FINAL

LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY REPORT FOR NINE LANDFILLS

FORT MONMOUTH, OCEANPORT, MONMOUTH COUNTY, NEW JERSEY

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LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY REPORT FOR NINE LANDFILLS

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LIST OF ACRONYMS

ACRONYM	DEFINITION
CO	carbon monoxide
CWA	Charles Wood Area
FTMM	Fort Monmouth
FS	feasibility study
GEM	Gas Extraction Monitor
GVP	Gas Vapor Probe
LEL	Lower Explosive Limit
MP	Main Post
NJAC	New Jersey Administrative Code
NJDEP	New Jersey Department of Environmental Protection
PID	Photo-Ionization Detector
QA	quality assurance
QC	quality control
RI	remedial investigation

1.0 INTRODUCTION

This report presents the results of the refinement of the landfill boundaries and methane gas survey for the nine landfills (FTMM-02, FTMM 03, FTMM-04, FTMM-05, FTMM-08, FTMM-12, FTMM-14, FTMM-18, and FTMM-25) located at Fort Monmouth (FTMM) in Oceanport, Monmouth County, New Jersey. Eight of the FTMM landfills are located at the Main Post (MP), and one landfill (FTMM-25) is located in the Charles Wood Area (CWA). The location of the eight landfills at the MP is depicted on **Figure 1**, and the landfill located at CWA is shown on **Figure 2**. The landfill boundary refinement and methane gas survey was performed in accordance with the June 19, 2015 *Landfill Boundary Refinement and Methane Gas Survey* letter from the U.S. Army to New Jersey Department of Environmental Protection (NJDEP). The letter stated that as part of the ongoing Remedial Investigation/Feasibility Study (RI/FS) report preparation process, it was determined that data gaps exist between the historic and current estimated limits of the FTMM landfills. This letter outlined that the landfill boundaries would be refined and field validated using test pits, historical aerial photograph review and field observations of the materials uncovered in the pits. In addition, the letter also outlined the requirement of a methane gas survey at the landfills. The NJDEP acknowledged this letter in an email dated July 8, 2015. This report was prepared as a standalone document supplemental to the RI/FS reports.

The intent of the landfill boundary refinement is to determine the landfill extents prior to construction of a vegetated soil cover or functional equivalent that will be placed over each landfill to provide safety protection for future non-residential use. As part of the cap construction, the existing landfill surface will be clear cut and regraded prior to the installation of a vegetated native soil cover or functional equivalent consistent with the NJDEP Solid Waste regulations (New Jersey Administrative Code [N.J.A.C.] 7:26-2A).

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and historical test pit and soil boring data for consistency with the 2015 landfill delineation solid waste criteria discussed further in Section 2.1. In accordance with the June 19, 2015 letter, a methane gas survey was conducted in July 2015 to evaluate the potential presence of methane gas within the landfill boundaries. Test pits were advanced in August and September 2015 to further refine the landfill boundaries. This report provides a summary of these two field investigation activities of the landfill limits. The investigation, results, and determinations for each landfill is presented in individual appendices in this report.

1.1 REPORT ORGANIZATION

This report includes the following sections:

- Section 1 provides an introduction and the organization of the report;
- Section 2 presents the methodology of the landfill boundary refinement and methane gas survey program;
- Section 3 summarizes the findings for the landfills;
- Section 4 presents the references used in preparation of this report; and
- Appendices A through I provide the test pit advancement and methane gas survey results and findings, summary tables and figures, and test pits logs for each landfill.

2.0 LANDFILL BOUNDARY REFINEMENT PROGRAM

2.1 TEST PIT ADVANCEMENT

Prior to test pit advancement, the Army performed vegetation clearance at the nine FTMM landfills to facilitate access to the proposed test pit and methane gas sampling locations. Between August 17 and September 3, 2015, test pits were advanced at the nine FTMM landfills using a mini-excavator. Test pits were typically advanced four feet below ground surface (bgs) and perpendicular to the landfill boundaries as verification of the historical test pits and soil boring logs which indicated that debris was typically found within the four feet of the ground surface. Where the 2010 historical logs indicated waste at greater depths, test pits were advanced deeper to verify the presence of waste.

At each test pit, the excavation was advanced in 6 to 12 inch increments. The excavated material was stockpiled adjacent to each test pit. Test pit contents were visually characterized to determine the presence and type of waste, if applicable. The type, layer thickness, and extent of waste material, and depth of excavation was recorded on the test pit logs. Test pit logs for each landfill can be referenced in Attachment A of each appendix. For health and safety purposes and in accordance with NJDEP Landfill Investigation Technical Guidance (September 2015), test pits were monitored during excavation for Lower Explosive Limit (LEL) with a direct-reading Photo-Ionization Detector (PID) and Multi-gas meter properly calibrated for methane.

Per the Solid Waste Regulations, N.J.A.C. 7:26-1.4, a solid waste landfill is defined as a sanitary landfill, or a "solid waste facility, at which solid waste is deposited on or into the land as fill for the purpose of permanent disposal or storage for a period of time exceeding six months, except that it shall not include any waste facility approved for disposal of hazardous waste". It is generally recognized that scattered debris may exist outside the limits of a consolidated landfill, and these locations are not indicative of the landfill. Based on 2015 test pits observations at FTMM, soils with miscellaneous or isolated singular pieces of debris were differentiated from contiguous solid waste. Therefore in the determination of the refined landfill boundaries specific to FTMM, it is Parsons' professional judgment that test pits containing scattered and non-contiguous debris are outside the landfill bounds and are not considered part of the landfill.

At the FTMM landfills, test pits fell into three categories based on professional judgment, observations, and practicality:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.

2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of *de minimus* quantity; not landfill.

3) Soils only. No solid waste observed*; not landfill*.

Further test pit details including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale are presented in Table 1 of each landfill appendix.

If solid waste indicative of a landfill was observed within a test pit location near the landfill perimeter, then additional step-out test pits were advanced to further refine the landfill boundary. Step-out locations were based on the 2015 test pits and historic test pits previously performed at the landfills. Locations of the historic and 2015 test pits are presented as Figure 1 of each landfill appendix.

Upon completion of each test pit, material from the test pit was returned to its origin and the excavated cover soil replaced. The material and cover soil was compacted with the backhoe bucket to restore the original grade.

2.2 METHANE GAS SURVEY

In accordance with the June 19, 2015 letter from the U.S. Army to NJDEP, *Landfill Boundary Refinement and Methane Gas Survey* stated methane gas surveys will be conducted at the landfills to monitor the potential presence and concentrations of methane gas at the nine landfills.

Methane gas sampling was performed at a total of 95 locations for the nine landfills. At each location, the methane gas soil gas points were sampled using an AMS gas vapor probe (GVP) kit. The kit consists of steel GVP rods attached to a retractable GVP tip; 3/16-inch polyethylene tubing was pre-threaded through the rods and attached to the tip. The GVP tip had a retractable screened section that allows for remote reading of the landfill gas from the surface of the sampling location. The GVP assembly consisting of the rods, tubing and retractable tip was driven to a sampling depth of 3.5 feet bgs with a slide hammer. At the desired sampling depth, the GVP tip was retracted, and the open end of the tubing at the surface was attached to a LANDTEC Gas Extraction Monitor-2000 (GEM-2000) which pumped and provided an instantaneous measurement of landfill gases at the GVP tip. Landfill gas readings were recorded once the tubing volume was purged and the readings had stabilized. Each gas sample was analyzed for percent methane, percent of methane LEL, percent CO (Carbon Monoxide), and percent oxygen. In some locations, the soil gas probe could not be driven to 3.5 feet bgs because the water table occurred shallower than this depth. At these locations, the soil gas probe was driven to a depth six inches above the water table, and variations on the depth of sample collection are noted on Table 2 of each appendix.

The array of gas sampling points (number and location) was designed to meet the objective of determining the presence and concentration of methane gas at each landfill. The survey included a minimum of five (5) interior locations per landfill, and locations were selected to evaluate the areas of highest methane concentrations, If methane was detected at any one of those locations, then additional locations were added to investigate potential off-site migration of methane gas. A QA/QC methane gas sample was taken 1 per every 10 samples.

Details including the soil gas sampling point ID and landfill gas results are presented in Table 2 of each landfill appendix. Locations of the methane gas soil points and where methane was measured greater than 25 percent of the LEL (at 11 of 95 sample locations) are presented as Figure 2 of each landfill appendix.

3.0 SUMMARY OF FINDINGS

Each of the nine FTMM landfills will be discussed as individual appendices to this report. As part of each appendix, the test pit advancement approach, test pit contents, landfill boundary changes, and methane gas survey results are summarized.

3.1 TEST PITS

The refined boundaries for each landfill presented in this report are based on historical test pits and soil borings performed in 2010 by FTMM, test pits performed in 2015 as part of this program, and an examination of historical aerial photographs.

Historical test pits and soil borings were reexamined for consistency with the 2015 landfill delineation landfill waste criteria. Waste material observed in the historical test pits included wood, cinders, asphalt, ash, ceramic plates, slag, brick, glass, broken bottles, cans, wires, plastic, concrete, and metal pieces. At select landfills, some historical test pits that were previously designated to contain landfill debris did not appear did not appear to meet the criteria to be considered landfill solid waste. These historical test pits were re-categorized as having miscellaneous singular pieces of debris or scattered debris that was not contiguous, and this debris of *de minimus* quantity is not representative of landfill solid waste. At seven of the nine landfills (FTMM-02, FTMM-03, FTMM-04, FTMM-05, FTMM-12, FTMM-18, and FTMM-25) one or more boundaries were revised from the 2010 landfill boundaries. Both the 2010 and 2015 landfill boundaries are shown on the figures in the landfill-specific appendices.

3.2 METHANE GAS SURVEY

Methane gas was detected at a total of 18 gas sampling locations at seven of the nine FTMM landfills, and 11 of those sampling locations exceeded 25 percent of the methane LEL. The eighteen locations were at landfills FTMM-02 (3), FTMM-03 (2), FTMM-04 (2), FTMM-08 (2), FTMM-12 (4), FTMM-14 (4), and FTMM-25 (1). When methane gas was detected at a sampling location, step outs were performed to determine the extent of the methane gas. At the nine FTMM landfills, none of the landfill gas readings at sampling locations (including step outs) on the perimeter of the landfill boundaries had methane detections, nor were greater than 25 percent of the methane LEL. This demonstrates that landfill gases are not migrating off-site at the nine landfills.

Based on a review of NJDEP 7:26-2A, an active or passive venting system at the nine FTMM landfills is not necessary. The regulations state that the detection of 25 percent of the LEL of combustible landfill gases, at the perimeter of the sanitary landfill property, or any concentration of any landfill gases within any structures shall trigger the construction of an induced draft or active venting system. Passive gas venting systems may be designed and constructed initially as a preventive measure against sanitary landfill gas migration however, since there is currently no evidence of landfill gas migration, active or passive gas venting measures are not required at this time.

4.0 REFERENCES

New Jersey Department of Environmental Protection. *Field Sampling Procedures Manual*, August 2005, Revised April 2009.

New Jersey Department of Environmental Protection. *Landfill Investigation Technical Guidance*, September 2015.

New Jersey Department of Environmental Protection. *Technical Requirements for Site Remediation*, July 2013.

Parsons. *Remedial Investigation Report for Site FTMM-04, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. August 2014.

Parsons. *Remedial Investigation Report for Site FTMM-05, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. October 2015.

Parsons. *Remedial Investigation Report for Site FTMM-12, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. August 2015.

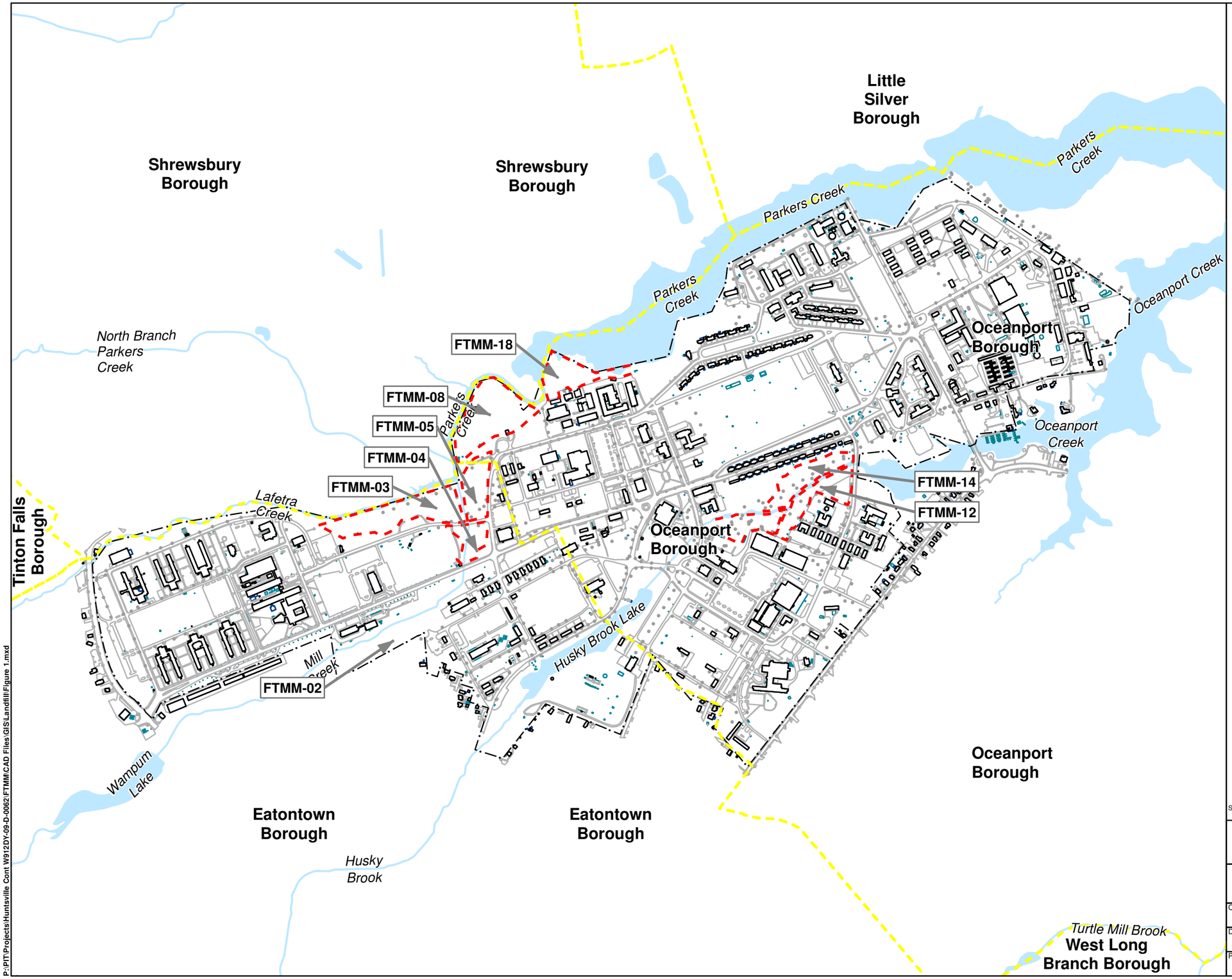
Parsons. *Remedial Investigation Report for Site FTMM-14, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. July 2015.

Parsons. *Remedial Investigation Report for Site FTMM-18, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. October 2015.

FIGURES

Figure 1 Main Post Layout

Figure 2 Charles Wood Area Layout



LEGEND:

- Landfill Boundary
- Municipal Boundary
- Installation Boundary
- Surface Water Feature

N

1 inch = 1,000 feet

0 250 500 1,000 1,500 2,000 2,500 Feet

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

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
MAIN POST LAYOUT	
CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE 1
PROJECT NUMBER: 748810-06035	FILE: Figure 1.mxd

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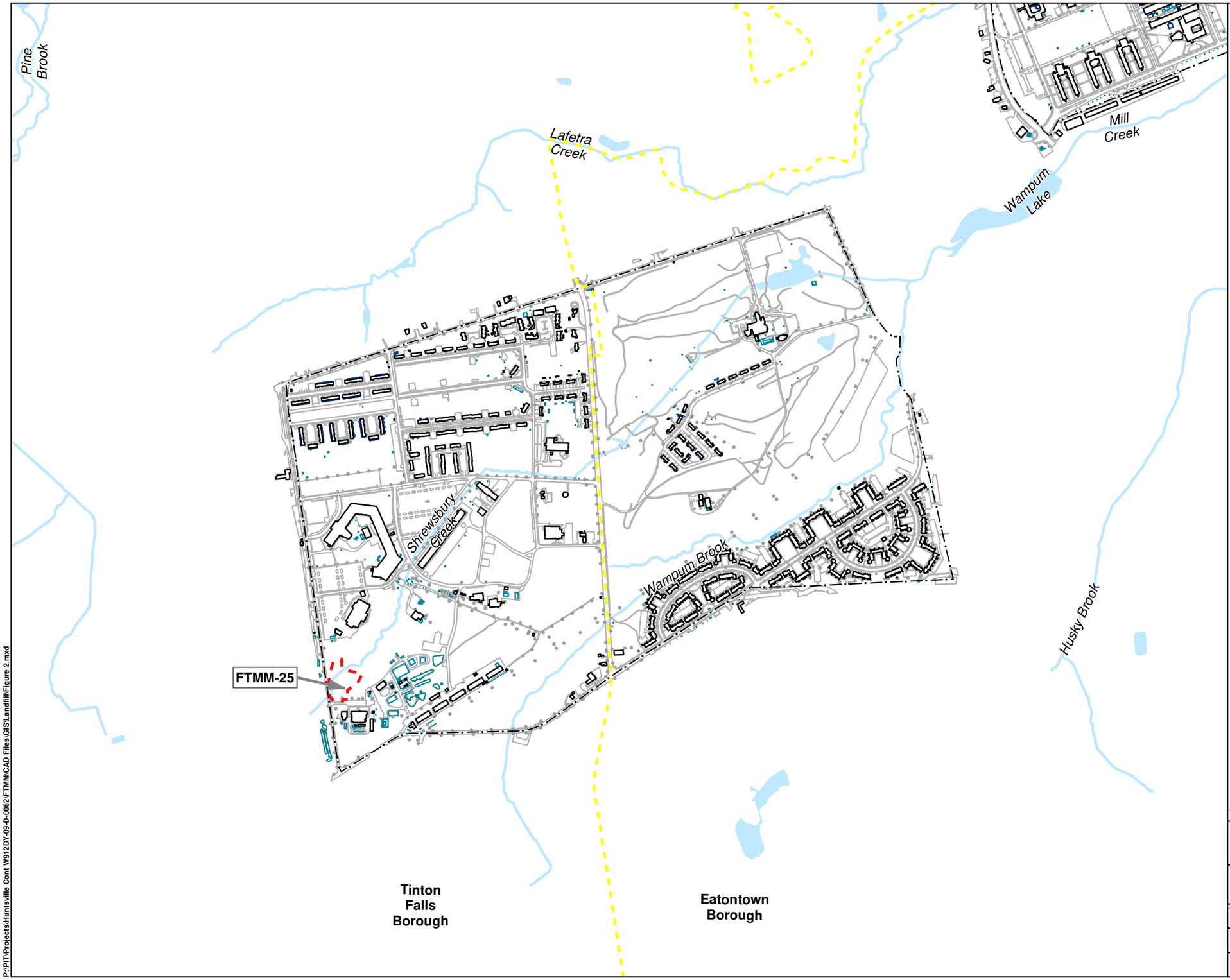

LEGEND:

- Landfill Boundary
- Municipal Boundary
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1 inch = 1,000 feet

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

PARSONS 401 Diamond Drive NW, Huntsville AL	Fort Monmouth New Jersey
CHARLES WOOD AREA LAYOUT	
CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE 2
PROJECT NUMBER: 748810-06035	FILE: Figure 2.mxd

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APPENDICES

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Appendix B FTMM-03: Landfill Boundary Refinement and Methane Gas Survey Results
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APPENDIX A

FTMM-02: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX A: FTMM-02 Landfill Boundary Refinement and Methane Gas Survey Results

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Attachment	Title
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1.0 LANDFILL BOUNDARY REFINEMENT SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries will be discussed in further detail in the Remedial Investigation (RI) Report for FTMM-02 that will be issued under separate cover. These changes are reflected on **Figure A1**. The historical information review identified data gaps in the 2010 landfill boundaries, specifically at the southwestern boundary and at the southern part of FTMM-02 directly along the former railroad line which needed to be addressed during the landfill boundary refinement field activities. In addition, subsequent to the preparation of the RI Report for FTMM-02, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. Some historical test pits (16C1, 19, 20, 22, 24, and 24A) did not appear to meet the criteria to be considered landfill solid waste. The designation of these historical test pits was modified on **Figure A1** to indicate landfill solid waste was not present.

Test pits during the landfill boundary refinement were advanced along the 2010 landfill boundaries to refine the landfill extent, and to address the data gaps identified along the southern boundary. To form a more comprehensive view of the landfill, additional test pits were performed in other areas of the landfill including: 1) in the western and southwestern corner of FTMM-02 after landfill solid waste was found in that area to better define the horizontal limits of the landfill; 2) in the areas of historical test pits 14 through 17 in the eastern and southeastern area of the landfill to confirm the contents and categorization of those historical test pits; and 3) in the interior of the landfill since there was limited test pit data in this area. Test pits were advanced at a total of 36 locations at FTMM-02 as part of the landfill boundary refinement activities on August 17, August 18, August 28, and August 31, 2015. Historical (2010) and the 2015 test pit locations are provided in **Figure A1**.

Logs for the 2015 test pits are provided in **Attachment A-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table A1**.

Observations of the 2015 test pits along the northern boundary bordering Mill Creek either did not contain landfill solid waste or contained miscellaneous debris such as asphalt, aluminum, paper, plastic, glass, wire, rusted metal, and silt fence. The miscellaneous singular pieces of debris and scattered debris that was not contiguous was categorized as debris of *de minimus* quantity and did not meet the criteria to be considered as part of the delineated landfill. These observations were consistent with the information contained in the Construction Closeout Report (Princeton Hydro, 2011) documenting that the 2009 creek slope re-grading along the FTMM-2 northern creek boundary indicating no landfill debris and only surface debris was found during those activities. Therefore, the FTMM-2 northern landfill boundary was revised as shown on **Figure A1**.

In the western corner, landfill solid waste at least two feet in thickness was observed in M2TP2 and M2TP18, and additional step-out test pits were performed. As a result, the landfill boundary was extended (as shown on **Figure A1**) to the west to incorporate the landfill solid waste found in M2TP23 and M2TP24, and south to the abandoned railroad bed to capture the landfill solid waste found in M2TP19, M2TP20, and M2TP21, and M2TP22.

The 2015 tests pits performed in the eastern and southeastern area of the landfill (M2TP28, M2TP29, M2TP34, M2TP35, and M2TP36) confirmed the presence of landfill solid waste consistent with the historical test pit logs. Therefore, no change in the landfill delineation was made along this boundary.

Based on historical aerial photographs in conjunction with 2015 test pit data, the southern boundary of the landfill was moved north to correspond with the northern edge of the abandoned raised railroad bed where the former railroad bed was constructed prior to any historical record of landfilling in this area. The historical photographs depict the progression of suspected filling activities that occurred to produce the FTMM-02 landfill. The landfill clearly post dated the construction of the raised railroad bed in these photographs, and this physical boundary formed the southern boundary of the landfill. The southern boundary was further refined based on the 2015 test pits which confirmed the presence of landfill solid waste (M2TP9 and M2TP22), or contained scattered debris that is not contiguous (M2TP6 and M2TP11).

Figure A1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of fourteen (14) landfill gas readings (including one QA/QC sample) were measured at thirteen soil gas locations at FTMM-02 as part of the methane gas survey. Sampling was conducted on July 31, August 3, and August 4, 2015. Methane was detected at three locations (M2SG2, M2SG3, and M2SG4). Two of the locations (M2SG2 and M2SG3) exceeded 25 percent of the methane LEL. These two locations were located on the interior of the landfill (west-central). The five step out locations (M2SG9, M2SG10, M2SG11, M2SG12, and M2SG13) were measured based on the methane detections. Soil gas locations on the perimeter (including step outs) of the landfill did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-02. The methane gas survey indicate the area within the landfill where methane was found above 25 percent of the LEL is limited. The methane detections are most likely attributed to methane gas generating conditions at the landfill, and to natural methane gas generating conditions from the decomposition of organics in this area (FTMM-02 is covered with dense patches of phragmites which may also indicate natural methane gas generating conditions). The landfill gas readings are summarized in **Table A2.** The soil gas sampling locations and the locations where landfill gas exceeded 25 percent of the LEL are provided in **Figure A1**.

3.0 REFERENCES

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

U.S. Army Office of the Assistant Chief of Staff for Installation Management. 2012. M-2 Landfill (FTMM-02) Remedial Action Progress Report, U.S. Army Garrison Fort Monmouth, Main Post, Fort Monmouth, New Jersey. March 2012.

TABLES

Table A1 Landfill Boundary Refinement Summary

Table A2 Methane Gas Survey Results

Table A1
Landfill Boundary Refinement Summary
Site FTMM-02
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M2TP1	Y	1	Solid waste including asphalt, aluminum cans, paper, misc plastic, glass indicative of landfill.
M2TP2	Y	1	Solid waste including rusty meal, aluminum, pantyhose, glass jars, bottles, rope, lots of misc plastic indicative of landfill.
M2TP3	N	2	Debris of de minimus quantity; not landfill.
M2TP4	Y	1	Solid waste including burned lumber, ash, misc plastic, wire, broken glass indicative of landfill.
M2TP5	N	2	Debris of de minimus quantity; not landfill.
M2TP6	N	2	Debris of de minimus quantity; not landfill.
M2TP7	N	3	No solid waste observed; not landfill.
M2TP8	N	2	Debris of de minimus quantity; not landfill.
M2TP9	Y	1	Solid waste including wire, glass jars and bottle, misc plastic, burned lumber, metal cans, broken ceramic plates indicative of landfill.
M2TP10	N	2	Debris of de minimus quantity; not landfill.
M2TP11	N	2	Debris of de minimus quantity; not landfill.
M2TP12	N	3	No solid waste observed; not landfill.
M2TP13	N	2	Debris of de minimus quantity; not landfill.
M2TP14	N	3	No solid waste observed; not landfill.
M2TP15	Y	1	Solid waste including wood chips, metal, concrete indicative of landfill.
M2TP16	N	2	Debris of de minimus quantity; not landfill.
M2TP17	N	2	Debris of de minimus quantity; not landfill.
M2TP18	Y	1	Solid waste including misc plastic, glass jar and bottles, photographic film, broken glass, metal wire, paper, wood, concrete indicative of landfill.
M2TP19	Y	1	Solid waste including tire, glass bottle, paper, misc. plastic, metal, film indicative of landfill.
M2TP20	Y	1	Solid waste including old trash can, glass bottles, misc plastic ,rusty metal, paper indicative of landfill.
M2TP21	Y	1	Solid waste including paper, glass bottles, misc plastic indicative of landfill.
M2TP22	Y	1	Solid waste including lumber, misc plastic, glass bottles and jars, paper, hubcap, comb, indicative of landfill.
M2TP23	Y	1	Solid waste including drywall, plastic, glass bottles, misc plastic indicative of landfill.
M2TP24	Y	1	Solid waste including glass bottles/jars, misc plastic, shoe sole, metal pipe indicative of landfill.
M2TP25	N	3	No solid waste observed; not landfill.
M2TP26	N	3	No solid waste observed; not landfill.
M2TP27	Y	1	Solid waste including glass bottles, rusted mteal, misc plastic indicative of landfill.
M2TP28	Y	1	Solid waste including burned wood, plastic bag, misc plastic, glass bottlems, broken glass, paper, nylons, plastic, misc metal indicative of landfill.
M2TP29	Y	1	Solid waste including misc plastic, plastic bags, glass bottles, broken glass, plastic bottles, metal wire, fabric, rusting metal indicative of landfill.
M2TP30	N	2	Debris of de minimus quantity; not landfill.
M2TP31	Y	1	Solid waste including ash, terracotta tile, wood, fabric, concrete indicative of landfill.
M2TP32	Y	1	Solid waste including ash, burned wood, broken glass, misc metal, misc plastic, metal wire indicative of landfill.
M2TP33	N	3	No solid waste observed; not landfill.
M2TP34	Y	1	Solid waste including concrete, wire, ash, coal indicative of landfill.
M2TP35	Y	1	Solid waste including terracotta tile, broken glass, glass bottles, broken concrete, brick indicative of landfill.
M2TP36	Y	1	Solid waste including ash, coal, slag, terracotta tile, blue tile indicative of landfill.
M2TP37	Y	1	Solid waste including ash, coal, burned wood, brick, misc. plastic, concrete, small pieces of metal, glass bottles indicative of landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

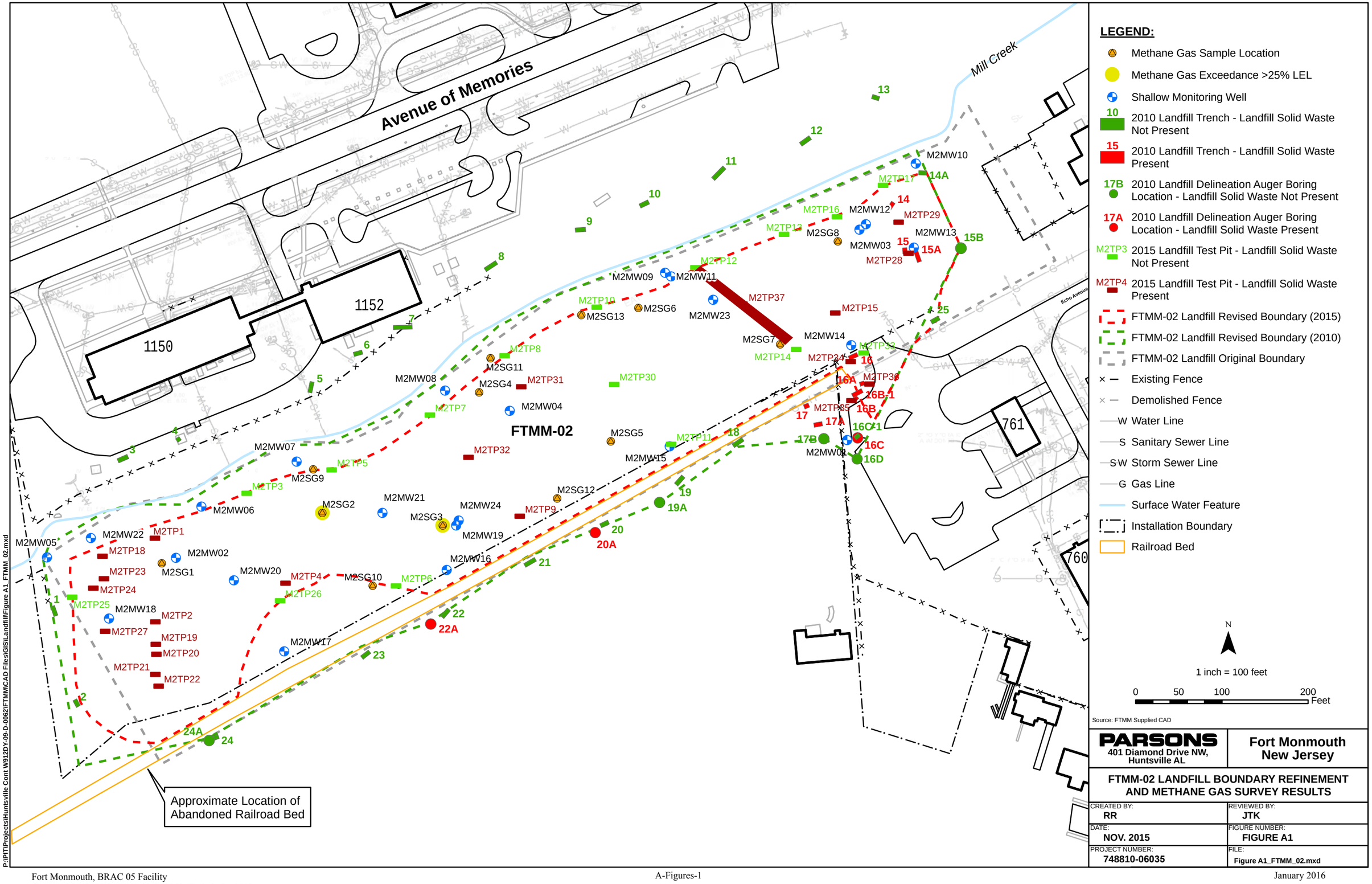
Table A2
Methane Gas Survey Results
Site FTMM-02
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M2SG1	8/3/2015	0.0	0.0	5.0	16.4	
M2SG2	7/31/2015	14.5	OOR	15.3	1.2	
M2SG3	8/3/2015	8.8	OOR	8.0	1.4	
M2SG4	7/31/2015	1.2	24.0	4.5	9.9	
M2SG5	7/31/2015	0.0	0.0	1.1	19.8	
M2SG6	7/31/2015	0.0	0.0	4.4	16.6	
M2SG7	8/3/2015	0.0	0.0	5.6	15.2	
M2SG8	7/31/2015	0.0	0.0	4.9	15.6	
M2SG8QA	7/31/2015	0.0	0.0	3.8	15.8	QA Sample
M2SG9	8/4/2015	0.0	0.0	3.1	17.6	Step out
M2SG10	8/4/2015	0.0	0.0	6.5	15.3	Step out
M2SG11	8/4/2015	0.0	0.0	0.8	19.8	Step out
M2SG12	8/4/2015	0.0	0.0	2.1	18.5	Step out
M2SG13	8/4/2015	0.0	0.0	1.1	20.1	Step out

Notes:
1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.
2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure A1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- 10 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 15 — 2010 Landfill Trench - Landfill Solid Waste Present
- 17B — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 17A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M2TP3 — 2015 Landfill Test Pit - Landfill Solid Waste Not Present
- M2TP4 — 2015 Landfill Test Pit - Landfill Solid Waste Present
- FTMM-02 Landfill Revised Boundary (2015)
- FTMM-02 Landfill Revised Boundary (2010)
- FTMM-02 Landfill Original Boundary
- Existing Fence
- Demolished Fence
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line
- Surface Water Feature
- Installation Boundary
- Railroad Bed

N

1 inch = 100 feet

0 50 100 200 Feet

Source: FTMM Supplied CAD

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

FTMM-02 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE A1
PROJECT NUMBER: 748810-06035	FILE: Figure A1_FTMM_02.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure A1_FTMM_02.mxd

ATTACHMENTS

Attachment A-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP1

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R.McDonald
CONTRACTOR: AWT
START DATE: 081815 | 0910
COMPLETION DATE: 081815 | 0925
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae Plus	VOC/CO/H2S LEL/Oxy	Calibrated Passed	081815 / 0730

REMARKS:

LOCATION SKETCH: Creek

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-2'	
2					3/4 gravel for road	
3					silt fence barrier @ ~2'	
4					2-4'	
5					Sandy loam mixed w/waste, including: asphalt, aluminum cans, paper, misc. plastic, glass, etc. dk brown-black, w/mottled yellow, green	
6					multi-meter reading: 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP2

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748816
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815/1015
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

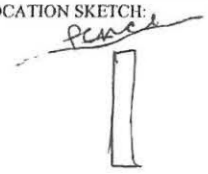
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC / CO / H_2S / LEL / Oxy	calibrated passed	081015/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1 brown, silty loam, roots 1-4 SAA, w/ waste, including rusting metal, aluminum, pantyhose, glass jars + bottles, rope, lots of misc. plastic multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP3

PROJECT: FTMM
LOCATION: Landfill #2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R.McDonald
CONTRACTOR: ANT
START DATE: 081915 | 0854
COMPLETION DATE: 081515 | 0904
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

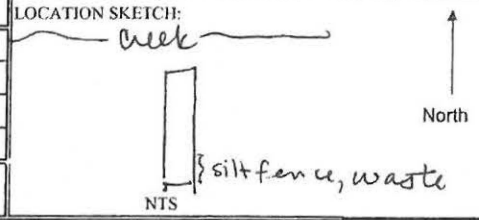
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC | CO | H_2S LEL | Oxy	cal. passed	081815/0930

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2 brown silty sandy loam, root zone 2-4 SAA, increasing sand grading to orange sand, med., well sorted • silt fence under gravel road approx. 1.5' bgs @ S. end of pit; 3/4 gravel for road in this area • waste appears just below silt fence @ S. end of pit. Includes glass jar, misc. plastic, metal wire, aluminum can, rusted metal multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP~~#~~4

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 081815 | 0950
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	18"	4'	mini excavator

GROUNDWATER DATA

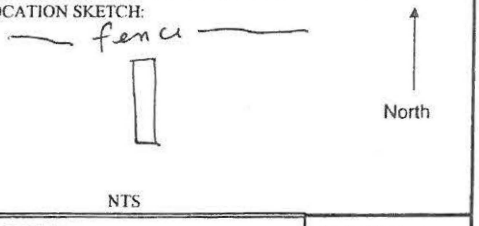
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H2S LEL/Oxy	Cal. Passed	081815/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2.5 brown, silty loam, large tree roots (3+") 2.5-4.5' waste – black sand, burned lumber, ash, misc. plastic, wire, broken glass multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP5

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 081815 / 0837
COMPLETION DATE: 081815 / 0845
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4.5'	Mini-excavator

GROUNDWATER DATA

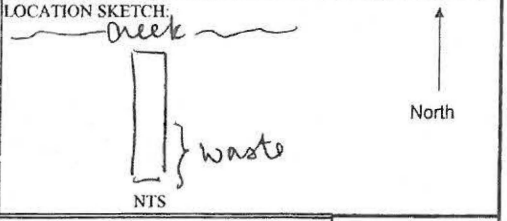
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S/ LEL/ Oxy	Cal. passed	081815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5 brown silty sandy loam 1.5-4.5 SAA, increasing sand grading to mustard yellow sand, well sorted, med. • Some waste including misc. plastic, coke bottle, small bits of rusted metal. • Waste appears more concentrated @ S. end of pit, tapering to no waste @ N. end multi-rae reading: 0 • manhole w/ vent stack, sign post immediately West of TP5	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP6

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	3'	4'	mini-excavator

GROUNDWATER DATA

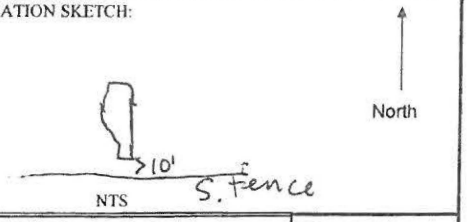
DATE / TIME	0835		
DEPTH TO WATER	4'		

MONITORING DATA

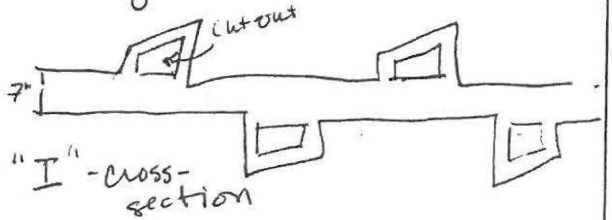
INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' dk brown loam, silty Little waste except large pieces of rusting metal- approx. 7" across solid span, 6' long exposed but continue underground	



multi-rae reading: 0

* some concrete @ bottom of test pit

• S. end of pit approx. 10' from boundary fence

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP7

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 081815 | 0817
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4.5'	mini-excavator

GROUNDWATER DATA

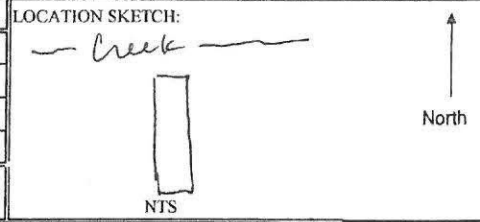
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC / CO/H_2S / LEL / CH_4	calibration passed	081815 / 0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0 – 1.5 brown silty sandy loam, rootzone	
2					1.5 – 4.5 orange sand, little gravel med. grained, well sorted, sl. moist	
3						
4						
5					No waste encountered	
6					multi-gas meter: ~~0~~	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP8

PROJECT: FTMM
LOCATION: M2 Landfill

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815 | 0755
COMPLETION DATE: 081815 | 0815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6	18"	4'	mini-ex

GROUNDWATER DATA

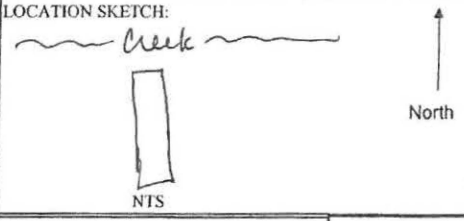
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H2S LEL/CH4	Calibration Passed	081815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3.5 Silty sandy loam, brown, root zone 3.5–4 SAA, top of waste @ ~4'. Waste includes brick, misc. plastic, glass bottle, plastic cup, sm. pieces of concrete oxidized (rusted) color multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP9

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: K. McDonald
CONTRACTOR: AWT
START DATE: 091915
COMPLETION DATE: 091915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini excavator

GROUNDWATER DATA

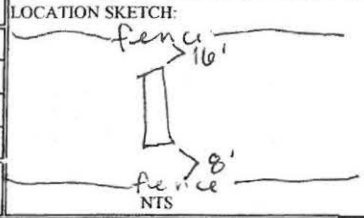
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	091915 0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty loam, roots 1'-4' SAA, waste mixed in. Waste includes wire, glass jars + bottles, misc. plastic, burned lumber, metal cans, broken ceramic plate Send of pit is approx. 8 ft from boundary fence • Multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP10

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08/17/5/1455
COMPLETION DATE: 08/17/5
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini excavator

GROUNDWATER DATA

DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H_2S/ LEL/CH_4/Oxy	calibration passed	08/17/5/1200

REMARKS:

LOCATION SKETCH:

NTS

North

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3. brown silty, sandy loam, root zone 3-4' asphalt, metal banding, trash interbedded w/ roots N. end of pit is approx. 5' South of rip-rap multi-rae meter readings = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP11

PROJECT: FTMH
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 / 0745
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	~~3'6"~~	3'	mini excavator

GROUNDWATER DATA

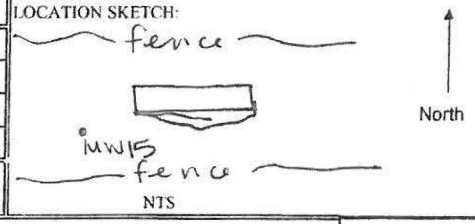
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / Oxy	Cal. passed	081915 / 0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8 brown silty loam, dry waste includes asphalt 0.8-3' SAA, no asphalt, large pieces of concrete, including one @ 3' some metal (old pipe, strapping) multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP12

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081715/ 1540
COMPLETION DATE: 081715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae	VOC/CO/H_2S	Cal.	081715/1200
Plus	LEL/Oxy	passed	

REMARKS:

LOCATION SKETCH: North

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2.5 - silty, sandy loam, brown, root zone. Some 3/4 road rocks 2.5-4 SAA, branches + stumps, sl. darker No debris Multi-rae readings: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP13

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081715 1420
COMPLETION DATE: 081715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	18"	~~5~~ 4'	mini excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H2S LEL/Oxy	Cal. Passed	08/17/15 /1200

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4 brown silty sandy loam - misc. tar/asphalt/coal (former road way?), misc. other debris (plastic bottle, paper) some mustard-brown sand *did not encounter filter fabric readings on MultiRae: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:
PROJECT: FTMM-Landfills (02)	TEST PIT NO.: M2TBP14
LOCATION: M2TP14	JOB NUMBER: 748810.06035
	GROUND ELEV:
	INSPECTOR: R.McDonald
	CONTRACTOR: AWT
	START DATE: 091715
	COMPLETION DATE: 091715
	CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	1.5'	3'	mini excavator

GROUNDWATER DATA

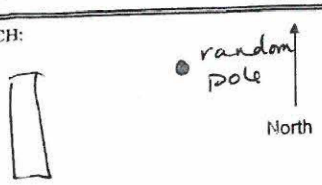
DATE / TIME			
DEPTH TO WATER			Not encountered

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/H_2S/CH_4/CO/Oxy	cal. passed	091715/1200

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-2 - Loam, brown, w/ 3-4" angular cobbles, root zone	
2					2-3' green-gray sandy clay, oxidation on plastic, some cobbles	
3						
4						
5					TD = 3' bgs No waste encountered	
6						
7					Multi-meter: ~~0~~ (no indication of waste or decomposition)	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP15

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081715 / 1305
COMPLETION DATE: 081715
CHECKED BY:

18 strides

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
	18"	4'	mini excavator

GROUNDWATER DATA

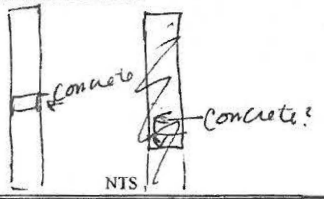
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H_2S/CH_4/Oxy		

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5 - silty brown sandy loam root zone	
2					1.5-2.2 woodchips/mulch (decomposing)	
3						
4					2.2-4 dk brown silty sand w/ clay, decomposing	
5					1 bent piece of metal organic matter	
6					* 2.5' wide piece of concrete @	
7					South end of test pit.	
8						
9						
10					S. End of pit @ approx.	
11					mulch/woodchips start approx.	
12						
13					debris: 2 small pieces misc. plastic,	
14					1-4" x 4' piece of steel, 1/2 brick	
15					Multi-rae readings 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP16

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: K. McDonald
CONTRACTOR: AWT
START DATE: 081715
COMPLETION DATE: 081715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	3.5	mini excavator

GROUNDWATER DATA

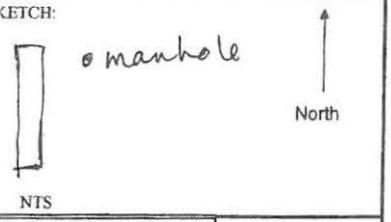
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / H_2S / CH4 / CO / LEL / Oxy	calibration passed	081715/1200

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2.0 - brown silty sandy loam, root zone Silt fence fabric @ 2.5 ft ~~fabric~~ ~~load~~ - fabric is likely associated w/ gravel ~~road~~ 2 @ 3.5 mustard brown to grayish green sandy soil. misc. plastic, pepsi can *No groundwater *readings on multi-rae = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP17

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748010
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 080715/1350
COMPLETION DATE: 080715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
12'	18"	3'	mini-excavator

GROUNDWATER DATA

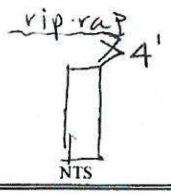
DATE / TIME	
DEPTH TO WATER	NA

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / H_2S / CH_4 / CO / LEL	Calibration passed	080715/1200

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–0.8 - brown silty sand - topsoil 0.8 - 3 mustard brown + gray-green sand, small pieces of plastic, slight odor but no reading on multi-rae (mustard brown to North/stream, gray-green to south.) *N. end of pit is approx. 4ft South of stream rip-rap readings on multi-rae = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP1 (FurthestWest)

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748610
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815/0928
COMPLETION DATE: 081815/0944
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	18"	4'	mini-excavator

GROUNDWATER DATA

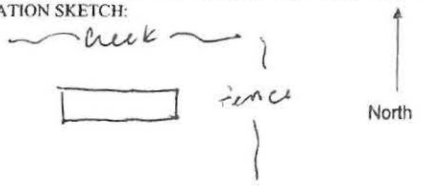
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/H2S	Calibration	081815/0730
	CH4/CO/LEL	passed	

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' - brown silty, sandy loam, roots 2'-4' SAA, w/ mixed waste. Includes: misc. plastic, glass jar, glass bottles, photographic film, broken glass, metal wire, paper, wood, concrete. multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS | CLIENT: | TEST PIT NO.: M2TP19 (20'S of TP2)

PROJECT: FTMH
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	18"	Mini Excavator

GROUNDWATER DATA

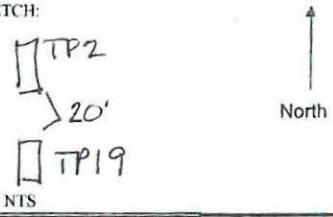
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / Oxy	cal. passed	081815 / 0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.5 - brown silty loam	
2					0.5-1.5 - waste tire, glass bottles, paper, misc. plastic, misc. metal, film	
3						
4					multi-rae reading: 0	
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP20 (40'S of TP2)

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748816
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 08/18/15
COMPLETION DATE: 08/18/15/1124
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	3.5'	mini excavator

GROUNDWATER DATA

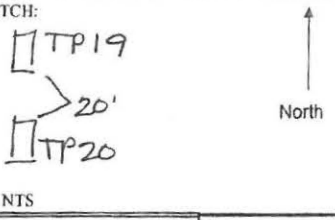
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	08/18/15/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5	
2					1.5-3.5	
3					waste including old trashcan,	
4					glass bottles, misc. plastic,	
5					rusty metal, paper, etc.	
6					multi-rae reading: 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP21

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	2'	Mini Excavator

GROUNDWATER DATA

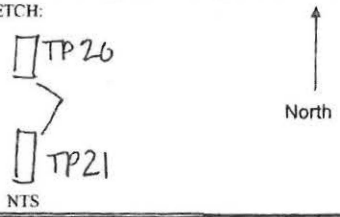
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	08/815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1 brown silty loam	
2					1-2 waste including paper, glass bottles, misc. plastic	
3					multi-rae reading: 0	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP22

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	2.5	mini-ex.

GROUNDWATER DATA

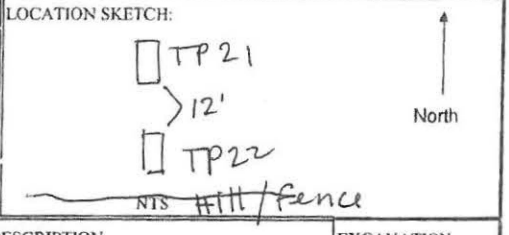
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H2S LEL/Oxy	Cal. Passed	081815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1 brown silty, sandy loam. Wet 1-2.5 waste - lumber, misc. plastic, glass bottles/jars, paper, hubcap, comb binding - This is in a low area, ground is saturated. - multi-rae reading: 0 - Cannot move further south due to steep hill	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP23 (20' SW of TP)

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815 1210
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	3'	mini-ex.

GROUNDWATER DATA

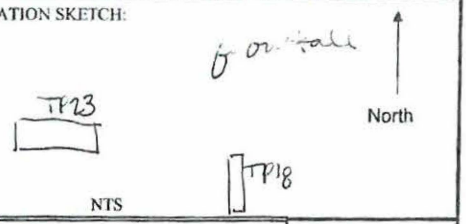
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	Calibration Passed	VOC/CO/H2S 1E/0xy	081815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5 silty, sandy loam, brown, lots of tree roots	
2					1.5-3 waste - gypsum board (drywall), plaster	
3					glass bottles, misc. plastic	
4						
5					multi-rae reading: 0	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP24

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	1.5'	3'	mini-ex.

GROUNDWATER DATA

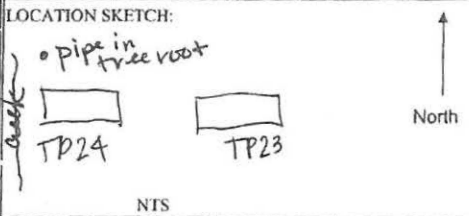
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	Calibration Passed	VOC/CO/H2S LEL/Oxy	081815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5 silty, sandy loam, brown, tree roots, moist 1.5'-3' waste: glass bottles/jars, misc. plastic, sole of a shoe, metal metal pipe coming out of tree roots approx. 5ft N of this pit (see pictures) multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP25

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081815
COMPLETION DATE: 081815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-ex.

GROUNDWATER DATA

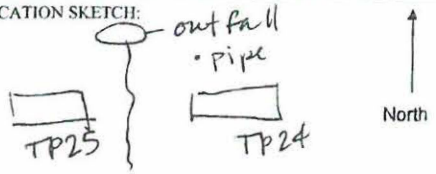
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy	Calibration passed	081815/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' dk brown silty loam, lots of organic matter + tree roots No Waste • Surface debris in area multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP26 (20'SSW from TP4

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748010
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 091915/0848
COMPLETION DATE: 091915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	Cal. passed	091915/0720

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown, sandy, silty loam, dry, moister/darker w/ depth * No waste · multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP27

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R.M Donald
CONTRACTOR: AWT
START DATE: 081915
COMPLETION DATE: 081915 | 0915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	3'	mini-excavator

GROUNDWATER DATA

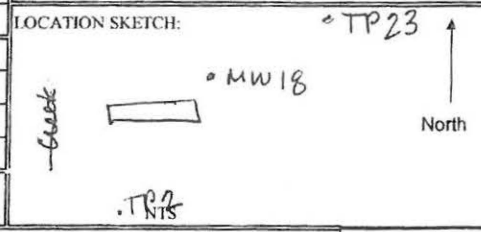
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/oxy	cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-1.5' brown silty loam, dry 1.5-3' SAA, w/ waste - glass bottles, twisted metal, misc. plastic soil becomes rust-colored, sandy multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MZTP28

PROJECT: FTMM
LOCATION: LandFill MZ

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082815/1221
COMPLETION DATE: 082815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

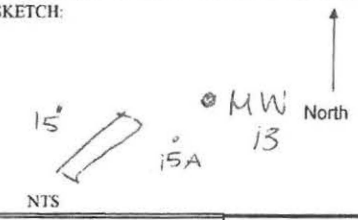
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082815/0915

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty, sandy loam, dry, root zone 1.5-2' orangish-brown silty sand, dry, med-fine, loose, some gravel 2-4' waste including burned wood, plastic bags, misc plastic, glass bottles, broken glass, paper, nylons, plaster, misc. metal TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP29

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08/28/15 1405
COMPLETION DATE: 08/29/15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

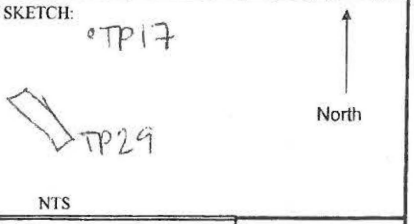
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H_2S Lel/oxy	Cal. passed	08/28/15 0915

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty, sandy loam, dry, root zone 1.5'-4' waste incl. lots of misc. plastic, plastic bags, glass bottles, broken glass, plastic bottles, metal wire, fabric, rusting metal TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP30

PROJECT: FTMM
LOCATION: landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082815 | 1455
COMPLETION DATE: 082815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2.5'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S/LEL/Oxy	cal. passed	082815/0915

REMARKS:

LOCATION SKETCH: TP10 ↑ North

NTS TP30

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty sandy loam, increasing sand w/ depth, root zone top 2.5' • piece of concrete ~2'x3' in 1st bucket (top 8") • little ash, other misc. trash from 2'-4' TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP31

PROJECT: FTMM
LOCATION: LandFill M2

JOB NUMBER: 748510
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 093115 | 0753
COMPLETION DATE: 093115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	4'	mini-excavator

GROUNDWATER DATA

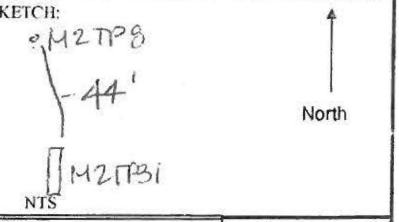
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	093115 / 0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, some gravel 1'-4' SAA, waste incl ash, terracotta tile, wood, fabric, coal. Slight odor, but no readings above background on multi-meter. @ 4' black to dk. greenish-grey sand, silty, some clay, med.-fine, well sorted, wet. TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:	M2TP32
PROJECT: FTMM		JOB NUMBER:	748810
LOCATION: Landfill M2		GROUND ELEV:	
		INSPECTOR:	R. McDonald
		CONTRACTOR:	AWT
		START DATE:	093115/0810
		COMPLETION DATE:	093115
		CHECKED BY:	

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
16'	20"	4'	mini-excavator

GROUNDWATER DATA

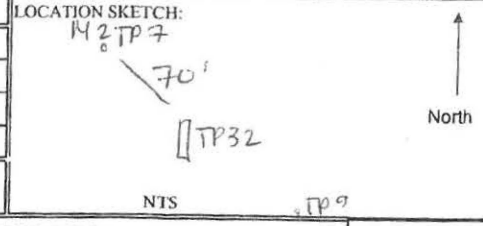
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	Cal. passed	093115/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' brown silty, sandy loam, some gravel, dry, roots top 18" enc. sand downwards 3'-4' waste. ash, burned wood, broken glass, misc. metal, misc. plastic, metal wire TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP33

PROJECT: ETMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: B. McDonald
CONTRACTOR: ANT
START DATE: 083115/0846
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

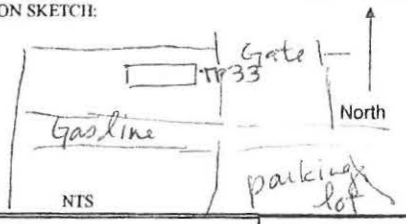
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' Lt. brown silty sand, some gravel, dry, med-fine 1.5'-4' brown to green silty sand, some pebble-size gravel, hard, dry to damp, difficult to dig through TD = 4' bgs No Waste multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP34

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/0901
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

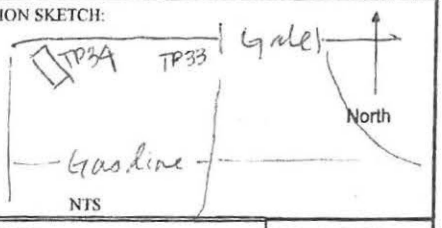
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–3' Lt. brown silty sand, some gravel, dry, hard 3'–4' Waste incl. concrete, wire, ash, coal TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP35

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/0914
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

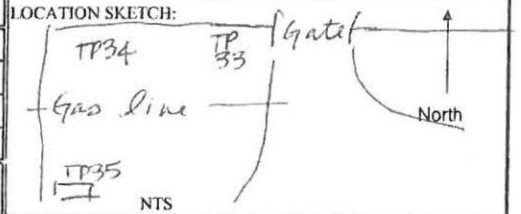
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-4'	
2					Lt. brown silty sand w/ gravel, med, dry, hard	
3					*waste from 3'-4', incl.	
4					terracotta tile, broken glass,	
5					glass bottles, broken concrete,	
6					brick.	
7						
8					TD = 4' bgs	
9					multi-rae plus reading = 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP36

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/0928
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

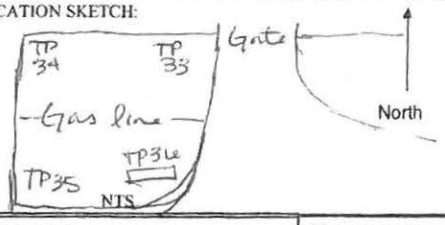
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' Lt. brown silty sand, med, 1.5'–3' waste - ash, coal, slag, terracotta tile, blue tile 3'–4' Lt. orangish-brown silty sand, moist, fine-med, well-sorted TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP37

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082815
COMPLETION DATE: 082815 / 1150
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
130'	20"	4'	mini-excavator

GROUNDWATER DATA

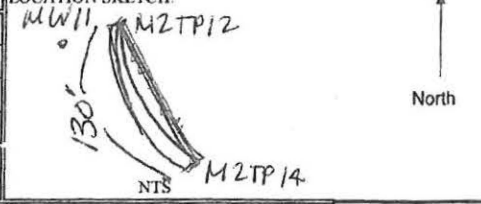
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

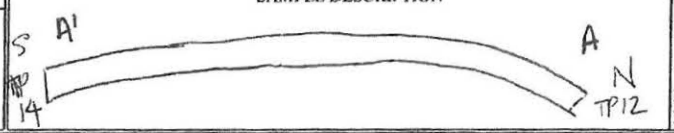
INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	~~VOC~~ Cal. passed	082815/0915

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)



Generally
0 - 2.5'
brown, silty sandy loam. Gravel in areas of gravel road. dry roots to 2.5'
~2.5' - 4'
sand mixed w/ waste. Waste includes ash, coal, burned wood, brick, misc. plastic, concrete, small pieces of metal, glass bottles.
*N end is clean until 5' N of MW11.

~~TD~~ = 4' bgs

multi-rae reading = 0

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M2TP37

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082815
COMPLETION DATE: 082815 / 1150
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
130'	20"	4'	mini-excavator

GROUNDWATER DATA

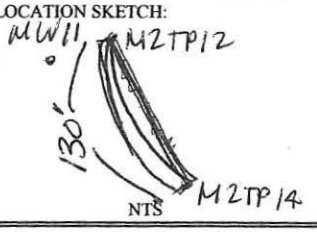
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

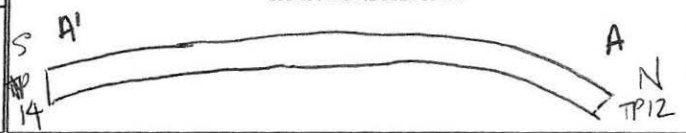
INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	~~VOC~~ CO cal. passed	082815/0915

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)



Generally

0 - 2.5'

brown, silty sandy loam. Gravel in areas of gravel road. dry roots to 2.5'

~2.5' - 4'

sand mixed w/ waste. Waste includes ash, coal, burned wood, brick, misc. plastic, concrete, small pieces of metal, glass bottles.

* N. end is clean until 15' N of MW11.

~~TD~~ = 4' bgs

multi-rae reading = 0

APPENDIX B

FTMM-03: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX B: FTMM-03 Landfill Boundary Refinement and Methane Gas Survey Results

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B1	Landfill Boundary Refinement Summary
B2	Methane Gas Survey Results

LIST OF FIGURES

Figure No.	Title
B1	Landfill Boundary Refinement and Methane Gas Survey Results

LIST OF ATTACHMENTS

Attachment	Title
B-A	Test Pit Logs

1.0 LANDFILL BOUNDARY REFINEMENT SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries will be discussed in further detail in the Remedial Investigation (RI) Report for FTMM-03 that will be issued under separate cover. These changes are reflected on **Figure B1**. The historical review did not identify any data gaps with respect to landfill delineation. In addition, subsequent to the preparation of the RI Report for FTMM-03, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. None of the historical test pits that contain landfill solid waste (e.g., debris) were recategorized.

Test pits during the landfill boundary refinement were advanced along the 2010 landfill boundaries to refine the landfill extent. Additional step-out test pits were unable to be performed at this landfill due to heavy vegetation consisting of dense brush and trees. Test pits were advanced at 24 locations at FTMM-03 as part of the landfill refinement activities on August 20, 2015. Historical (2010) and additional test pit locations are provided in **Figure B1**.

Logs for the test pits excavated in 2015 are provided in **Attachment B-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table B1**.

Observations of the 2015 test pits along the northern boundary bordering Lafetra Creek contained miscellaneous scattered debris such as asphalt, concrete, plastic, rusty metal, paper, broken ceramic, glass, and wires or did not contain solid waste. The miscellaneous singular pieces of debris and scattered debris that was not contiguous was categorized as debris of *de minimus* quantity and did not meet the criteria to be considered as part of the delineated landfill. These observations were consistent with the information contained in the Construction Closeout Report (Princeton Hydro, 2011) documenting the 2009 creek slope flattening and riprap installation along the FTMM-03 northern and eastern creek boundaries indicating no landfill solid waste was found during those activities. Therefore, the FTMM-3 northern landfill boundary was revised in line with the 2015 test pit locations as shown on **Figure B1**.

Test pits M3TP22, M3TP23 and M3TP24 along the eastern side of the landfill contained landfill solid waste, and the eastern landfill boundary was relocated between these test pits and the Mill Creek western bank. On the western and southern sides of the landfill, the 2015 test pits (M3TP2, M3TP4, M3TP6, M3TP16, and M3TP18) performed did not contain landfill waste, but due to Site conditions limiting additional test pit advancement in the western side, the landfill boundaries on the western were not revised. The landfill boundary on the southern side was generally maintained, but was revised slightly due to no waste observed in M3TP16 and M3TP18 (**Figure B1**). Additional information on the landfill along these boundaries may be collected during the construction of a planned cap on this landfill.

Figure B1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of thirteen (13) landfill gas readings (including one QA/QC sample) were measured at twelve soil gas locations at FTMM-03 as part of the methane gas survey. Sampling was conducted on July 28, July 29, and July 30, 2015. Methane was detected at two locations (M3SG1 and M3SG2). Only one of these locations (M3SG1) had a recorded concentration that exceeded 25 percent of the methane LEL. The three step out locations (M3SG11, M3SG12, and M3SG13) were measured based on these methane detections. The collective methane results indicate the area within the landfill where methane was found above 25 percent of the LEL is very limited. Soil gas locations on the perimeter (including step outs) of the landfill did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-25. The methane detections most likely are attributed to natural methane gas generating conditions from the decomposition of organics in this area of the landfill. FTMM-03 is covered with dense vegetation and patches of phragmites which may also indicate natural methane gas generating conditions. The landfill gas readings are summarized in **Table B2.** The soil gas sampling locations and the locations where landfill gas exceeded 25 percent of the LEL are shown on **Figure B1**.

3.0 REFERENCES

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table B1 Landfill Boundary Refinement Summary

Table B2 Methane Gas Survey Results

Table B1
Landfill Boundary Refinement Summary
Site FTMM-03
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M3TP1	N	3	No solid waste observed; not landfill.
M3TP2	N	3	No solid waste observed; not landfill.
M3TP3	N	3	No solid waste observed; not landfill.
M3TP4	N	3	No solid waste observed; not landfill.
M3TP5	N	3	No solid waste observed; not landfill.
M3TP6	N	3	No solid waste observed; not landfill.
M3TP7	N	2	Debris of de minimus quantity; not landfill.
M3TP8	Y	1	Solid waste including glass bottles, misc plastic, rusting metal, concrete block, ash, asphalt shingles indicative of landfill.
M3TP9	N	3	No solid waste observed; not landfill.
M3TP10	N	3	No solid waste observed; not landfill.
M3TP11	N	3	No solid waste observed; not landfill.
M3TP12	N	2	Debris of de minimus quantity; not landfill.
M3TP13	N	3	No solid waste observed; not landfill.
M3TP14	N	2	Debris of de minimus quantity; not landfill.
M3TP15	N	3	No solid waste observed; not landfill.
M3TP16	N	3	No solid waste observed; not landfill.
M3TP17	N	2	Debris of de minimus quantity; not landfill.
M3TP18	N	2	Debris of de minimus quantity; not landfill.
M3TP19	N	2	Debris of de minimus quantity; not landfill.
M3TP20	N	2	Debris of de minimus quantity; not landfill.
M3TP22	Y	1	Solid waste including ash, concrete, broken bottles, rusted metal, misc. plastic, concrete indicative of landfill.
M3TP23	Y	1	Solid waste including ash, concrete, rusted metal pieces indicative of landfill.
M3TP24	Y	1	Solid waste including asphalt, brick, broken terracotta tile, rusting metal indicative of landfill.
M3TP25	N	2	Debris of de minimus quantity; not landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

Table B2
Methane Gas Survey Results
Site FTMM-03
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M3SG1	7/29/2015	2.7	54.0	10.8	3.1	
M3SG1QA	7/29/2015	2.5	50.0	10.5	3.8	QA Sample
M3SG2	7/29/2015	0.6	11.0	11.1	4.3	
M3SG3	7/28/2015	0.0	0.0	2.0	19.1	
M3SG4	7/29/2015	0.0	0.0	0.9	20.8	
M3SG5	7/29/2015	0.0	0.0	1.4	19.8	
M3SG6	7/29/2015	0.0	0.0	3.5	17.2	
M3SG7	7/29/2015	0.0	0.0	0.8	20.6	
M3SG8	7/29/2015	0.0	0.0	4.5	17.4	
M3SG9	7/29/2015	0.0	0.0	2.6	18.7	
M3SG10	7/30/2015	0.0	0.0	0.1	21.5	Step out
M3SG11	7/30/2015	0.0	0.0	0	21.7	Step out
M3SG12	7/30/2015	0.0	0.0	0	21.6	Step out

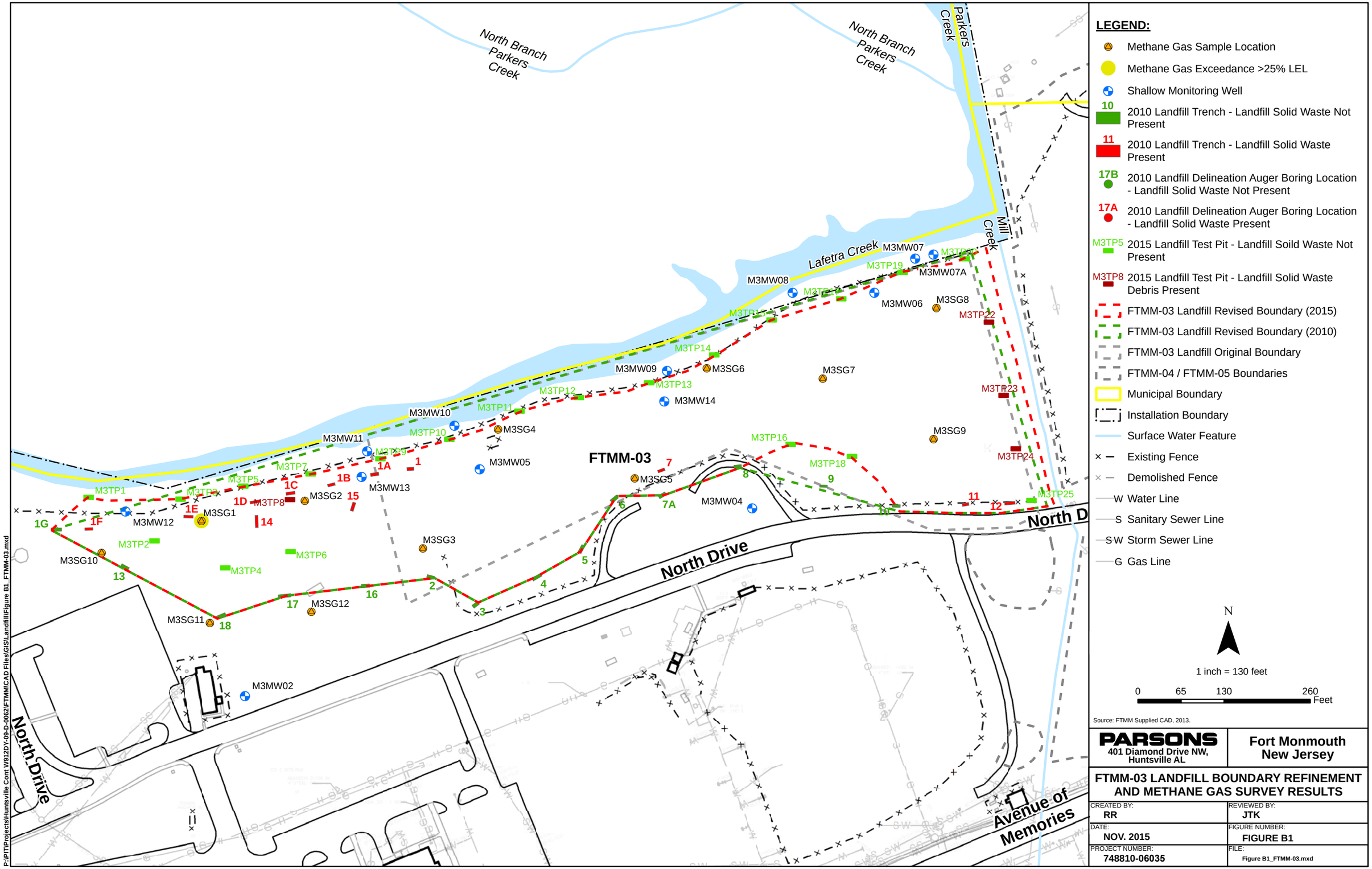
Notes:

1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.

2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure B1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- 10 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 11 — 2010 Landfill Trench - Landfill Solid Waste Present
- 17B — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 17A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M3TP5 — 2015 Landfill Test Pit - Landfill Soild Waste Not Present
- M3TP8 — 2015 Landfill Test Pit - Landfill Solid Waste Debris Present
- FTMM-03 Landfill Revised Boundary (2015)
- FTMM-03 Landfill Revised Boundary (2010)
- FTMM-03 Landfill Original Boundary
- FTMM-04 / FTMM-05 Boundaries
- Municipal Boundary
- Installation Boundary
- Surface Water Feature
- Existing Fence
- Demolished Fence
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

N

1 inch = 130 feet

0 65 130 260 Feet

Source: FTMM Supplied CAD, 2013.

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

FTMM-03 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE B1
PROJECT NUMBER: 748810-06035	FILE: Figure B1_FTMM-03.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure B1_FTMM-03.mxd

ATTACHMENTS

Attachment B-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP1

PROJECT: FTHM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: P. McDonald
CONTRACTOR: AWT
START DATE: 082015 / 0809
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator-Hitachi

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082015 / 0715

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' - brown silty loam, dry, root zone 0.8'-4' med. yellowish brown silty sand, hard, dry some clay 4' = TD No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP2

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AVT
START DATE: 082015 | 1350
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal passed	082015/0715

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown silty sandy loam, increasing sand w/ depth, damp, tree roots • orange sand, med, well-sorted @ 4' TD = 4' bgs No Waste multi-rae reading; 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP3

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/0820
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

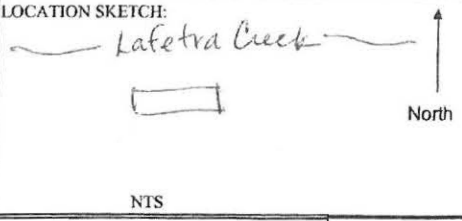
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' med. brown silty Loam, little gravel, thin lags of gray sand from 3'-3.5', friable, dry to sl. moist TD=4' No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP4

PROJECT: FTMM
LOCATION: Land Fill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08 20 15 | 1400
COMPLETION DATE: 08 20 15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
4'	18"	4'	mini-excavator

GROUNDWATER DATA

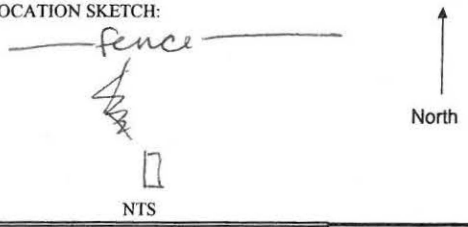
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / OXY	cal. passed	08 20 15 / 0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' silty sandy loam, yellowish brown, loose, cohesive No Waste multi-rae reading: ~~0~~	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:	M3TP5
PROJECT: ETMM		JOB NUMBER:	748810
LOCATION: Landfill M3		GROUND ELEV:	
		INSPECTOR:	R. McDonald
		CONTRACTOR:	AWT
		START DATE:	082015/0844
		COMPLETION DATE:	082015
		CHECKED BY:	

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

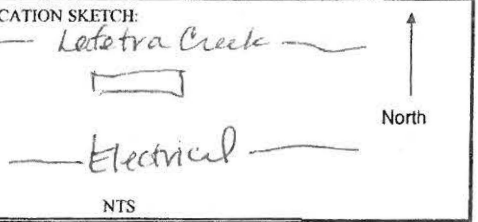
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC / CO / H_2S LEL / Oxy	Cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty loam, little gravel, friable, loose • some interbedded yellowish-brown sand, med., well sorted • black sand @ 4' • No Waste multirae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP6

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AINT
START DATE: 08/20/15 | 1411
COMPLETION DATE: 08/20/15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

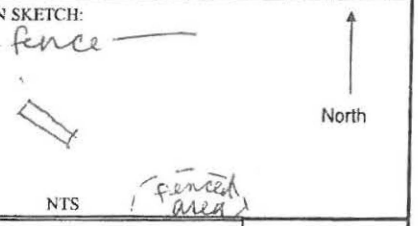
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC | CO | H_2S | LEL | OX4	Cal. passed	08/20/15 | 0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty loam, friable, dry, lots of roots + organic matter 1-4' orangish brown silty sand, med., well sorted, damp TD = 4' BGS No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP7
PROJECT: FTMM		JOB NUMBER: 740810
LOCATION: landfill M3		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: ANT
		START DATE: 082015 / 0856
		COMPLETION DATE: 08.2015
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

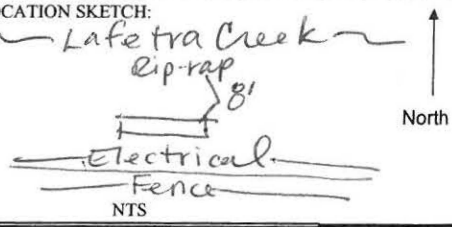
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' 3/4" gravel for gravel road, in gray silty loam. Silt fence fabric @ 1.5' 1.5'–3' black sandy layer, some rusted metal - possibly asphalt or ash, probably decaying organic matter 3'–4' yellowish brown sand, med., well sorted, little gravel TD = 4' bgs • slight methane odor, but multi-rae reading = 0 (background)	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP8

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015 1423
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

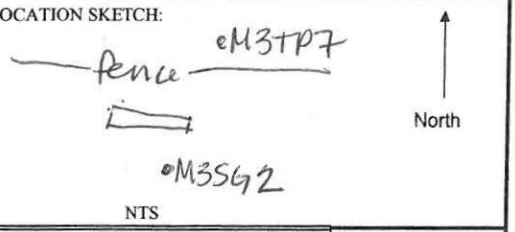
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082015/0715

REMARKS: could not locate stake, pit placement based on map

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' dk brown silty sandy loam, damp, loose 2'-4' SAA, w/ waste incl. 7-up bottle, other glass bottles, misc. plastic, rusting metal, concrete block, ash, asphalt shingles TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP9

PROJECT: FTMM
LOCATION: LandFill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08/20/15 | 09/3
COMPLETION DATE: 08/20/15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

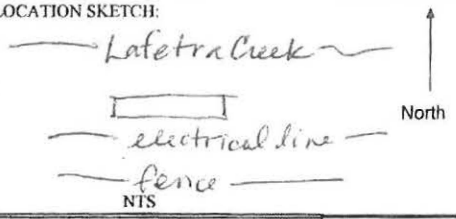
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	08/20/15/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' gravel for gravel road, silt, silt fence @ 1.5' 1.5'-2' black organic matter, decaying 2'-4' orange sand, med., well sorted TD = 4' bgs No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP10

PROJECT: FTHM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/0929
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

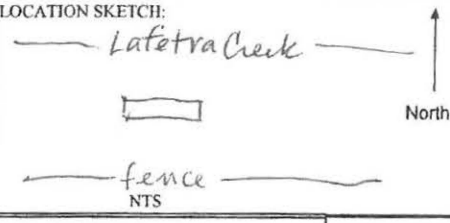
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' 3/4 gravel for gravel road, w/ silt	
2						
3					1.5'-4' black decomposing organic matter, slight methane smell but no readings on multi-rae plus.	
4						
5						
6					No Waste	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP11

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748910
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08/20/15 0949
COMPLETION DATE: 08/20/15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2.5'	4'	mini-excavator

GROUNDWATER DATA

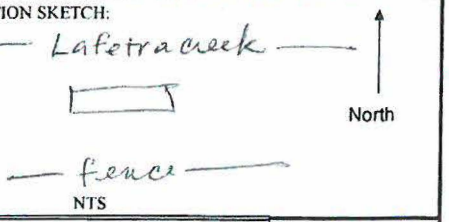
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H2S LEL/Oxy	cal. passed	08/20/15/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' 3/4 gravel for gravel road, silt silt fence @ 1.5'	
2					1.5-2' organic matter, decaying, black	
3						
4					2-4' yellowish brown sand, med, well sorted, little gravel	
5						
6					4' = TD	
7					No Waste	
8					multi-rae reading: 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP12

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015 1007
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2.5'	4'	mini-excavator

GROUNDWATER DATA

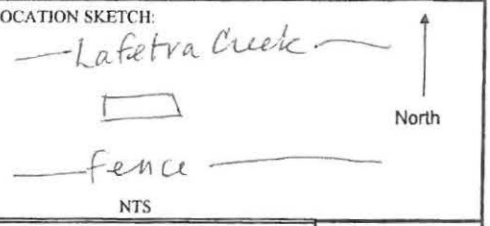
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/Oxy	cal passed	082015/0745

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' 3/4" gravel for gravel road, silt silt fence fabric @ 1.5' 1.5-2' black decomposing organic matter. slight methane smell, but no above-background readings on 4-gas meter 2'-4' orangish brown sand/silty, med, well sorted. Waste in this layer includes bricks, broken pieces of concrete (<1') TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP13

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/1022
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	3'	4'	mini-excavator

GROUNDWATER DATA

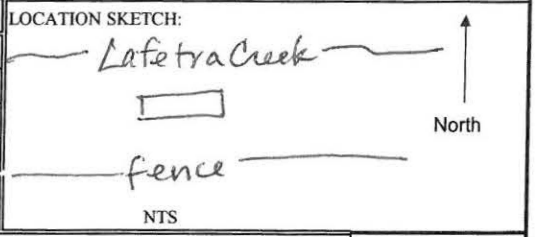
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/OXY	cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' gravel for gravel road (3/4), silt, silt fence @ 1.5'	
2						
3					1.5'-2' black decaying organic matter (roots, branches, etc.); coarse silty sand, loose	
4						
5						
6					2'-4' olive brown silty sand to gravel, loose, well-graded	
7						
8					@4'- purplish coarse sand + gravel	
9					TD=4'	
10					No Waste	
11					multi-rae reading = 0	
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP14

PROJECT: FTUM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082015/1037
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

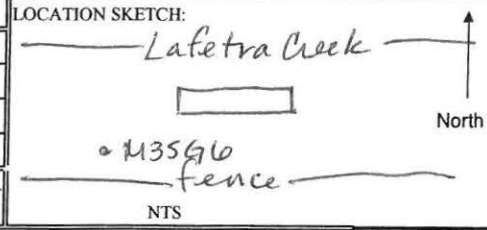
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H2S LEL/Oxy	Cal. passed	082015/0715

REMARKS: Stake destroyed @ this loc. - pit placement based on map.

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' gravel for gravel road (3/4), silt Silt fence fabric @ 1.5'-4' Coarse sand + gravel, coloring from orangish brown to pinkish brown, well-graded, pebble to cobble size gravel, ~~some~~ little organic matter TD = 4' multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP15

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082015/1100
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini-excavator

GROUNDWATER DATA

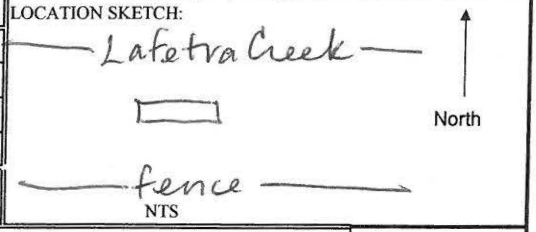
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S/LEL/OXY	cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' Gravel for gravel road, 3/4, coarse/angular, some silt. Silt fence fabric @ 1.5' 1.5'-2' black-dk brown decaying organic matter, Possible ash, 1 piece rusted metal 2'-4' med. brown silty sand, med-coarse, well sorted, some pebble-size gravel, damp TD = 4' bgs No Waste multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP16
PROJECT: FTMM		JOB NUMBER: 749816
LOCATION: Landfill M3		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082015/1329
		COMPLETION DATE: 082015
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

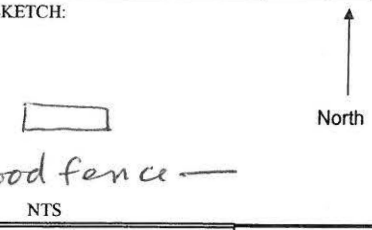
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty, sandy loam, damp, color darkens w/ depth some interbedded orange sand TD = 4' bgs No Waste multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP17

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/1114
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini-excavator

GROUNDWATER DATA

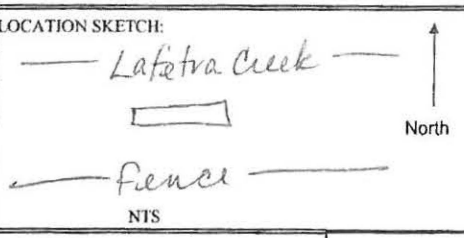
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR			BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC	CO	H_2S	Cal. passed	082015/0715
	LEL	Oxy			

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' 3/4 gravel for gravel road, silt silt fence fabric @ 1.5' 1.5'-4' black sand, some decaying organic matter, possibly ash zone. slight odor, multi-rae reading = 0 TD = 4'	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP18

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015 1337
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:

North

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' dk brown silty sandy loam. a few pieces of coal TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: M3TP19
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/1126
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

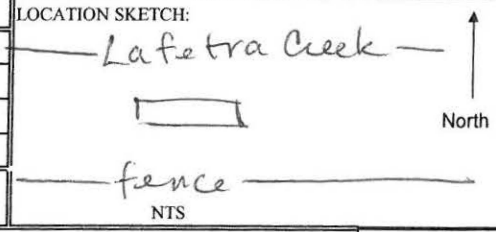
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082015/0715

LOCATION SKETCH:



REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty loam, dry, root zone	
2						
3					1.5'-4' ash, concrete, rusted metal, some gravel	
4						
5					TD = 4' bgs	
6					multirae reading: 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP20
PROJECT: FTMM		JOB NUMBER: 748610
LOCATION: Landfill M3		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082015/1138
		COMPLETION DATE: 082015
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini-excavator

GROUNDWATER DATA

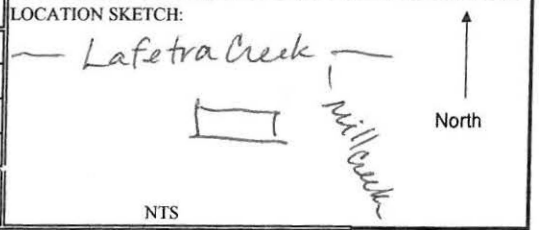
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty loam, root zone, dry. Some large (8+") stones 1'-4' SAA, increased sand, sl. moist @ bottom, waste including tire (3' diameter), ~~rebar~~ and mottled gray-green-rust coloring 4' = TD Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP22

PROJECT: FTMM
LOCATION: landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/1150
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	20"	4'	mini-excavator

GROUNDWATER DATA

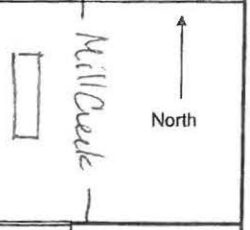
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty loam, dry, root zone 1-4' SAA, increased sand, waste including ash, concrete, broken bottles, rusting metal, misc. plastic. Concrete pieces are <1' diameter TD = 4' multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP23

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08 2015 / 1229
COMPLETION DATE: 08 2015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

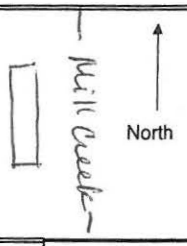
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	08 2015 / 0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty, sandy loam, dry, root zone 1.5'–4' silty sand & gravel, waste zone. Waste includes ash, concrete @ bottom of hole, rusted bits of metal. TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP24

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082015/1250
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
12'	20"	4'	mini-excavator

GROUNDWATER DATA

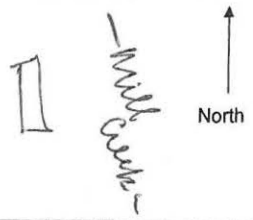
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082015/0715

REMARKS: No Stake on W. side of creek, pit placement based on map.

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty loam grading to orange sand (med. well-sorted). Sand is hard, dry 2'-4' brown silty sand w/ waste including asphalt, brick, broken terracotta tile, rusting metal. TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M3TP25

PROJECT: FTMM
LOCATION: Landfill M3

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AMT
START DATE: 082015/1305
COMPLETION DATE: 082015
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	4'	mini-excavator

GROUNDWATER DATA

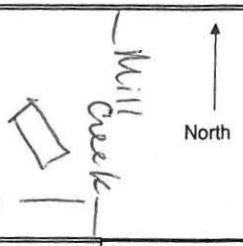
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082015/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty loam w/sand, friable, dry 1.5'-4' orange silty sand, med, well sorted, low-moderate cementation · 1 mini alcohol bottle, 1 broken ceramic mug TD=4' bgs multi-rae reading=0	

APPENDIX C

FTMM-04: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX C: FTMM-04 Landfill Boundary Refinement and Methane Gas Survey Results

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1.0 LANDFILL BOUNDARY REFINEMENT SUMMARY C-1
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C2	Methane Gas Survey Results

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C1	Landfill Boundary Refinement and Methane Gas Survey Results

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Attachment	Title
C-A	Test Pit Logs

1.0 LANDFILL BOUNDARY REFINEMENT SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. Based on the historical information review, the boundaries of Landfill FTMM-04 remain generally similar to how they were defined in 2010, however, the boundaries were refined in a few areas. The most significant refinement was made to the southern and eastern boundaries of the landfill since there was landfill debris in Test Pits 8, 11, 12, 15, and 16 that were previously shown on the maps as containing no debris. In the south-central portion of FTMM-04 near Test Pit 12, shallow soil borings B-53, B-54, and B-55 contained no debris. Therefore, the boundary of the landfill was moved east in this area, which is consistent with observations of the landfill boundary made during the 2015 review of a series of aerial photographs dated 1947, 1957, 1963, and 1969. Additionally, west of Mill Creek, the log of M4MW06 was reviewed, and found to contain no debris, and based on this the boundary was moved eastward to align with this monitoring well. These changes are reflected on **Figure C1**. In addition, data gaps in the landfill boundaries were identified to the north (Test Pits 4C and 5), to the east (Test Pits 8 and 16), and to the south (B-12, B-62, and B-63) to be addressed during the landfill boundary refinement field activities.

In addition, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. Some historical test pits (1, 4, 4A, 4D, and 4E) did not appear to meet the criteria to be considered landfill solid waste. The designation of these historical test pits was modified on **Figure C1** to indicate landfill solid waste was not present.

Test pits during the landfill boundary refinement were advanced along the 2015 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the report. To form a more comprehensive view of the landfill, additional test pits were performed in other areas of the landfill including: 1) step-out test pits to the west of Mill Creek after landfill solid waste was found in that area; and 2) in the interior of the landfill to the west and east of Mill Creek since there was limited historical test pit data in these areas. Test pits were advanced at 38 locations at FTMM-04 as part of the landfill delineation activities on August 19, August 31, and September 2, 2015. Historical (2010) and 2015 test pit locations are provided in **Figure C1**.

Logs for the test pits advanced in 2015 are provided in **Attachment C-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table C1**.

Observations of the 2015 test pits in combination with the historical test pit logs to the west of Mill Creek indicate pockets of landfill solid waste in the northwestern and southwestern corner of the landfill. Areas of landfill solid waste including ash, coal, concrete, and metal indicative of a landfill were found to be surrounded by test pits with no waste or test pits with scattered debris that was not contiguous (categorized as debris of *de minimus* quantity). These test pits around the areas of landfill solid waste did not meet the criteria to be considered as part of the delineated landfill. For example, at the pocket of landfill solid waste in the southwestern corner of the landfill, M4TP5 contains landfill solid waste, but is encircled by M4TP3, M4TP4, M4TP7, and historical test pits 1 and 1A which do not. Similarly, at the pocket of landfill solid waste in the northwestern corner of the landfill, test pits M4TP4, M4TP6, M4TP23, and

historical test pit 4C contain landfill solid waste, but are encircled by test pits 4F, M4TP1, M4TP14, M4TP15, M4TP24, and M4TP26 which do not. The 2015 test pits along the western shore of Mill Creek and in the central portion of the landfill (M4TP2, M4TP13, and M4TP27) did not contain landfill solid waste. These observations were consistent with the information contained in the Construction Closeout Report (Princeton Hydro, 2011) documenting that the 2009 creek slope re-grading along Mill Creek, indicating no landfill solid waste (e.g, debris) was found during those activities. Therefore, the landfill boundaries west of Mill Creek were revised accordingly to contain the pockets of landfill solid waste (**Figure C1**).

To the east of Mill Creek, the test pits along the perimeter contained scattered debris that was not contiguous or did not contain landfill solid waste (M4TP9, M4TP16, M4TP17, M4TP18, M4TP19, M4TP20, M4TP21, and M4TP22), therefore, the landfill boundaries were revised inward away from the roads bounding the eastern portion of the landfill to the north, east, and south (**Figure C1**). The test pits performed on the interior of the landfill east of Mill Creek contained landfill solid waste consistent with the historical test pit logs and borings.

Figure C1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of eleven (11) landfill gas readings (including one QA/QC sample) were measured at ten soil gas locations at FTMM-04 as part of the methane gas survey. Sampling was conducted on July 27 and July 28, 2015. Methane was detected at two locations (M4SG1 and M4SG4), and only one location (M4SG4) exceeded 25 percent of the methane LEL. This location was located on the interior of the landfill east of Mill Creek. Four step out locations (M4SG7, M4SG8, M4SG9, and M4SG10) were measured based on the methane detections. Soil gas locations on the perimeter of the landfill (including step outs) did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-04. The methane gas survey results indicate the area within the landfill where methane was found above 25 percent of the LEL is very limited. The methane detections are attributed to methane gas generating conditions at the landfill. The landfill gas readings are summarized in **Table C2.** The soil gas sampling locations and the locations where landfill gas exceeded 25 percent of the LEL are shown on **Figure C1**.

3.0 REFERENCES

Parsons. *Remedial Investigation Report for Site FTMM-04, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. August 2014.

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table C1 Landfill Boundary Refinement Summary

Table C2 Methane Gas Survey Results

Table C1
Landfill Boundary Refinement Summary
Site FTMM-04
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M4TP1	N	3	No solid waste observed; not landfill.
M4TP2	N	3	No solid waste observed; not landfill.
M4TP3	N	3	No solid waste observed; not landfill.
M4TP4	Y	1	Solid waste including black ash indicative of landfill.
M4TP5	Y	1	Solid waste including ash, asphalt shingles, wood, terracotta pipe indicative of landfill.
M4TP6	Y	1	Solid waste including concrete, ash, rusted metal pipe, concrete pieces indicative of landfill.
M4TP7	N	3	No solid waste observed; not landfill.
M4TP8	N	3	No solid waste observed; not landfill.
M4TP9	N	3	No solid waste observed; not landfill.
M4TP10	N	3	No solid waste observed; not landfill.
M4TP11	N	3	No solid waste observed; not landfill.
M4TP12	Y	1	Solid waste including concrete pieces, some ash, some rusty metal indicative of landfill.
M4TP13	N	2	Debris of de minimus quantity; not landfill.
M4TP14	N	3	No solid waste observed; not landfill.
M4TP15	N	3	No solid waste observed; not landfill.
M4TP16	N	3	No solid waste observed; not landfill.
M4TP17	N	3	No solid waste observed; not landfill.
M4TP18	N	3	No solid waste observed; not landfill.
M4TP19	N	3	No solid waste observed; not landfill.
M4TP20	N	3	No solid waste observed; not landfill.
M4TP21	N	2	Debris of de minimus quantity; not landfill.
M4TP22	N	2	Debris of de minimus quantity; not landfill.
M4TP23	Y	1	Solid waste including black ash indicative of landfill.
M4TP24	N	3	No solid waste observed; not landfill.
M4TP25	N	2	Debris of de minimus quantity; not landfill.
M4TP26	N	3	No solid waste observed; not landfill.
M4TP27	N	3	No solid waste observed; not landfill.
M4TP28	Y	1	Solid waste including concrete indicative of landfill.

Table C1
Landfill Boundary Refinement Summary
Site FTMM-04
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M4TP29	Y	1	Solid waste including concrete, brick, coal, ash, burned wood indicative of landfill.
M4TP30	Y	1	Solid waste including concrete, misc. metal, coal, burned wood indicative of landfill.
M4TP31	Y	1	Solid waste including concrete indicative of landfill.
M4TP32	Y	1	Solid waste including concrete indicative of landfill.
M4TP33	Y	1	Solid waste including concrete, metal pipe, ash, coal, ceramic tile, wire, brick indicative of landfill.
M4TP34	Y	1	Solid waste including brick, wood, ash, large concrete pieces indicative of landfill.
M4TP35	Y	1	Solid waste including concrete indicative of landfill.
M4TP36	Y	1	Solid waste including concrete, brick, ash, coal, burned wood indicative of landfill.
M4TP37	Y	1	Solid waste including concrete, asphalt, coal ash indicative of landfill.
M4TP38	Y	1	Solid waste including concrete, asphalt, slag, broken glass indicative of landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

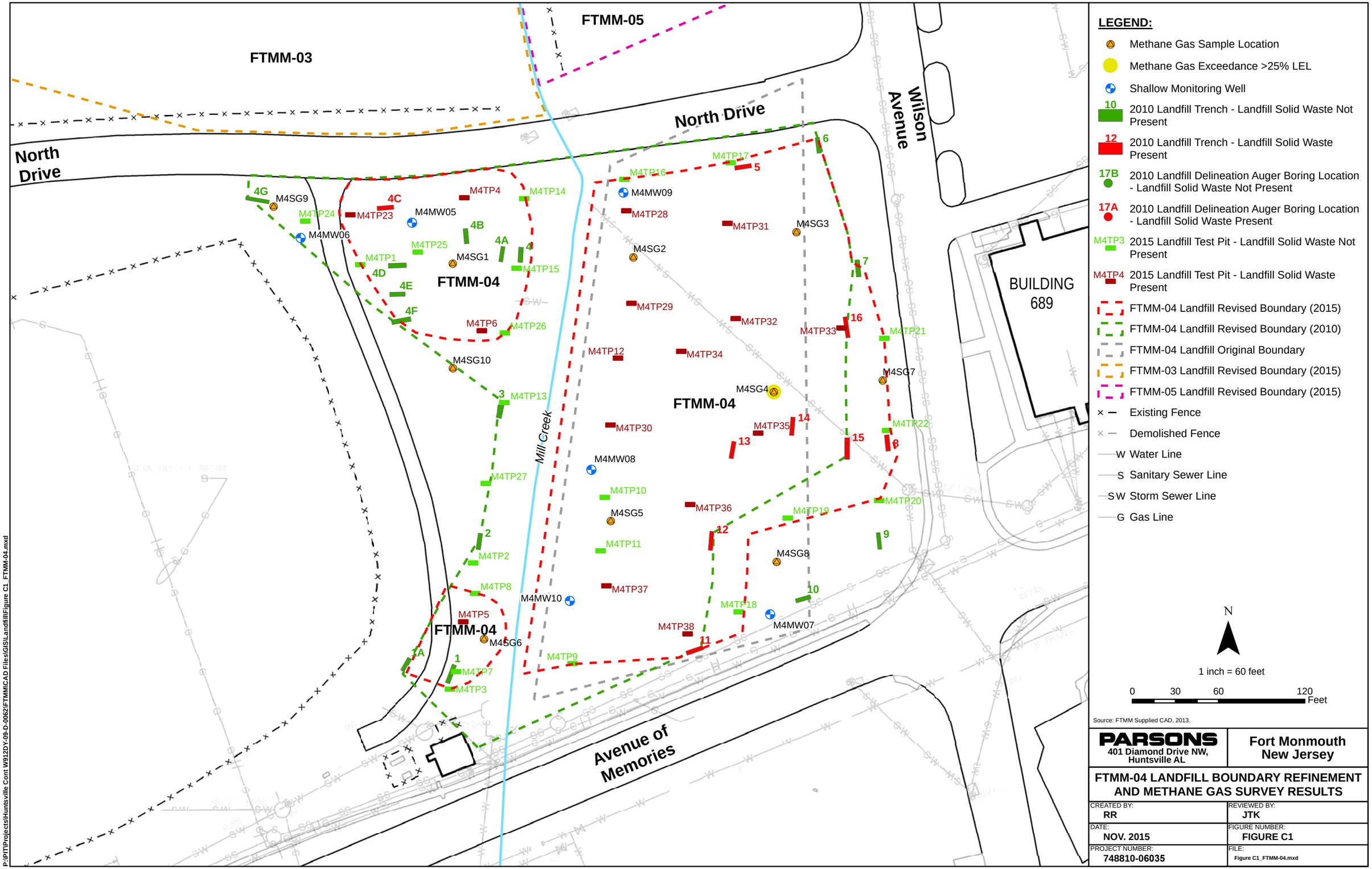
Table C2
Methane Gas Survey Results
Site FTMM-04
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M4SG1	7/27/2015	0.3	5.0	0.4	20.4	
M4SG1QA	7/27/2015	0.2	4.0	0.3	20.9	QA Sample
M4SG2	7/27/2015	0.0	0.0	0.8	20.8	
M4SG3	7/27/2015	0.0	0.0	0.1	21.7	
M4SG4	7/27/2015	5.5	OOR	5.2	2.3	
M4SG5	7/27/2015	0.0	0.0	0.0	21.2	
M4SG6	7/27/2015	0.0	0.0	8.8	13.9	
M4SG7	7/28/2015	0.0	0.0	2.5	19.5	Step out
M4SG8	7/28/2015	0.0	0.0	1.1	18.5	Step out
M4SG9	7/28/2015	0.0	0.0	0.9	20.5	Step out
M4SG10	7/28/2015	0.0	0.0	0	21.8	Step out

Notes:
1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.
2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure C1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- 10 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 12 — 2010 Landfill Trench - Landfill Solid Waste Present
- 17B — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 17A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M4TP3 — 2015 Landfill Test Pit - Landfill Solid Waste Not Present
- M4TP4 — 2015 Landfill Test Pit - Landfill Solid Waste Present
- FTMM-04 Landfill Revised Boundary (2015)
- FTMM-04 Landfill Revised Boundary (2010)
- FTMM-04 Landfill Original Boundary
- FTMM-03 Landfill Revised Boundary (2015)
- FTMM-05 Landfill Revised Boundary (2015)
- Existing Fence
- Demolished Fence
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

N

1 inch = 60 feet

0 30 60 120 Feet

Source: FTMM Supplied CAD, 2013.

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

FTMM-04 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE C1
PROJECT NUMBER: 748810-06035	FILE: Figure C1_FTMM-04.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure C1_FTMM-04.mxd

ATTACHMENTS

Attachment C-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP2

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115 | 1344
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

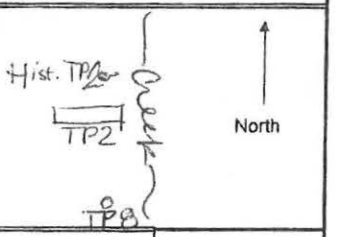
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / OXY	Calibrated	083115 / 0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty, sandy loam, some gravel, root zone, loose 1.5'–4' orangish-brown silty sand, hard (difficult to advance bucket through), mottled w/ greenish-grey sand, damp to moist @4' greenish-grey sand TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP1

PROJECT: FTMM
LOCATION: LandfillM4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R.McDonald
CONTRACTOR: AWT
START DATE: 081915/1024
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

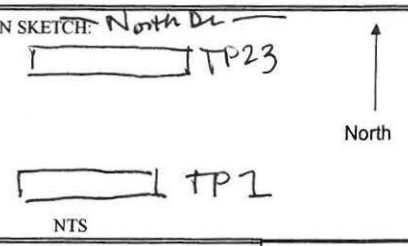
DATE / TIME		
DEPTH TO WATER	N/A	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	081915 /0720

REMARKS:

LOCATION SKETCH: ~~North~~



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' med olive brown silty, sandy loam, med. sand, some interbedded orange sand Sub angular cobbles 0'-2'	
					No Waste	
					multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP3

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 / 1200
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

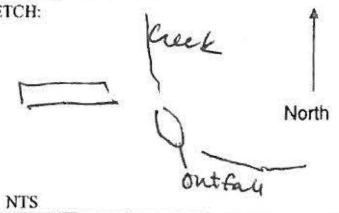
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	Calibration passed	081915/0720

REMARKS: Pit moved approx. 10' N. of stake due to water line in area.

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5'- brown silty loam, dry	
2					1.5-4' orangish-brown silty sand, cohesive, hard	
3						
4					No Waste	
5					multi-rae reading: 0	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP4

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915/1034
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

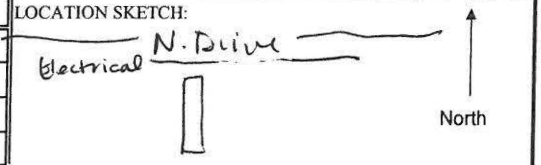
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/OXY	Cal. passed	081915/0720

REMARKS: location moved approx. 4' S. of stake due to electrical line in area.

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-0.8' - olive brown silty loam w/ gravel, dry 0.8'-4' - waste - black ash + sand, orange sand + gravel (1'-1.5'), moist multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP6

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748610
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 1100
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
4'	2.5'	4'	mini-excavator

GROUNDWATER DATA

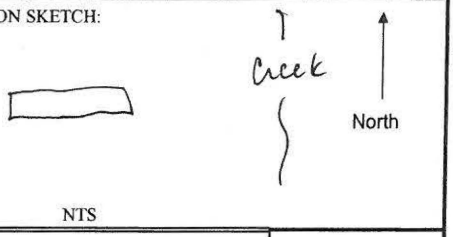
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal passed	081915/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty, sandy loam, dry	
2					1'-4' SAA, w/ waste including concrete, ash, rusted metal pipe. Concrete pieces to ~2' diameter	
3						
4						
5					multi-rae reading: 0	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP5

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090915/1145
COMPLETION DATE: 090915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	calibration passed	090915/0720

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty loam, dry	
2					1.5-4' orangish-brown sandy silt, ash, asphalt shingles, wood, terracotta pipe	
3						
4					multi-meter reading: 0	
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP7

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08/19/15 1157
COMPLETION DATE: 08/19/15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	08/19/15/0720

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty loam, dry 1.5'-4' silty sandy loam grading to orangish brown silty sand, med. grained, hard, mod. cohesive No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP8

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915/1132
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

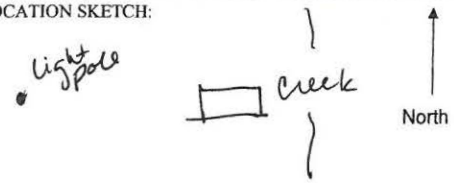
GROUNDWATER DATA

DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H2S LEL/OX4	cal. passed	081915/0720

LOCATION SKETCH:



NTS

REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty loam, root zone, dry 1.5'–4' orangish-brown sand, silty, had a few small (<3") pieces of burned wood, 1 piece broken glass • multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP9

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 749610
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 | 1430
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

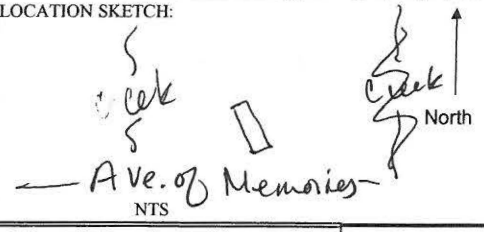
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty, sandy loam, damp, 2'-4' orangish-brown silty sand, med., well-sorted, moist No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4 TP10

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

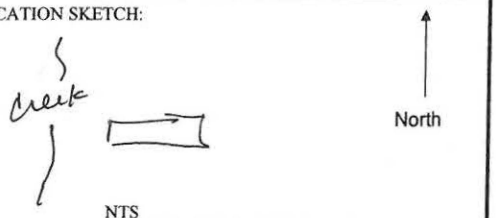
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty loam, root zone, dry	
2					1-4' orangish brown silty sand, medium, well-sorted, dry to sl. damp.	
3					No Waste	
4					multi-rae reading: 0	
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP11

PROJECT: FTUA
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWI
START DATE: 081915/1440
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
4'	18"	4'	mini-excavator

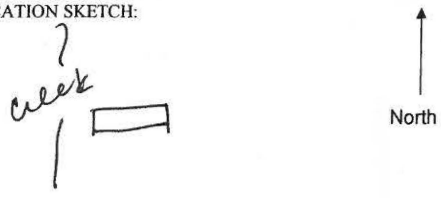
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	081915/0720

LOCATION SKETCH:



REMARKS: forgot to take photos.

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty loam, dry, rootzone	
2					0.8'-4' orangish-brown silty sand, medium, well sorted, dry to sl. moist	
3						
4						
5					No Waste	
6					multi-rae reading: 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP12

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915
COMPLETION DATE: 081915/1455
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

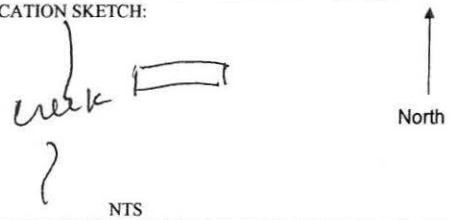
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty loam, dry, root zone 1-4' SAA, grading to orangish-brown sand, med., well sorted. This zone has waste - pieces of concrete, some ash, some rusty metal. • W. end of pit is approx. 3' from rip-rap. • multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MATP13

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08/19/15 1110
COMPLETION DATE: 08/19/15
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

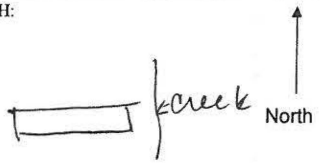
DATE / TIME	N/A	
DEPTH TO WATER		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S / LEL/OXY	Calibration passed	08/19/15/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'–1' brown silty loam, dry rootzone 1'–4' orangish brown sandy silt, tight, moderately cohesive, 1 small piece of rusting metal, No other waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP14

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 090915/1041
COMPLETION DATE: 090915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

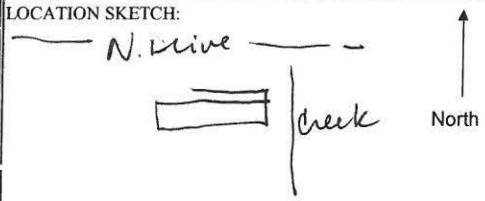
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	090915/0720

REMARKS: Moved pit approx 4' S. of stake due to fiber-optic line.

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam 1'-4' orange sand, med. grained, little gravel No Waste multirae reading- 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:	M4TP15
PROJECT: FTMM		JOB NUMBER:	749810
LOCATION: Landfill M4		GROUND ELEV:	
		INSPECTOR:	R. McDonald
		CONTRACTOR:	AWT
		START DATE:	081915/1054
		COMPLETION DATE:	081915
		CHECKED BY:	

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

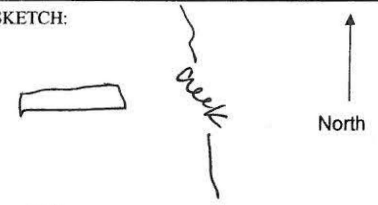
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' Silty sandy loam, brown from 0-1', then lt. brangish brown from 1'-4', somewhat cohesive, tight, No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP16

PROJECT: FTUM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 1313
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

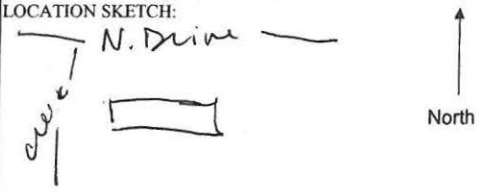
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown silty loam, some gravel, dry, slight yellow coloring w/depth. 3-4 bricks, (broken) a few pieces of broken terracotta pipe multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP17

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915/1326
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

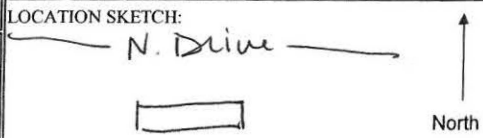
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/OXY	Cal. passed	081915/0720

REMARKS: pit approx. 6' S. of staked location b/c of electrical

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty, sandy loam, some gravel, dry · few small pieces of broken concrete, tenacotta pipe · multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP18

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 | 1420
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

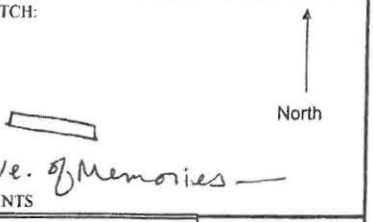
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy.	cal. passed	081915 | 0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-4' brown silty sandy loam, dry, grading to orangish brown silty sand, med.; well-sorted, little gravel	
2						
3						
4						
5					No Waste	
6					multi-rae reading: 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP19

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 08|915|1408
COMPLETION DATE: 08|915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

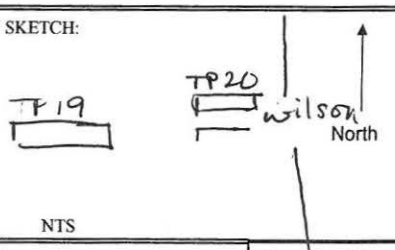
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/OXY	cal. passed	08/915/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown silty, sandy loam, dry grading to orangish-brown sand, medium, well-sorted. Little gravel. No Waste. multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP20

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915/1400
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

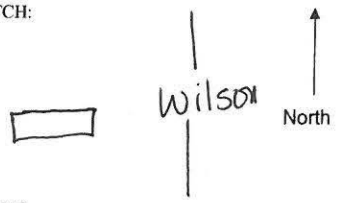
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	081915/0726

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty sandy loam grading downward to orangish brown sand, medium, well sorted. Little gravel. No Waste. · Multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4 TP21

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748816
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 | 1346
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

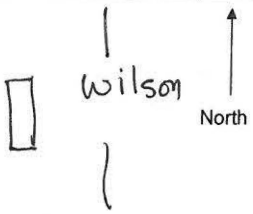
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	081915/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty loam, some gravel, dry 1.5-2' SAA, some waste – ash, 2'-4' orange sand, med. grained, sl. moist, well sorted multi-rae reading: 0 *Stake had been run over @ this location. Pit placement based on map, in line w/ TP22.	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP22

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 | 1335
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

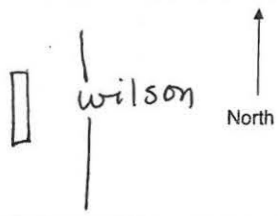
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / Oxy	cal. passed	081915 / 0720

REMARKS: Moved pit approx. 10' W. of stake due to lg trees + electrical line

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown silty loam, some gravel, tree roots. • Some small-<8" pieces of concrete in top 18" multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP24

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748910
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 081915 1228
COMPLETION DATE: 081915
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

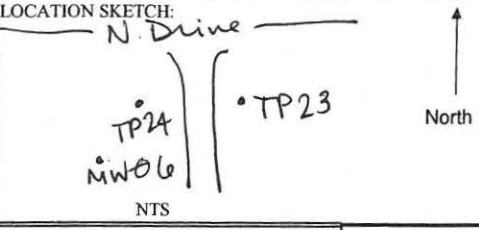
DATE / TIME		
DEPTH TO WATER	N/A	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC / CO / H_2S / LEL / OXY	cal. passed	081915 / 0720

REMARKS: 31' W of M4TP23

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty loam, dry, little gravel	
2					1'-2' orange sand + gravel, well rounded, hard	
3						
4					2'-4' olive brown silty sand, cohesive, sl. moist	
5						
6					No Waste	
7					multi-rae reading: 0	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MATP25

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1312
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

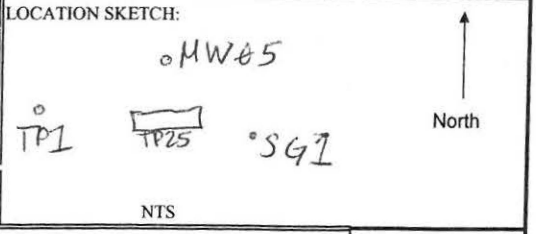
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S/LEL/OXY	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty, sandy loam, dry, root zone 0.8-2' orange silty sand, med-fine, well sorted 2'-4' Lt. brown silty sand, little gravel few small pieces of tile, little ash TD=4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP26

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1321
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

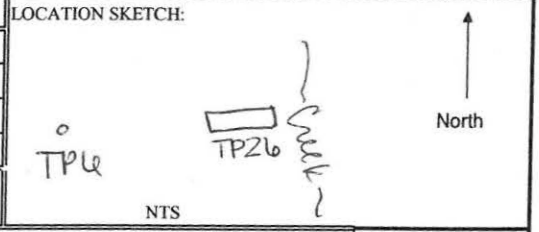
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty, sandy loam, root zone	
2						
3					1'-4' brown silty sand, some gravel, med, hard (difficult to advance bucket through)	
4						
5						
6						
7					TD = 4' bgs	
8					multi-rae reading = 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP27

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1335
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4	mini-excavator

GROUNDWATER DATA

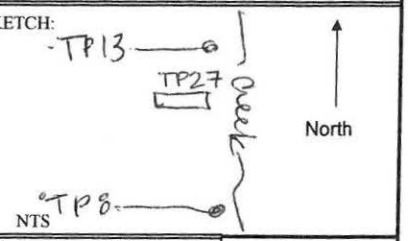
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/OXY	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, dry, root zone, some gravel 1'-2.5' brown silty sand, hard (difficult to advance bucket through) 2.5'-4' greenish-grey silty sand w/ clay, moist TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MATP28

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115 | 1400
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	3'	mini-excavator

GROUNDWATER DATA

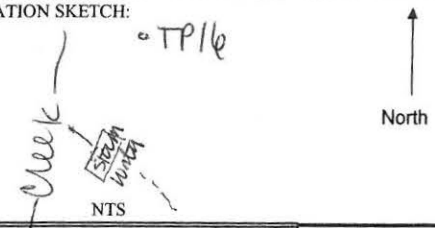
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.5' 3/4 gravel, manufactured	
2					0.5'-3' brown silty sandy loam, some gravel, dry	
3						
4						
5					@3' concrete. cannot advance bucket	
6						
7					TD = 3' bgs	
8						
9					multi-rae reading = 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MATP29

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1434
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10.5'	20"	4'	~~Trackhoe~~ mini excavator

GROUNDWATER DATA

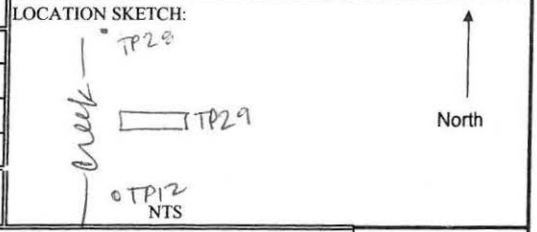
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty sandy loam w/ gravel, inc. sand w/ depth, root zone 2'-4' SAA, w/ waste incl. concrete, brick, coal, ash, burned wood @4' - cannot advance bucket - lg. piece of concrete. TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP30

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: K. McDonald
CONTRACTOR: AWT
START DATE: 083115 1448
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	20"	4'	mini-excavator

GROUNDWATER DATA

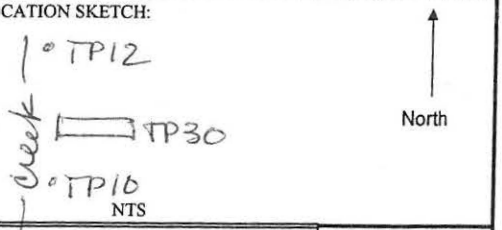
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/OXY	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–0.8' brown silty sandy loam, root zone, some gravel 0.8–1' orangish-brown silty sand, med-fine 1'–4' waste incl. concrete, misc. metal, coal, burned wood, TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP31

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/1132
COMPLETION DATE: 090205
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	2'	mini-excavator

GROUNDWATER DATA

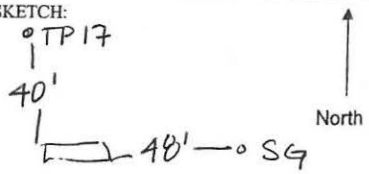
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, some gravel, small (<6") pieces of concrete 1'-2' Lt. orangish-brown silty sand, med.-fine @ 2' - concrete. Cannot advance bucket further TD = ~~2~~ 2' bgs multi-rae reading = ~~0~~	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP32

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215 | 1144
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	2'	mini-excavator

GROUNDWATER DATA

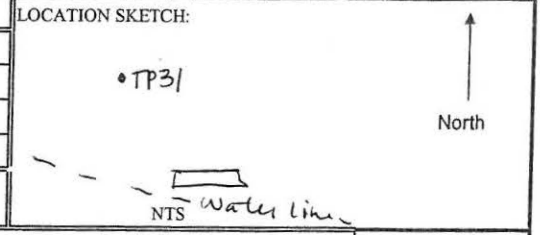
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty sand w/ gravel, decreased gravel downward dry, small pieces of concrete (<6" dia.) TD = 2' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: ~~M25~~ M4TP33

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215 | 1155
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	2'	mini-excavator

GROUNDWATER DATA

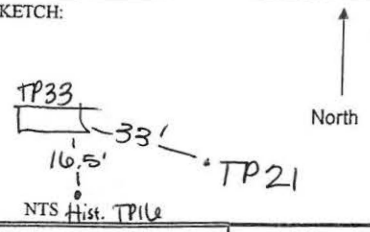
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.5' brown silty, sandy loam w/ gravel, dry, grass roots 0.5 – 2' waste - concrete (>1' dia.), metal pipe (rusting), ash, coal, ceramic tile, wire, brick. Metal pipe in 2 sizes: ~1" dia. & ~3" dia. dry TD = 2' bgs multirae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4 TP34

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/1212
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	2'	3'	mini-excavator

GROUNDWATER DATA

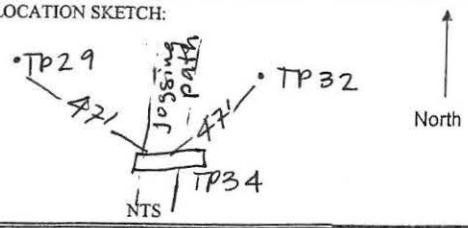
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' gravel for jogging/pedestrian path landscape fabric @ 1' 1'-3' brown silty sand w/ waste - brick, wood, ash, lg. pieces of concrete (>10" dia.) TD = 3' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP35

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/1223
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	2'	mini-excavator

GROUNDWATER DATA

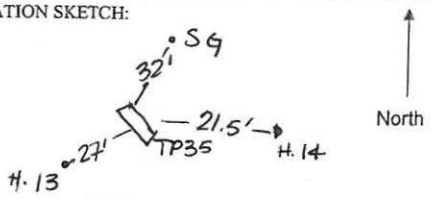
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty, sandy loam w/ gravel. Root zone (grass) top 8". Waste below the root zone, including lg. (>10" dia.) pieces of concrete, coal, lg piece of concrete @ 2' bgs, cannot advance bucket further. TD = 2' bgs. multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP36

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/1244
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	3'	mini-excavator

GROUNDWATER DATA

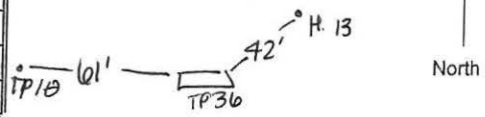
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty, sandy loam w/ gravel. Rootzone top 1' Dry	
2						
3						
4					1.5'-3' waste-concrete, brick, ash, coal, burned wood	
5						
6						
7					TD=3' bgs	
8						
9					multi-rae reading = 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP37

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215 / 1257
COMPLETION DATE: 090205
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	3'	mini-excavator

GROUNDWATER DATA

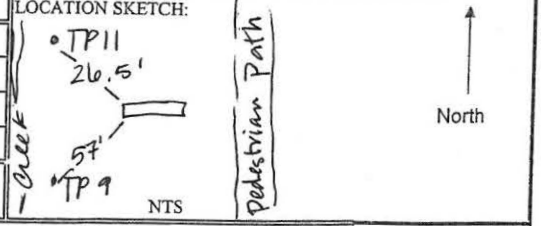
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.5' brown silty, sandy loam, dry, loose 0.5-1.5' tan to lt. brown silty sand, med-fine, well-sorted 1.5-3' waste incl. concrete, asphalt, coal, ash @ 3' - lg. piece of concrete, cannot advance bucket further TD = 3' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M4TP30

PROJECT: FTMM
LOCATION: Landfill M4

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/1313
COMPLETION DATE:
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	2'	mini-excavator

GROUNDWATER DATA

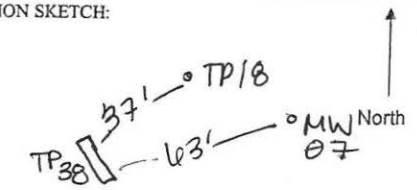
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty sand w/ gravel, tree roots, grass roots top 6"; dry 1.5'–2' SAA, waste incl. coal, concrete, slag, broken glass @ 2' – lg. piece of concrete – cannot advance bucket farther. TD = 2' bgs Multi-Rae reading = 0	

APPENDIX D

FTMM-05: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX D: FTMM-05 Landfill Boundary Refinement and Methane Gas Survey Results

TABLE OF CONTENTS

1.0 LANDFILL BOUNDARY REFINEMENT SUMMARY D-1
2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS.....D-1
3.0 REFERENCES.....D-2

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D2	Methane Gas Survey Results

LIST OF FIGURES

Figure No.	Title
D1	Landfill Boundary Refinement and Methane Gas Survey Results

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Attachment	Title
D-A	Test Pit Logs

1.0 LANDFILL BOUNDARY REFINEMENT SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries are discussed in further detail in the Remedial Investigation Report for FTMM-05 (Parsons, 2015). These changes are reflected on **Figure D1**. In addition, the RI report identified data gaps in the landfill boundaries, specifically along Mill Creek and at test pit 5 to be addressed during the landfill boundary refinement field activities. Subsequent to the preparation of the RI Report for FTMM-05, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. One historical test pit (8) did not appear did not appear to meet the criteria to be considered landfill solid waste. The designation of these historical test pits was modified on **Figure D1** to indicate landfill solid waste was not present.

Test pits during the landfill boundary refinement were initially advanced along the 2015 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the RI report (Parsons, 2015). To form a more comprehensive view of the landfill, additional test pits were performed in the interior of the landfill since there was limited test pit data in this area. Test pits were advanced at 19 locations at FTMM-05 as part of the landfill refinement activities on August 21, 2015. Historical (2010) and 2015 test pit locations are shown in **Figure D1**.

Logs for the test pits excavated in 2015 are provided in **Attachment D-A**. A summary of the test pit observations, depth of waste, and whether the location meets the criteria for being part of the delineated landfill is presented in **Table D1**.

Observations of the 2015 test pits along the western landfill boundary of FTMM-05 and the eastern bank of Parkers Creeks (M5TP1 and M5TP2) contained miscellaneous singular pieces of debris and/or scattered debris that was not contiguous. These test pits were categorized as having debris of *de minimus* quantity and did not meet the criteria to be considered as part of the delineated landfill; however, one of the test pits along the eastern bank of Mill Creek contained landfill waste (M5TP3). The 2015 test pits performed along the eastern and southern perimeter contained scattered debris that is not contiguous (M5TP11) or did not contain solid waste (M5TP8, M5TP9, M5TP12, and M5TP13). The landfill boundaries were revised and pulled in away from the roads on the eastern and southern sides of the landfill. The 2015 test pits on the interior of the landfill contained ash, coal, lumber, brick, plastic, glass, and metal; the thickness and quantity observed in the interior test pits was indicative of landfill solid waste.

Figure D1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of seven (7)) landfill gas readings (including one QA/QC sample) were measured at six soil gas locations at FTMM-05 as part of the methane gas survey. Sampling was conducted on July 28, 2015. Methane was not detected at the six sampling locations. At two locations (M5SG4 and M5SG6), the soil gas probe could not be driven to 3.5 feet bgs because the water table occurred shallower than this depth. At M5SG4 and M5SG6, the soil gas probe was

driven to a depth above the water table of 3.0 feet bgs and 2.5 feet bgs, respectively. Variations to the depth of sample collection are noted on **Table 2**. The landfill gas readings are summarized in **Table D2.** The soil gas sampling locations are provided in **Figure D1**.

3.0 REFERENCES

Parsons. *Remedial Investigation Report for Site FTMM-05, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. October 2015.

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table D1 Landfill Boundary Refinement Summary

Table D2 Methane Gas Survey Results

Table D1
Landfill Boundary Refinement Summary
Site FTMM-05
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M5TP1	N	2	Debris of de minimus quantity; not landfill.
M5TP2	N	3	No solid waste observed; not landfill.
M5TP3	Y	1	Solid waste including ash, broken glass, coal indicative of landfill.
M5TP4	Y	1	Solid waste including ash, coal, lumber, rusty brick indicative of landfill.
M5TP5	Y	1	Solid waste including ash, coal, brick indicative of landfill.
M5TP6	Y	1	Solid waste including brick, large piece of steel, concrete, ash, coal, terracota tile indicative of landfill.
M5TP7	Y	1	Solid waste including ash, coal, burned wood, broken bottle indicative of landfill.
M5TP8	N	3	No solid waste observed; not landfill.
M5TP9	N	3	No solid waste observed; not landfill.
M5TP10	Y	1	Solid waste including some ash, coal, broken glass indicative of landfill.
M5TP11	N	2	Debris of de minimus quantity; not landfill.
M5TP12	N	3	No solid waste observed; not landfill.
M5TP13	N	3	No solid waste observed; not landfill.
M5TP14	Y	1	Solid waste including ash, coal, broken botle, newspaper indicative of landfill.
M5TP15	Y	1	Solid waste including ash, coal indicative of landfill.
M5TP16	Y	1	Solid waste including ash, coal, wire (metal), broken glass, misc. plastic indicative of landfill.
M5TP17	Y	1	Solid waste including ash, coal indicative of landfill.
M5TP18	Y	1	Solid waste including ash, coal, metal, broken glass indicative of landfill.
M5TP19	Y	1	Solid waste including ash indicative of landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

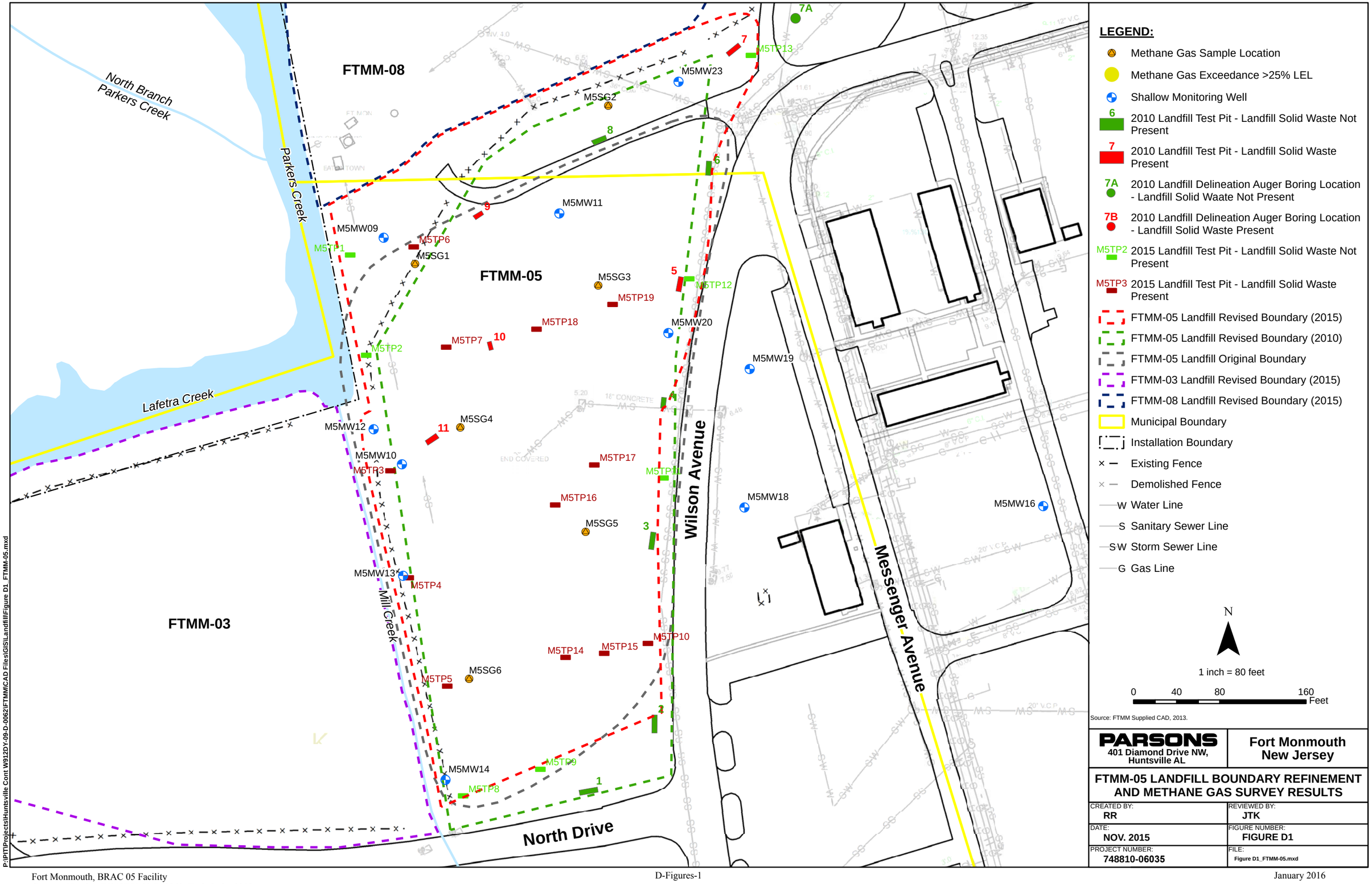
Table D2
Methane Gas Survey Results
Site FTMM-05
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M5SG1	7/28/2015	0.0	0.0	2.7	18.9	
M5SG2	7/28/2015	0.0	0.0	0.0	22.1	
M5SG3	7/28/2015	0.0	0.0	0.7	20.3	
M5SG4	7/28/2015	0.0	0.0	0.0	20.7	Sampled at 3.0' bgs
M5SG5	7/28/2015	0.0	0.0	0.0	20.9	
M5SG5QA	7/28/2015	0.0	0.0	0.0	21.1	
M5SG6	7/28/2015	0.0	0.0	0.0	21.3	Sampled at 2.5' bgs

Notes:
1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.
2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure D1 Landfill Boundary Refinement and Methane Gas Survey Results


FTMM-08
FTMM-05
FTMM-03
North Branch Parkers Creek
Parkers Creek
Lafetra Creek
Mill Creek
Wilson Avenue
Messenger Avenue
North Drive
M5MW23
M5SG2
M5MW11
M5MW09
M5TP1
M5TP6
M5SG1
M5SG3
M5TP19
M5TP18
M5TP7
M5TP2
M5MW20
M5MW19
M5MW12
M5SG4
M5MW10
M5TP3
M5TP17
M5TP16
M5SG5
M5MW18
M5MW16
M5MW13
M5TP4
M5TP14
M5TP15
M5TP10
M5SG6
M5TP5
M5MW14
M5TP9
M5TP8
7A
7
M5TP13
8
6
9
5
M5TP12
10
4
11
3
2
1
LEGEND:
Methane Gas Sample Location
Methane Gas Exceedance >25% LEL
Shallow Monitoring Well
6 2010 Landfill Test Pit - Landfill Solid Waste Not Present
7 2010 Landfill Test Pit - Landfill Solid Waste Present
7A 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waate Not Present
7B 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
M5TP2 2015 Landfill Test Pit - Landfill Solid Waste Not Present
M5TP3 2015 Landfill Test Pit - Landfill Solid Waste Present
FTMM-05 Landfill Revised Boundary (2015)
FTMM-05 Landfill Revised Boundary (2010)
FTMM-05 Landfill Original Boundary
FTMM-03 Landfill Revised Boundary (2015)
FTMM-08 Landfill Revised Boundary (2015)
Municipal Boundary
Installation Boundary
Existing Fence
Demolished Fence
W Water Line
S Sanitary Sewer Line
SW Storm Sewer Line
G Gas Line
N
1 inch = 80 feet
0 40 80 160 Feet
Source: FTMM Supplied CAD, 2013.
PARSONS
401 Diamond Drive NW, Huntsville AL
Fort Monmouth New Jersey
FTMM-05 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS
CREATED BY: RR
REVIEWED BY: JTK
DATE: NOV. 2015
FIGURE NUMBER: FIGURE D1
PROJECT NUMBER: 748810-06035
FILE: Figure D1_FTMM-05.mxd
P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure D1_FTMM-05.mxd

ATTACHMENTS

Attachment D-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP1

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/1112
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

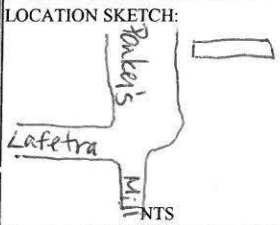
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	Cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown silty sandy loam w/ interbedded gray-green silty sand and orange silty sand · a few small pieces of coal, 1 broken brick, 1 broken ceramic plate TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MBTP2

PROJECT: FTMH
LOCATION: Landfill M93

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 | 1133
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	2'	3'	mini-excavator

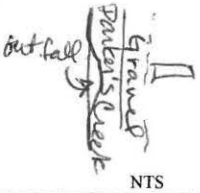
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae	VOC/CO/H2S	Cal. passed	082115/0720
PID	LEL/OXY		

LOCATION SKETCH:



North

NTS

REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam 1'-3' waste zone including metal, brick, broken glass, coal, fabric, wood TD = 3' multi-rae reading: 0 *this pit is immediately east of the rip rap + gravel road	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MSTP2

PROJECT: FTMH
LOCATION: Landfill MS

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/1104
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

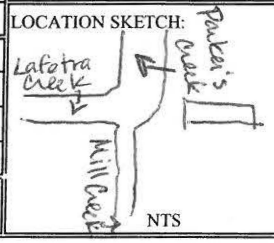
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty, sandy loam, little gravel, some interbedded gray-green sand, roots. 2 pieces of concrete <1' diameter. • orange sand @ 4'	
					No Waste	
					multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: M5TP3
GROUND ELEV:
INSPECTOR: 7408/10
CONTRACTOR: R. McDonald
START DATE: 082115/1036
COMPLETION DATE:
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	3'	miniexcavator

GROUNDWATER DATA

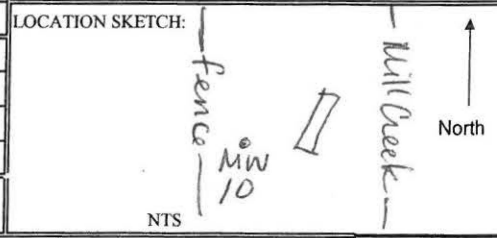
DATE / TIME	1040		
DEPTH TO WATER	3'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty loam, root zone, little gravel	
2						
3					0.8'-3' waste - ash, broken glass, coal,	
4						
5						
6						
7					TD = 3' bgs multi-rae reading=	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP4

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/1027
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini excavator

GROUNDWATER DATA

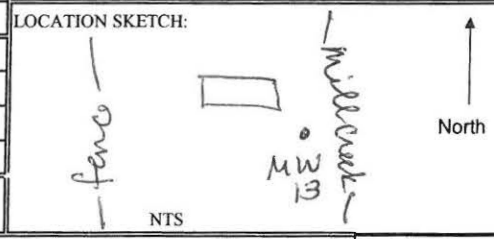
DATE / TIME	1029		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty loam, little gravel, roots	
2						
3					1'-4' orange silty sand, waste including ash, coal, lumber, rusty brick	
4						
5						
6						
7					TD=4' bgs	
8					multi-rae reading=0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP5

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/1004
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2.5'	4'	mini excavator

GROUNDWATER DATA

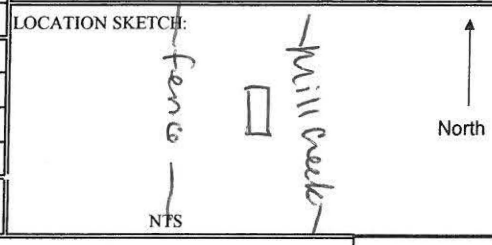
DATE / TIME	1007		
DEPTH TO WATER	4'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/oxy	cal. passed	082115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-2' brown silty loam, damp, rootzone, some lg. (8"+) cobbles	
2						
3					2'-4' waste zone - ash, coal, brick, coarse sand	
4						
5						
6					• Water filling in hole @ 4', continues to rise when pit was backfilled	
7					TD = 4' bgs	
8					multi-rae reading: 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP6

PROJECT: FTMH
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/1120
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2.5'	4'	mini excavator

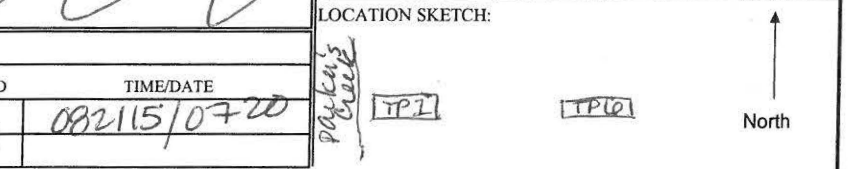
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal passed	082115/0720

LOCATION SKETCH:



NTS

REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1' 3/4 gravel for gravel road. Silt fence fabric @ 1' 1'–4' Waste. Brick, lg. piece of steel concrete, ash, coal, terracotta tile TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:

PROJECT: FTMH
LOCATION: Landfill M5

JOB NUMBER: M5 TP7
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

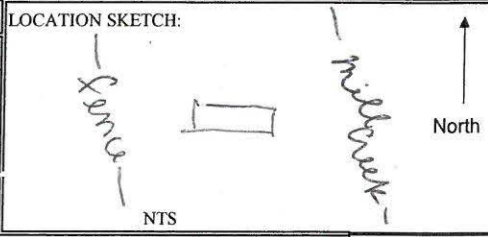
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-Rae plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.5' organic matter (leaves, twigs), roots, 1 brick	
2					0.5-1' orange sand, med-fine, moist	
3					1'-4' dk brown silty sand, waste zone including ash, coal, burned wood broken bottle	
4						
5						
6						
7					TD = 4' bgs	
8					multirae reading = 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP8
PROJECT: FTMM		JOB NUMBER: 749810
LOCATION: Landfill M5		GROUND ELEV:
		INSPECTOR: K. McDonald
		CONTRACTOR: AWT
		START DATE: 082115/0956
		COMPLETION DATE: 082115
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	1.5'	4'	mini-excavator

GROUNDWATER DATA

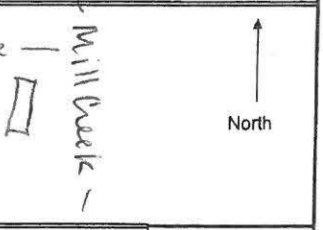
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / Oxy	cal. passed	082115/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown to sl. reddish brown silty loam, little gravel, roots 0.8-4' orangish brown to orange silty sand, med-fine, well sorted 4' = TD No Waste multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP9

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/0742
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

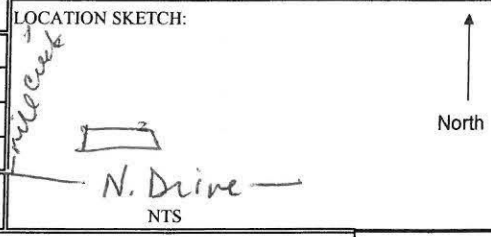
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' - gravel for pedestrian path fabric barrier @ 1' bgs	
2						
3					1'-4' orange silty sand, med-fine, well-sorted	
4						
5					TD = 4' bgs	
6					No Waste	
7						
8					Multi-rae reading: 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MSTP10

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115/0752
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

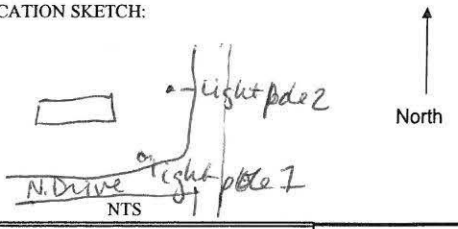
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082115/0720

REMARKS: Closer (immediately west) of light pole 2 on drawing

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8 brown silty sandy loam 0.8-2.5 Sand+gravel, coarse, well-graded, some ash, coal, brokenglass, med. gray 2.5'-4' - orange sand, med, well sorted @4' black to greenishblack sand w/ decomposing organic matter TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP11

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 | 0805
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

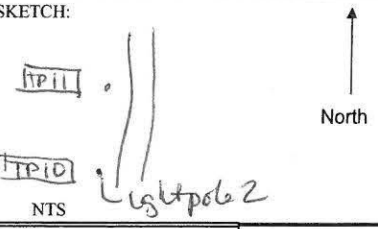
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty loam, tree roots, broken concrete	
2						
3					0.8-4' orange silty sand, med., well-sorted, roots	
4						
5					TD = 4' bgs	
6					multi-rae reading: 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP12

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 | 0819
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

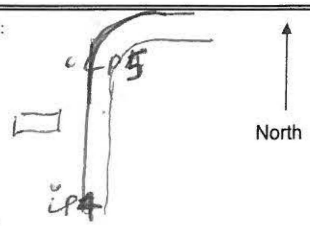
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082115/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty loam, little gravel, root zone 1-4' orange to orangish brown silty sand, med-fine, loose, well sorted, poorly graded TD=4' bgs No Waste multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP13
PROJECT: ETMM		JOB NUMBER: 748810
LOCATION: Landfill M5		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082115/0932
		COMPLETION DATE: 082115
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
			mini-excavator

GROUNDWATER DATA

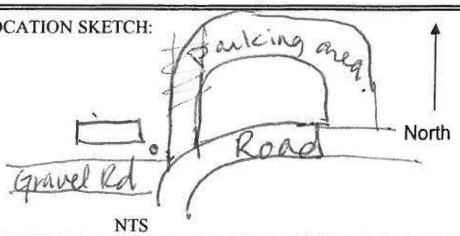
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082115/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty loam, dry, root zone 0.8'-3.5' yellowish brown silty sand, med.-fine, well sorted 3.5'-4' SAA, but orange TD=4' bgs No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5 TP14

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 | 1300
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini excavator

GROUNDWATER DATA

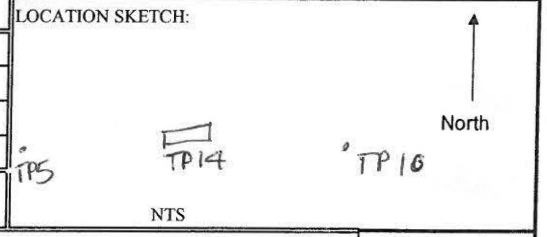
DATE / TIME	1304		
DEPTH TO WATER	2.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	cal. passed	082115 / 0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty sandy loam, rootzone 1.5'–4' Ash, coal, broken bottle, newspaper from 1943. Slight odor, but no readings above background on multi-rae plus TD = 4' bgs multi-rae reading: 0 GW filled hole to 2.5' bgs in about 2 min. TP14 — 37.5' — TP15 — 41' — TP10	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP15
PROJECT: FTMM		JOB NUMBER: 748810
LOCATION: Landfill M5		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082115 | 1312
		COMPLETION DATE: 082115
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

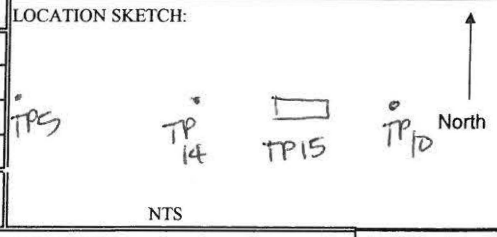
GROUNDWATER DATA

DATE / TIME	1313		
DEPTH TO WATER	4'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC|CO|H_2S LEL|Oxy	Cal. passed	082115/0720

LOCATION SKETCH:



NTS

REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty, sandy loam, rootzone, damp 1.5'–4' silty sand, waste zone incl. ash, coal • GW filled in pit to 3' bgs w/in 1 min. TD = 4' bgs multi-rae reading: ~~0~~ TP15 — 41' — TP10	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP16

PROJECT: FTMM
LOCATION: Landfill 5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 | 1323
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

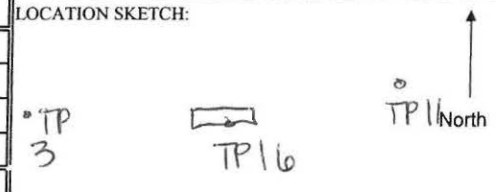
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC | CO | H_2S LEL | Oxy	cal. passed	082115 | 0720

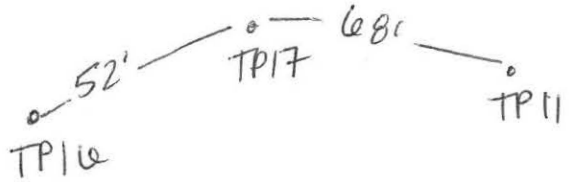
REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' silty, sandy loam, brown, root zone 1'-4' ash and other waste incl. coal, wire (metal), broken glass, misc. plastic TD = 4' bgs multi-rae reading = 0	



TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: M5TP17
GROUND ELEV:
INSPECTOR: 748810 / R. McDonald
CONTRACTOR: AWT
START DATE: 082115 / 1333
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini excavator

GROUNDWATER DATA

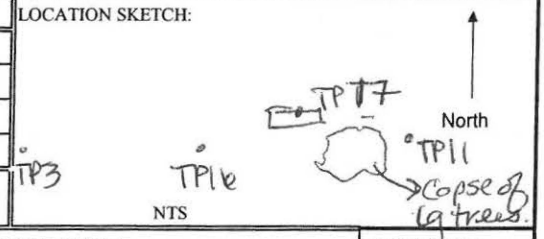
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S LEL / OXY	Cal. passed	082115 / 0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty, sandy loam. Rootzone. (lg tree roots) 2'-4' Waste-ash, coal TD = 4' bgs multi-rae reading = 0 TP17 — 52' — TP11	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5TP18

PROJECT: FTMM
LOCATION: Landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 | 1344
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

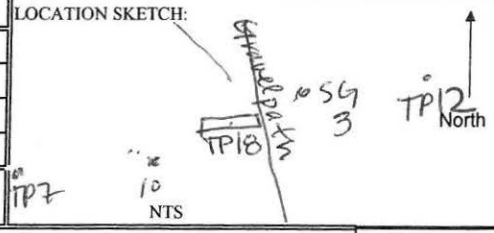
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC | CO | H_2S LEL | O_2	cal. passed	082115/0720

LOCATION SKETCH:



REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–0.8' brown silty, sandy loam, root zone 0.8'–2' orange silty sand, med-fine, well-sorted 2'–4' waste-ash, metal, coal, broken glass TD = 4' bgs multi-rae reading: 0 TP18 ○—75'—○ TP19 ○—75'—○ TP12	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M5SG19

PROJECT: FTMM
LOCATION: landfill M5

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

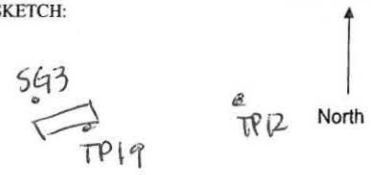
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082115/0720

LOCATION SKETCH:



NTS

REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–0.5' brown silty sandy loam, grass roots 0.5'–1.0' ash 1.0'–4' orange silty sand, med., well-sorted TD = 4' bgs multi-rae reading = 0 75' TP19 TP12	

APPENDIX E

FTMM-08: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX E: FTMM-08 Landfill Boundary Refinement and Methane Gas Survey Results

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1.0 TEST PIT DELINEATION SUMMARY E-1
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E1	Landfill Boundary Refinement Summary
E2	Methane Gas Survey Results

LIST OF FIGURES

Figure No.	Title
E1	Landfill Boundary Refinement and Methane Gas Survey Results

LIST OF ATTACHMENTS

Attachment	Title
E-A	Test Pit Logs

1.0 TEST PIT DELINEATION SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries will be discussed in further detail in the Remedial Investigation Report for FTMM-08 that will issued under separate cover. These changes are reflected on **Figure E1**. In addition, the RI report identified data gaps in the landfill boundaries, specifically between FTMM-08 test pit 4 and FTMM-05 test pit 7. Subsequent to the preparation of the RI Report for FTMM-08, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. None of the historical test pits that contain landfill solid waste (e.g., debris) were recategorized.

Test pits during the landfill boundary refinement were advanced along the 2010 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the RI report. Test pits were advanced along the southwestern, southern, and southeastern landfill boundary. Additional test pits were unable to be performed in the interior of the landfill due to Site conditions including heavy brush and trees. Test pits were advanced at 10 locations at FTMM-08 as part of the landfill refinement activities on August 21, and August 24, 2015. Historical (2010) and additional test pit locations are shown in **Figure E1**.

Logs for the test pits advanced in 2015 are provided in **Attachment E-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table E1**.

Observations of the 2015 test pits at FTMM-08 varied from those containing landfill solid waste (M8TP1, M8TP2, M8TP4, M8TP5, M8TP6, and M8TP10) such as asphalt, concrete, wood, coal, glass, miscellaneous plastic, and metals, to those containing miscellaneous singular pieces of debris and/or scattered debris that was not contiguous and categorized as debris of *de minimus* quantity (M8TP3, M8TP7 M8TP8, and M8TP9). Those test pits with debris of *de minimus* quantity did not meet the criteria to be considered as part of the delineated landfill. Based on review of the historic test pits logs and 2015 test pits, the landfill boundary at FTMM-08 was not revised further and was kept as the 2010 boundary.

These observations were consistent with the information contained in the Construction Closeout Report (Princeton Hydro, 2011), which indicated that no landfill debris and only surface concrete debris was found along Parker's Creek when the creek banks were re-graded and riprap installed in 2009.

Figure E1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of fourteen (14) landfill gas readings (including one QA/QC sample) were measured at thirteen soil gas locations at FTMM-08 as part of the methane gas survey. Sampling was conducted on August 3, August 4, and August 5 2015. Methane was detected at two locations (M8SG4 and M8SG6). One of the locations (M8SG6) exceeded 25 percent of the methane LEL. This location was located on the interior of the landfill. The five step out locations

(M8SG9, M8SG10, M8SG11, M8SG12, and M8SG13) were measured based on this methane detection. The collective methane results indicate the area within the landfill where methane was found above 25 percent of the LEL is very limited. Soil gas locations on the perimeter (including step outs) of the landfill did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-08. The methane detections are attributed to methane gas generating conditions at the landfill. The landfill gas readings are summarized in **Table E2.** The soil gas sampling locations and the locations where landfill gas exceeded 25 percent of the LEL are shown in **Figure E1**.

3.0 REFERENCES

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table E1 Landfill Boundary Refinement Summary

Table E2 Methane Gas Survey Results

Table E1
Landfill Boundary Refinement Summary
Site FTMM-08
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M8TP1	Y	1	Solid waste including concrete, burned wood, ash, brick indicative of landfill.
M8TP2	Y	1	Solid waste including metal, brick, broken glass, coal, fabric, wood indicative of landfill.
M8TP3	N	2	Debris of de minimus quantity; not landfill.
M8TP4	Y	1	Solid waste including asphalt, aluminum cans, paper, misc plastic, glass indicative of landfill.
M8TP5	Y	1	Solid waste including concrete, coal indicative of landfill.
M8TP6	Y	1	Solid waste including coal, concrete, terracota tile, paper cup, misc. plastic indicative of landfill.
M8TP7	N	2	Debris of de minimus quantity; not landfill.
M8TP8	N	2	Thin surface debris of de minimus quantity; not landfill.
M8TP9	N	2	Thin surface debris of de minimus quantity; not landfill.
M8TP10	Y	1	Solid waste including ball of wire, multiple glass bottles/jars, bricks, ash. indicative of landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

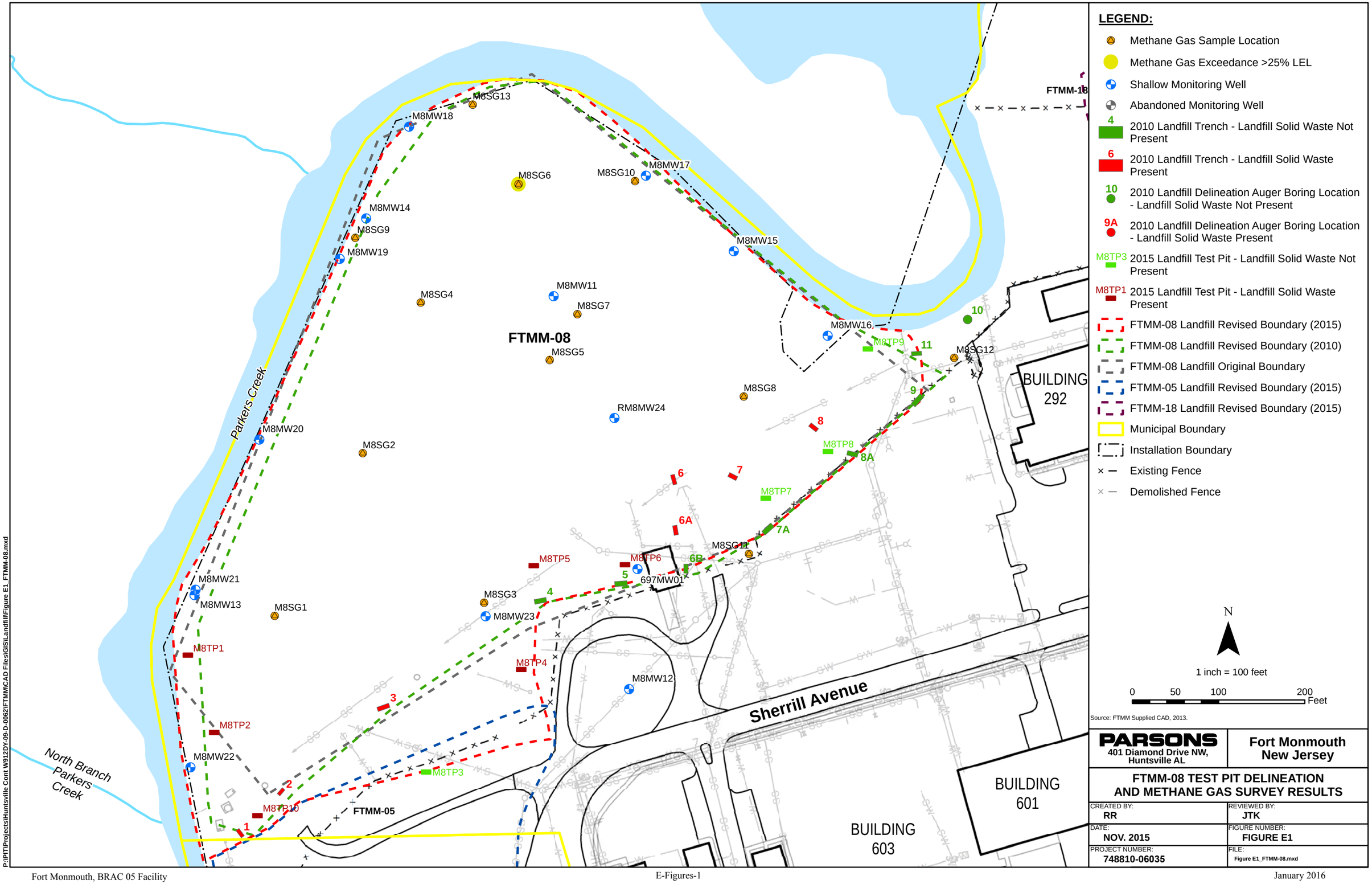
Table E2
Methane Gas Survey Results
Site FTMM-08
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M8SG1	8/3/2015	0.0	0.0	0.7	20.4	
M8SG2	8/4/2015	0.0	0.0	0.5	20.2	
M8SG3	8/4/2015	0.0	0.0	1.2	19.6	
M8SG3QA	8/4/2015	0.0	0.0	1.6	19.5	QA Sample
M8SG4	8/3/2015	0.2	3.0	4.5	14.6	
M8SG5	8/4/2015	0.0	0.0	1.6	19.4	
M8SG6	8/3/2015	16.9	OOR	21.6	1.0	
M8SG7	8/4/2015	0.0	0.0	2.8	18.9	
M8SG8	8/4/2015	0.0	0.0	2.0	19.1	
M8SG9	8/5/2015	0.0	0.0	0.8	20.1	Step out
M8SG10	8/5/2015	0.0	0.0	0.5	20.0	Step out
M8SG11	8/5/2015	0.0	0.0	1.1	19.6	Step out
M8SG12	8/5/2015	0.0	0.0	0.3	20.5	Step out
M8SG13	8/5/2015	0.0	0.0	3.6	17.4	Step out

Notes:
1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.
2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure E1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- Abandoned Monitoring Well
- 4 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 6 — 2010 Landfill Trench - Landfill Solid Waste Present
- 10 — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 9A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M8TP3 — 2015 Landfill Test Pit - Landfill Solid Waste Not Present
- M8TP1 — 2015 Landfill Test Pit - Landfill Solid Waste Present
- FTMM-08 Landfill Revised Boundary (2015)
- FTMM-08 Landfill Revised Boundary (2010)
- FTMM-08 Landfill Original Boundary
- FTMM-05 Landfill Revised Boundary (2015)
- FTMM-18 Landfill Revised Boundary (2015)
- Municipal Boundary
- Installation Boundary
- Existing Fence
- Demolished Fence

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

FTMM-08 TEST PIT DELINEATION AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE E1
PROJECT NUMBER: 748810-06035	FILE: Figure E1_FTMM-08.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure E1_FTMM-08.mxd

ATTACHMENTS

Attachment E-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MBTP2

PROJECT: FTMM
LOCATION: ~~EE~~ Landfill M8

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082115 / 1142
COMPLETION DATE: 082115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2.5'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082115/0720

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–2' 3/4 Gravel for gravel road; silt fence fabric @ 2' 2'–4' black waste layer – concrete, burned wood, ash, brick TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MBTP3

PROJECT: FTMM
LOCATION: Landfill M8

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 092415/0950
COMPLETION DATE: 092415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

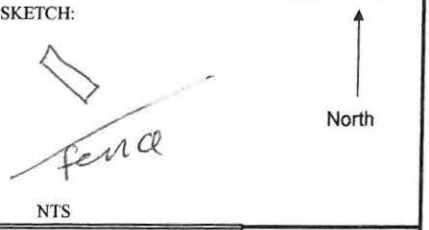
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	092415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, rootzone 1'-4' orange silty sand, med., damp, well-sorted, 1 piece of metal in pit sidewall. 4' = TD multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MWTP4

PROJECT: FTMM
LOCATION: Landfill MW

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/0940
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2.5'	4'	mini excavator

GROUNDWATER DATA

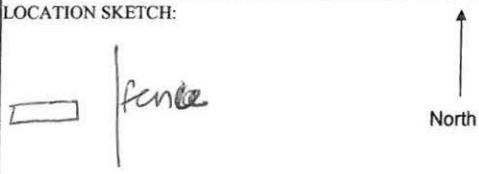
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty, sandy loam, little gravel, lots of roots waste: concrete, some smaller pieces (<18" dia.), 1 large piece (~3'x4'x8"). multi-rae reading: ~~0~~ TD = 4' bgs	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:

PROJECT: FTMM
LOCATION: Landfill MB

JOB NUMBER: MBTP5
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 | 0911
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	2.5'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:

North

Fence
NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' dk brown silty, sandy loam, dry, root zone	
2						
3					1'-2.5' SAA, waste zone incl. concrete, coal.	
4						
5					Very hard @ 2.5' difficulty advancing the bucket	
6						
7					TD = ~2.5' bgs	
8						
9					multi-rae reading: 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MWTP6

PROJECT: FTMM
LOCATION: Landfill MW

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/0857
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	3	mini-excavator

GROUNDWATER DATA

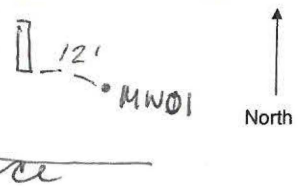
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082415/0710

REMARKS: Location not staked.

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty sandy loam w/ gravel, dry 1'-1.7' orangish brown sand, silty, waste including coal, concrete pieces 1.7-3.0' brown silty sandy w/ gravel, waste incl. broken concrete, paper cup, terracotta tile, misc. plastic TD = 3' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MBTP7

PROJECT: FTMM
LOCATION: Landfill MB

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/0835
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	4'	4'	mini-excavator

GROUNDWATER DATA

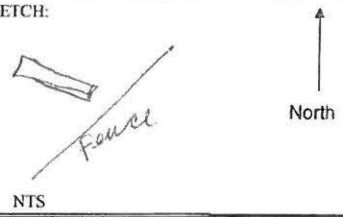
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. ~~gas~~ passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown to lt. reddish brown silty sandy loam, little gravel. No waste except a large concrete piece w/ rebar. 4' (+) diameter (did not expose edges). Other smaller pieces of concrete, some broken glass. TD = 4' bgs. multi-Rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:	MSTP8
PROJECT: FTMM		JOB NUMBER:	748810
LOCATION: Landfill MS		GROUND ELEV:	
		INSPECTOR:	R. McDonald
		CONTRACTOR:	AWT
		START DATE:	082415/0820
		COMPLETION DATE:	082415
		CHECKED BY:	

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini excavator

GROUNDWATER DATA

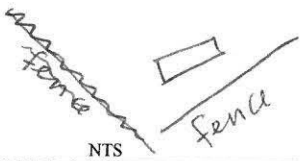
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. Passed	082415/0710

REMARKS: Lots of surface debris @ this location.

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty, sandy loam, little gravel, waste including pieces of concrete, telephone pole, pieces of metal, glass bottle	
2						
3						
4						
5					1-4' SAA, no waste	
6						
7					TD = 4' bgs	
8						
9					multi-rae reading: 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MSTP9

PROJECT: FTMM
LOCATION: Landfill M8

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/0809
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini excavator

GROUNDWATER DATA

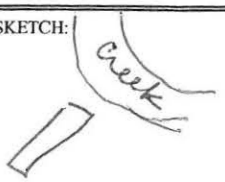
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-RaePlus	VOC/CO/H_2S LEL/OXY	cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-4' brown silty loam, some sand and gravel • pieces of concrete (to 2' diameter) in top 1', no other waste • couple small (<3" dia.) pieces of coal. TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MBTPH

PROJECT: FTMM
LOCATION: Landfill MB

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082415
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	3'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS: underground bumblebee hive.

LOCATION SKETCH:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' dk brown silty, sandy loam, little gravel • waste from 1.5-4', including ball of wire, multiple glass bottles/jars, bricks, ash TD = 4' bgs multi-rae reading = 0	

APPENDIX F

FTMM-12: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX F: FTMM-12 Landfill Boundary Refinement and Methane Gas Survey Results

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1.0 TEST PIT DELINEATION SUMMARY F-1
2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS F-2
3.0 REFERENCES F-2

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F1	Landfill Boundary Refinement Summary
F2	Methane Gas Survey Results

LIST OF FIGURES

Figure No.	Title
F1	Landfill Boundary Refinement and Methane Gas Survey Results

LIST OF ATTACHMENTS

Attachment	Title
F-A	Test Pit Logs

1.0 TEST PIT DELINEATION SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries are discussed in further detail in the Remedial Investigation Report for FTMM-12 (Parsons, 2015). These changes are reflected on **Figure F1**. In addition, the RI report identified data gaps in the landfill boundaries, specifically near borings B-15 through B-22 in the northeast portion of FTMM-12 to be addressed during the landfill boundary refinement field activities. Subsequent to the preparation of the RI Report for FTMM-12, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. Some historical test pits (10, 11C, 12, 14B, and 21) did not appear to meet the criteria to be considered as part of the delineated landfill. The designation of these historical test pits was modified on **Figure F1** to indicate landfill solid waste was not present.

Test pits during the landfill boundary refinement were initially advanced along the 2015 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the RI report (Parsons, 2015). To form a more comprehensive view of the landfill, additional test pits were performed in other areas of the landfill including: 1) in the northeastern corner of FTMM-12 after landfill solid waste was found in that area to better define the horizontal limits of the landfill; and 2) in the interior of the landfill since there was limited test pit data in this area. Test pits were advanced at 45 locations at FTMM-12 as part of the landfill refinement activities on August 25, 26, 27, and 28, and September 3, 2015. Historical (2010) and 2015 test pit locations are shown in **Figure F1**.

Logs for the test pits excavated in 2015 are provided in **Attachment F-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table F1**.

Observations of the 2015 test pits along Husky Brook contained landfill solid waste such as ash, slag, lumber, asphalt, and coal. These observations were consistent with the information contained in the Construction Closeout Report (Princeton Hydro, 2011), documenting the 2009 creek slope re-grading and riprap installation along the FTMM-12 northern creek boundary, where landfill solid waste was found along northern boundary adjacent to Husky Brook. Along the southern landfill perimeter, one test pit contained miscellaneous singular pieces of debris that was not contiguous and was categorized as debris of *de minimus* quantity (M12TP15). Other test pits contained no landfill solid waste (M12TP19, M12TP21, M12TP23, and M12TP25), however no change is recommended for the majority of the southern landfill boundary due existing roads and structures. The northern boundary was pulled in from Husky Brook based on the previous brook stabilization activities. Observations of the 2015 test pits on the interior of the landfill (M12TP11, M12TP20, M12TP41, M12TP42, M12TP43, M12TP44) contained landfill solid waste.

As a modification to the RI report, the southeastern landfill boundary was revised due to the presence of landfill solid waste in the 2015 test pits (M12TP29 and M12TP31). The RI report concluded that FTMM-12 boundaries identified the southeastern corner adjacent to Murphy Road as not landfill due to a review of the aerial photos indicating that this area was historically used for parking during landfill operations, and since the historical test pits around

this triangular area (2, 3, 4, 5, 6, and 7) did not indicate landfill solid waste. The landfill boundary was extended south beyond the step out locations that also contained landfill solid waste (M12TP32, M12TP34, M12TP35, and M12TP38), and bounded to the south by a series of test pits not containing landfill solid waste (M12TP25, M12TP36, M12TP37, M12TP39, and M12TP40).

Figure F1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of sixteen (16) landfill gas readings (including one QA/QC sample) were measured at 15 soil gas locations at FTMM-12 as part of the methane gas survey. Sampling was conducted on July 29, 30, and 31, and August 3 and 5, 2015. Methane was detected at four locations (M12SG1, M12SG2, M12SG9, and M12SG13), and three of these locations (M12SG1, M12SG2, and M12SG13) exceeded 25 percent of the methane LEL. The six step out locations (M12SG10, M12SG11, M12SG12, M12SG13, M12SG14, and M12SG15) were measured based on these methane detections. These locations are located exterior to the 2010 landfill boundary, but on the interior of the refined 2015 landfill boundaries in accordance with the test pit activities summarized in Section 1.0. The collective methane results indicate the two areas within the landfill where methane was found above 25 percent of the LEL are very limited. Soil gas locations on the perimeter (including step outs) of the landfill did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-12. The methane detections are most likely attributed to methane gas generating conditions at the landfill, and to natural methane gas generating conditions from the decomposition of organics in this area. At three locations (M12SG7, M12SG8, and M12SG13), the soil gas probe could not be driven to 3.5 feet bgs because the water table occurred shallower than this depth. The soil gas probes were driven to a depth above the water table of 2.5 feet bgs. The landfill gas readings and any variations on the depth of sample collection are summarized in **Table F2.** The soil gas sampling locations and the locations where landfill gas exceeded 25 percent of the LEL are shown in **Figure F1**.

3.0 REFERENCES

Parsons. *Remedial Investigation Report for Site FTMM-12, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. August 2015.

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table F1 Landfill Boundary Refinement Summary

Table F2 Methane Gas Survey Results

Table F1
Landfill Boundary Refinement Summary
Site FTMM-12
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M12TP1	N	3	No solid waste observed; not landfill.
M12TP2	Y	1	Solid waste including ash, slag, burned wood, misc plastic, burned paper, brick, broken glass indicative of landfill.
M12TP3	Y	1	Solid waste including ash, concrete pieces, terracotta tile indicative of landfill.
M12TP4	N	3	No solid waste observed; not landfill.
M12TP5	N	3	No solid waste observed; not landfill.
M12TP6	Y	1	Solid waste including concrete, coal indicative of landfill.
M12TP7	Y	1	Solid waste including ash, coal indicative of landfill.
M12TP8	Y	1	Solid waste including ash, coal, sla gindicative of landfill.
M12TP9	N	2	Debris of de minimus quantity; not landfill.
M12TP10	Y	1	Solid waste including ash, coal indicative of landfill.
M12TP11	Y	1	Solid waste including ash, coal, slag indicative of landfill.
M12TP12	N	3	No solid waste observed; not landfill.
M12TP13	Y	1	Solid waste including ash, coal, glass bottle, broken glass, fabric, paper indicative of landfill.
M12TP14	N	3	No solid waste observed; not landfill.
M12TP15	N	2	Debris of de minimus quantity; not landfill.
M12TP16	Y	1	Solid waste includingash, slag, asphalt, shingle, coal indicative of landfill.
M12TP17	Y	1	Solid waste includingburned lumber, metal, wire, glass bottle, concrete indicative of landfill.
M12TP18	Y	1	Solid waste including ash, coal indicative of landfill.
M12TP19	N	3	No solid waste observed; not landfill.
M12TP20	Y	1	Solid waste including ash, wire, coal, burned wood indicative of landfill.
M12TP21	N	3	No solid waste observed; not landfill.
M12TP22	N	3	No solid waste observed; not landfill.
M12TP23	N	3	No solid waste observed; not landfill.
M12TP24	Y	1	Solid waste including ash, slag, coal, glass bottle indicative of landfill.
M12TP25	N	3	No solid waste observed; not landfill.
M12TP26	Y	1	Solid waste including glass bottles, misc plastic, burned wood, rusting metal indicative of landfill.
M12TP27	N	2	Thin surface debris of de minimus quantity; not landfill.
M12TP28	Y	1	Solid waste including coal, ash, slag, concrete, brick indicative of landfill.
M12TP29	Y	1	Solid waste including ash, slag indicative of landfill.
M12TP30	Y	1	Solid waste including ash, coal, slag, burned wood indicative of landfill.

Table F1
Landfill Boundary Refinement Summary
Site FTMM-12
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M12TP31	Y	1	Solid waste including ash, coal, slag indicative of landfill.
M12TP32	Y	1	Solid waste including ash, coal, slag indicative of landfill.
M12TP33	N	3	No solid waste observed; not landfill.
M12TP34	Y	1	Solid waste including slag, ash, coal indicative of landfill.
M12TP35	Y	1	Solid waste including ash, coal, concrete, lumber, metal pipe, wire, glass bottle indicative of landfill.
M12TP36	N	3	No solid waste observed; not landfill.
M12TP37	N	3	No solid waste observed; not landfill.
M12TP38	Y	1	Solid waste including ash, coal, burned wood, glass bottle, coal indicative of landfill.
M12TP39	N	2	Debris of de minimus quantity; not landfill.
M12TP40	N	3	No solid waste observed; not landfill.
M12TP41	Y	1	Solid waste including ash, coal, slag indicative of landfill.
M12TP42	Y	1	Solid waste including burned wood indicative of landfill.
M12TP43	Y	1	Solid waste including ash, coal, slag indicative of landfill.
M12TP44	Y	1	Solid waste including ash, coal, slag, paper, cans indicative of landfill.
M12TP45	Y	1	Solid waste including ash, coal, slag indicative of landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

Table F2
Methane Gas Survey Results
Site FTMM-12
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M12SG1	7/29/2015	31.2	OOR	8.7	4	
M12SG2	7/30/2015	25.7	OOR	9.8	3.2	
M12SG2QA	7/30/2015	27.3	OOR	10.9	0.8	QA Sample
M12SG3	7/30/2015	0.0	0.0	0.0	21.1	
M12SG4	7/30/2015	0.0	0.0	12.0	8.7	
M12SG5	7/31/2015	0.0	0.0	1.3	19.6	
M12SG6	7/31/2015	0.0	0.0	0.4	20.1	
M12SG7	7/31/2015	0.0	0.0	1.9	18.7	Sampled at 2.5' bgs
M12SG8	7/31/2015	0.0	0.0	0.0	20.8	Sampled at 2.5' bgs
M12SG9	7/30/2015	0.3	6.0	0.6	19.3	
M12SG10	8/3/2015	0.0	0	2.6	18.3	Step out
M12SG11	8/3/2015	0.0	0.0	0	21.2	Step out
M12SG12	8/3/2015	0.0	0.0	0.2	26.9	Step out
M12SG13	8/3/2015	3.4	65.0	8.2	6.6	Step out, sampled at 2.5' bgs
M12SG14	8/3/2015	0.0	0.0	1.2	19.7	Step out
M12SG15	8/5/2015	0.0	0.0	0.5	18.7	Step out

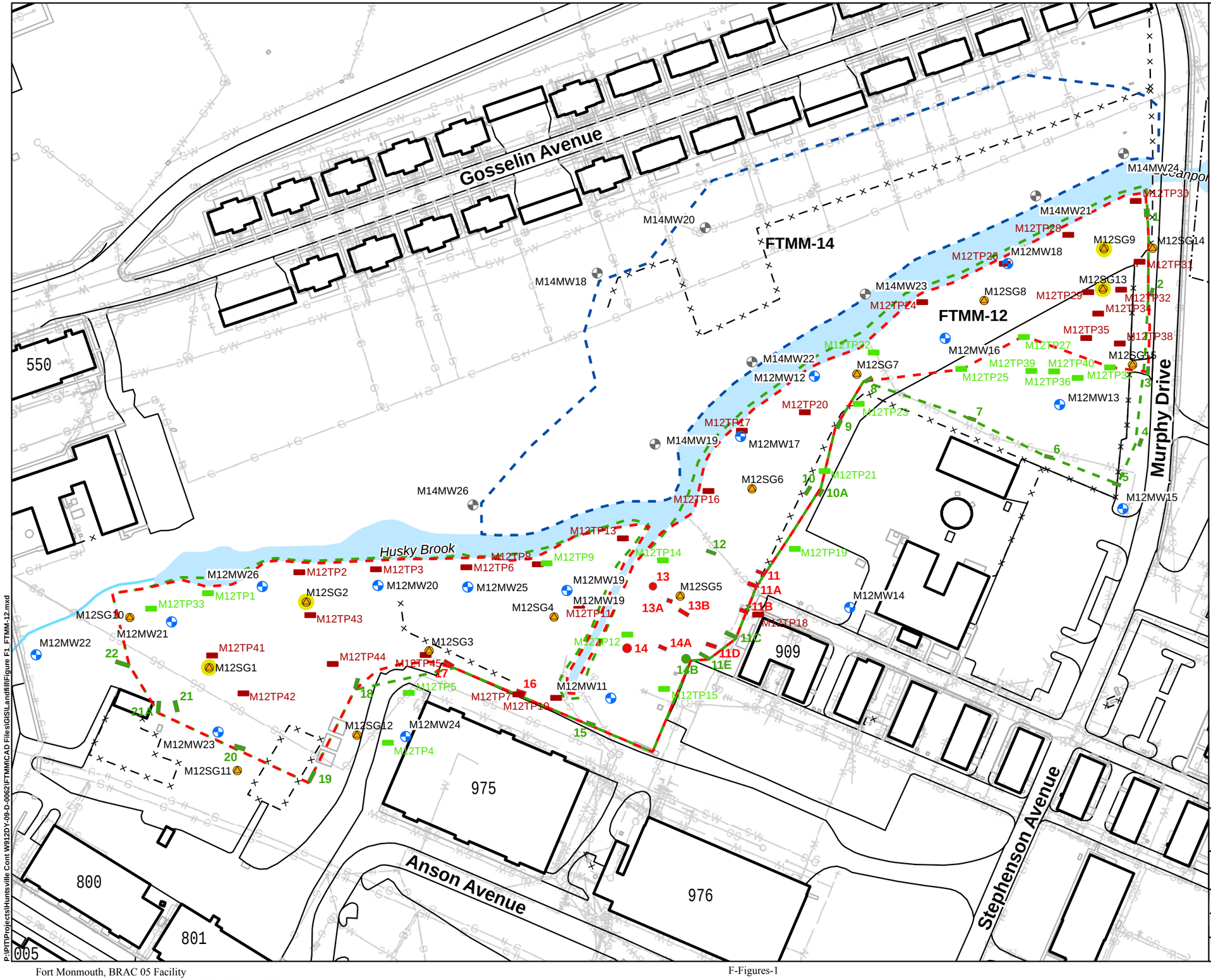
Notes:

1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.

2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure F1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- FTMM-14 Shallow Monitoring Well
- 12 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 16 — 2010 Landfill Trench - Landfill Solid Waste Present
- 17A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 14A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M12TP2 — 2015 Landfill Test Pit - Landfill Solid Waste Not Present
- M12TP4 — 2015 Landfill Test Pit - Landfill Solid Waste Present
- FTMM-12 Landfill Revised Boundary (2015)
- FTMM-12 Landfill Revised Boundary (2010)
- FTMM-14 Landfill Revised Boundary (2015)
- Installation Boundary
- Municipal Boundary
- Existing Fence
- Demolished Fence
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

N

1 inch = 130 feet

0 65 130 260 Feet

Source: FTMM Supplied CAD, 2013.

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure F1_FTMM-12.mxd

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

FTMM-12 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE F1
PROJECT NUMBER: 748810-06035	FILE: Figure F1_FTMM-12.mxd

ATTACHMENTS

Attachment F-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP1

PROJECT: FTMLH
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/0812
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	3'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–2' orangish brown silty sand, med-fine, well-sorted, some pebble-size gravel, dry to moist 2'–4' dk greenish gray to dark brown silty sand, med, well-sorted, some clay, sporadic decaying organic matter. Moist to wet TD = 4' bgs No Waste multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP2

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082715/0751
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

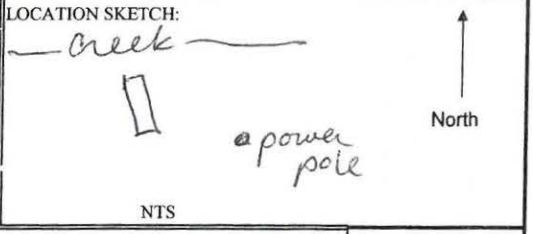
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H2S LEL/OXY	Cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1' brown silty, sandy loam, rootzone 1'–2.5' brown to orangish brown silty sand, med., well-sorted 2.5'–4' waste – ash, slag, burned wood, misc. plastic, burned paper, brick, broken glass TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP3

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615/1436
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

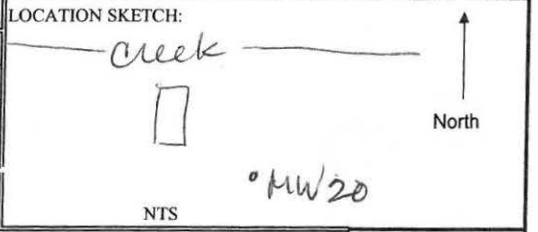
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082615/0945

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty sandy loam, dry, root zone 0.8-2' brown silty sand, med, well sorted, dry to moist w/ depth 2'-4' waste-ash, concrete pieces, terracotta pieces, moist TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP4

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515 / 1055
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

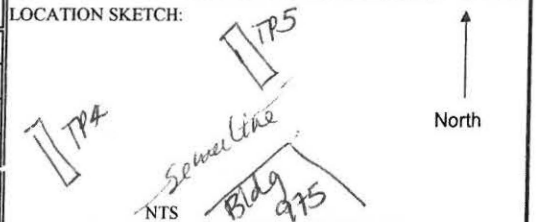
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/OXY	cal. passed	082515/0725

REMARKS: TP moved ~3' NW of staked loc. due to sewer line

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty, sandy loam,	
2					1.5-3.5' orangish-red silty sand, fine-med, well-sorted, damp	
3						
4					3.5-4' greyish-green silty sand w/ clay, V. moist, med.,	
5						
6					TD = 4' bgs	
7						
8					multi-rae reading = 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP5

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1042
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

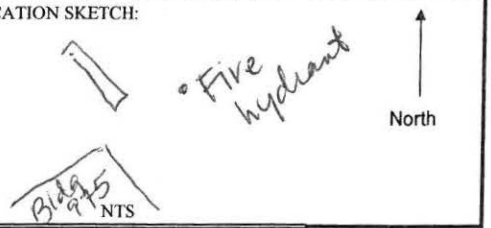
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/OXY	cal. passed	082515/0725

REMARKS: TP moved NW ~4' of staked loc. due to sewer line.

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty sandy loam w/ gravel 2'-4' reddish-orange silty sand, med., some gravel, some concrete, coal TD=4' bgs multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP6

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615/1424
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

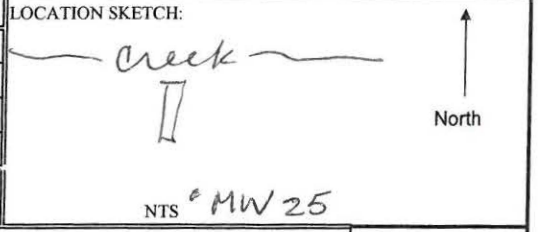
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082615/0945

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3.5' brown silty sand, dry, increasing moisture downward, some gravel top 2' @ South end of pit: gravel for gravel road in top 2'; 3.5-4' waste - ash, slag, TD=4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP7

PROJECT: FTMM
LOCATION: landfill M12

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1124
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	3'	3'	mini-excavator

GROUNDWATER DATA

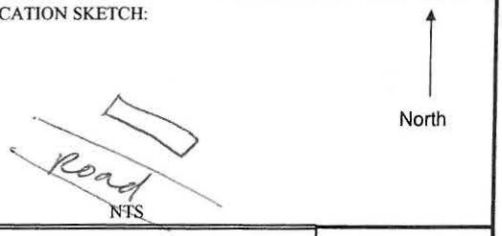
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S/LEL/OXY	Cal. passed	082515/0725

REMARKS: orig. loc. in road, moved NE to unpaved area

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty, sandy loam, root zone	
2						
3					1.5'-3' waste zone. ash, coal	
4						
5						
6					TD = 3' bgs	
7					multi-rae reading = 0	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP8

PROJECT: FTMH
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615/1414
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	5'	mini-excavator

GROUNDWATER DATA

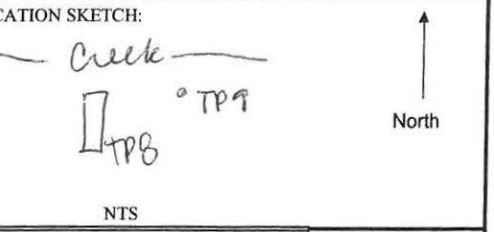
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082615/0945

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' 3/4 gravel for gravel road silt fence fabric @ 1.5' 1.5'-3' greenish-grey sand, silty, med., well sorted 3'-5' waste - ash, slag, coal TD = 5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP9
PROJECT: FTMM		JOB NUMBER: 748810
LOCATION: Landfill M12		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082615 / 1405
		COMPLETION DATE: 082615
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini excavator

GROUNDWATER DATA

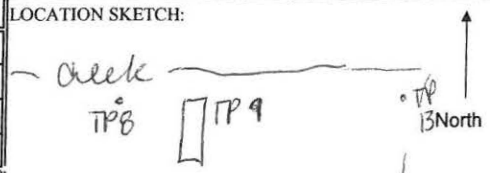
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082615 / 0945

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' 3/4 gravel for gravel road silt fence fabric @ 1.5' 1.5-4' greenish gray sand, med, well sorted, 2-3 small (<8" dia.) pieces of asphalt, few pieces of coal, few pieces of brick TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: 4

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: M12TP10/748816
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1109
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

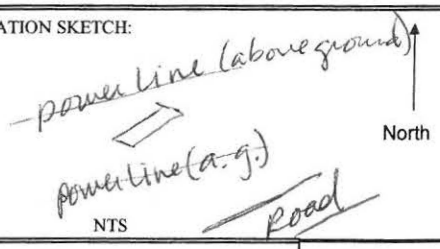
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy.	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty sandy loam. dry	
2						
3					0.8'-4' SAA, waste zone-ash, coal,	
4						
5					@4' yellowish-brown silty sand, med., damp	
6						
7						
8					TD = 4' bgs	
9					multi-rae reading: 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP11

PROJECT: FTMM
LOCATION: landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615 1343
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

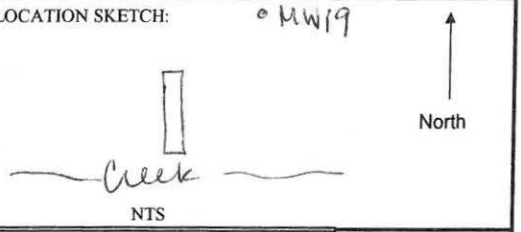
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	~~background~~ Cal. passed	082615/0945

REMARKS:

LOCATION SKETCH: ° MW19



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' 3/4 gravel for gravel road. Silt fence fabric @ 1.5' 1.5'-2.5' olive brown silty sand, med-fine, mottled coloring 2.5'-4' waste - ash, coal, slag TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP12

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1145
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

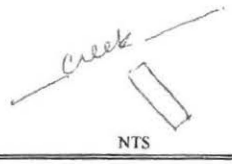
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. Passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-2'	
2					3/4 gravel for gravel road silt fence @ 2'	
3					2'-4'	
4					reddish brown silty sand med-fine, well-sorted, little gravel	
5						
6						
7					No Waste	
8					TD = 4' bgs	
9					multi-rae reading = 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:	M12TP13
PROJECT: FTMM		JOB NUMBER:	744010
LOCATION: Landfill M12		GROUND ELEV:	
		INSPECTOR:	R. McDonald
		CONTRACTOR:	ANT
		START DATE:	082615 | 1353
		COMPLETION DATE:	082615
		CHECKED BY:	

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

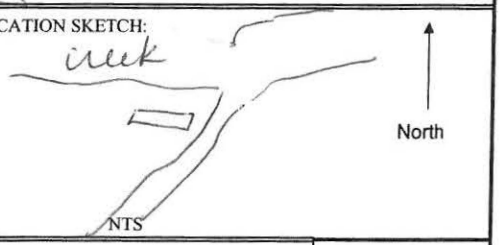
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082615 | 0945

LOCATION SKETCH:



REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' 3/4 gravel for gravel road, silt fence fabric @ 1.5' 1.5-4' waste - ash, coal, glass bottles, broken glass, fabric, paper.	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP14

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1313
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

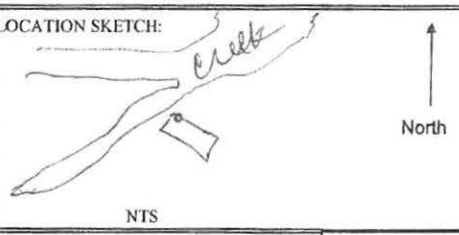
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/Co/H_2S LEL/Oxy	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' 3/4 gravel for gravel road Silt fence fabric @ 1' 1'-4' orangish brown silty sand, little gravel, med-fine, well-sorted, damp TD = 4' bgs No Waste multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP15

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082515 / 1154
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini-excavator

GROUNDWATER DATA

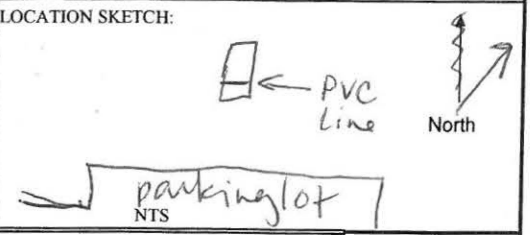
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
iMulti-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082515/0725

REMARKS: ~~location not staked, 15 ft NW of edge of parking lot~~ found stake

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty, sandy loam, surface debris	
2						
3					0.8-4' reddish-brown silty sand, fine-med., well-sorted, damp	
4						
5					TD = 4' bgs	
6					multi-rae reading = 0	
7						
8					*2 PVC/conduit lines @ SE end of pit. Approx. 6" dia. One broken by excavator - nothing inside. Called electrician (Jim). He came & looked @ them, said he did not know what they went to & to fill in the pit.	
9						
10						
11						
12						
13					Area was not cleared of vegetation, no utilities were marked in the area prior to pit excavation.	
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: ~~7408016~~ → M12TP16
PROJECT: FTMM		JOB NUMBER:
LOCATION: Landfill M12		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082615/1233
		COMPLETION DATE: 082633
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

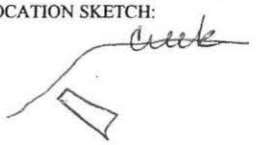
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082615/0945

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty, sandy loam. root zone. some pebble-size gravel 1.5'-2.5 olive brown silty sand, med, well-sorted 2.5-4' waste. ash, slag, asphalt shingles, coal TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP17

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615 | 1222
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	2'	3'	mini-excavator

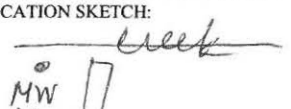
GROUNDWATER DATA

DATE / TIME	1225		
DEPTH TO WATER	2'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC|CO|H_2S LEL|OXY	cal. passed	082615|0945

LOCATION SKETCH:



NTS

REMARKS:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty, sandy loam, root zone top 2' 2'-3' waste-burned lumber, metal, wire, glass bottle, concrete TD=3' bgs multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.:	M12TP18
PROJECT: FTMM		JOB NUMBER:	748810
LOCATION: Landfill M12		GROUND ELEV:	
		INSPECTOR:	R. McDonald
		CONTRACTOR:	AWT
		START DATE:	082515/1229
		COMPLETION DATE:	082515
		CHECKED BY:	

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

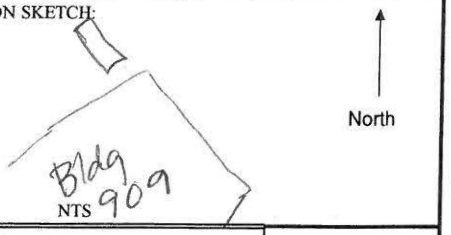
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, grass roots 1'-1.5' black sand - ash/coal-waste 1.5'-3' orangish-brown silty sand, med., damp 3'-4' greenish-grey silty sand med, moist TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP19
PROJECT: FTMM		JOB NUMBER: 748810
LOCATION: Landfill M12		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082515 / 1342
		COMPLETION DATE: 082515
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	4'	mini-excavator

GROUNDWATER DATA

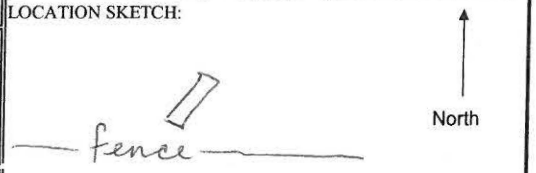
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. gas	082515/0725

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' reddish-brown silty sand, med-fine, well-sorted, damp, mottled w/ darker sand. TD=4' bgs No Waste multi-rae reading: ~~0~~	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP20

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615/1202
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
12'	2'	4'	mini-excavator

GROUNDWATER DATA

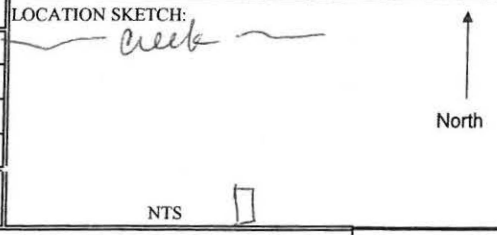
DATE / TIME	1210		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S 2EL/OXY	cal. passed	082615/0945

REMARKS: No stake. Pit placement based on map + vegetation clearance.

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' olive brown silty sand, med-fine, well sorted, little gravel 2'-4' waste - ash, wire, coal, burned wood @4' black silty sand w/ clay, wet, organic matter TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: 748810 → M12TP21

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER:
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515 | 1419
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

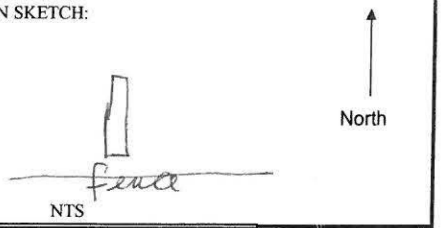
DATE / TIME	1422		
DEPTH TO WATER	4'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC | CO | H_2S LEL | Oxy	Cal. passed	082515 / 0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–4' silty sand, med.-fine, well sorted, damp to wet, inter-bedded brown + orange, roots in top 18" TD = 4' bgs No Waste multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP22

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 092615 / 1152
COMPLETION DATE: 092615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

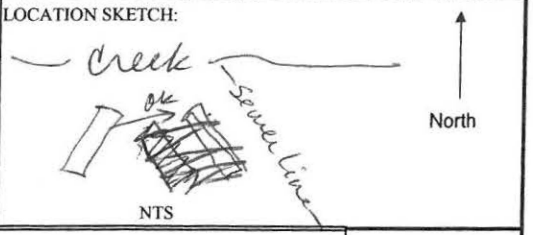
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	092615/0945

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–4' orangish brown silty sand, fine-med, well-sorted, damp. little pebble-size gravel, roots top 8" No Waste TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP23

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1430
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

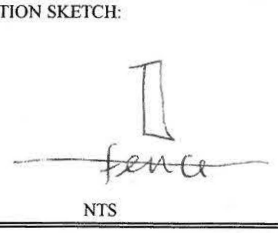
DATE / TIME	1432		
DEPTH TO WATER	2.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' silty sand, lt.-med. reddish brown, damp to wet, roots top 18", sand is fine-med, well-sorted · Test pit caving · No Waste TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12T24

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615/1138
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

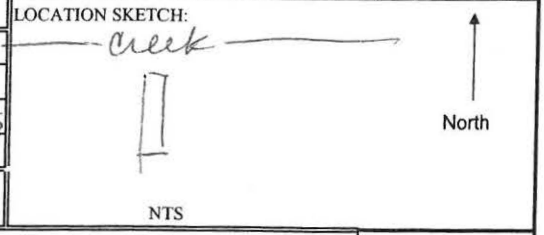
DATE / TIME	1140		
DEPTH TO WATER	4'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082615/0945

REMARKS: Moved approx. 5' W. of staked loc. due to large tree roots

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty sandy loam, root zone 2'-4' waste - ash, slag, coal, glass bottle TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP25

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1436
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
16'	20"	4'	mini-excavator

GROUNDWATER DATA

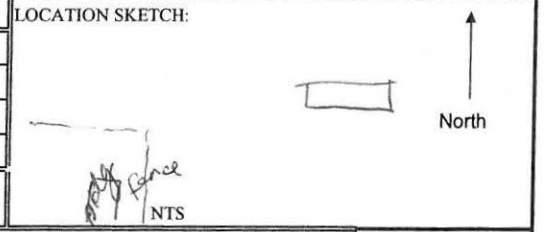
DATE / TIME	1439		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' dk brown silty sand, roots to 18", fine-med, well sorted, some gravel in top 2' damp to wet No Waste TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP26

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615 1127
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	3.5	mini-excavator

GROUNDWATER DATA

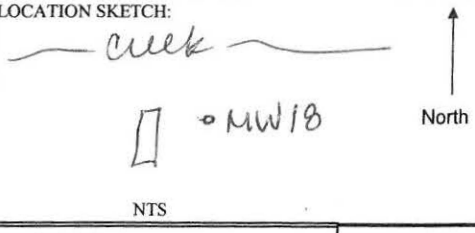
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	Cal. passed	082615 0945

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty, sandy loam. surface debris, root zone 1.5'-3.5' Wastezone including glass bottles, misc. plastic, burned wood, rusting metal. damp to wet. TD = 3.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP27

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515 1447
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

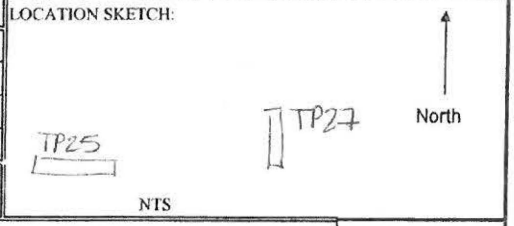
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/OXY	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty, sandy loam. Couple of small (≤10" dia.) pieces of asphalt 0.8-4' tan to orange silty sand, fine-med, well-sorted, damp to moist TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP28

PROJECT: FTMH
LOCATION: Landfill M12

JOB NUMBER: 74810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615 1118
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	2'	3'	mini-excavator

GROUNDWATER DATA

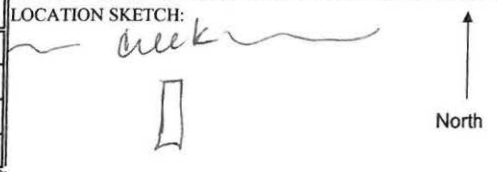
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082615/0945

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, root zone, 1'-3' waste - coal, ash, slag, concrete, brick TD=3' bgs multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP29

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/1456
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	3.5'	mini-excavator

GROUNDWATER DATA

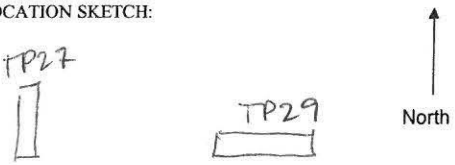
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty sandy loam, root zone, concrete @ surface	
2						
3						
4					1'-3.5' waste - ash + slag, petroleum odor/slight	
5						
6					TD = 3.5' bgs	
7					multi-rae reading = 0	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP30

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 092615/1055
COMPLETION DATE: 092615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	3.5'	mini-excavator

GROUNDWATER DATA

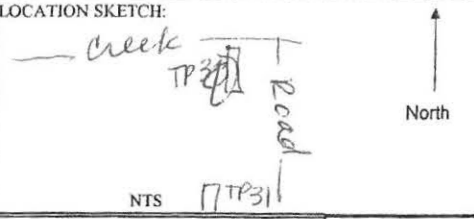
DATE / TIME	1100		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	092615/0945

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty sand w/ gravel	
2						
3					1'-3.5' waste - ash, coal, slag, burned wood	
4						
5					@3.5' black silty sand w/ clay, wet, plastic	
6						
7					TD = 3.5' bgs	
8					multi-rae reading = 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP31

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615 | 1010
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	1015		
DEPTH TO WATER	4'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082615 / 0945

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.5' brown sandy loam, some gravel	
2					0.5'-2' Waste zone - ash, coal, slag	
3						
4					2'-4' black silty sand, some clay, moist to wet. Water @ bottom of pit.	
5						
6						
7						
8					TD = 4' bgs	
9					multi-rae reading = 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP32

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082615/1250
COMPLETION DATE: 082615
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	3'	4'	mini-excavator

GROUNDWATER DATA

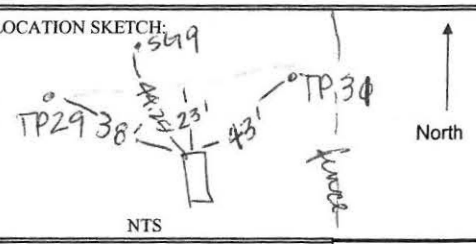
DATE / TIME	1255		
DEPTH TO WATER	3.8'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S/LEL/Oxy	cal. passed	082615/0945

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty, sandy loam, root zone	
2						
3					1'-4' waste - ash, coal, slag	
4						
5					TD = 4' bgs	
6					multi-rae reading = 0	
7						
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP33

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/0827
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	miniexcavator

GROUNDWATER DATA

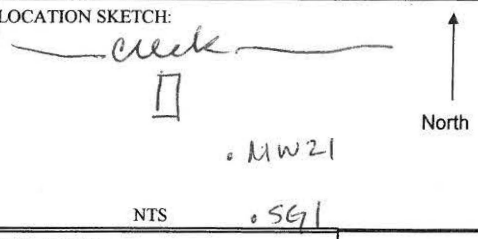
DATE / TIME	0830		
DEPTH TO WATER	3'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/Co/H_2S LEL/OXY	cal. passed	082715/0730

REMARKS: Loc. not staked. PP placement based on map (in line w/ MW21 + SG1).

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' orangish-brown silty sand w/ gravel (pebble-size), med-fine, root zone 1.5-4' grayish-green silty sand, med., decaying organic matter TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP34

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/1321
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	20"	4.5'	mini-excavator

GROUNDWATER DATA

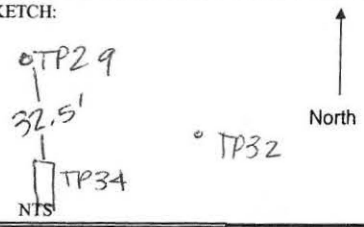
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty sandy loam, some gravel, dry, rootzone 1.5'–4.5' waste- slag, ash, coal, blue-green (glauconitic?) sand @ N. end of pit. TD = 4.5' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP35

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/1400
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	3'	4'	mini-excavator

GROUNDWATER DATA

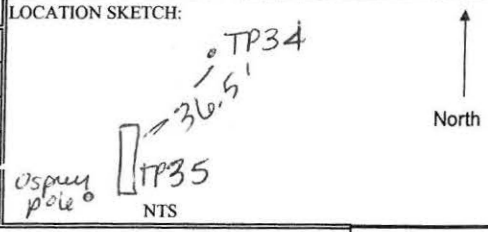
DATE / TIME	1405		
DEPTH TO WATER	3'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy	Cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, some gravel, dry, root zone 1'-4' waste-ash, coal, concrete (to 18"), lumber, metal pipe, wire, glass bottles TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP36

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/1412
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

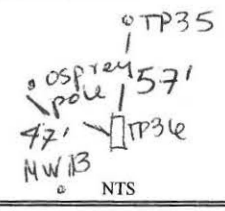
DATE / TIME	1415		
DEPTH TO WATER	4		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty sandy loam, some gravel 0.8'-4' orangish brown silty sand, fine - med, well-sorted, No Waste TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP37

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/1422
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2.5'	4'	mini-excavator

GROUNDWATER DATA

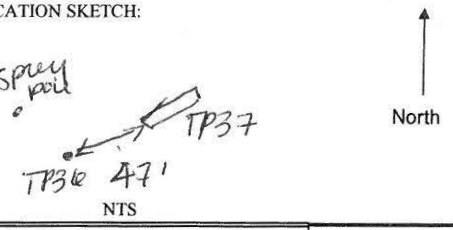
DATE / TIME	1425		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty sandy loam 1'-4' orangish-brown to tan silty sand, med-fine, well-sorted, loose (caves easily) No Waste TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12 TP38
PROJECT: FTM M		JOB NUMBER: 748810
LOCATION: Landfill M12		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082715 / 1440
		COMPLETION DATE: 082715
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2.5'	4'	mini-excavator

GROUNDWATER DATA

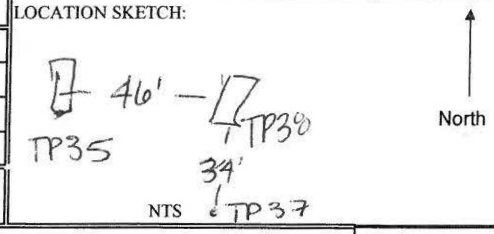
DATE / TIME	1442		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty sandy loam, dry, some gravel 0.8-4' Waste-ash, burned wood, glass bottle, coal TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12 TP39

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082815/0925
COMPLETION DATE: 082815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	3'	mini-excavator

GROUNDWATER DATA

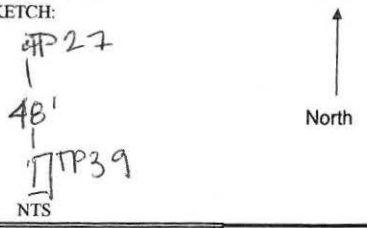
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy	Cal. passed	082815/0915

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.5' brown silty sandy loam 0.5-1.0 Waste - ash, slag, coal 1.0-3.0' tan to orangish-brown silty sand, fine-med, loose, caves easily TD = 3' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP40

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082815 | 09316
COMPLETION DATE: 082815
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4	mini-excavator

GROUNDWATER DATA

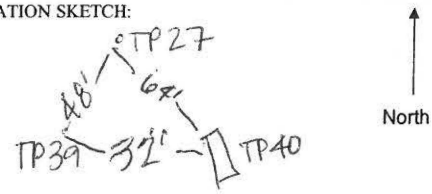
DATE / TIME	0938		
DEPTH TO WATER	3.5'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082815 / 0915

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' orangish brown silty sand, fine to med., well-sorted, some gravel in top 1', root zone top 1', loose (caves easily). No Waste TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP41

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

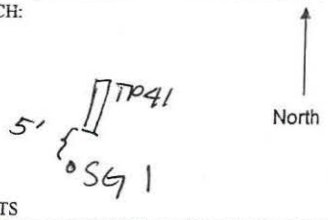
DATE / TIME	
DEPTH TO WATER	NA

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' lt. brown silty sand + gravel, dry, loose	
2						
3						
4					1.5'-3' waste - ash, slag, coal	
5						
6					3'-4' greenish gray silty sand, moist	
7						
8						
9					TD = 4' bgs	
10					multi-rae reading = 0	
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP42

PROJECT: FTMM
LOCATION: Landfill M 12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315/1055
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	5'	mini-excavator

GROUNDWATER DATA

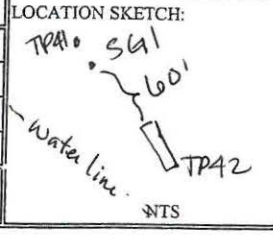
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–3.5' Lt. reddish brown silty sand, fine-med, 3.5–5' greenish grey silty sand, V. moist, med @ 5' waste – burned wood. Wet TD = 5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12 TP43

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

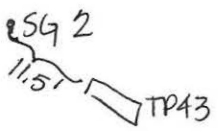
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0 – 1' tan silty sand, dry, loose, some gravel 1' – 2' SAA, greenish 2' – 4' Waste – ash, coal, slag TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP44

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	20"	4.5'	mini-excavator

GROUNDWATER DATA

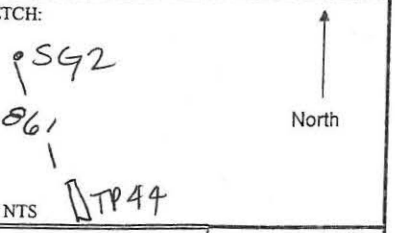
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H2S LEL/OXY	cal. passed	090305/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' tan silty sand + gravel, dry, little gravel 1.5–3' SAA, greenish 3'–4.5' Waste - ash, coal, slag, paper, cans, etc. TD = 4.5' bgs multi-rae plus = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M12TP45

PROJECT: FTMM
LOCATION: Landfill M12

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315/1138
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	20"	3.5'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty sand, some gravel, dry, loose 1.5-3.5 dk. brown silty sand, damp, some ash, coal, slag. hard - difficult to advance bucket through TD = 3.5' bgs multi-rae reading = 0	

APPENDIX G

FTMM-14: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX G: FTMM-14 Landfill Boundary Refinement and Methane Gas Survey Results

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1.0 TEST PIT DELINEATION SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries are discussed in further detail in the Remedial Investigation Report for FTMM-14 (Parsons, 2015). These changes are reflected on **Figure G1**. In addition, the RI report identified data gaps in the landfill boundaries, specifically near test pits 3E, 4D, 6C, and 7C. Subsequent to the preparation of the RI Report for FTMM-14, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. None of the historical test pits that contain landfill solid waste (e.g., debris) were recategorized.

Test pits during the landfill boundary refinement were initially advanced along the 2015 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the RI report (Parsons, 2015). To form a more comprehensive view of the landfill, additional test pits were performed in other areas of the landfill including in the areas of historical test pits 3E, 4D, 6C, and 7C in the northern area of the landfill to confirm the contents and categorization of those historical test pits. Test pits were advanced at 31 locations at FTMM-14 as part of the landfill refinement activities on August 24, 25, 27, and 31, and September 3, 2015. Historical and the 2015 test pit locations are shown in **Figure G1**.

Logs for the test pits excavated in 2015 are provided in **Attachment G-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table G1**.

Observations of the 2015 test pits along the southern boundary adjacent to Husky Brook contained solid waste (M14TP4, M14TP5, M14TP8, M14TP11, M14TP13, M14TP18, and M14TP20) such as ash, coal, glass, and concrete indicative of a landfill. Other test pits did not contain landfill solid waste (M14TP2, M14TP9, and M14TP15). Landfill solid waste, when present in the test pits performed near historical test pits 3E, 4D, 6C, and 7C, was consistent with observations recorded on the historical test pits logs. Based on the contents of the historical and 2015 test pits, the landfill boundaries were not changed.

Figure G1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of 16 landfill gas readings (including one QA/QC sample) were measured at 15 soil gas locations at FTMM-14 as part of the methane gas survey. Sampling was conducted on July 29 30, and 31, 2015. Methane was detected at four locations (M14SG4, M14SG7, M14SG8, and M14SG9), and two of these locations (M14SG4 and M14SG9) had concentrations that exceeded 25 percent of the methane LEL. These two locations are located on the interior of the landfill. The five step out locations (M14SG11, M14SG12, M14SG13, M14SG14, and M14SG15) were measured based on these methane detections. Soil gas locations on the perimeter of the landfill (including step outs) did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-14. The collective methane results indicate the area within the landfill where methane was found above 25 percent of the LEL is very

limited. The methane detections are most likely attributed to methane gas generating conditions at the landfill. The landfill gas readings are summarized in **Table G2.** The soil gas sampling locations and the locations where landfill gas exceeded 25 percent of the LEL are provided in **Figure G1**.

3.0 REFERENCES

Parsons. *Remedial Investigation Report for Site FTMM-14, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. July 2015.

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table G1 Landfill Boundary Refinement Summary

Table G2 Methane Gas Survey Results

Table G1
Landfill Boundary Refinement Summary
Site FTMM-14
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M14TP2	N	3	No solid waste observed; not landfill.
M14TP3	N	3	No solid waste observed; not landfill.
M14TP4	Y	1	Solid waste including ash, glass bottles, coal, burned wood indicative of landfill.
M14TP5	Y	1	Solid waste including ash, coal indicative of landfill.
M14TP6	N	3	No solid waste observed; not landfill.
M14TP7	N	3	No solid waste observed; not landfill.
M14TP8	Y	1	Solid waste including Ash, coal, broken glass indicative of landfill.
M14TP9	N	3	No solid waste observed; not landfill.
M14TP10	N	2	Debris of de minimus quantity; not landfill.
M14TP11	Y	1	Solid waste including ash, burned wood, rusting metal, broken glass, shoe sole indicative of landfill.
M14TP12	N	3	No solid waste observed; not landfill.
M14TP13	Y	1	Solid waste including ash, fabric, terracotta tile, coal, rusting metal indicative of landfill.
M14TP14	N	2	Debris of de minimus quantity; not landfill.
M14TP15	N	3	No solid waste observed; not landfill.
M14TP16	Y	1	Solid waste including lumber indicative of landfill.
M14TP17	N	2	Debris of de minimus quantity; not landfill.
M14TP18	Y	1	Solid waste including concrete indicative of landfill.
M14TP19	N	3	No solid waste observed; not landfill.
M14TP20	Y	1	Solid waste including asphalt, concrete indicative of landfill.
M14TP21	N	2	Debris of de minimus quantity; not landfill.
M14TP22	N	3	No solid waste observed; not landfill.
M14TP23	Y	1	Solid waste including slag, concrete, brick, metal wire, concrete indicative of landfill.
M14TP24	N	3	No solid waste observed; not landfill.
M14TP25	Y	1	Solid waste including concrete indicative of landfill.
M14TP26	N	2	Debris of de minimus quantity; not landfill.
M14TP27	N	3	No solid waste observed; not landfill.
M14TP28	N	3	No solid waste observed; not landfill.
M14TP29	N	3	No solid waste observed; not landfill.
M14TP30	Y	1	Solid waste including concrete, ash, coal, concrete indicative of landfill.
M14TP31	N	3	No solid waste observed; not landfill.
M14TP32	Y	1	Solid waste including ash, coal, slag indicative of landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

Table G2
Methane Gas Survey Results
Site FTMM-14
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M14SG1	7/30/2015	0.0	0.0	5.7	16.7	
M14SG2	7/29/2015	0.0	0.0	1.1	20.2	
M14SG3	7/30/2015	0.0	0.0	0.1	21.1	
M14SG4	7/30/2015	21.4	OOR	22.4	2.7	
M14SG5	7/30/2015	0.0	0.0	0.0	21.2	
M14SG6	7/29/2015	0.0	0.0	0.0	21.2	
M14SG7	7/29/2015	0.3	6.0	0.2	20.9	
M14SG8	7/30/2015	1.0	20.0	3.2	14.9	
M14SG8QA	7/30/2015	0.6	18.0	3.3	15.1	
M14SG9	7/29/2015	7.8	OOR	3.2	17.9	
M14SG10	7/30/2015	0.0	0.0	0.1	21.1	
M14SG11	7/31/2015	0.0	0.0	0	20.4	Step out
M14SG12	7/31/2015	0.0	0.0	2.4	19.2	Step out
M14SG13	7/31/2015	0.0	0.0	1.5	20.1	Step out
M14SG14	7/31/2015	0.0	0.0	1.1	19.9	Step out
M14SG15	7/31/2015	0.0	0.0	0	20.6	Step out

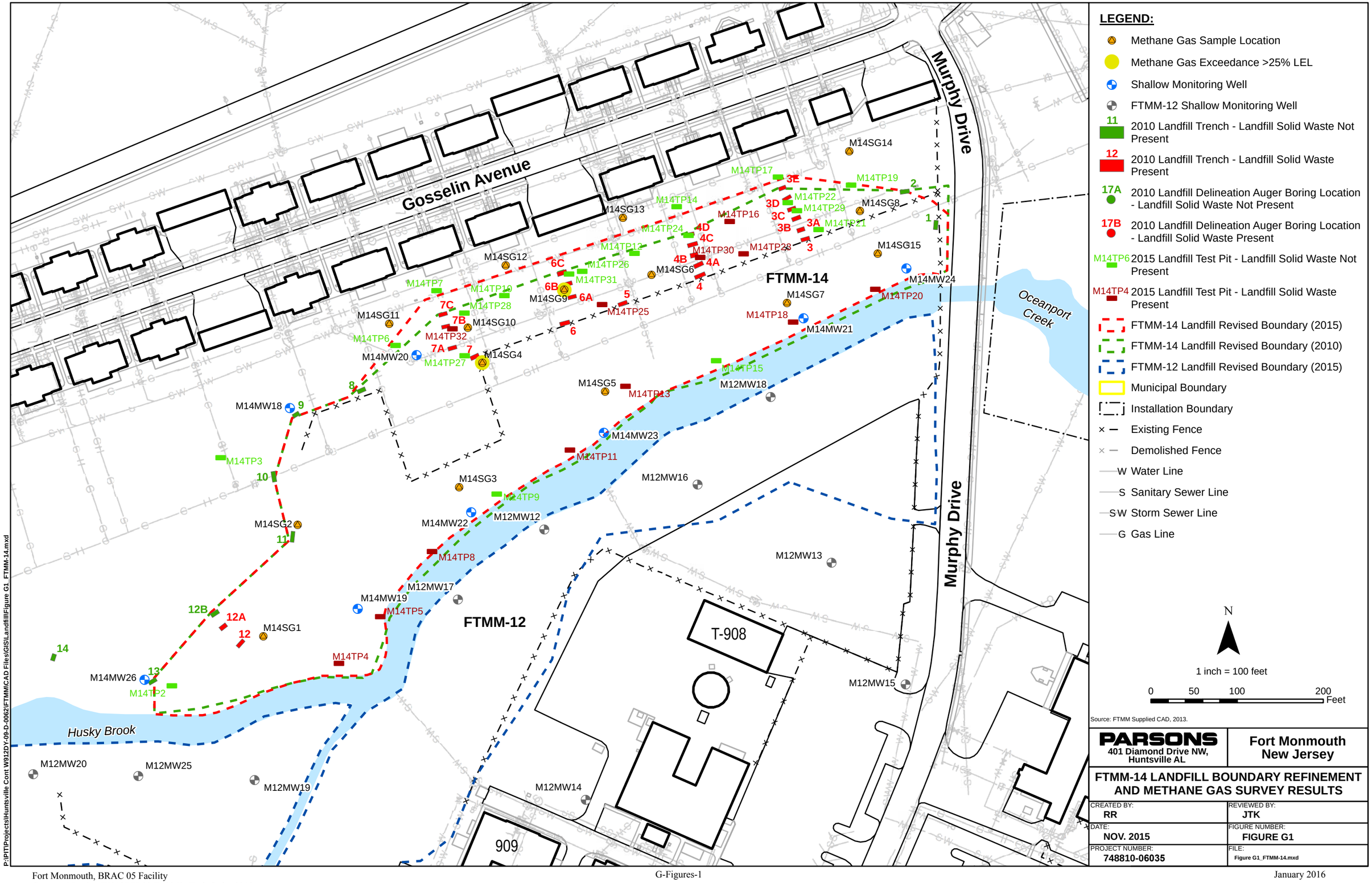
Notes:

1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.

2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure G1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- FTMM-12 Shallow Monitoring Well
- 11 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 12 — 2010 Landfill Trench - Landfill Solid Waste Present
- 17A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 17B — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M14TP6 — 2015 Landfill Test Pit - Landfill Solid Waste Not Present
- M14TP4 — 2015 Landfill Test Pit - Landfill Solid Waste Present
- FTMM-14 Landfill Revised Boundary (2015)
- FTMM-14 Landfill Revised Boundary (2010)
- FTMM-12 Landfill Revised Boundary (2015)
- Municipal Boundary
- Installation Boundary
- Existing Fence
- Demolished Fence
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

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**

FTMM-14 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE G1
PROJECT NUMBER: 748810-06035	FILE: Figure G1_FTMM-14.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\LandfillFigure G1_FTMM-14.mxd

ATTACHMENTS

Attachment G-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP2

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748910
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715 | 0845
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

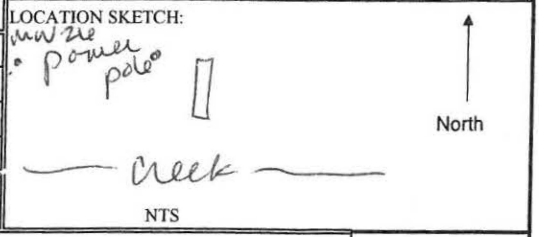
GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:


NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty, sandy loam 0.8'-4' lt. orangish-beige silty sand, fine-med, little pebble-size gravel, loose. Beach sand. TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP3

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 092515
COMPLETION DATE: 092515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini excavator

GROUNDWATER DATA

DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	092515/0725

REMARKS: TP Moved ~20' W. of staked location due to very large tree (roots)

LOCATION SKETCH: Bldg — North

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–0.8' brown silty sandy loam, root zone 0.8'–4' olive-brown silty sand, fine–med., well sorted, damp 4' = TD multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14 TP4

PROJECT: FTMH
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715 | 0951
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5	20"	4'	mini-excavator

GROUNDWATER DATA

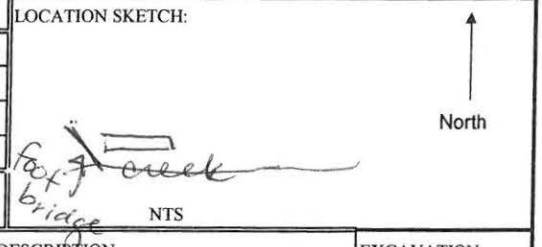
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC / CO / H_2S / LEL / OXY	cal. passed	082715 / 0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					@ surface - fine gravel for pedestrian path, underlain with landscape fabric 0-2.5' lt. beige silty sand w/gravel, med, well-sorted 2.5'-3.5' waste - ash, glass bottles, coal, burned wood 3.5'-4' black silty sand, wet TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP5

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 749610
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 092415 1451
COMPLETION DATE: 092415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	3.5'	mini-excavator

GROUNDWATER DATA

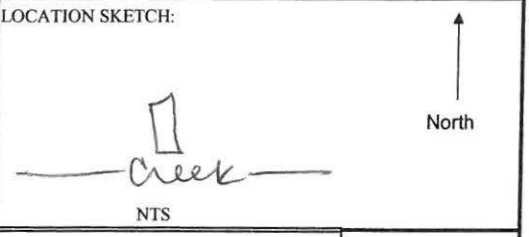
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy	Cal. passed	092415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' brown silty sandy loam, dry, increasing sand downward 3-3.5' waste zone. ash, coal TD = 3.5' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP6

PROJECT: FTUM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 092515/0938
COMPLETION DATE: 092515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	18"	4'	mini-excavator

GROUNDWATER DATA

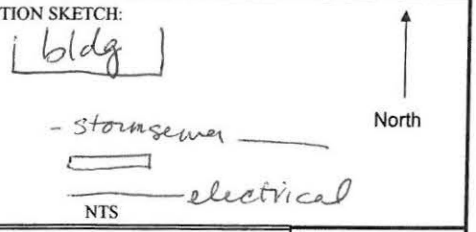
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	Cal. passed	092515/0725

REMARKS: TP moved 2' N. of stake due to electrical lines

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' Lt. brown silty sand, loam in top 8", med-fine, little gravel, well sorted 3'-4' dk. greenish grey to black silty sand, little gravel, some clay, V. moist-wet TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14 TP7
PROJECT: FTMH		JOB NUMBER: 748810
LOCATION: Landfill M14		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082515/0926
		COMPLETION DATE: 082515
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	5'	mini-excavator

GROUNDWATER DATA

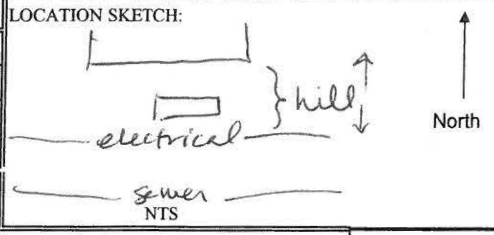
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OX4	Cal. passed	082515/0725

REMARKS: TP moved ~3' N. of stake due to electrical line

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty sandy loam, grass roots	
2						
3					0.8-4.5' reddish brown to med. brown silty sand, damp, med., well-sorted	
4						
5						
6					4.5-5' reddish brown to olive green silty sand w/ clay. moist, med., wet @ 5'	
7						
8						
9					TD = 5' bgs	
10					multi-rae reading = 0	
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP8

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	3.5'	mini-excavator

GROUNDWATER DATA

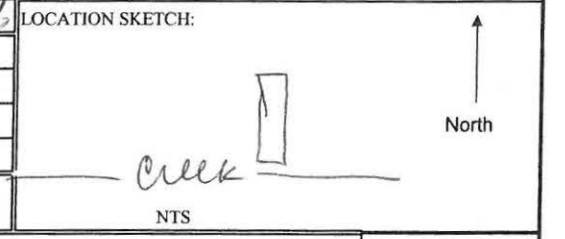
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S/LEL/O_2	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–0.8' brown silty, sandy loam, root zone 0.8'–2' silty sand, med-fine, well sorted, mottled orange to olive green 2'–3.5' waste – ash, coal, broken glass TD = 3.5' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP9

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	20"	4'	mini-excavator

GROUNDWATER DATA

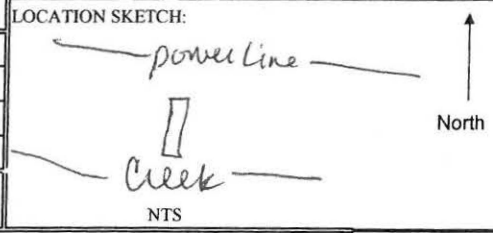
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1' brown silty sandy loam, dry	
2						
3					1'-4' orangish-brown silty sand, med-fine, well sorted	
4						
5					@4' - greenish-grey sand, med-fine, well sorted	
6						
7					TD=4' bgs	
8					multi-rae reading: 0	
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP10

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515 | 0910
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	18"	4'	mini-excavator

GROUNDWATER DATA

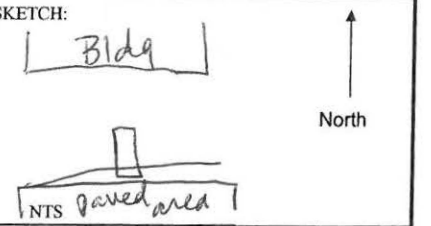
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown to reddish brown silty sandy loam 1'-4' brown to black silty sand, med., little pebble-size gravel, little decaying organic matter. 1 piece of trash @ ~2' bgs TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP11

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 082415/1424
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

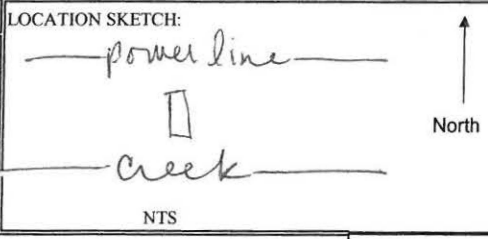
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-2' brown silty, sandy loam, root zone, interbedded olive-brown sand 2'-4' waste zone. ash, burned wood, rusting metal, broken glass, shoe sole. TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP12

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R McDonald
CONTRACTOR: AWT
START DATE: 082515/0854
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	miniexcavator

GROUNDWATER DATA

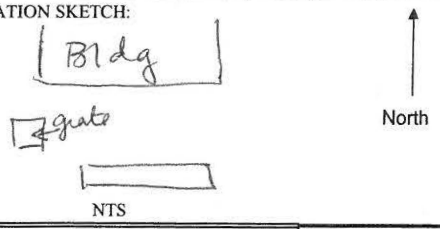
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–3.5' brown silty sandy loam, sand increases w/ depth 3.5'–4' black silty sand, moist, little gravel, organic odor TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP13

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 | 1416
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

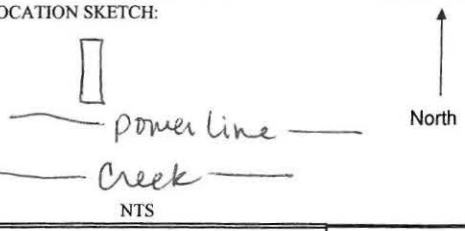
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty, sandy loam, root zone 0.8-4' SAA, some interbedded green sand, waste zone: ash, fabric, terracotta tile, coal, rusting metal TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP14

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/0837
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	19"	4'	mini-excavator

GROUNDWATER DATA

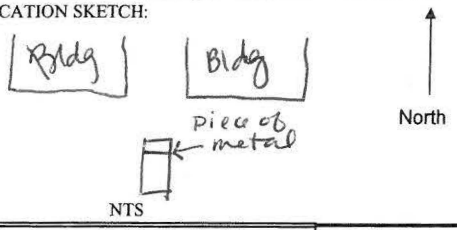
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S/LEL/O_2	Cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty, sandy loam, dry, lg. tree roots *square piece of metal crossing pit @ N. end ~20" bgs. Utilities folks say it is not conduit TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP15

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/1407
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	18"	4'	mini-excavator

GROUNDWATER DATA

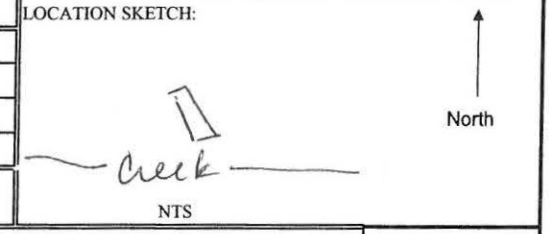
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal passed.	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty, sandy loam, dry, inc. moisture + sand downward, root zone @4' (in last bucket) - black sand, med, well sorted, damp-moist, silty TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP16

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/0818
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	20"	4'	mini-excavator

GROUNDWATER DATA

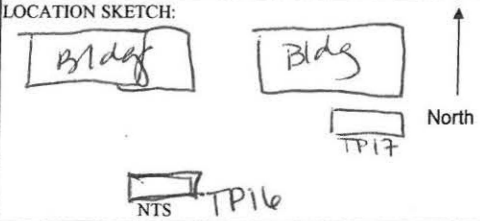
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-2' brown silty, sandy loam, damp. 2'-4' black silty sand, damp, petroleum odor (no readings above background on multi-rae), 1 large piece of lumber crossing excavation @ a 2' bgs - possible power pole TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP17

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515 | 0807
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini excavator

GROUNDWATER DATA

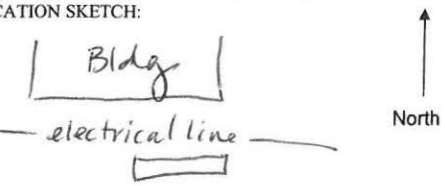
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/Oxy	cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–4' brown silty sandy loam, root zone · darker w/ depth · some small (<3" dia.) pieces of concrete, asphalt TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP18

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 / 1359
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	3.5'	mini-excavator

GROUNDWATER DATA

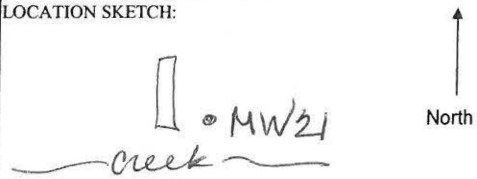
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3.5' brown silty, sandy loam, little gravel, dry @ 3.5' hard zone - small pieces of concrete in bucket - lg piece underneath TD = 3.5' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP19

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082515/0747
COMPLETION DATE: 082515
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

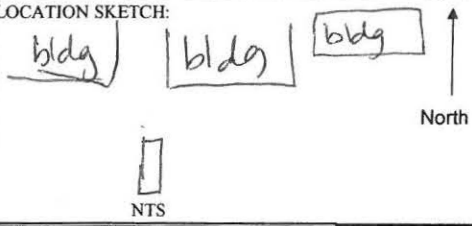
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082515/0725

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.5' brown silty sandy loam 0.5'-4' silty sand, fine-med, well-sorted variable coloration (brown, reddish brown, yellow) TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP20

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/1350
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	3.5'	mini-excavator

GROUNDWATER DATA

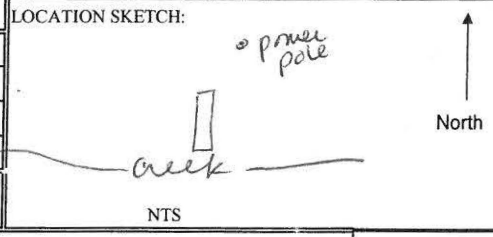
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2.5' brown silty sandy loam, little gravel, root zone 2.5'–3.5' waste zone – asphalt, concrete TD = 3.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP21

PROJECT: FTMM
LOCATION: Land Fill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1019
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

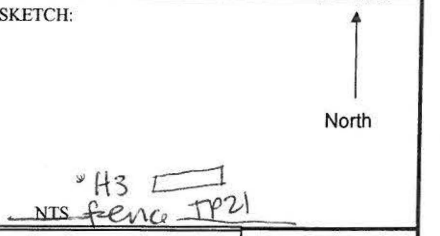
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam, root zone 1'-1.5' brown silty sand, some gravel 1.5'-4' dk brown to black silty sand, some gravel, hard, some organic matter, few pieces of metal TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP22

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115 | 1029
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

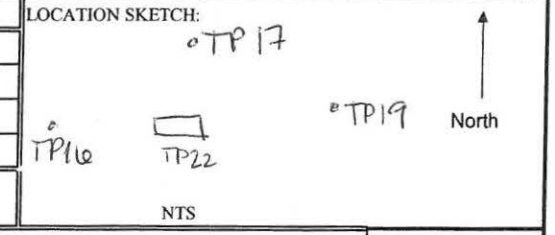
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	083115 | 0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' brown silty, sandy loam, some gravel, grading to silty sand, med, dry, little graded 3'-4' black silty sand, med-coarse, moist, some organic matter TD=4' bgs multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP23

PROJECT: FTMH
LOCATION: Landfill M14

JOB NUMBER: 740810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: ANT
START DATE: 083115/1039
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	3'	mini-excavator

GROUNDWATER DATA

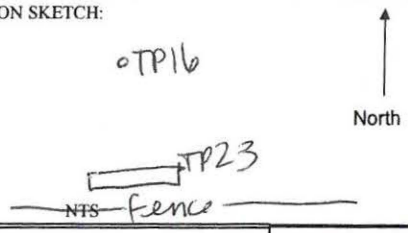
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae plus	VOC/CO/H2S LEL/OXY	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0'-2' brown silty sandy loam grading to brown silty sand, gravel in top 1', root zone top 1' 2'-3' black sand w/ waste - slag, concrete, brick, metal wire @3' lg piece of concrete cannot dig past. TD = 3' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP24

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1052
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	Mini-excavator

GROUNDWATER DATA

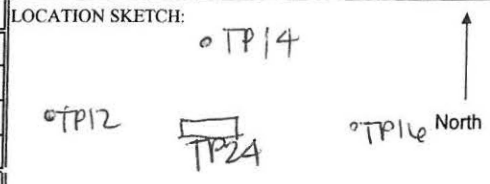
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal passed	083115/0730

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty sandy loam, dry, root zone 0.8'-2' brown silty sand, med. fine 2'-4' black silty sand, little organic matter, some pebble-size gravel moist TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP25

PROJECT: FTMM
LOCATION: Landfill M2

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1102
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

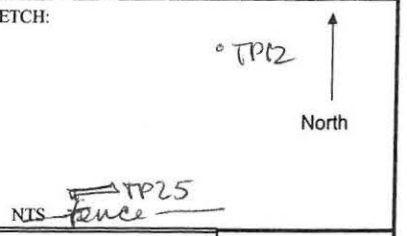
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2.5' brown silty sand, little pebble-size gravel, dry 2.5'-4' dk. greenish gray to black silty sand @4' concrete - cannot advance further TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14 TP26

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1114
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

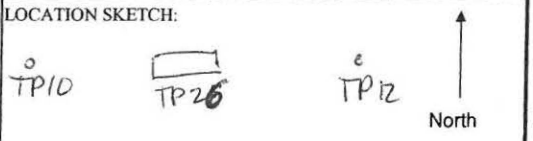
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/O2	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					• pieces of electrical conduit just beneath grass – cut pieces, empty 0'-2' brown silty sand, root zone top 8", some gravel, dry, med 2'-4' black silty sand, med-coarse, moist, pieces of brick TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP27

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	4'	mini-excavator

GROUNDWATER DATA

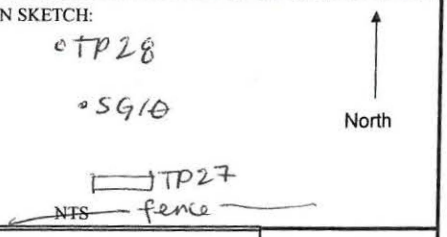
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty sand, some gravel, dry 1.5'–3.5' greenish-blue sand, silty, med-fine, moist 3.5–4' waste. ash, slag, coal TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP28

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 083115/1124
COMPLETION DATE: 083115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	3'	mini-excavator

GROUNDWATER DATA

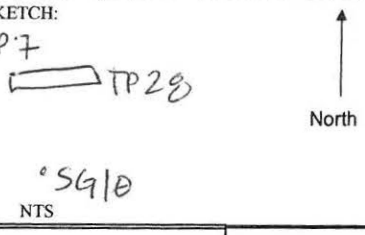
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S/Lel/oxy	Cal. passed	083115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown silty sand, root zone top 8", some gravel, dry 2'-3' black to dk. brown silty sand, some gravel, moist, decaying lumber TD = 3' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP29-3C

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748610
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315/0853
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

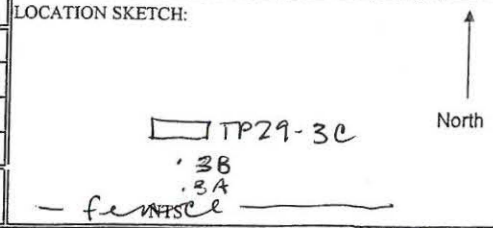
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/Oxy	cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty, sandy loam, dry, little gravel, loose	
2						
3						
4					1.5-4' dk brown to black silty sand, little gravel, few pieces of wood, moist	
5						
6						
7						
8					TD=4' bgs	
9						
10					multi-rae reading = 0	
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP30-4B

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

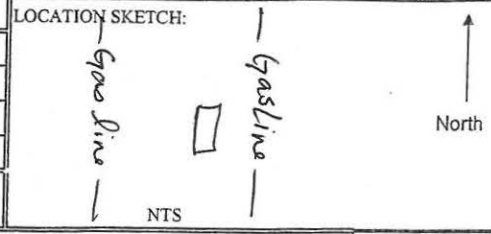
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/O2	cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty sandy loam, dry, loose, little gravel 1.5'-3.5' dk. brown grading to black silty sand, damp, 3.5'-4' waste incl. small pieces of concrete, ash, coal @4' refusal - lg. piece of concrete TD = 4' bgs Multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP31-6C

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315 | 0938
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	20"	7'	mini-excavator

GROUNDWATER DATA

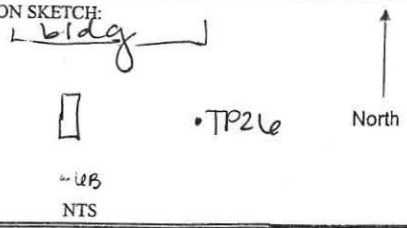
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/OXY	Cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty, sandy loam, dry, loose 1.5-7' dk. brown grading to black silty sand, little gravel, med, damp to moist, lg piece of wood in N. wall of excavation @ approx. 5.5' TD = 7' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M14TP32-7B

PROJECT: FTMM
LOCATION: Landfill M14

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090315
COMPLETION DATE: 090315
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5'	18"	4'	mini-excavator

GROUNDWATER DATA

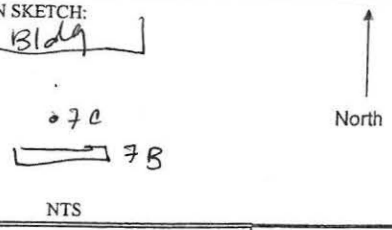
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090315/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–3.5' brown silty sand, med-fine, darker w/ depth 3.5–4' ash, coal slag TD = 4' bgs multi-rae reading = 0	

APPENDIX H

FTMM-18: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX H: FTMM-18 Landfill Boundary Refinement and Methane Gas Survey Results

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1.0 TEST PIT DELINEATION SUMMARY H-1
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H1	Landfill Boundary Refinement Summary
H2	Methane Gas Survey Results

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H1	Landfill Boundary Refinement and Methane Gas Survey Results

LIST OF ATTACHMENTS

Attachment	Title
H-A	Test Pit Logs

1.0 TEST PIT DELINEATION SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries are discussed in further detail in the Remedial Investigation Report for FTMM-18 (Parsons, 2015). These changes are reflected on **Figure H1**. In addition, the RI report identified data gaps in the landfill boundaries, specifically along the northern and eastern sides of the site because test pit data from what are currently mapped as non-landfill areas are not available. Subsequent to the preparation of the RI Report for FTMM-18, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. Some historical test pits (6A, 7, 7A, 8, and 8A) that contain landfill debris did not appear to meet the criteria to be considered as part of the delineated landfill. The designation of these historical test pits was modified on **Figure H1** to indicate landfill solid waste was not present.

Test pits during the landfill boundary refinement were initially advanced along the 2015 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the RI report (Parsons, 2015). Test pits were advanced at 13 locations at FTMM-18 as part of the landfill delineation activities on August 24, 2015. Additional step-out test pits were not performed due to Site conditions due to heavy vegetation consisting of dense brush and trees, and the presence of tidally influenced marsh areas. Historical (2010) and the 2015 test pit locations are shown in **Figure H1**.

Logs for the 2015 test pits excavated in 2015 are provided in **Attachment H-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table H1**.

Observations of the 2015 test pits on the interior of the landfill (M18TP11, M18TP12, and M18TP13) contained solid waste such as concrete pieces, ash, coal, and burned wood indicative of a landfill and consistent with the historical test pits logs. At two test pits along the southern boundary (M18TP16 and M18TP18), large pieces of concrete were observed at the bottom of the test pit. Based on the location of these test pits to the adjacent roads, it is assumed that the concrete is associated with the construction of the roads, and is not indicative of landfill solid waste. No changes were made to the western, northern, and southern landfill boundaries based on the contents of the historical and 2015 test pits. On the east of the landfill (M18TP14, M18TP16, M18TP17, M18TP19, and M18TP20) the 2015 test pits did not contain landfill solid waste and the eastern landfill boundary was moved west to align with the location of M18TP14.

The northern boundary of FTMM-18 was aligned with the northern extent of apparent landfilling based on the historical aerial photos. The mini excavator was unable to progress into the tidally-influenced marshy northern area along Parkers Creek, although historical aerial photographic evaluation indicated that this area was never filled. Based on visual observations of the Site conditions it seems unlikely that landfill material would be buried in between the creek and the northern landfill boundary.

Figure H1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of six (6) landfill gas readings (including one QA/QC sample) were measured at five soil gas locations at FTMM-18 as part of the methane gas survey. Sampling was conducted on August 5, 2015. Methane was not detected at this landfill. The landfill gas readings are summarized in **Table H2.** The soil gas sampling locations are shown in **Figure H1**.

3.0 REFERENCES

Parsons. *Remedial Investigation Report for Site FTMM-18, Fort Monmouth, Oceanport, Monmouth County, New Jersey, Final*. Prepared for the U.S. Army Engineering and Support Center, Huntsville, Alabama. October 2015.

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table H1 Landfill Boundary Refinement Summary

Table H2 Methane Gas Survey Results

Table H1
Landfill Boundary Refinement Summary
Site FTMM-18
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M18TP8	N	3	No solid waste observed; not landfill.
M18TP9	N	2	Debris of de minimus quantity; not landfill.
M18TP10	Y	1	Solid waste including ash, coal, asphalt indicative of landfill.
M18TP11	Y	1	Solid waste including concrete, ash, burned wood indicative of landfill.
M18TP12	Y	1	Solid waste including concrete, ash, coal indicative of landfill.
M18TP13	Y	1	Solid waste including concrete, brick, ash, burned wood indicative of landfill.
M18TP14	N	3	No solid waste observed; not landfill.
M18TP15	N	3	No solid waste observed; not landfill.
M18TP16	N	3	No solid waste observed; not landfill.
M18TP17	N	2	Debris of de minimus quantity; not landfill.
M18TP18	N	3	No solid waste observed; not landfill.
M18TP19	N	3	No solid waste observed; not landfill.
M18TP20	N	3	No solid waste observed; not landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

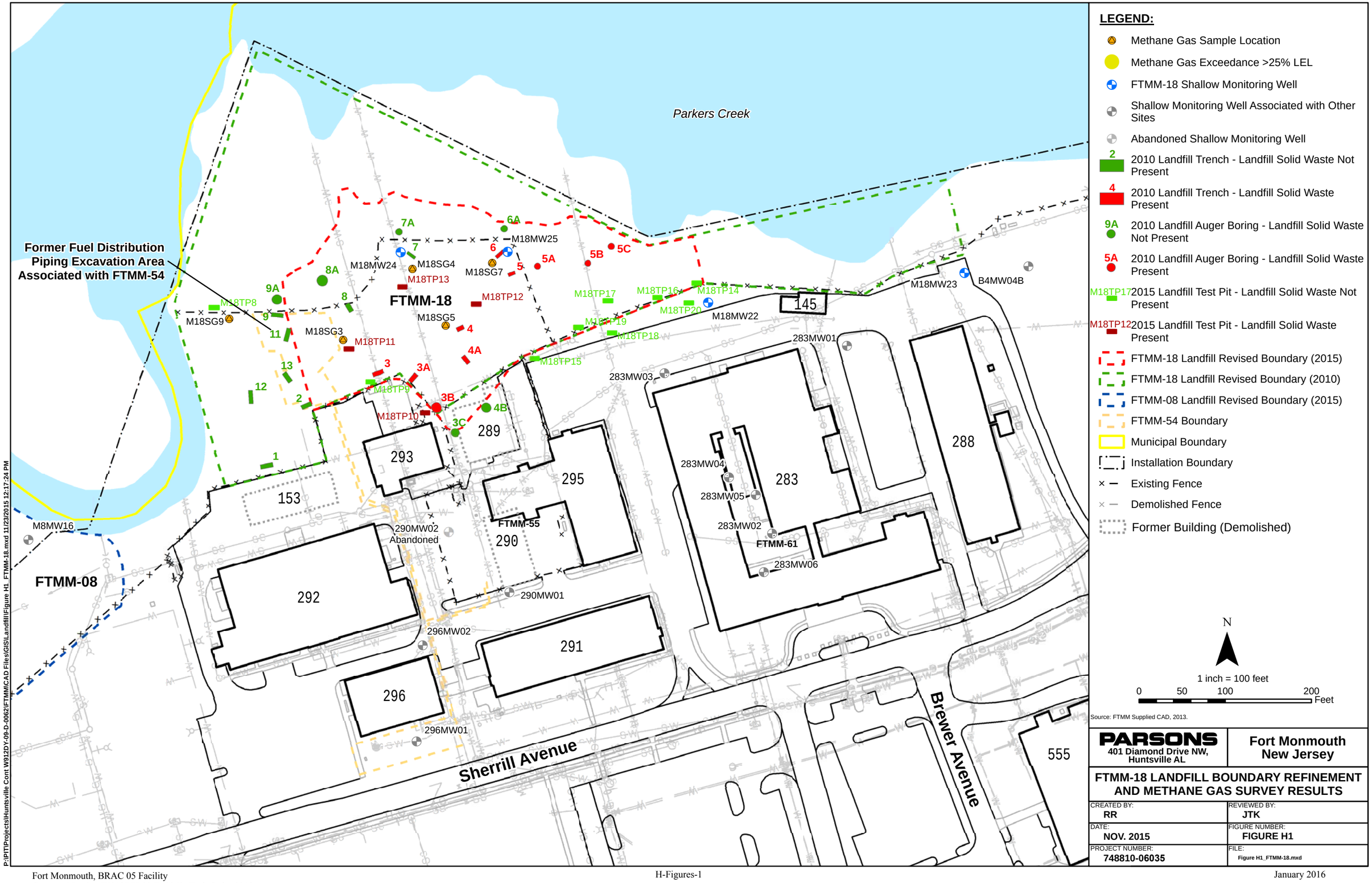
Table H2
Methane Gas Survey Results
Site FTMM-18
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M18SG3	8/5/2015	0.0	0.0	1.3	19.4	
M18SG4	8/5/2015	0.0	0.0	2.4	19.1	
M18SG5	8/5/2015	0.0	0.0	3.5	18.0	
M18SG7	8/5/2015	0.0	0.0	2.8	18.9	
M18SG7QA	8/5/2015	0.0	0.0	3.0	18.8	QA Sample
M18SG9	8/5/2015	0.0	0.0	1.3	20.0	

Notes:
1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.
2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure H1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- FTMM-18 Shallow Monitoring Well
- Shallow Monitoring Well Associated with Other Sites
- Abandoned Shallow Monitoring Well
- 2 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 4 — 2010 Landfill Trench - Landfill Solid Waste Present
- 9A — 2010 Landfill Auger Boring - Landfill Solid Waste Not Present
- 5A — 2010 Landfill Auger Boring - Landfill Solid Waste Present
- M18TP17 — 2015 Landfill Test Pit - Landfill Solid Waste Not Present
- M18TP12 — 2015 Landfill Test Pit - Landfill Solid Waste Present
- FTMM-18 Landfill Revised Boundary (2015)
- FTMM-18 Landfill Revised Boundary (2010)
- FTMM-08 Landfill Revised Boundary (2015)
- FTMM-54 Boundary
- Municipal Boundary
- Installation Boundary
- Existing Fence
- Demolished Fence
- Former Building (Demolished)

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**

FTMM-18 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: NOV. 2015	FIGURE NUMBER: FIGURE H1
PROJECT NUMBER: 748810-06035	FILE: Figure H1_FTMM-18.mxd

P:\PIT\Projects\Huntsville Cont W912DY-09-D-0062\FTMM\CAD Files\GIS\Landfill\Figure H1_FTMM-18.mxd 11/23/2015 12:17:24 PM

ATTACHMENTS

Attachment H-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP8

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 | 1047
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
8'	18"	4'	mini-ex

GROUNDWATER DATA

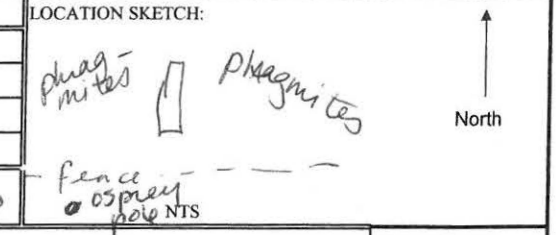
DATE / TIME	1049		
DEPTH TO WATER	~1' bgs		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS: immediately N. of dd fence MW 830

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' black silty sand, decaying organic matter, no waste. Phragmites rhizomes. TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP9

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 1101
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	18"	4'	mini-excavator

GROUNDWATER DATA

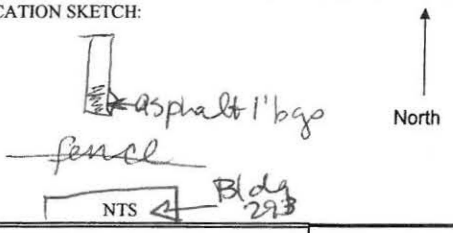
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' brown silty sandy loam, homogeneous. Asphalt about 8" bgs @ S. end of pit. • Concrete pieces at about 2' bgs, no other waste. 3'-4' Silty sand, mottled grey-green and orange, some pebble-size gravel TD = 4' bgs multi-rae reading: <0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP10

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/1115
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

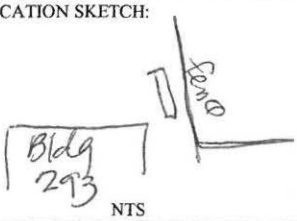
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	082415/0720

REMARKS: moved approx. 4' E to avoid water line

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' silty, sandy loam, brown, dry some gravel 1'-4' SAA, waste zone including ash, coal, asphalt, interbedded orange sand + green sand TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP11 (near SG3)

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWF
START DATE: 082415 1243
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

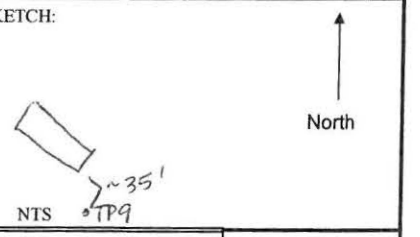
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam 1'-4' SAA, some interbedded orange sand, med, little gravel · Waste zone - concrete pieces to 2' dia., ash, burned wood TD = 4' bgs multi-rae reading: ~~0~~	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP12

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 | 1256
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	3'	3.5	mini-excavator

GROUNDWATER DATA

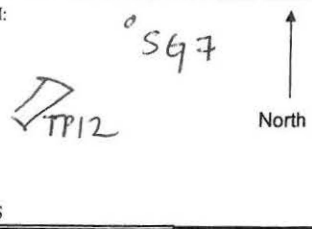
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3.5' Orange silty sand + gravel, med. sand, pebble-size gravel, waste including pieces of concrete 2'+ dia., ash, coal TD = 3.5' bgs multi-meter reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MI8TP13

PROJECT: FTMM
LOCATION: Landfill MI8

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415 | 1309
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	20"	3.5'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S/LEL/Oxy	cal. passed	082415 | 0710

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty, sandy loam 0.8-1.5' orange silty ~~loam~~ sand, med, some pebble-size gravel 1.5-3.5' waste zone - concrete, brick, ash, burned wood TD=3.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: ~~TP~~ MI8TP14

PROJECT: FTMM
LOCATION: LandFill MI8

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. MacDonald
CONTRACTOR: AWT
START DATE: 082715 | 1038
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
20'	2'	4'	mini excavator

GROUNDWATER DATA

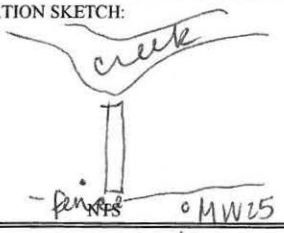
DATE / TIME	N/A
DEPTH TO WATER	

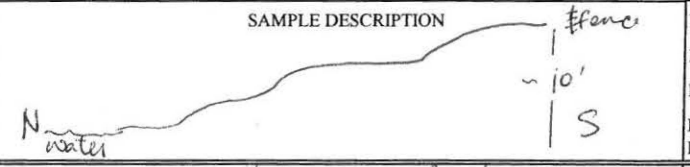
MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT
						E - Easy M - Moderate D - Difficult

- minor surface debris incl. glass + plastic bottles, lumber, rubber ball

0 – 4'
lt. brown to tan silty sand. fine-med, well-sorted, dry, loose, root zone top 2'

TD = 4' bgs

No Waste

multi-rae reading = 0

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP15

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/1123
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	18"	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Mult-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' brown silty, sandy loam dry, root zone, lighter color, sandier to East 1.5' - concrete across entire test pit. *Cannot step in due to inaccessible fenced area TD = 1.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP16

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715 | 1110
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	20"	4'	mini-excavator

GROUNDWATER DATA

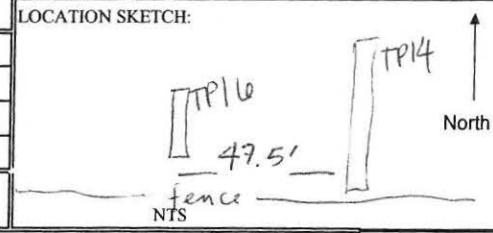
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082715 / 0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					~~0~~ Surface debris incl. tire, glass bottles, fiberglass boat	
2					0-4'	
3					lt brown to tan silty sand,	
4					loose, fine-med, root zone	
5					No Waste	
6					TD = 4' bgs	
7					multi-rae reading = 0	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP17

PROJECT: FTMM
LOCATION: ~~EE~~ Landfill 18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/1135
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC / CO / H_2S / LEL / OXY	Calibration passed	082715/0735

REMARKS:

LOCATION SKETCH: Phragmites, ~~creek~~, drainage, TP17, 60', TP16, North, NTS, Fence, TP18

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' Lt. brown to tan silty sand, loose, dry, med-fine, well-sorted. • Some white material @ N. end of pit - bag of lime? Spot waste, not landfill TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP18

PROJECT: FTMM
LOCATION: Landfill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082415/1137
COMPLETION DATE: 082415
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
8'	~~4'10"~~	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H2S LEL/OXY	Cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.8' brown silty, sandy loam 0.8-~~2.5'~~ rpm 4' orange silty sand, med-fine, well sorted. 1g piece of concrete in center of test pit. ~~TD=2.5'bgs~~ RRM TD=4'bgs multi-rae reading=~~0~~	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M18TP19

PROJECT: FTMM
LOCATION: Land Fill M18

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 082715/1238
COMPLETION DATE: 082715
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	2'	4'	mini-excavator

GROUNDWATER DATA

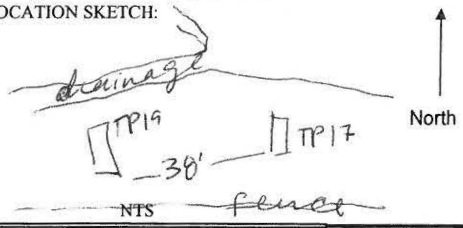
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	082715/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' Ubrown to tan silty sand, loose, fine-med, well sorted. root zone top 2' No Waste TD=4' bgs multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: MW18TP20
PROJECT: FTMM		JOB NUMBER: 748810
LOCATION: Landfill MW18		GROUND ELEV:
		INSPECTOR: R. McDonald
		CONTRACTOR: AWT
		START DATE: 082415/1144
		COMPLETION DATE: 082415
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

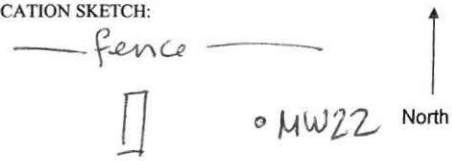
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/oxy	cal. passed	082415/0710

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1' brown silty, sandy loam 1'-4' orangish brown to orange silty sand, med., well sorted No Waste TD = 4' bgs multi-rae reading = 0	

APPENDIX I

FTMM-25: LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

APPENDIX I: FTMM-25 Landfill Boundary Refinement and Methane Gas Survey Results

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1.0 TEST PIT DELINEATION SUMMARY I-1
2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS I-2
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I1	Landfill Boundary Refinement Summary
I2	Methane Gas Survey Results

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Figure No.	Title
I1	Landfill Boundary Refinement and Methane Gas Survey Results

LIST OF ATTACHMENTS

Attachment	Title
I-A	Test Pit Logs

1.0 TEST PIT DELINEATION SUMMARY

Prior to test pit advancement, the landfill boundaries were reexamined by Parsons using the historical aerial photographs, and available historical test pit and soil boring data. The historical information review and related changes to the landfill boundaries will be discussed in further detail in the Remedial Investigation (RI) Report for FTMM-25 that will be issued under separate cover. These changes are reflected on **Figure I1**. The historical information review identified data gaps in the 2010 landfill boundaries. In addition, subsequent to the preparation of the RI Report for FTMM-25, historical test pit and soil borings were reassessed for consistency with the 2015 landfill delineation landfill waste criteria. Some historical test pits (8, 8A, 8B, and 15) did not appear did not appear to meet the criteria to be considered landfill solid waste. The designation of these historical test pits was modified on **Figure I1**.

Test pits during the landfill boundary refinement were initially advanced along the 2015 landfill boundaries to refine the landfill extent, and to address the data gaps identified in the RI report (Parsons, 2015). To form a more comprehensive view of the landfill, test pits were performed in other areas of the landfill. To confirm the historical test pit contents in the eastern portion of the landfill, test pits were advanced in the interior of the landfill since there was limited test pit data in this area. Test pits were advanced at 22 locations at FTMM-25 as part of the landfill refinement activities on September 1 and 2, 2015. Historical (2010) and the 2015 test pit locations are shown in **Figure I1**.

Logs for the test pits conducted in 2015 are provided in **Attachment I-A**. A summary of the test pit observations including the test pit ID, if contents were representative of landfill solid waste, the category, and rationale is presented in **Table I1**.

On the eastern portion of the landfill south of Shrewsbury Creek, observations of the 2015 test pits along the landfill northern (M25TP14) boundary and eastern boundary (M25TP10 and M25TP11) did not contain solid waste indicative of a landfill. Along the southern boundary M25TP5 was determined to consist of scattered debris that was not contiguous and was categorized as debris of *de minimus* quantity that did not meet the criteria to be considered as part of the delineated landfill. In the interior test pits, landfill solid waste such as ash, coal, slag, glass, brick, metal, and burned wood was observed. These observations were consistent with the historical test pits. At the eastern portion of the landfill, the landfill boundaries were not changed based on the contents of the historical and 2015 test pits.

To the northeast of the FTMM-25 landfill there are ten above-ground debris piles shown on the figure. These debris piles if varying sizes are located over 300 feet from the eastern landfill boundary and are not considered part of the landfill.

On the western portion of the landfill north of Shrewsbury Creek, based on historical aerial photographs in conjunction with 2015 test pit data, the 2010 landfill boundary north and west of Shrewsbury Creek previously shown has been removed, and the revised boundary is on the eastern side of Shrewsbury Creek in this area. On the western portion of the landfill north and west of Shrewsbury Creek, solid waste indicative of a landfill was not observed in the 2015 test pits (M25TP2, M25TP3 and M25TP7) and in the historical test pits 1, 7, 8, 8A, 8B, 8C, 9, 11, 12, 13, 15, and 15A. In addition, historical aerial photos show a road crossing Shrewsbury Creek from the south to north with no filling directly observed in the area to the west of Shrewsbury Creek (between the creek and road). Miscellaneous singular pieces of debris

observed may be attributed to use of this road to access the landfill south of the creek to areas farther north.

Figure I1 shows the refined landfill limits based on the 2015 test pit data, available historical test pit and soil boring data, and historical aerial photographs.

2.0 METHANE GAS SURVEY ACTIVITIES AND RESULTS

A total of eight (8) landfill gas readings (including one QA/QC sample) were measured at seven soil gas locations at FTMM-25 as part of the methane gas survey. Sampling was conducted on August 5, 2015. Methane was detected at one location (M25SG4), and this location exceeded 25 percent of the methane LEL. Two step out locations (M2S5G6 and M2S5G7) were measured based on these methane detections. The collective methane results indicate the area within the landfill where methane was found above 25 percent of the LEL is limited. Soil gas locations on the perimeter (including step outs) of the landfill did not have methane detections and showed that landfill gases were not migrating off-site at FTMM-25. The methane detections are most likely attributed to methane gas generating conditions at the landfill. The landfill gas readings are summarized in **Table I2.** The soil gas sampling locations and the location where landfill gas exceeded 25 percent of the LEL are shown in **Figure I1**.

3.0 REFERENCES

Princeton Hydro, Sanitary Landfill Disruption Approval Construction Closeout Report, Monmouth County, NJ. January 2011.

TABLES

Table I1 Landfill Boundary Refinement Summary

Table I2 Methane Gas Survey Results

Table I1
Landfill Boundary Refinement Summary
Site FTMM-25
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Test Pit	Landfill Solid Waste?	Category	Comments
M25TP1	N	2	Debris of de minimus quantity; not landfill.
M25TP2	N	3	No solid waste observed; not landfill.
M25TP3	N	3	No solid waste observed; not landfill.
M25TP4	Y	1	Solid waste including ash, some metal and burned wood, broken glass indicative of landfill.
M25TP5	N	2	Debris of de minimus quantity; not landfill.
M25TP6	Y	1	Solid waste including ash, coal, wood, glass bottles, broken glass, broken ceramics and terracotta, metal, misc plastic, wire indicative of landfill.
M25TP7	N	3	No solid waste observed; not landfill.
M25TP8	Y	1	Solid waste including ash, coal, slag, glass bottle, broken glass, brick, concrete, burned wood, metal wire indicative of landfill.
M25TP9	N	2	Debris of de minimus quantity; not landfill.
M25TP10	N	3	No solid waste observed; not landfill.
M25TP11	N	3	No solid waste observed; not landfill.
M25TP12	Y	1	Solid waste including burned lumber, ash, metal, broken ceramic indicative of landfill.
M25TP13	N	3	No solid waste observed; not landfill.
M25TP14	N	3	No solid waste observed; not landfill.
M25TP15	Y	1	Solid waste including ash, coal, slag, some broken concrete indicative of landfill.
M25TP16	Y	1	Solid waste including ash, coal, slag, glass, brick, burned wood, metal, concrete indicative of landfill.
M25TP17	Y	1	Solid waste including broken glass, brick, coal, ash, misc metal, glass bottle indicative of landfill.
M25TP18	Y	1	Solid waste including ash, coal, slag, broken glass indicative of landfill.
M25TP19	Y	1	Solid waste including ash, coal, slag, broken glass, brick indicative of landfill.
M25TP20	Y	1	Solid waste including ash, coal, slag, broken glass, broken glass, burned wood indicative of landfill.
M25TP21	Y	1	Solid waste including ash, slag, rusting metal, broken ceramic, wood indicative of landfill.
M25TP22	N	2	Debris of de minimus quantity; not landfill.

Category notes:

1) Contiguous soil and solid waste mixture. Solid waste indicative of landfill.
2) Soils with miscellaneous singular pieces of debris or scattered debris that is not contiguous. Debris of de minimus quantity; not landfill.
3) Soils only. No solid waste observed; not landfill.

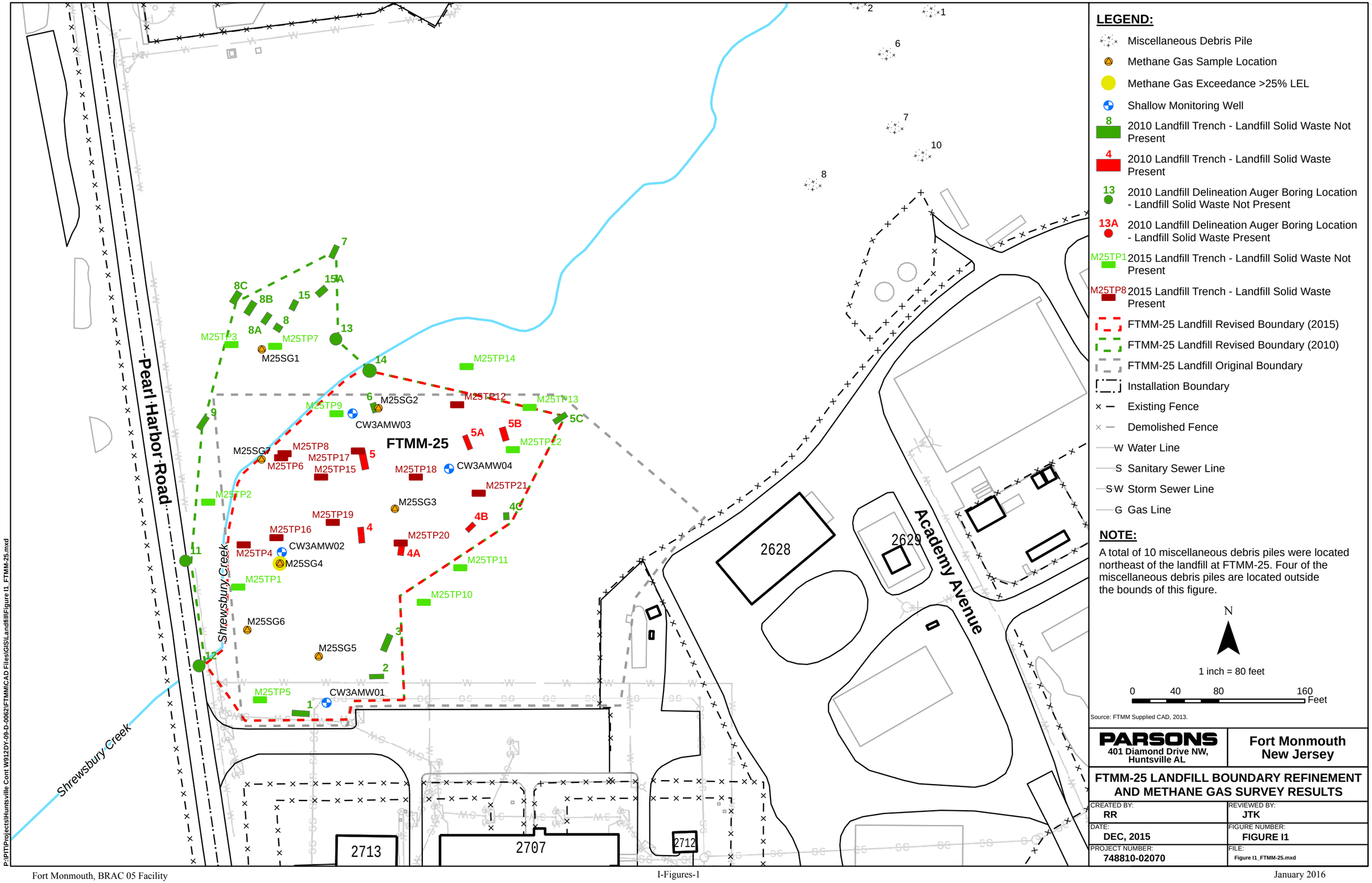
Table I2
Methane Gas Survey Results
Site FTMM-25
Landfill Boundary Refinement and Methane Gas Survey Report for Nine Landfills
Fort Monmouth, New Jersey

Soil Gas Sampling Point	Date	Percent Methane	Percent of LEL	Percent Carbon Monoxide	Percent Oxygen	Comments
M25SG1	8/5/2015	0.0	0.0	0.5	20.3	
M25SG1QA	8/5/2015	0.0	0.0	0.7	20.0	QA Sample
M25SG2	8/5/2015	0.0	0.0	6.6	14.9	
M25SG3	8/5/2015	0.0	0.0	11.6	11.4	
M25SG4	8/5/2015	5.8	OOR	10.4	4.4	
M25SG5	8/5/2015	0.0	0.0	1.1	19.8	
M25SG6	8/5/2015	0.0	0.0	6.7	15.3	Step out
M25SG7	8/5/2015	0.0	0.0	1.1	19.1	Step out

Notes:
1) OOR = Out of Range. Percent of Lower Explosive Limit was greater than 100% and out of the range of the instrument.
2) A LANDTEC Gas Extraction Monitor-2000 (GEM-2000) provided an instantaneous measurement of landfill gases. Each gas sample was analyzed for percent methane, percent of methane Lower Explosive Limit (LEL), percent CO (Carbon Monoxide), and percent oxygen.

FIGURES

Figure I1 Landfill Boundary Refinement and Methane Gas Survey Results



LEGEND:

- Miscellaneous Debris Pile
- Methane Gas Sample Location
- Methane Gas Exceedance >25% LEL
- Shallow Monitoring Well
- 8 — 2010 Landfill Trench - Landfill Solid Waste Not Present
- 4 — 2010 Landfill Trench - Landfill Solid Waste Present
- 13 — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Not Present
- 13A — 2010 Landfill Delineation Auger Boring Location - Landfill Solid Waste Present
- M25TP1 — 2015 Landfill Trench - Landfill Solid Waste Not Present
- M25TP8 — 2015 Landfill Trench - Landfill Solid Waste Present
- FTMM-25 Landfill Revised Boundary (2015)
- FTMM-25 Landfill Revised Boundary (2010)
- FTMM-25 Landfill Original Boundary
- Installation Boundary
- Existing Fence
- Demolished Fence
- W Water Line
- S Sanitary Sewer Line
- SW Storm Sewer Line
- G Gas Line

NOTE:

A total of 10 miscellaneous debris piles were located northeast of the landfill at FTMM-25. Four of the miscellaneous debris piles are located outside the bounds of this figure.

N

1 inch = 80 feet

0 40 80 160 Feet

Source: FTMM Supplied CAD, 2013.

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

FTMM-25 LANDFILL BOUNDARY REFINEMENT AND METHANE GAS SURVEY RESULTS

CREATED BY: RR	REVIEWED BY: JTK
DATE: DEC, 2015	FIGURE NUMBER: FIGURE I1
PROJECT NUMBER: 748810-02070	FILE: Figure I1_FTMM-25.mxd

P:\PITTProjects\Huntsville Cont W912DY-09-D-0062\FTMMCAD Files\GIS\LandfillFigure I1_FTMM-25.mxd

ATTACHMENTS

Attachment I-A Test Pit Logs

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP1

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/0930
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	3'	4'	mini-excavator

GROUNDWATER DATA

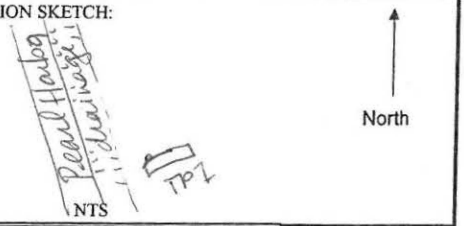
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' brown silty sand, some gravel, dry, loose concrete pieces, including a large (~1 ft³) footing at ~1.5' bgs. No other waste TD=4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP2

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 / 1352
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	2'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/OXY	cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–4' brown silty, sandy loam, some gravel, dry, loose, lots of tree roots @4' little ash + coal, pale green sand TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP3

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 / 1345
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

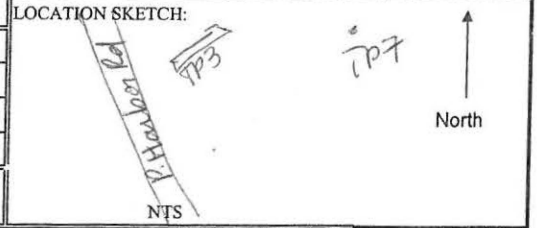
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' tan to orange silty sand, fine-med, well sorted, some pebble-size gravel in top 1', dry to damp No Waste TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP4

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/0945
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
10'	20"	5'	mini-excavator

GROUNDWATER DATA

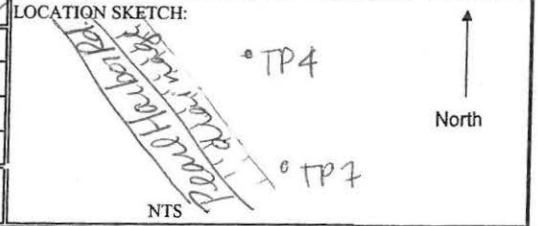
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090115/0730

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' brown to tan silty sand w/ gravel, dry, fine med, gravel is pebble size, rounded 3'-5' dk. brown to black organic matter + sand – ash, some metal + burned wood, broken glass TD = 5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP5
PROJECT: FTMM		JOB NUMBER: 748810
LOCATION: Land Fill M25		GROUND ELEV:
		INSPECTOR: R.McDonald
		CONTRACTOR: AWT
		START DATE: 090115/0852
		COMPLETION DATE: 090115
		CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	4'	mini-excavator

GROUNDWATER DATA

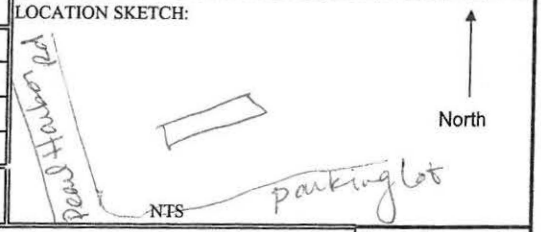
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
multi-rae plus	VOC/CO/H_2S LEL/OXY	cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' brown to light brown silty sand, little gravel, med-fine, well-sorted, dry 2'-2.5' waste - ash, coal, slag 2.5'-4' orangish-brown silty sand, poorly graded, med-fine, damp TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP6

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/1006
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4.5'	mini-excavator

GROUNDWATER DATA

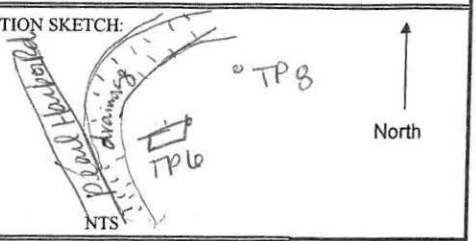
DATE / TIME	NA
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–1.5' brown silty sandy loam, some gravel, dry, loose 1.5–2.5' Lt. brown to tan sand, silty, med-fine, well sorted 2.5–4.5' Waste incl. ash, coal, wood, glass bottles, broken glass, broken ceramics + terracotta, metal, misc plastic, wire TD = 4.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP7

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/1339
COMPLETION DATE: 090115/
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

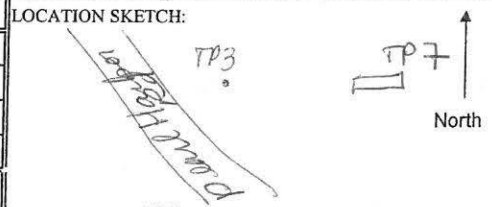
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.8' brown silty, sandy loam, rootzone, dry	
2						
3					0.8-4' orangish-brown silty sand, med-fine, well sorted, little gravel	
4						
5						
6					No Waste	
7						
8					TD = 4' bgs	
9					multi-rae reading = 0	
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP8

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 / 1023
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4.5'	mini-excavator

GROUNDWATER DATA

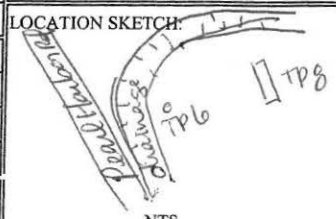
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S/ LEL/OXY	cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3' brown to orangish brown silty sand w/ gravel some asphalt pieces in top 8" 3'-4.5' waste incl. ash, coal, slag, glass bottle, broken glass, brick, concrete, burned wood, metal wire TD = 4.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP9

PROJECT: ETMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/1037
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

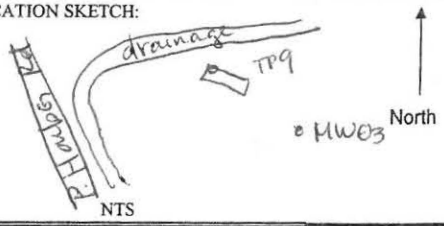
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	~~PID~~/CO/H_2S LEL/OX4	cal. pass	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					~metal surface debris	
2					0-3.5' brown silty sand, med, little gravel, tree roots in top 18", intermittant pieces of concrete, brick	
3						
4						
5					3.5-4' dk gray silty sand, med-coarse, some black organic matter, V. moist	
6						
7						
8						
9					TD = 4' bgs	
10					multi-rae reading = 0	
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP10

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/0907
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	4'	mini-excavator

GROUNDWATER DATA

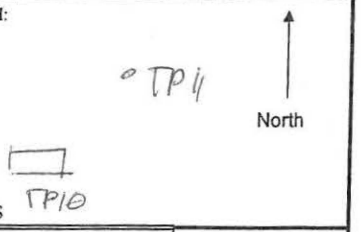
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
iMulti-Rae Plus	VOC/CO/H_2S/LEL/Oxy	Cal. passed	090115/0735

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-0.5' brown silty, sandy loam. lots of organic matter (fallen leaves, etc.), dry	
2						
3						
4					0.5-4' orange silty sand w/ gravel sand is med-fine, well sorted, gravel is pebble size, well-rounded	
5						
6						
7						
8						
9					TD = 4' bgs	
10					multi-rae reading = 0	
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25 TP11

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: ~~090~~ 090115/0856
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	18"	5'	mini-excavator

GROUNDWATER DATA

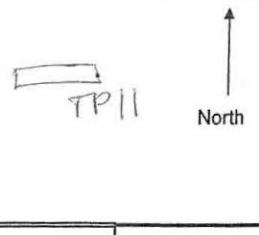
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-0.5' brown silty loam, lots of organic matter 0.5 – 5' ~~reddish~~ orangish-brown silty sand, med-fine, little gravel, top 1' is loose, then sand becomes difficult to advance bucket through No Waste TD = 4' bgs multi-rae plus reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25 TP12

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 749810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 / 1051
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4.5'	mini-excavator

GROUNDWATER DATA

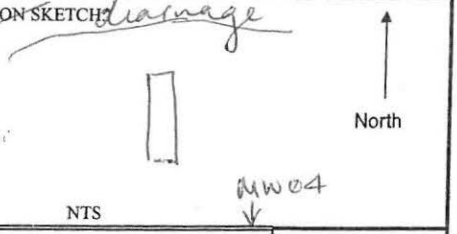
DATE / TIME	1053		
DEPTH TO WATER	4'		

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090115/0715

REMARKS:

LOCATION SKETCH: drainage



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-3.5 brown silty sand, some gravel, med-fine, well-sorted, dry. 3.5'-4.5' Waste - mostly lumber, burned, some ash, metal, broken ceramics. Wet. TD = 4.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25 TP13

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 / 1101
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	20"	4.5'	mini excavator

GROUNDWATER DATA

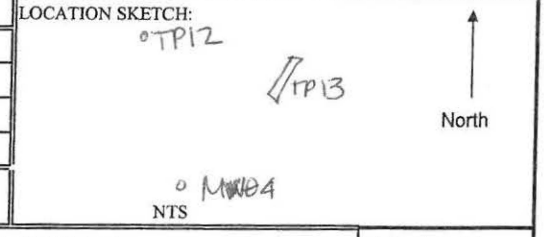
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090115 / 0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–4.5' tan silty sand, med-fine, loose, some gravel top 18", lighter-colored band from 18" to 2' No Waste TD = 4.5' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP14

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 | 1200
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

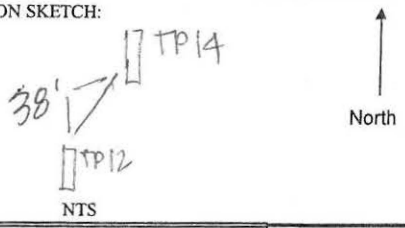
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' silty sand w/ gravel, med. brown grading to orangish brown, loose, dry, tree roots + dead wood throughout TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP15

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115 / 1220
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

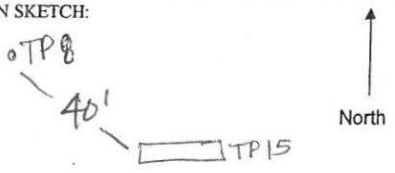
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2.5' lt. brown to tan silty sand, some pebble-size gravel, med. 2.5-4' waste – ash, coal, slag, some broken concrete TD = 4' bgs multi-rae reading: 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP16

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/1232
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6.5'	2'	4'	mini-excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-2' orangish-brown silty sand fine-med, loose, dry, well-sorted, some gravel 2-4' waste- ash, coal, slag, glass, brick, burned wod, metal, concrete TD=4' bgs multi-rae reading=0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25 TP17

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090115/1407
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

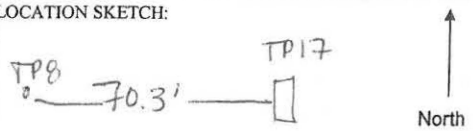
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0–2' brown silty sand + gravel, dry, loose 2'–4' SAA, w/ waste – broken glass, brick, coal, ash, misc. metal, glass bottles TD = 4' bgs multi-rae reading = 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP18

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: RMDonald
CONTRACTOR: AWT
START DATE: 090115 | 1422
COMPLETION DATE: 090115
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	20"	3'	mini-excavator

GROUNDWATER DATA

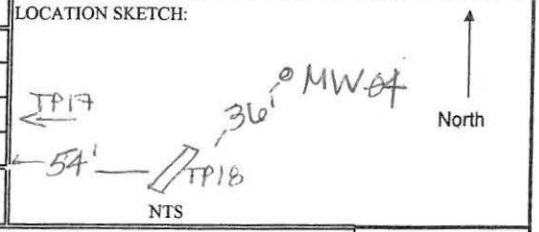
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
MultiRae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090115/0715

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown to tan silty sand, fine-med, loose, dry	
2						
3					1.5-3' waste - ash + coal, slags, broken glass	
4						
5						
6					TD = 3' bgs	
7					multi-gal reading = 0	
8						
9						
10						
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25 TP19

PROJECT: FTMM
LOCATION: landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/0940
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini excavator

GROUNDWATER DATA

DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/Oxy	Cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:

NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-1.5' lt. brown silty sand w/ gravel, med-fine, gravel is pebble size, rounded 1.5-4' waste - ash, coal, slag, broken glass, brick TD = 4' bgs multi-rae reading 0	

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP20

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/0902
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
5.5'	18"	4'	mini-excavator

GROUNDWATER DATA

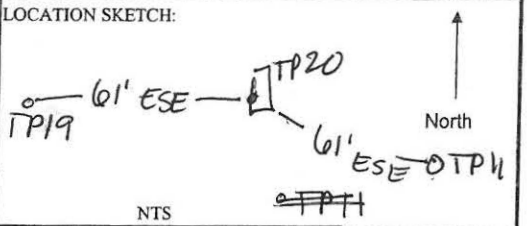
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					0-1.5' brown silty sand w/ gravel, dry, loose	
2						
3					1.5'-3' waste - ash, coal, brick, slag, broken glass, burned wood	
4						
5						
6					3'-4' lt. orange silty sand, fine-med, loose	
7						
8						
9					TD = 4' bgs	
10					multi-rae reading = 0	
11						
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25 TP21

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215 | 1000
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
6'	20"	4'	mini-excavator

GROUNDWATER DATA

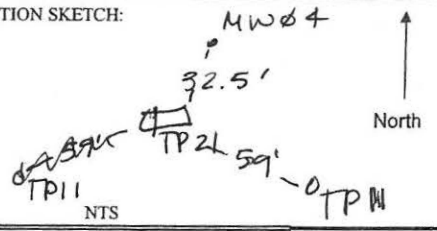
DATE / TIME	
DEPTH TO WATER	N/A

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H2S LEL/OXY	cal. Passed	090215/0720

REMARKS:

LOCATION SKETCH:



DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1					• Asphalt @ surface	
2					0-2.5' tan silty sand w/ gravel. sand is med-fine, loose. gravel is pebble to cobble size, rounded. Dry	
3						
4						
5						
6					2.5'-4' Waste incl. ash, slag, rusting metal, broken ceramic, wood	
7						
8						
9						
10					TD = 4' bgs	
11					multi-rae reading = 0	
12						
13						
14						
15						

TEST PIT FIELD LOG

PARSONS	CLIENT:	TEST PIT NO.: M25TP22

PROJECT: FTMM
LOCATION: Landfill M25

JOB NUMBER: 748810
GROUND ELEV:
INSPECTOR: R. McDonald
CONTRACTOR: AWT
START DATE: 090215/1021
COMPLETION DATE: 090215
CHECKED BY:

TEST PIT DATA

LENGTH	WIDTH	DEPTH	EXCAVATION METHOD
7'	20"	4'	mini-excavator

GROUNDWATER DATA

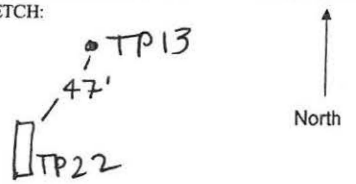
DATE / TIME	N/A
DEPTH TO WATER	

MONITORING DATA

INSTRUMENT	DETECTOR	BACKGROUND	TIME/DATE
Multi-Rae Plus	VOC/CO/H_2S LEL/OXY	Cal. passed	090215/0720

REMARKS:

LOCATION SKETCH:



NTS

DEPTH (FT)	VOC	SAMPLE NO.	SAMPLE DEPTH	STRATA	SAMPLE DESCRIPTION	EXCAVATION EFFORT (E - Easy, M - Moderate, D - Difficult)
1–15					0-4' tan to orange silty sand, fine-med, some gravel few (3-4) pieces of coal. @4' black decaying organic matter, V. moist. TD=4' bgs multi-rae reading = 0	