.5' = 7 ppm, 7' = 7 ppm, 6.5' = 13 ppm, 5-6' = 0 ppm, 10-10.5' = 7 ppm, 10.5-15' = 0 ppm.

Decon equipt.

1035: Decommision SCREEN4, backfill with soil cuttings.

1040: Start drilling SCREEN5

1046: Begin screening SCREEN5 WL = 6'

1050: No PID hits > 0 ppm ~0-10'

1053: Start drilling SCREEN6

1059: Begin screening SCREEN6 WL = 5.9'

3.5' = 7 ppm, 0-3.8' = 0 ppm, 3.8-10' = 0 ppm. Decon

1110: Decommision SCREEN 5+6, backfilled with soil cuttings.

Nov 10 2017 (cont)

1120: Start drilling PAR-54-884-TMW-01

1126: Begin PID screening TMW-01 WL = 5.1'

1145: No PID hits > 0 ppm TMW-01 ~0-10'

1150 (27): Collect sample, PAR-54-884-TMW-01-10', VOC+TICs & SVOC+TICs (High NTU - "chocolate milk")

1153: Decon Geoprobe

1200: Start drilling TMW-02

1206: PID TMW-02 WL = 5.1'

0-5' = 0 ppm, 7.5' = 11 ppm, 7' = 23 ppm, 8-10' = 0 ppm - Decon

1210 (28): Collect Sample PAR-54-884-TMW-02-10', VOC+TICs & SVOC+TICs (Moderate NTU-Yellow brown Petroleum odor)

1215: Lunch

1300: Start drilling TMW-04

1308: Begin PID screening TMW-04 WL = 4.6'

1318: No PID hits > 0 ppm TMW-04 ~10'

1320: Decommisioned TMW-01 & TMW-02, backfilled with soil cuttings.

1322: Decon Geoprobe

1328: Start drilling TMW-03

1325 (29): Collect sample, PAR-54-884-TMW-04-10', VOC+TICs & SVOC+TICs (High NTU; orange-brown)

1335: No PID hits > 0 ppm TMW-03 ~0-10'

1337: WL = 6.1 (TMW-03). Decon Geoprobe

1345 (30): Collect sample, PAR-54-884-TMW-03-~~10~~ 8.5', VOC+TICs & SVOC+TICs. (Moderate NTU yellow-brown color)

1349: ECDI ent to PAR-98

(Unable to access PAR-51-750J: belongs to county & closed for Vet Day)

Nov. 10 2017 (cont)

1349: 884-TMW-04 decommisioned, backfilled with soil cuttings.

1359: 884-TMW-03 decommisioned, backfilled with soil cuttings.

1405: 800-12 (PAR-55) - Decommision TMW-01, 02, 03, & 04 from yesterday, backfilled with soil cuttings.

1410: Mob to office, pickup supplies (soil sampling) for PAR-98

1430: mob to PAR-98, drill 3 borings, 5' each for 0-0.5' bgs, 1.5-2.0' bgs, and 2.5-3.0' bgs (on hold).

~~1515~~ 1510: Collect sample PAR-98-SB-07-0'-0.5', AROCLOR

1515: Collect sample PAR-98-SB-07-1.5'-2.0', AROCLOR

1505: Collect sample PAR-98-SB-07-2.5-3.0', AROCLOR (Hold)

1520: Collect sample PAR-98-SB-107-1.5-2.0', AROCLOR (FD)

1525: Collect sample PAR-98-SB-07-1.5-2.0' (QA/QC Split)

1530: Collect sample PAR-98-SB-07-0'-0.5'-MS, AROCLOR

1535: Collect sample PAR-98-SB-07-0'-0.5'-MSD

1540: Collect sample, PAR-98-EB-11102017

1600: Prepare COCs, coolers, other paperwork

12-14-[illegible] MW INSTALLATION 30° FLURRIES

0705 ECDI ARRIVED, CONDUCTED H+S MEETING.

0755 MOBILIZE TO PAR-55-800-12-MW-02. HSA DRILLING TO 21 FT BGS. (K. ATWOOD, T. MCNALLY) SCREEN SET FROM ~~10' TO 20'~~. 8' TO 18' BASED ON GW LEVEL TAKEN AT MW-03, WHICH IS 10.2 FT BGS. USED 6 BAGS MORIE #0, 1 BAG #00, ½ BAG BENTONITE GROUT, 0930 DONE

0930-1030 DECON AUGERS, MOBILIZE TO PAR-54-884-MW-03. GW ELEV. IN MW-01 IS 5.9', SCREEN IN THE WELL IS FROM 5' TO 15' BASED ON ~~THAT~~ AND GW IN TMW-02 WAS 5.1' AND GW IN TMW-04 WAS 4.6': DISCUSSED RAISING THE SCREEN INTERVAL IN MW-03 AND MW-02 TO 2'-12' WITH KENT + JULIEN IN WHICH WAS A UNANIMOUS DECISION TO DO SO.

1140 WELL FINISHED (NOT COMPLETED) MOVE 2 DRUMS SOIL TO B.699 STAGING AREA: LUNCH BREAK

1255 MOB. TO PAR-884-MW-02 TO DRILL MW W/SAME SPECS. AS MW-03. EACH USED 6 BAGS #0 MORIE, 1 BAG #00 MORIE, ½ BAG BENT. GROUT.

1440 DONE-WELL FINISHED, CLEAN UP SITE AND PREVIOUS 2 MW INSTALLATION AREAS. MOB. TO 699 STAGING AREA, UNLOAD ½ FULL DRUM, DECON AUGERS, ~~STAGE~~ STAGE MATERIALS FOR 3 MW INSTALLATION. ECDI OFFSITE 1545

PARSONS

WELL DEVELOPMENT REPORT

CLIENT: USACE	WELL ID: PAR-54-884-MW-01
PROJECT NAME: FTMM	DATE: 11/21/17
LOCATION: Oceanport, NJ	PROJECT NO.:

DRILLING METHOD (s):	HSA (w/ Geoprobe)	INSPECTOR:	D. Lolzos
PUMP METHOD (s):	Whale	CONTRACTOR:	ECDI
SURGE METHOD (s):	Block	CREW:	W. Reeve
INSTALLATION DATE:	11/20/17	START DEVELOPMENT DATE:	11/21/17
		END DEVELOPMENT DATE:	11/21/17

WATER DEPTH (TOC):	8.28 ft	INSTALLED POW DEPTH(TOC):	18.25 ft
WELL DIA. (ID CASING):	2 ft	MEASURED POW DEPTH(TOC):	18.25 ft
BORING DIAMETER:	8 ft	SILT THICKNESS:	— ft
		POW AFTER DEVELOPMENT:	— ft

DIAMETER FACTORS (GAL/FT):

DIAMETER (IN):	2	3	4	5	6	7	8	9	10	11	12
GALLONS/ FT:	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	4.08	4.93	5.87

STANDING VOLUME INSIDE WELL = WATER COLUMN X WELL DIAMETER FACTOR = _____ GAL. = A

STANDING WATER IN ANNULAR SPACE =
WATER COL. BELOW SEAL(ft) X (BORING DIAM. FACTOR - WELL DIAM. FACTOR) X 0.3 = GAL. = B

SINGLE STANDING WATER VOLUME = A + B = ... GAL. = C

MINIMUM VOLUME TO BE REMOVED = 5 X C ..... GALS.

ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	pH (std)	CONDUCTIVITY ( )	TEMP ( )	COLOR	TURBIDITY (ntu)	OTHER
surge	1040	1040	1	—	—	—	—	—	—	
purge	1040	1045	5	~4	—	—	—	—	—	DRY
surge	1100	1100	1	—	—	—	—	—	—	
purge	1100	1110	10	~8	—	—	—	—	—	purged DRY
surge	1125	1125	1	—	—	—	—	—	—	
purge	1125	1130	5	~4	—	—	—	—	—	purged DRY
surge	1140	1140	1	—	—	—	—	—	—	
purge	1140	1145	5	~4	—	—	—	—	—	purged DRY
TOTALS/FINAL			35	~20						

COMMENTS:- well purged DRY 4 times + allowed to recover. developed over 1 hour period. water still turbid upon completion.

PARSONS Page _____ of _____

WELL DEVELOPMENT REPORT

CLIENT: US Army Corps of Engineers | WELL ID: PAR-54-884-MW-02

PROJECT NAME: Ft. Monmouth, NJ (FTMM) | DATE: 12/19/17

LOCATION: Parcel 54 | PROJECT NO. : FTMM/Parcel # 54

DRILLING METHOD (s): Hollow Stem Auger | INSPECTOR: Zahar Lay

PUMP METHOD (s): Submersible 12v. Whale Pump | CONTRACTOR: ECDI

SURGE METHOD (s): Surge Block | CREW: Colin T., Roman L.

INSTALLATION DATE: _____ | START DEVELOPMENT DATE: 12/19/17

END DEVELOPMENT DATE: _____

WATER DEPTH (TOC): 8.4 ft | INSTALLED POW DEPTH(TOC): _____ ft

WELL DIA. (ID CASING): 2" 2 in | MEASURED POW DEPTH(TOC): 15 ft

BORING DIAMETER: 8" 8 in | SILT THICKNESS: _____ ft

POW AFTER DEVELOPMENT: _____ ft

DIAMETER FACTORS (GAL/FT):

DIAMETER (IN):	2	3	4	5	6	7	8	9	10	11	12
GALLONS/ FT:	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	4.08	4.93	5.87

STANDING VOLUME INSIDE WELL = WATER COLUMN X WELL DIAM. FACTOR =

6.6 X .163 = 1.08 GAL. = A

STANDING WATER IN ANNULAR SPACE =

WATER COL. BELOW SEAL(ft) X (BORING DIAM. FACTOR - WELL DIAM. FACTOR) X 0.3 =

6.6 X (_____ - _____ = _____) X 0.3 = 4.84 GAL. = B

SINGLE STANDING WATER VOLUME = A + B = _____ + _____ = 5.93 GAL. = C

MINIMUM VOLUME TO BE REMOVED = 5 X C _____ X _____ = 29.6 GALS.

ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	pH (std)	CONDUCTIVITY (_____)	TEMP (___)	COLOR	TURBIDITY (ntu)	OTHER
Purge/Surge	1020	1030	10	10	5.48	0.198	14.01	tan	error	-
"	1030	1040	10	20	5.55	0.129	13.82	tan	error	-
"	1040	1050	10	30	5.10	0.134	14.19	cloudy	4.18	
Purge	1050	1055	5	35	5.12	0.137	14.28	clear	57.9	
TOTALS/FINAL										

COMMENTS:

PARSONS

Page _____ of _____

WELL DEVELOPMENT REPORT

CLIENT: US Army Corps of Engineers

WELL ID: PAR-54-884-MW-03

PROJECT NAME: Ft. Monmouth, NJ (FTMM)

DATE: 12/19/17

LOCATION: Parcel 54

PROJECT NO. : FTMM/Parcel # 54

DRILLING METHOD (s): Hollow Stem Auger

PUMP METHOD (s): Submersible 12v. Whale Pump

SURGE METHOD (s): Surge block

INSTALLATION DATE: _____

INSPECTOR: Zoltar Lacy

CONTRACTOR: ECDI

CREW: Colin T., Roman C.

START DEVELOPMENT DATE: 12/19/17

END DEVELOPMENT DATE: 12/19/17

WATER DEPTH (TOC): 7.5 ft

WELL DIA. (ID CASING): 2 in

BORING DIAMETER: 8 in

INSTALLED POW DEPTH(TOC): _____ ft

MEASURED POW DEPTH(TOC): 15.2 ft

SILT THICKNESS: _____ ft

POW AFTER DEVELOPMENT: _____ ft

DIAMETER FACTORS (GAL/FT):

DIAMETER (IN):	2	3	4	5	6	7	8	9	10	11	12
GALLONS/ FT:	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	4.08	4.93	5.87

STANDING VOLUME INSIDE WELL = WATER COLUMN X WELL DIAM. FACTOR = 7.7 X .163 = 1.2 GAL. = A

STANDING WATER IN ANNULAR SPACE =
WATER COL. BELOW SEAL(ft) X (BORING DIAM. FACTOR - WELL DIAM. FACTOR) X 0.3 =
7.7 X (_____ - _____ = 2.447) X 0.3 = 5.65 GAL. = B

SINGLE STANDING WATER VOLUME = A + B = _____ + _____ = 6.85 GAL. = C

MINIMUM VOLUME TO BE REMOVED = 5 X C _____ X _____ = 34 GALS.

ACTIVITY	START TIME	END TIME	ELAPSED TIME	GALLONS REMOVED	pH (std)	CONDUCTIVITY (_____)	TEMP ( )	COLOR	TURBIDITY (ntu)	OTHER
Purge/Surge	0940	0950	10	15	4.32	0.369	13.25	brown	Cloud	-
"	0950	1000	10	20	3.58	0.371	14.45	brown	cloud	
"	1000	1010	10	~~25~~ 30	4.72	0.38	15.04	cloudy	244	
"	1010	1015	5	35	4.65	0.375	14.71	clear	28.5	
TOTALS/FINAL										

COMMENTS: