DEPARTMENT OF THE ARMY
US ARMY INSTALLATION MANAGEMENT COMMAND
HEADQUARTERS, UNITED STATES ARMY GARRISON
4551 LLEWELLYN AVENUE, SUITE 5000
FORT GEORGE G. MEADE, MARYLAND 20755-5000

March 30, 2016

Environmental Division

Mr. Robert Stroud
NPL/BRAC/Federal Facilities Branch
U.S. Environmental Protection Agency
1650 Arch Street
Philadelphia, PA 19103-2029

Dear Mr. Stroud:

This letter serves as notification that the *Draft 2015 Annual Long-Term Monitoring and Land Use Control Inspection Report for Manor Dump Site* at Fort George G. Meade (Report) has been finalized. Enclosed please find page replacements for the final version. The United States Environmental Protection Agency and the Maryland Department of the Environment approved the Draft Report on February 19, 2016 and February 3, 2016, respectively. Copies of the submittal have also been furnished to Fran Coulters (U.S. Army Environmental Command), Tim Peck (U.S. Army Corps of Engineers), Elisabeth Green (Maryland Department of the Environment), Christopher Williams (Anne Arundel County Schools), and the Fort George G. Meade Restoration Advisory Board.

If you have any questions, please feel free to contact Denise Tegtmeyer at (301) 677-9559 or me at (301) 677-7999.

Sincerely,

Michael P. Butler for

George B. Knight, PG
Program Manager, Installation Restoration Program
Directorate of Public Works Environmental Division

Enclosure

PIKA INTERNATIONAL, INC. A JOINT VENTURE

MALCOLM PIRNIE

Imagine the result

2015 Annual Long-Term Monitoring and Land Use Control Report

FGGM 93, Manor View Dump Site, Fort George G. Meade, Maryland

December 2015

FORT GEORGE G. MEADE
ENVIRONMENTAL DIVISION

Amanda T.K. Duggins
Staff Engineer

John Cherry
Project Manager

Draft 2015 Annual Long-Term Monitoring and Land Use Inspection Report

FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Prepared for:
U.S. Army

Prepared by:
PIKA-MP JV LLC
1114 Benfield Boulevard
Suite A
Millersville, Maryland 21108
Tel 410 987 0032
Fax 410 987 4392

Our Ref.:
06261062.0000
Date:
December 2015

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

Table of Contents

Executive Summary **1**

1. Introduction **1**

2. Site Background **3**

3. Site Activities **5**

3.1 Groundwater Sampling 5

3.2 In-Situ Soil Gas Monitoring 6

3.3 Indoor Air Sampling 7

3.4 Annual Mowing Event 7

3.5 Annual Site Inspection 8

4. Analytical Results and Groundwater Trend Analysis **9**

4.1 Groundwater Analytical Results 9

4.2 Groundwater Trend Analysis 11

4.3 In-Situ Soil Gas Monitoring 12

4.4 Indoor Air Analytical Results 13

4.5 Annual Inspection Findings 14

5. Conclusions and Recommendations **17**

6. Schedule **18**

7. References **19**

Tables

Table 1 Long-term Monitoring Program Summary

Table 2 Well Construction Details and Groundwater Elevations

Table 3 Groundwater Monitoring Results

Table 4 Summary of Soil Gas Methane Results

Table 5 Three Volume Purge Summary – March 2015

Table 6 Three Volume Purge Summary – August 2015

Table 7 Indoor Air Monitoring Results

Figures

Figure 1	Site Location Map
Figure 2	Manor View Dump Site, Site Location Map
Figure 3	Manor View Dump Site, Site Map
Figure 4	Excavation Extent and Debris/Fill Footprint
Figure 5	Monitoring Well Locations
Figure 6	Soil Gas Monitoring Locations
Figure 7	Indoor Air Sample Locations
Figure 8	Extent of Land Use Controls
Figure 9	Groundwater Contours February 2015
Figure 10	Groundwater Contours August 2015
Figure 11	Groundwater Analytical Results – Metals
Figure 12	Groundwater Analytical Results – VOCs
Figure 13	Soil Gas Monitoring Results
Figure 14	Indoor Air Sample Results

Appendices

Appendix A	Field Forms
Appendix B	Safety Data Sheets for Chemicals Stored near the Manor View Elementary School Crawl Space (Provided on CD)
Appendix C	Inspection Forms
Appendix D	Laboratory Reports (Provided on CD)
Appendix E	Data Validation Report (Provided on CD)
Appendix F	Volatile Organic Compound Groundwater Trend Plots
Appendix G	Photo Log

Acronyms and Abbreviations

%	percent
µg/L	micrograms per liter
µg/m³	microgram per cubic meter
amsl	above mean sea level
Arcadis	Arcadis U.S. Inc.
C&D	Construction and Demolition
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	Constituents of Concern
Corvias	Corvias Military Living Group
DCE	Dichloroethene
FGGM	Fort George G. Meade
FGGM 93	Manor View Dump Site
ft	feet
FS	Feasibility Study
IDW	Investigation Derived Waste
JV	Joint Venture
LEL	Lower Explosive Limit
LTM	Long Term Monitoring
LUC	Land Use Controls
MAES	Multiple Award Environmental Services
MGW	Methane Generating Waste
MW	Monitoring Well
NTCRA	Non-time Critical Removal Action
PCE	Tetrachloroethene
QAPP	Quality Assurance Project Plan
RACR	Remedial Action Completion Report

List of Acronyms and Abbreviations (continued)

RD	Remedial Design
RG	Remedial Goal
RI	Remedial Investigation
ROD	Record of Decision
Site	FGGM 93, Manor View Dump Site
SOPs	Standard Operating Procedures
SVE	Soil Vapor Extraction
TAL	Target Analyte Lis
TCE	Trichloroethene
U.S.	United States
USEPA	United States Environmental Protection Agency
VC	Vinyl Chloride
VOC	Volatile Organic Compound

Executive Summary

The PIKA-MP JV LLC comprised of joint venture partners PIKA International, Inc. and Arcadis U.S., Inc. (Arcadis), formerly Malcolm Pirnie has been retained by the United States Army Corps of Engineers, Baltimore District, to maintain remedial action (operations) and long-term management at Fort George G. Meade (FGGM) located in Anne Arundel County, Maryland. This work is being conducted under a Multiple Award Environmental Services contract that encompasses six FGGM sites. The full scope of services for this contract is defined in the Contract W912DR-12-D-0007, Delivery Order 0004, as modified.

This 2015 Annual Long-Term Monitoring (LTM) and Land Use Control (LUC) Inspection Report discussed the site activities conducted at FGGM, Manor View Dump Site (herein referred to as FGGM 93 or the Site) during 2015. All site activities were conducted in accordance with the LTM program established in the Remedial Design (RD; Arcadis 2015) and included the following components:

- Semi-annual LTM of contaminants of concern (COCs) in groundwater (i.e., arsenic, cadmium, chromium, cobalt, lead, selenium, thallium, trichloroethene [TCE] and vinyl chloride [VC]);
- Semi-annual LTM of soil gas for methane;
- Annual LTM of indoor air in the crawl space at Manor View Elementary for TCE and its daughter products (i.e., 1,1-dichloroethene [DCE], cis-1,2-DCE, trans-1,2-DCE, and VC) including additional sample locations requested by the Maryland Department of the Environment during regulatory review of the Remedial Action Completion Report in 2014 (Arcadis 2014c);
- Mowing of the western portion of the site in July and October 2015;
- Annual site inspections including operational testing of the methane monitors located in the crawl space at the Manor View Elementary School and in the housing units adjacent to the western portion of the Site and maintenance of the soil cover; and
- LUC inspections.

Documentation of the above mentioned activities is presented and discussed herein including field sampling forms, inspection forms, laboratory analytical reports, data validation reports, and a photo log. Furthermore, a comprehensive review of data trends following remedy implementation are presented with respect to groundwater, soil gas, and indoor air and the findings of the LUC inspections are documented.

In general, 2015 analytical results for groundwater, soil gas, and indoor air were consistent with historical results with minor exception. With respect to groundwater, total metals were detected across the Site above laboratory reporting limits; however, only chromium, cobalt, and VC were detected above their respective Remedial Goals (RGs). The chromium exceedance occurred in February 2015 and was determined to be the result of high sample turbidity. Chromium was not detected above laboratory reporting limits during the subsequent sampling event conducted in August 2015. Low level RG exceedances of VC continue to occur at MW-9. Linear regression analyses indicated that concentrations of VC will decrease below the RG in approximately 3.5 years following remedy implementation (fourth quarter of 2017).

Methane concentrations were not observed above the Lower Explosive Limit (LEL) of 5 percent during the March 2015 nor the August 2015 sampling event. Low level detections of methane were observed at various locations consistent with historical results and noted seasonal variability.

Three indoor air samples were collected at the Manor View Elementary School. In accordance with the RD (Arcadis 2015), one sample was collected from within the crawl space (MV-13). Two additional samples were collected from within the utility closet that provides access to the crawl space and outside of the utility closet in the school cafeteria. TCE was detected at MV-13 in exceedance of its RG of 1 microgram per cubic meter ($\mu g/m^3$). TCE was detected below the RG at each of the additional indoor air samples but did not exceed 1 $\mu g/m^3$.

The western portion of the Site was mowed in July and October 2015 and the shrubs along northern, western, and southern, portions of the fence line were removed. Findings of the site inspection did not necessitate any action with respect to maintenance of the existing soil cover. Further, all monitoring locations (i.e., soil gas and groundwater monitoring wells) were found to be functional and deemed secure. The dormant soil vapor extraction system was tested and no operational issues were encountered. Methane monitors in the housing units surrounding the western portion of the Site and within the crawl space of the Manor View Elementary school were tested and deemed operational.

The results and findings of the 2015 LTM program indicate that the selected remedy (Maintenance of Existing Soil Cover, LUCs, and LTM) continues to mitigate the hazards posed by human exposure to the remaining buried waste at the Site and COCs in groundwater, subsurface soil, and indoor air and ensure achievement of the remedial action objectives.

.

1. Introduction

The PIKA-MP JV LLC comprised of joint venture (JV) partners PIKA International, Inc. and Arcadis U.S., Inc. (Arcadis), formerly Malcolm Pirnie has been retained by the United States Army Corps of Engineers, Baltimore District, to maintain remedial action (operations) and long-term management at Fort George G. Meade (FGGM) located in Anne Arundel County, Maryland. This work at the Manor View Dump Site (hereinafter referred to as FGGM 93 or "the Site") is being conducted under a Multiple Award Environmental Services contract that encompasses six FGGM sites. The full scope of services for this contract is defined in the Contract W912DR-12-D-0007, Delivery Order 0004, as modified.

Through the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process, the Record of Decision (ROD; U.S. Army 2014) for FGGM 93 selected the following remedial action: maintenance of the existing soil cover, land use controls (LUCs), and long-term monitoring (LTM). This remedial action was implemented in August and October 2014. Implementation of the remedy is presented in the Remedial Action Completion Report (RACR; Arcadis 2014c).

An LTM program was established in the Remedial Design (RD; Arcadis 2015) for groundwater, soil gas, and indoor air. A summary of the LTM program is provided in **Table 1**. Groundwater sampling is conducted on a semi-annual basis to verify that (1) the remaining buried waste is not actively contributing to groundwater contamination and (2) the concentrations of constituents of concern (COCs) identified in groundwater continue to decline. Soil gas monitoring is also conducted on a semi-annual basis to ensure the continued effectiveness of the Non-Time Critical Removal Action (NTCRA) conducted in 2012 in reducing methane concentrations in soil gas below the lower explosive limit (LEL). Annual indoor air sampling is conducted to monitor the concentrations of trichloroethene (TCE) and its daughter products from within the crawl space at the Manor View Elementary School. In addition to the LTM program, site inspections are conducted on an annual basis to ensure that the integrity and continued effectiveness of the existing soil cover is maintained and to confirm continued compliance with all LUC objectives. Furthermore, annual site inspections include provisions to test methane detectors in the housing units adjacent to the western portion of the Site and in the crawl space at the Manor View Elementary School; operational testing of the soil vapor extraction (SVE) system; evaluation of the monitoring locations included in the LTM program; and mowing of the western portion of the Site.

This Annual Monitoring Report discusses the site activities conducted at the Manor View Dump Site during the 2015 calendar year, data trends, and future actions at the Site.

2. Site Background

FGGM is located midway between the cities of Baltimore, Maryland, and Washington D.C. in Anne Arundel County, Maryland, as shown on **Figure 1**. The Site is located near the intersection of MacArthur Road and 2nd Corps Boulevard in the northern portion of FGGM. A Site location map is provided as **Figure 2**, and an aerial map of the Site is presented on **Figure 3**. The Site is bounded by a group of residential housing and an open field to the north, 2nd Corps Boulevard to the south, Hayden Drive to the west, and Manor View Elementary School located at 2900 MacArthur Road to the east.

Landfilled material at the Site was discovered in 2003 during excavation and earth moving activities associated with the housing privatization initiative. Following the discovery of landfilled material, various field activities were completed to determine the nature and extent of the waste mass. Materials recovered in test pits and soil borings were dated as originating from the 1940s, and classified into two general categories: methane generating waste (MGW) and construction and demolition (C&D) debris/fill.

Results of these preliminary assessment/site investigation activities identified elevated methane concentrations in soil gas. In July and August 2005, a passive gas collection trench was installed along the western and northern extent of the Site to intercept methane migrating from the waste to the housing units and vent it to the atmosphere. In October 2005, soil gas samples were collected to determine the effectiveness of the passive collection trench. Elevated methane concentrations were observed near the housing units; thus for protection of the residents, the affected housing units located north and west of the Site were evacuated in December 2005 (URS 2008). As of July 2015, the housing units have been reoccupied and outreach documents including an informational letter and factsheet were provided to the residents by Corvias Military Living Group (Corvias) in coordination with the Army. As a precautionary measure, sub-slab depressurization systems were installed at select residences by Corvias. Field activities associated with the depressurization system installation are documented in the Sub-slab Depressurization at the Residential Housing Complex Adjacent to the Manor View Dump Site Report (EEC Environmental 2015). The MGW was determined to occupy an approximately one-acre area confined to the western portion of the Site; bounded to the east by the north/south oriented drainage swale and to the north and west by the Potomac Place Housing Area. Methane was consistently observed at concentrations exceeding the LEL of 5 percent (%) in various soil gas monitoring locations in this area. This portion of the Site was the focus of a NTCRA conducted in 2012 (Arcadis 2012), which included the excavation and off-Site disposal of approximately 27,700 tons of non-hazardous MGW and soil (**Figure 4**). Following

achievement of the vertical and horizontal excavation limits, the Site was backfilled utilizing stockpiled overburden soil, followed by a minimum of 18 inches of clean imported common fill, and 6 inches of top soil to support vegetative growth. Documentation of the NTCRA is presented in the Interim Removal Action Report (Arcadis 2013). The western portion of the Site is currently a vacant grassed lot.

The remaining approximate nine acres of the Site (eastern portion of the Site) contains debris/fill and typically consists of C&D debris including rubble and burned material/ash which is more inorganic in nature and does not significantly contribute to methane generation through decomposition. The buried C&D debris remains on the eastern portion of the Site beneath a vegetative soil cover approximately 2 to 8 feet (ft) thick.

3. Site Activities

Site activities conducted during 2015 consisted of the following:

- Two semi-annual groundwater sampling events;
- Two semi-annual soil gas monitoring events;
- One annual indoor air sampling event;
- Two mowing events and associated vegetation clearance; and
- One annual site inspection.

All site activities were conducted in accordance with the procedures established in the RD (Arcadis 2015) and the Fort Meade and Phoenix Military Reservation Remedial Action Operations and Long-term Management Accident Prevention Plan (PIKA-MP JV 2015). Furthermore, site-wide plans developed for work under the FGGM Performance Based Acquisition (Contract W91ZLK-05-D-0015) were adopted for use under the current Multiple Award Environmental Services (MAES) contract (Contract W912DR-12-D-0007) and included the following:

- Quality Assurance Project Plan (QAPP) for the Performance Based Acquisition at Fort Meade (Arcadis 2011a);
- Sample and Analysis Plan for the Performance Based Acquisition at Fort Meade (Arcadis 2011b); and
- Waste Management Plan for the Performance Based Acquisition at Fort Meade (Arcadis 2011c).

3.1 Groundwater Sampling

Two semi-annual groundwater sampling events were conducted in 2015. The first event was conducted on February 18, and February 23 – 24, 2015. The second event was conducted on August 17 – 19, 2015. Groundwater samples were collected from ten monitoring wells (monitoring well [MW]-01, MW-02, MW-03, MW-04, MW-05, MW-06, MW-07, MW-09, MW-10, and MW-11) using low flow sampling methodology and in accordance with the applicable standard operating procedures (SOPs) provided in the

RD (Arcadis 2015). Monitoring well locations are provided on **Figure 5**. Groundwater samples were submitted to Shealy Environmental Services located in West Columbia, South Carolina and analyzed for volatile organic compounds (VOCs) via United States Environmental Protection Agency (USEPA) Method 8260B, total metals via USEPA Method 6010, and biogeochemical parameters (i.e., pH [SM 4500-H B-2011], alkalinity [SM 2320B-2011], hardness [SM 2340C-2011], chloride [300.0], specific conductance [120.1], nitrate [300.0], chemical oxygen demand [SM 5220D-2011], turbidity [180.1], ammonia [350.1], sulfate [300.0], and total dissolved solids [SM 2540C-2011]). Prior to conducting groundwater sampling, each monitoring well was gauged with an electronic water level meter and depth to water and total sounded depth measurements were recorded. Field forms are presented in **Appendix A**.

All purge water and decontamination fluids generated during sampling events was combined before being containerized. All waste was stored in 55-gallon Department of Transportation approved drums, properly labeled and staged in a secure location at FGGM 93. At the end of the sampling event, all investigation derived waste (IDW) was relocated to the FGGM designated IDW storage area located inside the enclosure for the LPA hydraulic containment system located off Magazine Road. Liquid IDW was treated using the hydraulic containment system granular activated carbon units and processed through the system.

3.2 In-Situ Soil Gas Monitoring

Two semi-annual in-situ soil gas monitoring events were conducted on March 31, 2015 and August 26, 2015. Landfill gas measurements (i.e., methane, carbon dioxide, and oxygen) were collected in-situ using a Landtec GEM™ 2000 landfill gas monitor and in accordance with the SOP provided in the RD (Arcadis 2015) from 17 monitoring points (VMP-1,VMP-4, VMP-11,VMP-26, VMP-27, VMP-29 through VMP-33, VMP-36, MP-A, VE-C, VE-F, SG-82S, SG-82M, and SG-82D). Soil gas monitoring locations are displayed on **Figure 6**. Prior to conducting monitoring activities, the landfill gas monitor was calibrated in accordance with manufacturer specifications. Two landfill gas readings were collected at each monitoring point: (1) an initial reading collected from the monitoring point head space and (2) a final reading following a three-volume purge of the monitoring point. Following documentation of the initial reading, a three-volume purge was conducted at each monitoring point to displace stagnant air within the headspace and to capture a representative sample of the soil vapor from the screened interval. Flow rates and purge times were recorded following the three-volume purge at each monitoring point. Field forms are presented in **Appendix A**.

3.3 Indoor Air Sampling

The annual indoor air sampling event was conducted on March 31 - April 1, 2015. As indicated in the RD (Arcadis 2015), a time integrated sample was collected from the indoor sampling location MV-13, located in the crawl space at the Manor View Elementary School. Pursuant to comments received from the United States USEPA during development of the RACR (Arcadis 2014c), additional samples were collected from within the utility closet (MV-14) and outside of the utility closet in the school cafeteria (MV-12). Indoor air monitoring locations are presented on **Figure 7**. The samples were collected using 6L Summa® canisters with flow controllers pre-set by ALS Laboratories located in Simi Valley, California. During Summa® canister deployment, materials and chemicals housed in the storage room above the crawl space were documented and photographed. Material Safety Data Sheets were obtained for the chemicals within the storage room and are provided in **Appendix B**. Indoor air sampling was conducted in accordance with the SOP presented in the RD (Arcadis 2015). The Summa® canister was lowered into the crawl space and the crawl space entry hatch was closed while the sample was collected. The flow controllers of the Summa® canisters regulated passive sampling over a 24-hour period. Following the 24-hour sample period, the Summa® canisters were retrieved and submitted to ALS Laboratories for analysis of TCE and its daughter products via USEPA method TO-15. Field forms are presented in **Appendix A**.

3.4 Annual Mowing Event

Two mowing events were completed at FGGM 93 during 2015. The first mowing event was completed on July 9, 2015 by Envirotech and the second mowing event was completed on October 22, 2015 by KCS Landscape Management. An Arcadis field technician provided oversight and general supervision during both mowing events. In general both mowing events included 1) mowing of the open field west of the forested area bisecting the western and eastern portions of the Site and vegetation clearing along portions of the fence line and around the SVE system enclosure. Vegetation clearing (i.e., removal of small bushes and shrubs at the ground surface) was limited to the northern, southern, and western portion of the Site fence encircling the western portion of the Site and around the SVE system enclosure. Debris generated during landscaping activities was collected and disposed of off-Site.

3.5 Annual Site Inspection

As outlined in the RD (Arcadis 2015), site inspections are conducted on an annual basis to confirm the continued compliance with all of the LUC objectives, and to ensure that the integrity and continued effectiveness of the existing soil cover is maintained. Specifically, annual inspections include an evaluation of the existing soil cover, land use, and the integrity of on-Site monitoring locations (i.e., monitoring wells and soil gas monitoring points); operational testing of the methane monitors and SVE system; and identification of planned construction. LUC signage and the fence bisecting the Site into eastern and western parcels are also inspected. The five LUC signs are depicted on **Figure 8**.

The annual inspection was largely completed on July 9, 2015; however, the monitoring locations (i.e., MWs and soil gas monitoring points) were inspected in February and March 2015 in tandem with LTM activities. Further, Arcadis staff, escorted by a representative from Corvias and the U.S. Army, were unable to access three of the methane monitors on July 9, 2015 in housing units located at 4954, 4952, and 4950 Hayden Drive. Therefore, these monitors were tested by Corvias staff at a later date. The methane monitor (S-Tech Model) in the Manor View Elementary School crawl space was replaced and inspected on April 20, 2015 by Arcadis field staff. Completed inspection forms are provided in **Appendix C**.

4. Analytical Results and Groundwater Trend Analysis

This section presents the results of the annual indoor air and semi-annual groundwater and soil gas monitoring events completed in 2015. Laboratory analytical reports are included in **Appendix D**. All groundwater and indoor air data collected during 2015 were validated in accordance with the QAPP (Arcadis 2011a). Data validation was conducted by a third party and includes a review of the laboratory report narrative for noted deficiencies and the potential impact to data usability; review of chain-of-custodies, sample preservation, and sample receipt logs and electronic data validation of select quality control parameters. No major deficiencies were identified during the data validation. Data validation reports are provided in **Appendix E**.

4.1 Groundwater Analytical Results

Depth to groundwater measurements were collected from the monitoring wells on February 18, 2015 and August 17, 2015. Groundwater elevations ranged from 157.80 ft above mean sea level (amsl) at MW-5 to 165.28 ft amsl at MW-1 on February 18, 2015. Groundwater elevations increased across the Site by approximately 3 ft in August 17, 2015, ranging from 160.94 ft amsl at MW-5 to 168.13 ft amsl at MW-1. Based on historic and groundwater elevation data collected in 2015, groundwater flows generally towards the southeast. Depth to groundwater measurements and corresponding groundwater elevations are provided in **Table 2**. Groundwater contour maps representative of groundwater elevations measured in February 2015 and August 2015 is presented on **Figure 9** and **Figure 10**, respectively.

During both semi-annual sampling events completed in 2015, groundwater samples were submitted for analysis of VOCs via USEPA Method 8260B, total Target Analyte List (TAL) metals via USEPA Method 6020A, and a suite of biogeochemical parameters listed in **Table 3**. Groundwater analytical results are provided in **Table 3**. Groundwater COCs were established in the ROD (U.S. Army 2014) and include the following constituents: arsenic, cadmium, chromium, cobalt, lead, selenium, thallium, TCE, and vinyl chloride (VC). **Figure 11** and **Figure 12** graphically depict inorganic and organic COC results, respectively. A summary of the COC concentrations is discussed below:

- Arsenic was not detected above the Remedial Goal (RG) established in the ROD (U.S. Army 2014) of 10 micrograms per liter (µg/L) in any of the ten monitoring wells sampled in February or August 2015. In February 2015, arsenic was detected at concentrations above laboratory reporting limits at three locations with

the maximum concentration occurring at MW-1 (5.6 µg/L). Arsenic was not detected above laboratory reporting limits in August 2015.

- Cadmium was not detected above the RG of 5 µg/L in any of the ten monitoring wells sampled. Low level detections, typically below 1 µg/L, were detected consistently across the Site in February and August 2015 with the maximum concentration occurring at MW-4 in August 2015 (1.5 µg/L).

- Chromium was detected above the RG of 100 µg/L at MW-4 in February 2015 (960 µg/L). During the February 2015 sampling event, the static water level in MW-4 was approximately 1 ft above the bottom the well. After approximately 3 minutes of purging, the well ran dry. A sample was collected following 90% groundwater recharge in the well and was highly turbid. In August 2015, the well was purged for 45 minutes prior to sample collection and turbidity was recorded below 10 nephelometric turbidity units. Subsequently, chromium was not detected above laboratory report limits at MW-4 in August 2015. The presence of elevated chromium concentrations at this location in February 2015 is likely attributed to increased suspended solids in the sample. With respect to the remaining monitoring locations, chromium was detected at MW-1 (an estimated concentration of 18 µg/L) and MW-11 (an estimated concentration of 2.3 µg/L) in February 2015 and was not detected above laboratory reporting limits in August 2015.

- Cobalt was detected above the RG of 5 µg/L in seven of the ten monitoring wells sampled. Concentrations of cobalt were detected consistently across the Site with the maximum concentration of cobalt observed at MW-04 in February 2015 (an estimated concentration of 32 µg/L).

- Lead was not detected above the RG of 15 µg/L in any of the ten monitoring wells sampled during both the February and August 2015 sampling events. The maximum concentration of lead was observed at MW-04 in February 2015 (14 µg/L). The concentration of lead decreased at MW-04 in August 2015 to an estimated concentration of 0.28 µg/L.

- Selenium was not detected above the RG of 50 µg/L in any of the ten monitoring wells sampled during both the February and August 2015 sampling events. The maximum concentration of selenium was observed at MW-10 in February 2015 (2.5 µg/L). Selenium was not detected above laboratory reporting limits at MW-10 in August 2015.

- Thallium was not detected above the RG of 0.5 µg/L in any of the ten monitoring wells sampled during both the February and August 2015 sampling events. The maximum concentration of thallium was observed at MW-1 in February 2015 (an estimated concentration of 0.34 µg/L). Thallium was not detected above laboratory reporting limits at six of the ten monitoring wells sampled in February and August 2015.

- TCE was not detected above the RG of 5 µg/L in any of the ten monitoring wells sampled. TCE was detected above laboratory reporting limits at four of the ten monitoring wells sampled during both semi-annual events. Concentrations were relatively consistent when comparing February 2015 and August 2015 results. The maximum concentration of TCE was observed at MW-9 in August 2015 (3.8 µg/L).

- VC was detected above the RG of 2 µg/L at MW-9 in February 2015 (2.4 µg/L) and August 2015 (3.1 µg/L). VC was also detected above laboratory reporting limits at MW-6 in February 2015 (an estimated concentration of 0.26 µg/L) but decreased below the reporting limit in August 2015.

4.2 Groundwater Trend Analysis

In general, the analytical results presented above were consistent with the results observed during the previous round of sampling completed in August 2014. The concentration and location of total metals has remained consistent at the Site. The elevated concentration of chromium at MW-4 detected in February 2015 exceeded the maximum concentration of chromium observed at the Site (420 µg/L, MW-4, February 2011). As previously noted, the elevated detection is due to an excess of suspended solids in the sample.

Concentrations of TCE and VC have continued to decrease across the Site with TCE concentrations below its RG of 5 µg/L at each monitoring location and VC exceeding its RG of 2 µg/L at one monitoring location (MW-9). The historical maximum concentration of TCE occurred at MW-5 in November 2004 (21 µg/L). Concentrations of TCE at this location have decreased steadily over time, reaching its lowest concentration to date during the first semi-annual sampling event completed in 2015 (2.2 µg/L). Data trend plots depicting this decreasing trend are presented in **Appendix F**.

The historical maximum concentration of VC occurred at MW-9 in November 2004 (51 µg/L). Concentrations of VC at this location and across the Site have decreased over time. In August 2014, concentrations of VC decreased below the RG of 2 µg/L; subsequently, concentrations fluctuated, increasing to a concentration of 3.1 µg/L in August 2015. During development of the ROD, linear regression analyses were utilized to estimate an average timeframe of 2 years (following remedy implementation in August 2014) to achieve RGs for chlorinated solvents at the Site. As previously discussed, TCE and VC have decreased below their respective RGs at all monitoring locations except for VC at MW-9. Therefore, a linear regression was conducted at MW-9 to reassess the timeframe to achieve RGs at this location. Based on the results of the linear regression, it is estimated that VC will decrease below the 2 µg/L in approximately 3.5 years following remedy implementation (fourth quarter of 2017).

Data trend graphs depicting historical concentrations of TCE and VC at site monitoring wells are provided in **Appendix F**. Historical analytical data is documented in the Feasibility Study (FS) (Arcadis 2014a).

4.3 In-Situ Soil Gas Monitoring

Methane was not detected above the LEL of 5% at any of the monitoring points sampled during the March 2015 semi-annual monitoring event. During the March 2015 event, final methane concentrations, following purging activities were observed below the LEL at one location (VMP-33, 0.9%). The remaining sixteen locations did not exhibit any methane concentrations above the landfill gas monitor's detection limits (i.e., 0 %). In comparison, the frequency of methane detections in March 2015 (1 detection) was significantly less than the number of detections observed in March 2014 (6 detections).

Methane was not detected above the LEL of 5% at any of the monitoring points sampled during the August 2015 semi-annual monitoring event. During the August 2015 event, final methane concentrations, following purging activities were observed below the LEL at eight of the 17 monitoring locations sampled. The highest concentration of methane observed in August 2015 was 3.6% at VMP-26. The general distribution of methane concentrations observed in August 2015 is consistent with that of August 2014; however, August 2015 concentrations were considerably lower. The highest methane concentration observed in 2014 also occurred at VMP-26 at a concentration of 9.1%.

Following completion of the NTCRA in 2012, the well caps associated with VE-F, VE-C and MP-A were intermittently removed to prevent methane from accumulating at the well head between sampling events. When venting, residual methane is allowed to passively dissipate at low levels to ambient air. VE-F was capped during the March and June 2015 sampling events and no methane was detected during measurement of pre- and post- three volume purge readings. At VE-C the well cap was replaced following the March 2015 sampling event. No methane was observed at this location during the August 2015 sampling event. MP-A, located adjacent to the eastern boundary of the NTCRA, remains venting as methane has historically accumulated at this location likely due to a pocket of organic waste observed during the NTCRA.

In general, methane concentrations observed during the semi-annual monitoring events are similar, however, concentration fluctuations are attributed to seasonal factors such as amount of rainfall or timing of rain events prior to monitoring events. Historical methane trends observed at FGGM 93 are detailed in the 2014 Annual Soil Gas Monitoring Report (Arcadis 2014b). Final methane results collected following completion of purging activities are summarized in **Table 4** and on **Figure 13**. A summary of the three volume purge including total purge times, flow rates, and total purge volumes is provided in **Table 5** for March 2015 and **Table 6** for August 2015.

4.4 Indoor Air Analytical Results

Analytical results of the indoor air samples collected at the Manor View Elementary School on April 1, 2015 are presented in **Table 7** and graphically on **Figure 14**. As discussed, in addition to the indoor air sample collected from the crawl space within Manor View Elementary School and in accordance with the LTM program established in the RD (Arcadis 2015), two additional indoor air samples were collected from within the utility closet above the crawl space and in the cafeteria, as requested by the USEPA during development of the RACR (Arcadis 2014c). The additional sample locations were to confirm that TCE concentrations detected in the crawl space are not migrating towards occupied areas of the school. All indoor air samples were analyzed for TCE and its daughter products using analytical Method (TO-15).

2015 analytical results for the crawl space sample location (MV-13) and additional locations (MV-12 and MV-14) are presented on **Figure 14** and are discussed by analyte below:

- 1, 1-dicloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE, and VC were not detected above the laboratory reporting limits at any of the three sampling locations.

- TCE was detected above the RG of 1.0 micrograms per cubic meter (µg/m^3) in the sample collected inside the crawlspace (MV-13) at a concentration of 2.4 µg/m^3. TCE was also detected in the samples collected in the utility closet (MV-14) and outside of the utility closet in the school cafeteria (MV-12) at low estimated concentrations of 0.47 µg/m^3 and 0.26 µg/m^3, respectively. It should be noted that TCE detections in both samples collected outside the crawl space were low estimated concentrations below the RG of 1 µg/m^3.

- Tetrachloroethene (PCE) was also detected above laboratory reporting limits at an estimated concentration of 0.18 µg/m^3 at MV-13. PCE was not detected above laboratory reporting limits at MV-12 and MV-14.

With respect to the crawl space sample, TCE was observed at a concentration lower than the concentration reported during the previous round of sampling conducted in August 2014 (4.1 µg/m^3). TCE detections outside of the crawl space were below the RG. Historical indoor air analytical results for the crawlspace are presented in the Remedial Investigation (RI) Report (URS 2008) and indoor air analytical results for the 2014 sampling event are presented in the RACR (Arcadis 2014c).

4.5 Annual Inspection Findings

Completed inspection forms documenting completion of the annual site inspection are provided in **Appendix C**. A photo log documenting the annual inspection is presented in **Appendix G**. A summary of the inspection findings is presented below:

- **Existing Soil Cover**: The existing soil cover was inspected on July 9, 2015 following completion of the first mowing event and was observed in good condition. No signs of settling, subsidence, or erosion were noted and no waste material was exposed at the ground surface. The second mowing event was completed on October 22, 2015. The mowing events included mowing of the open area west of the forested area bisecting the western and eastern portions of the Site and vegetation clearing along the capped passive gas collection trench. Photographic documentation of the soil cover is presented in **Appendix G** (Photos 1 through 4).

- **Soil Vapor Extraction System**: The soil vapor extraction system was started July 9, 2015. The system was shut down immediately following the completion of the operational testing. It should be noted that although the system was started with little to no issue and mechanical components of the system were found in working order (i.e., the blower).

- **Monitoring Locations**: As part of the annual inspection all of the monitoring locations (i.e., monitoring wells and soil gas monitoring points) were evaluated with respect to integrity of construction and security. All monitoring locations were found to be visible, accessible, undamaged and secured. Several bolts were found to be missing from the soil gas monitoring points and were replaced during sampling activities in March 2015.

- **Fence**: In general, the fence was observed in good condition and was locked upon arrival to the Site. This fence does not allow access to the western portion of the Site and continues to delineate the land use associated with the Manor View Elementary School play yard and the western portion of the Site.

- **Methane Monitors**: One methane monitor (Kidde Nighthawk™ AC Plug-in Operated Carbon Monoxide and Explosive Gas Alarm with Digital Display, Model No. KN-COEG-3) is located in each of the housing units in the room nearest to the western portion of the Site (20 total installed by Corvias prior to housing being reoccupied). Arcadis inspected and tested 17 methane monitor on July 9, 2015 with representatives from the U.S Army Environmental Division and the Corvias Group. Access could not be obtained to the remaining three monitors at 4954, 4952, and 4950 Hayden Drive. Representatives from the Corvias Group tested these monitors on August 12, 2015. In general, the methane monitors were mounted to the wall in the living room of each housing unit. Methane monitors were observed in good condition. A replacement monitor (S-Tech Natural Gas [Methane] Detector, Model No. STCH-1000LC) was installed in the crawl space at the Manor View Elementary School on April 20, 2015. Installation was completed by an Arcadis technician. Following installation, the methane monitor was tested and was found to be operating as intended.

- **Land Use**: No changes in land use were observed at the Site including the crawl space of the Manor View Elementary School. Photos 5 and 6 of **Appendix G** depict the current conditions within the crawl space, confirming the use of the crawl space remains unchanged. It should be noted that several of the abandoned houses along Hayden Drive are now occupied.

- **LUC Signage**: Five LUC signs are present at the Site as depicted on **Figure 8.** On July 9, 2015, the signs were inspected to document that each sign remained in-place and in good condition. Photographs of each sign are provided in **Appendix G** (Photos 7 through 11). No issues or damages were noted during the inspection.

- **Construction Activities**: No construction activities were identified on or near the Site.

5. Conclusions and Recommendations

In accordance with the RD (Arcadis 2015) semi-annual groundwater monitoring will continue in order to verify that (1) the remaining wastes are not actively contributing to groundwater contamination and (2) the concentrations of COCs identified in groundwater continue to decline. Review of groundwater analytical results collected during 2015 and historical data trends confirm that COCs concentrations continue to decrease and the LUCs remain effective with respect to preventing human exposure to groundwater until contaminant levels in groundwater are reduced to levels that allow for unlimited and unrestricted exposure.

Semi-annual soil gas monitoring completed in 2015 confirmed no methane detections above the LEL. Continued soil gas monitoring and inspections of the methane monitors in the Manor View Elementary School and the adjacent housing units will continue in accordance with the RD (Arcadis, 2015) to ensure overall protection of human health and the welfare of the surrounding community from the safety hazard posed by methane gas.

TCE was detected in the crawlspace in the Manor View Elementary School in 2015 at concentrations exceeding the RG (1 $\mu g/m^3$). The JV suggests additional sampling of MV-14 (the location inside the utility closet) concurrently with MV-13 to confirm indoor air within the utility closet is not impacted by TCE and its daughter products at concentrations exceeding RGs. It should be noted that LUCs are effectively preventing full-time occupancy of the crawl space in the Manor View Elementary School. However, should follow up sampling confirm air inside the utility closet is impacted, additional remedial measures could be initiated at that time.

Further, continued annual LUC inspections will continue in accordance with the RD (Arcadis 2015) to ensure they remain effective. The LTM program will be evaluated during completion of CERLCA 5-year reviews and may be decreased pending USEPA and MDE approval.

6. Schedule

LTM will continue at FGGM 93 in accordance with the monitoring program established in the RD (Arcadis 2015). The next LTM event is tentatively scheduled in the end of the first quarter of 2016 and will include groundwater sampling and soil gas monitoring across the Site. Indoor air sampling inside the crawl space in the elementary school will also be completed during the first quarter 2016 LTM event when school is not in session (i.e., spring break).

7. References

Arcadis U.S., Inc. (Arcadis). 2011a. QAPP for the Performance Based Acquisition at Fort Meade. March 2011.

Arcadis. 2011b. Sample and Analysis Plan for the Performance Based Acquisition at Fort Meade. March 2011.

Arcadis. 2011c. Waste Management Plan for the Performance Based Acquisition at Fort Meade. October 2011.

Arcadis. 2012. Final Non-Time Critical Removal Action Work Plan for FGGM 93, Manor View Dump Site. February 2012.

Arcadis. 2013. Final Interim Removal Action Report, Manor View Dump Site. March 2013.

Arcadis. 2014a. Final Feasibility Study, Revision 1 for FGGM 93, Manor View Dump Site. March.

Arcadis. 2014b. Final 2014 Annual Soil Gas Monitoring Report, FGGM 93 Manor View Dump Site, Fort George G. Meade. Maryland. Final. December 2014.

Arcadis. 2014c. Final Remedial Action Completion Report, FGGM 93 Manor View Dump Site, Fort George G. Meade. Maryland. Final. December 2014.

Arcadis. 2015. Revised Final Remedial Design, FGGM 93 Manor View Dump Site, Fort George G. Meade. Maryland. Revised Final. August 2015.

EEC Environmental. 2015. Sub-Slab Depressurization at the Residential Housing Complex Adjacent to the Manor View Dump Site, Fort George G. Meade, Maryland. March 2015.

PIKA-MP JV. 2015a. Fort Meade and Phoenix Military Reservation Remedial Action Operations and Long-term Management Accident Prevention Plan, Fort George G. Meade, Maryland. January 2015.

United States Army (U.S. Army). 2014. Final Record of Decision, FGGM 93 Manor View Dump Site, Fort George G. Meade, Maryland. Final. September 2014.

URS. 2008. Remedial Investigation Report, Manor View Dump Site, Fort George G. Meade Maryland. Prepared by URS and the Army Corps of Engineers for Fort George G. Meade ANME-PWE, Environmental Division. November.

Tables

Table 1
Long-term Monitoring Program Summary
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Category	Analytical Parameters	Sampling Frequency	Monitoring Wells	Sampling Method
Groundwater	40 CFR 258, Appendix I Parameters (Volatile Organic Compounds, Total Metals, and Water Quality Parameters[2])	Semi-annually	MW-1	Low Flow Sampling
			MW-2	
			MW-3	
			MW-4	
			MW-5	
			MW-6	
			MW-7	
			MW-9	
			MW-10	
			MW-11	
Soil Gas	Landfill Gases (Methane, Carbon Dioxide, and Oxygen)	Semi-annually, concurrent with groundwater monitoring schedule.	VMP-1	In-Situ Monitoring
			VMP-4	
			VMP-11	
			VMP-26	
			VMP-27	
			VMP-29	
			VMP-30	
			VMP-31	
			VMP-32	
			VMP-33	
			VMP-36	
			MP-A	
			VE-F	
			VE-C	
			SG-82 (S,M,D)	
Indoor Air	Trichloroethene and its daughter products	Annually, concurrent with groundwater monitoring schedule.	MV-13, Manor View Elementary Crawl Space	SUMMA® Canister

Notes:

1. The groundwater monitoring program may be modified over time based on monitoring results, upon concurrence from the Maryland Department of the Environment and the United States Environmental Protection Agency.

2. Water quality parameters include pH, alkalinity, hardness, chloride, specific conductance, nitrate, chemical oxygen demand, turbidity, ammonia, sulfate, and total dissolved solids.

3. MW-8 was removed from the monitoring program following well abandonment on October 3, 2014. Abandonment was deemed necessary as the well had shifted outside of it's manhole following excavation and backfilling activities conducted during implementation of the Non-Time Critical Removal Action.

Table 2
Well Construction Details and Groundwater Elevations
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Well ID	Well Material	Well Diameter (inches)	Ground Surface Elevation	Top of Casing Elevation (ft msl)	Measured Total Depth (ft bmp)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	Screen Length (ft bgs)	2/18/2015		8/17/2015	
									Depth to Water (ft bmp)[1]	Groundwater Elevation (ft msl)	Depth to Water (ft bmp)[1]	Groundwater Elevation (ft msl)
MW-1	PVC	2	NA	212.71	49.36	40	50	10	47.43	165.28	44.58	168.13
MW-2	PVC	2	NA	208.58	53.29	44	54	10	44.23	164.35	41.34	167.24
MW-3	PVC	2	NA	210.68	49.62	40	50	10	48.03	162.65	45.19	165.49
MW-4	PVC	2	NA	209.41	49.35	40	50	10	48.40	161.01	45.43	163.98
MW-5	PVC	2	NA	202.94	51.88	42	52	10	45.14	157.80	42.00	160.94
MW-6	PVC	2	NA	199.50	47.56	38	48	10	40.85	158.65	37.86	161.64
MW-7	PVC	2	NA	216.16	53.64	45	55	10	51.11	165.05	48.57	167.59
MW-9	PVC	2	NA	206.57	49.87	40	50	10	43.13	163.44	40.53	166.04
MW-10	PVC	2	NA	187.78	35.17	25	35	10	26.71	161.07	24.17	163.61
MW-11	PVC	2	NA	188.15	39.13	30	40	10	28.79	159.36	25.86	162.29

Notes:
ft bgs - feet below ground surface
ft bmp - feet below measuring point
ft msl - feet above mean sea level

Table 3
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Constituents of Concern		Location ID:	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4	MW-5	MW-5
		Date:	2/24/2015	8/18/2015	2/24/2015	8/19/2015	2/24/2015	8/18/2015	2/24/2015	8/18/2015	2/23/2015	8/18/2015
	Remedial Goal[1]	Units										
Total Metals												
Aluminum	--	µg/L	**6900**	**140**	**69**	**110 J**	**72**	**350**	**13000**	**1,200**	**200 J**	**190**
Antimony	--	µg/L	< 5.0 UJ	< 1.0 U	< 1.0 UJ	< 1.0 U	< 1.0 UJ	< 1.0 U	< 10 UJ	< 1.0 U	< 0.14 U	< 1.0 U
Arsenic	10	µg/L	**5.6 J**	< 5.0 U	**0.27 J**	< 5.0 U	< 1.0 UJ	< 5.0 U	**4.9 J**	< 5.0 U	< 1.0 U	< 5.0 U
Barium	--	µg/L	**120**	**29**	**71**	**49**	**72**	**76**	**400**	**160**	**90**	**110**
Beryllium	--	µg/L	**0.38 J**	< 1.0 U	**0.10 J**	< 1.0 UJ	**0.15 J**	< 1.0 U	**1.5**	**0.71**	**0.24 J**	**0.30 J**
Cadmium	5	µg/L	**0.38 J**	**0.27**	**0.14**	**0.15**	**0.11**	**0.1**	**1**	**1.5**	**0.7**	**0.73**
Calcium	--	µg/L	**10000**	**11,000**	**6500**	**12,000**	**4400**	**5900**	**19000**	**18000**	**6700**	**11000**
Chromium	100	µg/L	**18 J**	< 1.3 U	< 5.0 U	< 1.3 UJ	< 5.0 U	< 1.6 U	**960**	< 25 U	< 5.0 U	< 1.3 U
Cobalt	5	µg/L	**21 J**	**11**	**6.5**	**6.2 J**	**5.6**	**5.1**	**32 J**	**22 J**	**18**	**19**
Copper	--	µg/L	**24**	**1.9**	< 1.3 U	< 0.98 UJ	< 1.0 U	**1.9**	**120**	**26**	**2.3**	**2.8**
Iron	--	µg/L	**8700**	**120**	**790**	**540**	**190**	**340**	**15000**	**110**	**260**	**85**
Lead	15	µg/L	**8.8**	**0.18 J**	**0.17 J**	**0.23 J**	**0.18 J**	**0.50 J**	**14**	**0.28 J**	**0.26 J**	**0.96 J**
Magnesium	--	µg/L	**3400 J**	**3,400**	**3200 J**	**3,300**	**1300 J**	**1,900**	**5400 J**	**5,400**	**4300**	**4900**
Manganese	--	µg/L	**100**	**85**	**61**	**25 J**	**45**	**45**	**130**	**100**	**46**	**50**
Mercury	--	µg/L	< 0.11 U	< 0.00010 U	< 0.041 U	< 0.00010 UJ	< 0.050 U	< 0.00010 U	< 0.24 U	< 0.00010 U	< 0.054 U	< 0.00010 U
Nickel	--	µg/L	**31**	**13**	**6.5**	**5.4 J**	**5.5**	**5.9**	**90**	**23 J**	**19**	**20**
Potassium	--	µg/L	**4700**	**3,500**	**2000**	**2,800**	**1500**	**2,000**	**3500**	**1,600**	**2200 J**	**2300**
Selenium	50	µg/L	**0.57 J**	< 5.0 U	**0.43 J**	**1.1 J**	< 1.0 UJ	< 5.0 U	**0.59 J**	< 5.0 U	**0.74 J**	**1**
Silver	--	µg/L	**0.10 J**	< 1.0 U	< 1.0 U	< 1.0 U	**0.016 J**	< 1.0 U	< 10 U	< 5.0 U	< 1.0 U	< 1.0 U
Sodium	--	µg/L	**2100**	**2,300**	**6600**	**3,200**	**6400**	**5,600**	**170000**	**140,000**	**20000**	**22000**
Thallium	0.5	µg/L	**0.34 J**	**0.21 J**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	**0.14 J**	< 0.50 U	< 0.50 U	< 0.50 U
Vanadium	--	µg/L	**23 J**	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	**1.1 J**	< 50 U	< 25 U	< 5.0 U	< 5.0 U
Zinc	--	mg/L	**120**	**13**	**24**	**15 J**	**16**	**15**	**200**	**71**	**34**	**35**
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,1,1-Trichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,1,2,2-Tetrachloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,1,2-Trichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,1-Dichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,1-Dichloroethene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,1-Dichloropropene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2,3-Trichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2,3-Trichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2,4-Trichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2,4-Trimethylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2-Dibromo-3-chloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2-Dibromoethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2-Dichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2-Dichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,2-Dichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,3,5-Trimethylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,3-Dichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,3-Dichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
1,4-Dichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
2,2-Dichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
2-Butanone (MEK)	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
2-Chlorotoluene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
4-Chlorotoluene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
4-Methyl-2-Pentanone	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Acetone	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 6.8 U	< 10 U	< 6.5 U	< 10 U	< 6.3 U	< 10 U
Benzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Bromobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Bromochloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U

Table 3
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Constituents of Concern		Location ID:	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW-4	MW-4	MW-5	MW-5
		Date:	2/24/2015	8/18/2015	2/24/2015	8/19/2015	2/24/2015	8/18/2015	2/24/2015	8/18/2015	2/23/2015	8/18/2015
	Remedial Goal[1]	Units										
Bromodichloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Bromoform	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Bromomethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Carbon Disulfide	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Carbon Tetrachloride	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
CFC-11	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
CFC-12	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Chlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Chlorodibromomethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Chloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Chloroform	--	µg/L	< 0.21 U	< 1.0 U	**11**	**2.3**	**0.93**	**3.2**	< 0.50 U	< 1.0 U	**1.8**	**1.9**
Chloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
cis-1,2-Dichloroethene	--	µg/L	< 0.50 U	< 1.0 U	**0.42 J**	**0.54 J**	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	**0.16 J**	**< 1.0 U**
cis-1,3-Dichloropropene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Cymene (p-Isopropyltoluene)	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Dibromomethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Dichloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Ethylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Hexachloro-1,3-butadiene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Isopropylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
m,p-Xylene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Methyl N-Butyl Ketone (2-Hexanone)	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Methyl-tert-butylether	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Naphthalene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
N-Butylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
N-Propylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
o-Xylene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
sec-Butylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Styrene (Monomer)	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
tert-Butylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Tetrachloroethene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Toluene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Total Xylenes	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
trans-1,2-Dichloroethene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
trans-1,3-Dichloropropene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Trichloroethene	5	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	**0.30 J**	**0.42 J**	**2.2**	**2.6**
Vinyl chloride	2	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U
Biogeochemical Parameters												
Alkalinity	--	mg/L	**7.6 J**	**13**	**4.6 J**	**20**	< 10 U	**4.3 J**	**9.6 J**	< 10 U	**4.4 J**	**9.9 J**
Ammonia - N (phenate)	--	mg/L	**0.051 J**	< 0.10 U	**0.065 J**	< 0.054 U	< 0.10 U	< 0.19 U	**0.078 J**	< 0.075 U	< 0.10 U	< 0.059 U
Chemical Oxygen Demand	--	mg/L	**73**	< 10 U	**9.1 J**	< 10 U	**110**	< 10 U	**150**	**37**	< 10 U	< 10 U
Chloride	--	mg/L	**1.4**	**1.4**	**14**	**4.9**	**11**	**11**	**310**	**260**	**38**	**46**
Hardness (total)	--	mg/L	**35**	**42**	**30**	**43**	**16**	**22**	**78**	**68**	**35**	**47**
Nitrate-N	--	mg/L	**2.2**	**2.3**	**2.5**	**3.6**	**3.6**	**2.7**	**1.9**	**2.1**	**2.9**	**2.7**
Sulfate	--	mg/L	**32**	**30**	**16**	**17**	**5.9**	**9.4**	**40**	**33**	**21**	**15**
Total Dissolved Solids	--	mg/L	< 52 U	**72**	< 77 U	**82**	< 47 U	**60**	**560**	**520**	**140**	**140**
Field Parameters												
pH	--	S.U.	5.12	5.27	4.99	5.39	4.90	5.02	4.83	4.5	5.00	5.20
Specific Conductance	--	mS/cm	0.108	0.126	0.119	0.127	0.108	0.095	1.158	0.931	0.203	0.242
Turbidity	--	ntu	44.9	9.76	33.5	13.1	9.79	46	257	8.29	30.9	10.11
Dissolved Oxygen	--	mg/L	3.37	3.36	3.91	2.47	6.66	2.77	9.54	6.92	5.47	5.43
Temperature	--	°C	8.79	15.31	13.29	16.46	10.84	16.3	9.87	19.29	13	17.98
Oxidation Reduction Potential	--	mV	162.3	-35.6	190.1	-50.3	242.0	122.2	254.0	174.9	184.1	-23.7

Table 3
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Constituents of Concern		Location ID:	MW-6	MW-6	MW-7	MW-7	MW-9	MW-9	MW-10	MW-10	MW-11	MW-11[4]
		Date:	2/23/2015	8/18/2015	2/23/2015	8/17/2015	2/23/2015	8/18/2015	2/18/2015	8/19/2015	2/18/2015	8/19/2015
	Remedial Goal[1]	Units										
Total Metals												
Aluminum	--	µg/L	**140 J**	**140**	**63 J**	**89 J**	**790 J (610 J)**	**1,200**	**630**	**420 J**	**490**	**240 J (1,400 J)**
Antimony	--	µg/L	< 0.15 U	< 1.0 U	< 0.11 U	< 1.0 U	< 0.32 U (< 0.24 U)	< 1.0 U	< 0.52 U	< 1.0 U	< 0.64 U	< 1.0 U (0.32 J)
Arsenic	10	µg/L	< 0.32 U	< 5.0 U	< 0.28 U	< 5.0 U	< 0.69 U (< 0.63 U)	< 5.0 U	< 0.77 U	< 5.0 U	< 1.0 U	< 5.0 U (< 5.0 U)
Barium	--	µg/L	**69**	**68**	**65**	**100**	**100 (100)**	**87**	**86**	**53**	**26**	**51 (65)**
Beryllium	--	µg/L	< 0.40 U	< 1.0 U	**0.047 J**	**0.14 J**	**0.099 J (0.042 J)**	< 1.0 U	**0.11 J**	< 1.0 UJ	< 0.40 U	< 1.0 UJ (0.19 J)
Cadmium	5	µg/L	< 0.10 U	< 0.50 U	**0.27**	**0.37**	**0.24 (0.29)**	< 0.50 U	**0.55**	**0.34**	**0.067 J**	**0.12 (0.21)**
Calcium	--	µg/L	**43000**	**45000**	**5500**	**10000**	**21000 (18000)**	**25,000**	**15000**	**16000**	**19000**	**38000 (39000)**
Chromium	100	µg/L	< 5.0 U	< 1.7 U	< 5.0 U	< 1.5 U	< 5.0 U (< 5.0 U)	< 1.5 U	< 5.0 U	< 1.6 UJ	**2.3 J**	< 4.4 UJ (150 J)
Cobalt	5	µg/L	2.2 J	**2.4 J**	**15**	**12**	4.4 J (4.8 J)	**4.2 J**	**12**	**5.2 J**	**0.34 J**	< 5.0 UJ (3.4 J)
Copper	--	µg/L	< 1.0 U	< 0.99 U	< 0.66 U	< 1.2 U	**3.1 (2.7)**	**4.7**	< 2.1 U	< 1.6 UJ	< 1.8 U	< 0.95 UJ (8.3 J)
Iron	--	µg/L	**1500**	**240**	**190**	**64**	**1200 (890)**	**410**	**620**	**440**	**1100**	**350 (4900)**
Lead	15	µg/L	**0.15 J**	< 1.0 U	**0.058 J**	< 1.0 U	**0.40 J (0.41 J)**	**0.30 J**	**0.32 J**	**0.32 J**	**0.74 J**	**0.31 J (7.2 J)**
Magnesium	--	µg/L	**7100**	**7,500**	**2600**	**3,900**	**5600 (5400)**	**5,200**	**11000**	**6,200**	**1900**	**2800 (2900)**
Manganese	--	µg/L	**43**	**40**	**160**	**160**	**380 (380)**	**370**	**120**	**76 J**	**4.9 J**	**1.8 J (38 J)**
Mercury	--	µg/L	< 0.041 U	< 0.00010 U	< 0.18 U	< 0.00010 U	< 0.035 U (< 0.043 U)	< 0.00010 U	< 0.075 U	**0.000039 J**	< 0.032 U	< 0.00010 UJ (0.000044 J)
Nickel	--	µg/L	**4.5 J**	**2.1 J**	**6.5**	**8.3**	**6.6 (6.8)**	**4.8 J**	**15**	**7.2 J**	**5.2**	**3.7 J (12 J)**
Potassium	--	µg/L	**5100 J**	**4,000**	**3200 J**	**3000**	**3800 J (3600 J)**	**3,100**	**3900**	**2,900**	**2000**	**2400 (2200)**
Selenium	50	µg/L	**0.47 J**	< 5.0 U	**0.80 J**	< 5.0 U	**0.94 J (1)**	< 5.0 U	**2.5**	< 5.0 U	**0.62 J**	**2.1 J (1.9 J)**
Silver	--	µg/L	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U (< 1.0 U)	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U (< 1.0 U)
Sodium	--	µg/L	**21000**	**16,000**	**9800**	**24000**	**28000 (29000)**	**27,000**	**7000**	**5,900**	**65000**	**97000 (98000)**
Thallium	0.5	µg/L	< 0.50 U	**0.089 J**	< 0.50 U	< 0.50 U	< 0.50 U (< 0.50 U)	**0.11 J**	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U (< 0.50 U)
Vanadium	--	µg/L	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U (< 5.0 U)	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U	< 5.0 U (2.0 J)
Zinc	--	mg/L	**5.1 J**	**3.1 J**	**10**	**11**	**13 (13)**	**8.4 J**	**23**	**13 J**	**14**	**27 J (49 J)**
Volatile Organic Compounds												
1,1,1,2-Tetrachloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,1,1-Trichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,1,2,2-Tetrachloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,1,2-Trichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,1-Dichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,1-Dichloroethene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,1-Dichloropropene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2,3-Trichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2,3-Trichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2,4-Trichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2,4-Trimethylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2-Dibromo-3-chloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2-Dibromoethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2-Dichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2-Dichloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,2-Dichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,3,5-Trimethylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,3-Dichlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,3-Dichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
1,4-Dichlorobenzene	--	µg/L	< 0.50 U	**0.21 J**	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	**0.25 J**	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
2,2-Dichloropropane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
2-Butanone (MEK)	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)
2-Chlorotoluene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
4-Chlorotoluene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
4-Methyl-2-Pentanone	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)
Acetone	--	µg/L	< 6.1 U	< 10 U	< 6.3 U	< 10 U	< 6.3 U (< 10 U)	< 10 U	< 10 U	< 10 U	< 10 U	**1.7 J** (< 10 UJ)
Benzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Bromobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Bromochloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)

Table 3
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Constituents of Concern		Location ID:	MW-6	MW-6	MW-7	MW-7	MW-9	MW-9	MW-10	MW-10	MW-11	MW-11[4]
		Date:	2/23/2015	8/18/2015	2/23/2015	8/17/2015	2/23/2015	8/18/2015	2/18/2015	8/19/2015	2/18/2015	8/19/2015
	Remedial Goal[1]	Units										
Bromodichloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Bromoform	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Bromomethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Carbon Disulfide	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 UJ (< 1.0 UJ)
Carbon Tetrachloride	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
CFC-11	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
CFC-12	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Chlorobenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Chlorodibromomethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Chloroethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Chloroform	--	µg/L	**0.13 J**	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Chloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
cis-1,2-Dichloroethene	--	µg/L	**0.44 J**	**0.60 J**	< 0.50 U	< 1.0 U	**0.76 (0.5)**	**1.2**	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
cis-1,3-Dichloropropene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Cymene (p-Isopropyltoluene)	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Dibromomethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Dichloromethane	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Ethylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Hexachloro-1,3-butadiene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Isopropylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
m,p-Xylene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Methyl N-Butyl Ketone (2-Hexanone)	--	µg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)
Methyl-tert-butylether	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Naphthalene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
N-Butylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
N-Propylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
o-Xylene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
sec-Butylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Styrene (Monomer)	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
tert-Butylbenzene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Tetrachloroethene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Toluene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Total Xylenes	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
trans-1,2-Dichloroethene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
trans-1,3-Dichloropropene	--	µg/L	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U (< 0.50 U)	< 1.0 U	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Trichloroethene	5	µg/L	**1.8**	**2**	< 0.50 U	< 1.0 U	**1.7 (1.8)**	**3.8**	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Vinyl chloride	2	µg/L	**0.26 J**	< 1.0 U	< 0.50 U	< 1.0 U	**2.4 (2)**	**3.1**	< 0.50 U	< 1.0 U	< 0.50 U	< 1.0 U (< 1.0 U)
Biogeochemical Parameters												
Alkalinity	--	mg/L	**38**	**42**	**3.9 J**	< 10 U	**4.3 J (4.2 J)**	< 10 U	< 10 U	**9.3 J**	**61**	**54 (54)**
Ammonia - N (phenate)	--	mg/L	< 0.49 U	**0.44**	< 0.10 U	**0.22**	< 0.34 U (< 0.26 U)	< 0.33 U	**0.079 J**	< 0.14 U	< 0.10 U	< 0.12 U (< 0.10 U)
Chemical Oxygen Demand	--	mg/L	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U (< 10 U)	< 10 U	< 10 U	**10**	< 10 U	**7.8 J (7.5 J)**
Chloride	--	mg/L	**29**	**28**	**13**	**54**	**57 (55)**	**57**	**20**	**12**	**62**	**160 (170)**
Hardness (total)	--	mg/L	**140**	**140**	**26**	**44**	**77 (70)**	**85**	**86**	**68**	**58**	**110 (110)**
Nitrate-N	--	mg/L	**7.6**	**6.5**	**3.8**	**2.1**	**2.3 (2.2)**	**2.5**	**5.9**	**3.5**	**2**	**2 (2)**
Sulfate	--	mg/L	**130**	**80**	**14**	**14**	**73 (93)**	**76**	**100**	**47**	**40**	**46 (47)**
Total Dissolved Solids	--	mg/L	**230**	**260**	**74**	**140**	**210 (200)**	**220**	**130**	**150**	**200**	**420 (410)**
Field Parameters												
pH	--	S.U.	5.50	5.58	4.91	4.86	4.91	4.64	4.59	5.18	6.53	6.27
Specific Conductance	--	mS/cm	0.429	0.417	0.125	0.238	0.350	0.38	0.272	0.202	0.426	0.789
Turbidity	--	ntu	17.5	17	7.49	4.84	43.3	10	33.7	39.2	47.3	47.1
Dissolved Oxygen	--	mg/L	1.31	0.39	8.14	4.32	1.45	0.92	7.90	6.78	5.7	6.7
Temperature	--	◦C	10.14	17.31	11.7	17.63	11.83	15.9	11.71	13.76	12.51	16.73
Oxidation Reduction Potential	--	mV	222.6	-89.7	246.3	95.4	222.4	191.0	289.2	14.5	125.1	88.7

Table 3
Groundwater Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Notes:
1. Remedial Goals presented were established in the Record of Decision (U.S. Army, 2014).
2. Values exceeding the remedial goal are boldfaced and shaded. Detected values are bolded.
3. Duplicate results are presented adjacent to parent results in parenthesis.
4. Variances in the concentrations of metals in the parent and duplicate samples for MW-11 are due to inconsistencies in sample turbidity due to a sporadic surge of sediment encountered following well stabilization and during the process of filling sample bottles.

◦C - degrees Celcius
µg/L - micrograms per liter
mS/cm - millisiemens per centimeter
mg/L - milligrams per liter
ntu - nephelometric units
S.U. - Standard Unit
J - Indicates an estimated result. Result is less than laboratory reporting limits.
U - Indicates that the analyte was analyzed but not detected above the detection limit.

Table 4
Summary of Soil Gas Methane Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Sample Location	Final Methane (%)[1]		Final Methane (%)	
	3/14/2014	8/8/2014	3/31/2015	8/26/2015
VMP-1[2]	0	0	0	1.2
VMP-4	0	0	0	0
VMP-11	0	0.3	0	0
VMP-26	1.2	**9.1**	0	3.6
VMP-27	0	3.9	0	2.6
VMP-29	0.6	0.7	0	0.4
VMP-30	0	0	0	0
VMP-31	0	0	0	0
VMP-32	0	1.3	0	0
VMP-33	1.2	1.4	0.9	0.2
VMP-36	0.4	4.1	0	0
MP-A	0.7	0	0	2.1
VE-C	0	0	0	0
VE-F	0	0.8	0	1.1
SG-82S	0	1.7	0	0
SG-82M	0.2	2.7	0	0
SG-82D	0	0.1	0	0.8

Notes:
1. Soil gas results measured in 2014 are provided for comparison purposes.
2. Following completion of the three volume purge (10 L/m for 1 minute) during the August 26, 2015 monitoring event, elevated concentrations of methane were observed with a maximum concentration of 19.5%. Additional purging was conducted for 2 minutes at 30 L/m. Water was encountered during purging activities. Following the additional purging activities, methane concentrations decreased, stabilizing at 1.2 %. Elevated methane concentrations observed at this location are likely attributed to the presence of water at the monitoring location hampering the collection of a sample representative of soil vapor at the well screen.

3. Concentrations presented above were measured following the removal of a minimum of three volumes from the sample point.

4. Concentrations exceeding the lower explosive limit for methane (5%) are presented in boldfaced font and are shaded grey.

% - percent
VMP - vapor monitoring point
MP - monitoring point
VE - vapor extraction
SG - soil gas

Table 5
Three Volume Purge Summary - March 2015
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Sample Point	Start Time(1)	Stop Time(1)	Vacuum (inches of water)	Flow (L/m)	Purge Duration (minutes)	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Total Purge Time (minutes)	Approximate Volume Purged (ft^3)
VMP-1										
INITIAL	1214	--	0	0.4	0.5	2.3	9.8	0.7	2.5	2.107
FINAL	1215	1217		30	2	0.0	0.1	19.5		
VMP-4										
INITIAL	1223	---	0	0.4	0.5	0.0	0.2	20.1	2.5	2.107
FINAL	1224	1226		30	2	0.0	0	20.3		
VMP-11										
INITIAL	1115	---	0	0.4	0.5	0.0	1.3	19.6	1.5	0.357
FINAL	1120	1121		10	1	0.0	0.1	20.3		
VMP-26										
FINAL	1159	---	0	0.4	0.5	0.0	0.2	19.9	0.5	0.007
VMP-27										
FINAL	1156	---	0	0.4	0.5	0.0	0.1	20.4	0.5	0.007
VMP-29										
FINAL	1207	---	0.1	0.4	0.5	0.0	0.1	20.5	0.5	0.007
VMP-30										
INITIAL	1141	---	0	0.4	0.5	0.0	0.2	19.9	1.5	1.057
FINAL	1142	1143		30	1	0.0	0.1	20.4		
VMP-31										
INITIAL	1135	---	0	0.4	0.5	0.0	4.8	16.2	1.5	1.057
FINAL	1136	1137		30	1	0.0	0.1	20.4		
VMP-32										
FINAL	1139	---	0	0.4	0.5	0.0	4	16.1	0.5	0.007
VMP-33										
FINAL	1201	---	0	0.4	0.5	0.9	7.1	11.5	0.5	0.007
VMP-36										
FINAL	1205	---	0	0.4	0.5	0.0	12.8	4.6	0.5	0.007
MP-A (Venting 0.5" DIA. Hole)										
INITIAL	1107	---	0	0.4	0.5	1.4	14.1	3.2	1.5	1.057
FINAL	1108	1110		30	1	0.0	0.1	20.3		
VE-C (Venting prior to sampling, Capped after sampling)										
INITIAL	1229	---	0	0.4	0.5	0.0	6.5	12	4.5	4.207
FINAL	1230	1235		30	4	0.0	0	20.3		
VE-F (Venting prior to sampling, Capped after sampling)										
INITIAL	1113	---	0	0.4	0.5	0.0	1	19.1	5.5	5.257
FINAL	1114	1119		30	5	0.0	0.1	20.3		
SG-82S										
INITIAL	1146	---	0	0.4	0.5	2.4	11.8	4.9	1	0.182
FINAL	1151	1152		10	0.5	0.0	0.3	18.3		
SG-82M										
INITIAL	1147	---	0	0.4	0.5	0.0	8.3	1.7	1	0.182
FINAL	1150	1151		10	0.5	0.0	0.1	20.1		
SG-82D										
INITIAL	1147		0	0.4	0.5	1.4	14.9	1.7	1	0.182
FINAL	1150	1150		10	0.5	0.0	0.1	20.4		

Notes:
1. Initial methane concentrations are not recorded for monitoring locations constructed of 0.25-inch diameter polyethylene tubing because methane concentrations fluctuate too quickly during purging with Landtec GEM™ 2000 due to the small volume associated with the construction of the monitoring point .
2. The lower explosive limit for methane is 5%.
% - percent
ft^3 - cubic feet
L/m - liters per minute

Table 6
Three Volume Purge Summary - August 2015
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Sample Date: 8/26/2015 Barometric Pressure: 29.71 inches
Weather: 80°F/Sunny

Sample Point	Start Time[2]	Stop Time[2]	Vacuum (inches of water)	Flow (L/m)	Purge Duration (minutes)	Methane (%)	Carbon Dioxide (%)	Oxygen (%)	Total Purge Time (minutes)	Approximate Volume Purged (ft^3)
VMP-1[1]										
INITIAL	1048	1049	0	0.4	0.5	0.0	5.3	13.4	6.5	2.499
First x 3 Volume	1049	1050		10	1	19.5	20.1	5.2		
Additional Purging	1052	1054		30	2	14.6	17.7	7.8		
FINAL	1055	1058		0.4	3	1.2	8	12.8		
VMP-4										
INITIAL	1101	1102	0	0.4	0.5	0.0	4.6	16.7	1.5	0.357
FINAL	1102	1103		10	1	0.0	7.4	15.1		
VMP-11										
INITIAL	0938	0939	0	0.4	0.5	0.0	1.8	19	1.5	0.532
FINAL	0939	0941		15	1	0.0	1.7	19.2		
VMP-26										
FINAL	1037	1037	0	0.4	0.5	3.6	3.4	16.2	0.5	0.007
VMP-27										
FINAL	1034	1034	0	0.4	0.5	2.6	13.3	10.7	0.5	0.007
VMP-29										
FINAL	1043	1046	0	0.4	0.5	0.4	0.2	19.5	0.5	0.007
VMP-30										
INITIAL	1015	1016	0	0.4	0.5	0.0	3.2	17.2	1.5	1.057
FINAL	1016	1017		30	1	0.0	0	20.1		
VMP-31										
INITIAL	1011	1011	0	0.4	0.5	0.0	7.5	13.5	1.5	1.057
FINAL	1012	1013		30	1	0.0	0.3	19.7		
VMP-32										
FINAL	1008	1009	0	0.4	0.5	0.0	0.1	20.3	0.5	0.007
VMP-33										
FINAL	1038	1039	0	0.4	0.5	0.2	7.8	13.3	0.5	0.007
VMP-36										
FINAL	1040	1041	0	0.4	0.5	0.0	11.3	7.2	0.5	0.007
MP-A (Venting 0.5" DIA. Hole)										
INITIAL	0953	0954	0	0.4	0.5	0.0	2.4	18.5	1.5	1.057
FINAL	0955	0956		30	1	2.1	10.5	10.7		
VE-C (Capped)										
INITIAL	1105	1105	0	0.4	0.5	0.0	8.2	12.3	4.5	4.207
FINAL	1105	1109		30	4	0.0	0	20.1		
VE-F (Capped)										
INITIAL	0942	0943	0	0.4	0.5	0.0	0.5	20.4	4.5	4.207
FINAL	0943	0947		30	4	1.1	6.6	14.3		
SG-82S										
INITIAL	1022	1022	–	0.4	0.5	2.8	13.2	5.4	1	0.182
FINAL	1027	1028		10	0.5	0.0	1.4	19		
SG-82M										
INITIAL	1023	1024	–	0.4	0.5	0.0	17	5.1	1	0.182
FINAL	1026	1027		10	0.5	0.0	17.6	5.3		
SG-82D										
INITIAL	1024	1024	0	0.4	0.5	0.8	20.1	5	1	0.182
FINAL	1025	1026		10	0.5	0.8	19.1	4.7		

Notes:
1. Following completion of the three volume purge (10 L/m for 1 minute), elevated concentrations of methane were observed with a maximum concentration of 19.5%. Additional purging was conducted for 2 minutes at 30 L/m. Water was encountered during purging activities. Following the additional purging activities, methane concentrations decreased, stabilizing at 1.2 %. Elevated methane concentrations observed at this location are likely attributed to the presence of water at the monitoring location hampering the collection of a sample representative of soil vapor at the well screen.

2. Initial methane concentrations are not recorded for monitoring locations constructed of 0.25-inch diameter polyethylene tubing because methane concentrations fluctuate too quickly during purging with Landtec GEM™ 2000 due to the small volume associated with the construction of the monitoring point .
3. The lower explosive limit for methane is 5%.
% - percent
ft^3 - cubic feet
L/m - liters per minute

Table 7
Indoor Air Monitoring Results
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

2015 Analytical Results

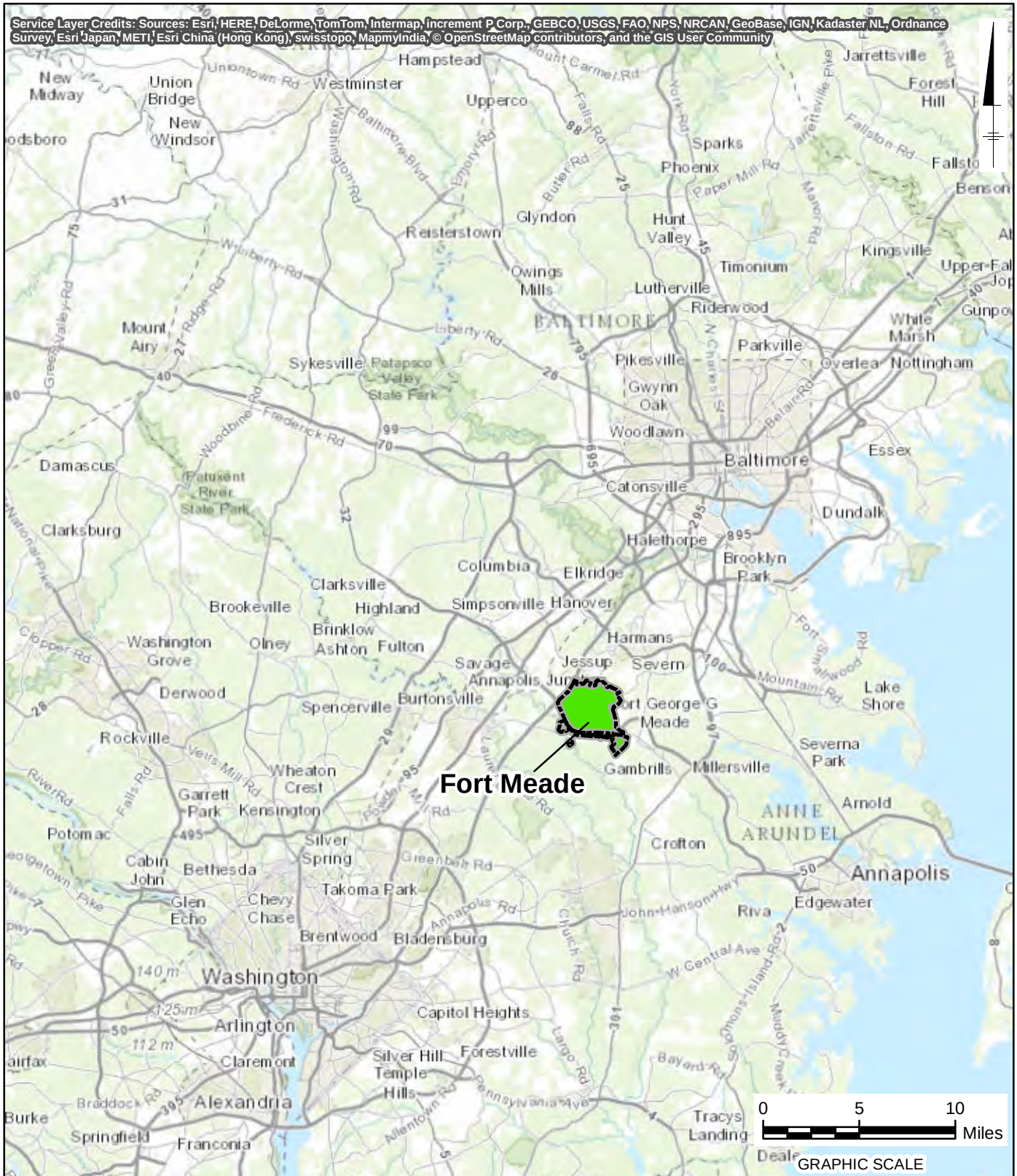
Site Specific Volatile Organic Compound Analyte List		Location ID:	MV-12	MV-13	MV-14
		Sample ID:	FGGM93-MV-12(040115)	FGGM93-MV-13 (040115)	FGGM93-MV-14(040115)
		Date:	4/1/2015	4/1/2015	4/1/2015
	Remedial Goal[1]	Units			
1,1-Dichloroethene	--	µg/m³	< 0.54 U	< 0.55 U	< 0.69 U
cis-1,2-Dichloroethene	--	µg/m³	< 0.54 U	< 0.55 U	< 0.69 U
trans-1,2-Dichloroethene	---	µg/m³	< 0.51 U	< 0.53 U	< 0.66 U
Tetrachloroethene	---	µg/m³	< 0.49 U	**0.18 J**	< 0.62 U
Trichloroethene	1	µg/m³	**0.26 J**	**2.4**	**0.47 J**
Vinyl Chloride	---	µg/m³	<0.49 U	< 0.50 U	< 0.62 U

MV-13 (Crawlspace) Historical Results

Site Specific Volatile Organic Compound Analyte List		Location ID:	MV-13	MV-13
		Sample ID:	---	FGGM93-MV13(082114)
		Date:	2/9/2005	8/21/2014
	Remedial Goal[1]	Units		
1,1-Dichloroethene	--	µg/m³	< 0.15 U	< 0.72 U
cis-1,2-Dichloroethene	--	µg/m³	< 0.15 U	< 0.72 U
trans-1,2-Dichloroethene	---	µg/m³	< 0.74 U	< 0.72 U
Tetrachloroethene	---	µg/m³	**0.24**	**0.61 J**
Trichloroethene	1	µg/m³	**3.5**	**4.1**
Vinyl Chloride	---	µg/m³	< 0.15 U	< 0.72 U

Notes:
1. Remedial Goals presented were established in the Record of Decision (U.S. Army, 2014).
2. Values exceeding the remedial goal are boldfaced and shaded. Detected values are bolded.
µg/m³ - micrograms per cubic meter
J - Indicates an estimated result. Result is less than laboratory reporting limits.
U - Indicates that the analyte was analyzed but not detected above the detection limit.

Figures



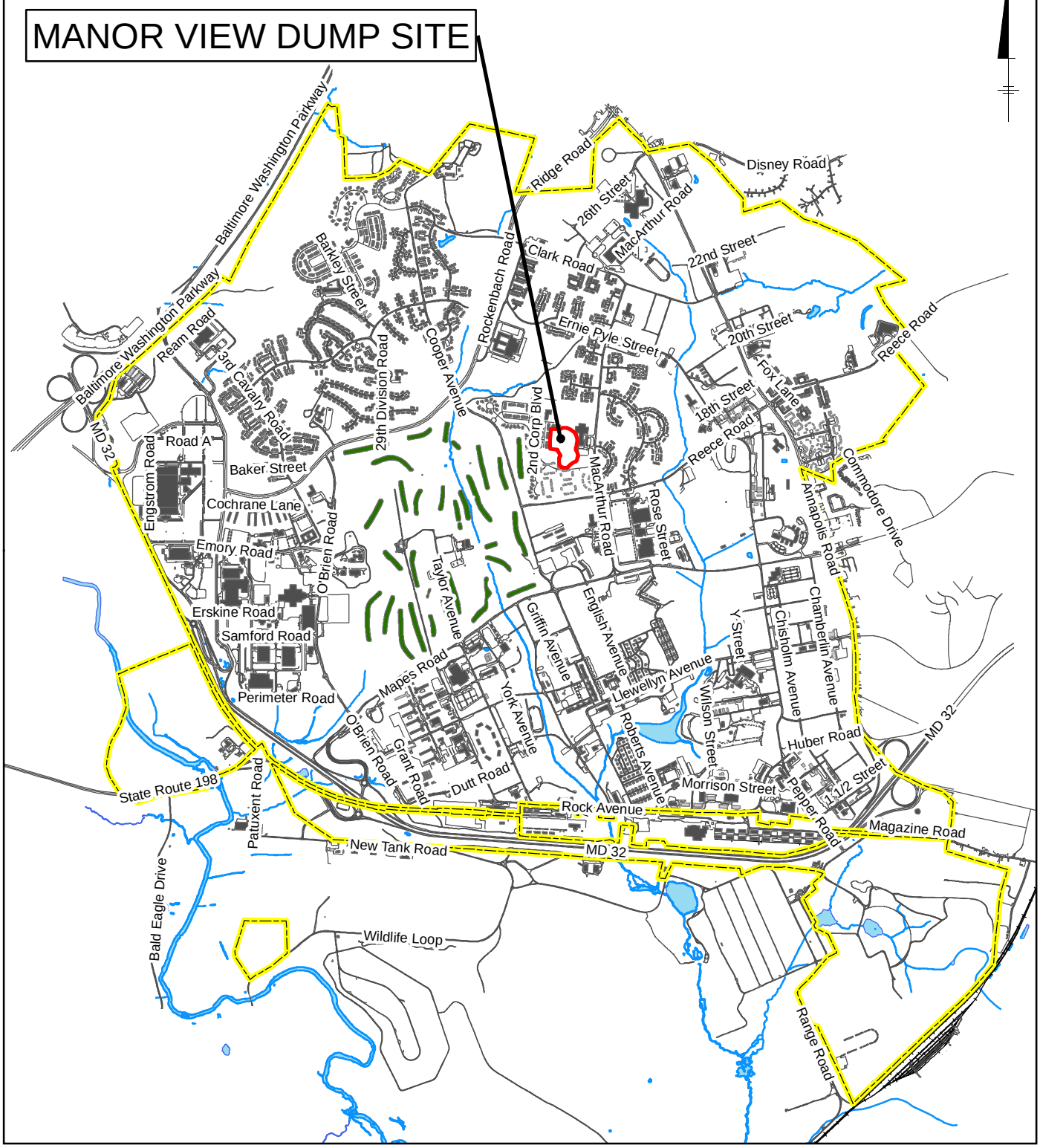
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

SITE LOCATION MAP

PIKA INTERNATIONAL, INC. A JOINT VENTURE
MALCOLM PIRNIE

FIGURE
1

CITY: MPLS DIV/GROUP: IM DB: MG
FORT GEORGE G. MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\01_Site_Location_2015.mxd



LEGEND:

MANOR VIEW SITE BOUNDARY

INSTALLATION BOUNDARY

0 1,500 3,000 Feet

GRAPHIC SCALE

FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

MANOR VIEW DUMP SITE SITE LOCATION MAP

PIKA INTERNATIONAL, INC. A JOINT VENTURE
MALCOLM PIRNIE

FIGURE 2

CITY: MPLS DIV/GROUP: IM DB: MG LD: A. DUGGINS
FORT MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\02_Manor_View_Loc_2015.mxd

LEGEND:

SITE BOUNDARY

0 200 400 Feet

GRAPHIC SCALE

FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

MANOR VIEW DUMP SITE SITE MAP

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 3

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\03_SiteMap_2015.mxd

0 200 400 Feet

GRAPHIC SCALE

LEGEND:

- DEBRIS/FILL FOOTPRINT
- EXTENT OF SOIL/WOODY DEBRIS EXCAVATION
- METHANE GENERATING WASTE FOOTPRINT REMOVED DURING THE 2012 NON-TIME CRITICAL REMOVAL ACTION (LOCATION IS APPROXIMATE)

FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

EXCAVATION EXTENT AND DEBRIS/FILL FOOTPRINT

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 4

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\04_Waste_Footprint_2015.mxd

LEGEND

MONITORING WELL

GROUNDWATER FLOW DIRECTION

0 200 400 Feet

GRAPHIC SCALE

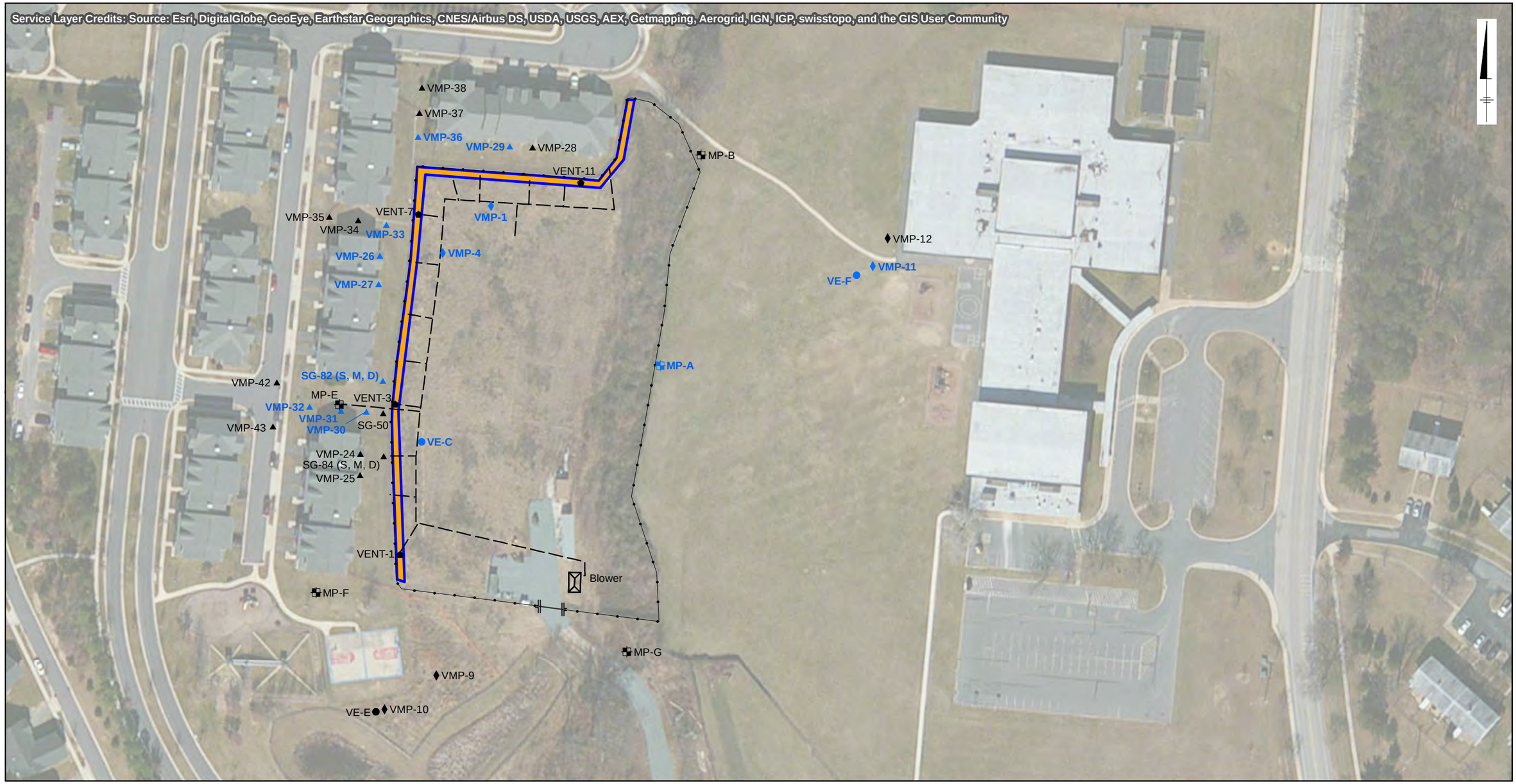
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

MONITORING WELL LOCATIONS

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 5

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\05_MW_Locs_2015.mxd



LEGEND:

- Monitoring Point
- Trench Well
- Deep Vapor Monitoring Point
- Shallow Vapor Monitoring Point
- Former Vapor Extraction Well
- Perimeter Fence
- Gate
- Subsurface Piping Network Associated with the Dormant Soil Vapor Extraction System (2012 - Present)
- Capped Passive Gas Collection Trench

0 100 200 Feet

GRAPHIC SCALE

Notes:
1. The soil vapor extraction system was shutdown on August 17, 2012. The system has remains off but in an operational status.
2. Monitoring locations included in the long-term monitoring program are displayed as a blue symbol with blue labels.

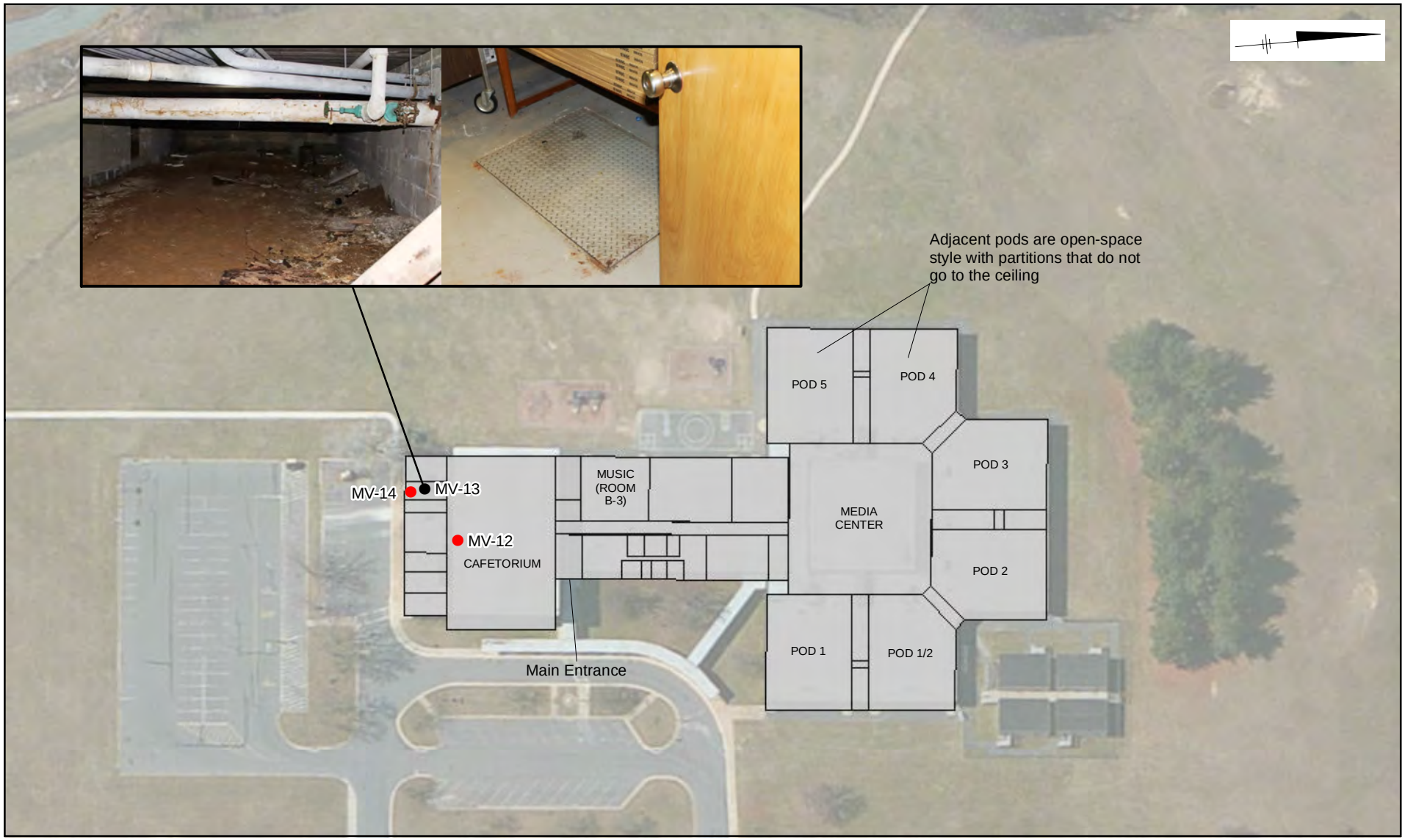
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

SOIL GAS MONITORING LOCATIONS

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 6

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\06_SiteMap_SoilGas_2015.mxd



LEGEND:

- Indoor Air Sample
- Additional Indoor Air Monitoring Locations, sampled per regulatory comments on the Remedial Action Completion Report

NOTE:

Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

0 100 200 Feet

GRAPHIC SCALE

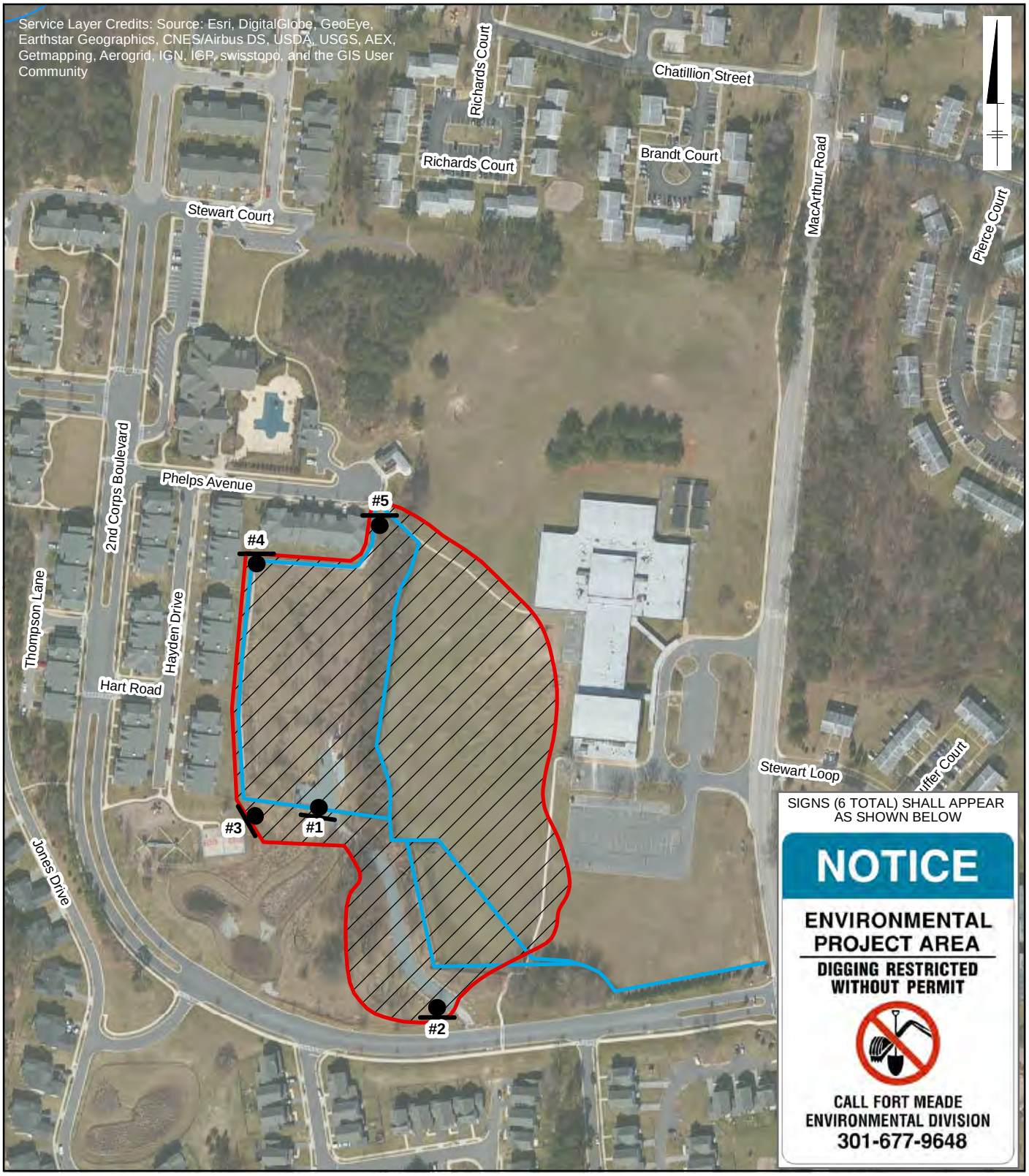
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

INDOOR AIR SAMPLE LOCATIONS

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 7

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\07_SiteMap_URS_IndoorAirSample_2015.mxd



LEGEND:

- SIGN LOCATIONS
- CURRENT ENGINEERING CONTROL / FENCE
- SITE BOUNDARY
- EXTENT OF LAND USE CONTROLS

0 200 400 Feet

GRAPHIC SCALE

FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

EXTENT OF LAND USE CONTROLS

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 8

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\08_LandUse_2015.mxd

LEGEND

Monitoring Well

(166.50) Groundwater Elevation (Feet Above Mean Sea Level)

Groundwater Elevation Contour Line (Dashed Where Inferred)

Flow Direction

0 175 350 Feet
GRAPHIC SCALE

Notes:
1. Depth to groundwater measurements were collected at each monitoring well on February 18, 2015.
2. Depth to groundwater was measured relative to the top of casing of each well.

FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

GROUNDWATER CONTOURS FEBRUARY 2015

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 9

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\09_GW_Contours_Feb2015.mxd

LEGEND

- Monitoring Well
- (166.04) Groundwater Elevation (Feet Above Mean Sea Level)
- Groundwater Elevation Contour Line (Dashed Where Inferred)
- Flow Direction

0 175 350 Feet
GRAPHIC SCALE

Notes:
1. Depth to groundwater measurements were collected at each monitoring well on August 17, 2015.
2. Depth to groundwater was measured relative to the top of casing of each well.

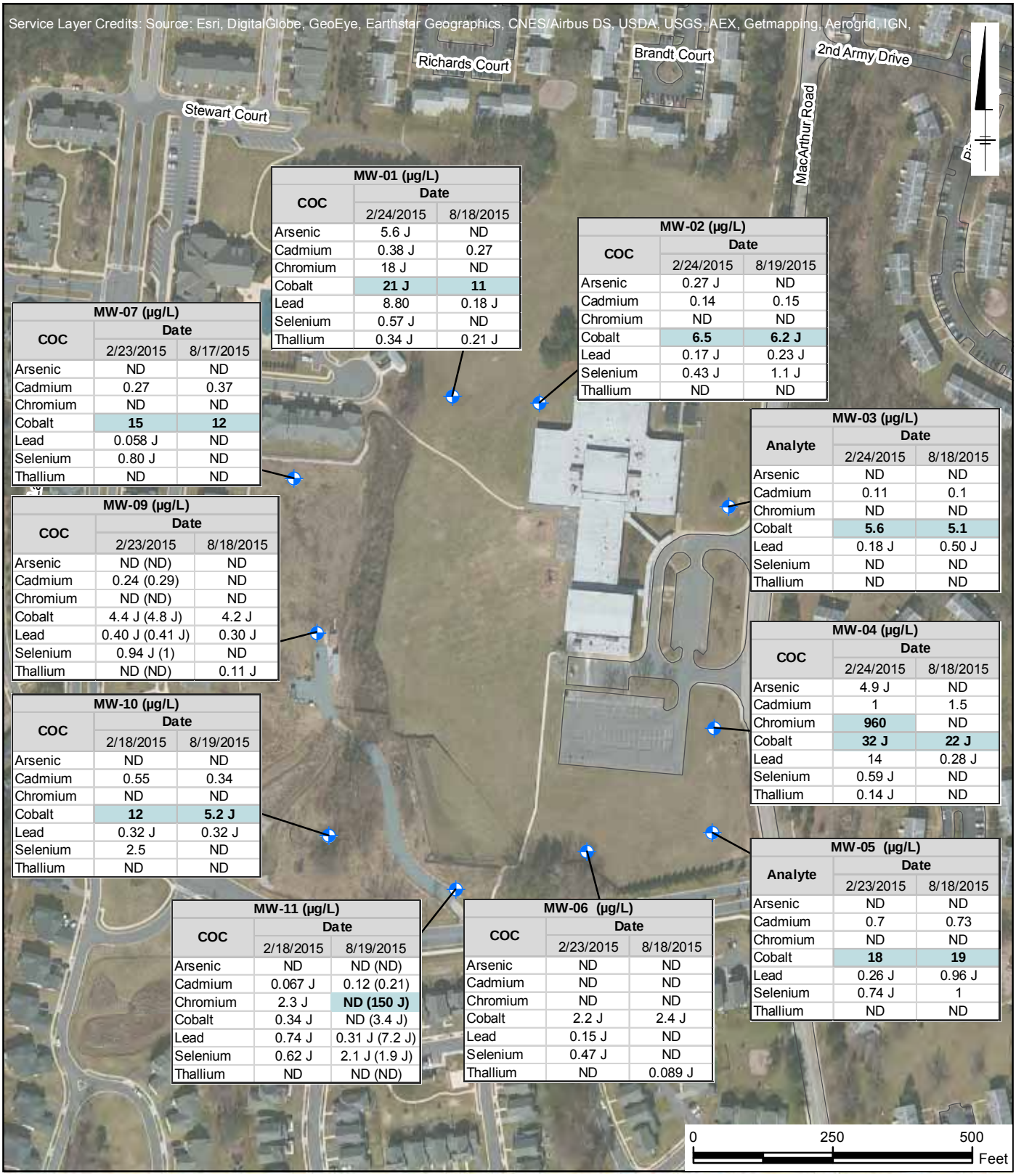
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

GROUNDWATER CONTOURS AUGUST 2015

PIKA INTERNATIONAL, INC. A JOINT VENTURE
MALCOLM PIRNIE

FIGURE 10

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\10_GW_Contours_August2015.mxd



MW-01 (µg/L)		
COC	Date	
	2/24/2015	8/18/2015
Arsenic	5.6 J	ND
Cadmium	0.38 J	0.27
Chromium	18 J	ND
Cobalt	**21 J**	**11**
Lead	8.80	0.18 J
Selenium	0.57 J	ND
Thallium	0.34 J	0.21 J

MW-02 (µg/L)		
COC	Date	
	2/24/2015	8/19/2015
Arsenic	0.27 J	ND
Cadmium	0.14	0.15
Chromium	ND	ND
Cobalt	**6.5**	**6.2 J**
Lead	0.17 J	0.23 J
Selenium	0.43 J	1.1 J
Thallium	ND	ND

MW-07 (µg/L)		
COC	Date	
	2/23/2015	8/17/2015
Arsenic	ND	ND
Cadmium	0.27	0.37
Chromium	ND	ND
Cobalt	**15**	**12**
Lead	0.058 J	ND
Selenium	0.80 J	ND
Thallium	ND	ND

MW-03 (µg/L)		
Analyte	Date	
	2/24/2015	8/18/2015
Arsenic	ND	ND
Cadmium	0.11	0.1
Chromium	ND	ND
Cobalt	**5.6**	**5.1**
Lead	0.18 J	0.50 J
Selenium	ND	ND
Thallium	ND	ND

MW-09 (µg/L)		
COC	Date	
	2/23/2015	8/18/2015
Arsenic	ND (ND)	ND
Cadmium	0.24 (0.29)	ND
Chromium	ND (ND)	ND
Cobalt	4.4 J (4.8 J)	4.2 J
Lead	0.40 J (0.41 J)	0.30 J
Selenium	0.94 J (1)	ND
Thallium	ND (ND)	0.11 J

MW-04 (µg/L)		
COC	Date	
	2/24/2015	8/18/2015
Arsenic	4.9 J	ND
Cadmium	1	1.5
Chromium	**960**	ND
Cobalt	**32 J**	**22 J**
Lead	14	0.28 J
Selenium	0.59 J	ND
Thallium	0.14 J	ND

MW-10 (µg/L)		
COC	Date	
	2/18/2015	8/19/2015
Arsenic	ND	ND
Cadmium	0.55	0.34
Chromium	ND	ND
Cobalt	**12**	**5.2 J**
Lead	0.32 J	0.32 J
Selenium	2.5	ND
Thallium	ND	ND

MW-05 (µg/L)		
Analyte	Date	
	2/23/2015	8/18/2015
Arsenic	ND	ND
Cadmium	0.7	0.73
Chromium	ND	ND
Cobalt	**18**	**19**
Lead	0.26 J	0.96 J
Selenium	0.74 J	1
Thallium	ND	ND

MW-11 (µg/L)		
COC	Date	
	2/18/2015	8/19/2015
Arsenic	ND	ND (ND)
Cadmium	0.067 J	0.12 (0.21)
Chromium	2.3 J	**ND (150 J)**
Cobalt	0.34 J	ND (3.4 J)
Lead	0.74 J	0.31 J (7.2 J)
Selenium	0.62 J	2.1 J (1.9 J)
Thallium	ND	ND (ND)

MW-06 (µg/L)		
COC	Date	
	2/23/2015	8/18/2015
Arsenic	ND	ND
Cadmium	ND	ND
Chromium	ND	ND
Cobalt	2.2 J	2.4 J
Lead	0.15 J	ND
Selenium	0.47 J	ND
Thallium	ND	0.089 J

LEGEND

- Monitoring Well
- µg/L micrograms per liter
- COC Constituent of Concern
- VOCs Volatile Organic Compounds
- J Indicates an estimated result. Result is less than laboratory reporting limits.
- ND The analyte was not detected above the detection limit.

RG Summary Table

COC	RG (µg/L)
Arsenic	10
Cadmium	5
Chromium	100
Cobalt	5
Lead	15
Selenium	50
Thallium	0.5

Notes:
1. Bolded and grey shaded values indicate concentrations above the Remedial Goal (RG).
2. Duplicate sample results are provided in parenthesis adjacent to results presented for the parent sample.

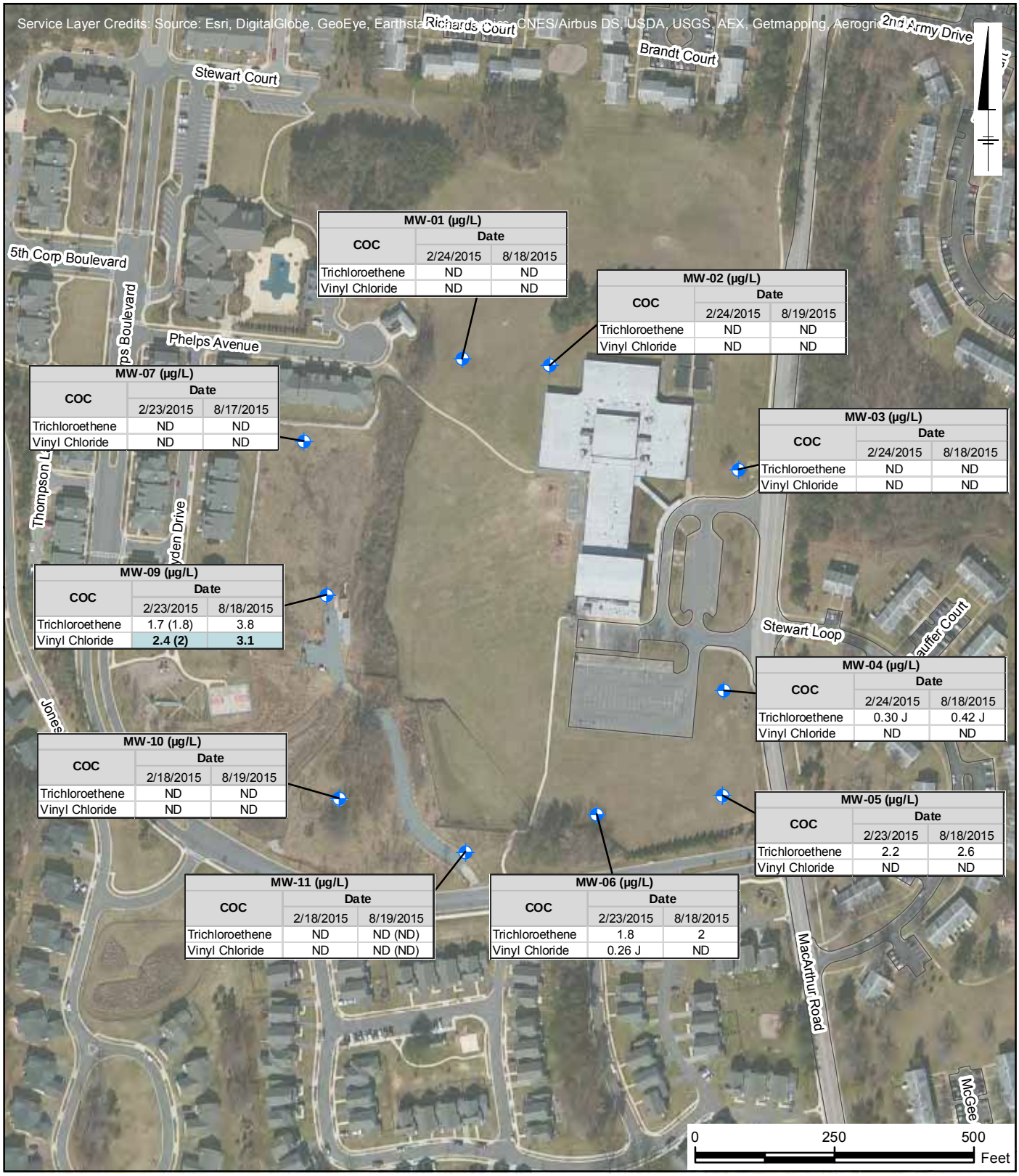
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

GROUNDWATER ANALYTICAL RESULTS - METALS

PIKA INTERNATIONAL, INC. A JOINT VENTURE
MALCOLM PIRNIE

FIGURE 11

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\11_GW_Metals_2015.mxd



MW-01 (µg/L)		
COC	Date	
	2/24/2015	8/18/2015
Trichloroethene	ND	ND
Vinyl Chloride	ND	ND

MW-02 (µg/L)		
COC	Date	
	2/24/2015	8/19/2015
Trichloroethene	ND	ND
Vinyl Chloride	ND	ND

MW-07 (µg/L)		
COC	Date	
	2/23/2015	8/17/2015
Trichloroethene	ND	ND
Vinyl Chloride	ND	ND

MW-03 (µg/L)		
COC	Date	
	2/24/2015	8/18/2015
Trichloroethene	ND	ND
Vinyl Chloride	ND	ND

MW-09 (µg/L)		
COC	Date	
	2/23/2015	8/18/2015
Trichloroethene	1.7 (1.8)	3.8
Vinyl Chloride	**2.4 (2)**	**3.1**

MW-04 (µg/L)		
COC	Date	
	2/24/2015	8/18/2015
Trichloroethene	0.30 J	0.42 J
Vinyl Chloride	ND	ND

MW-10 (µg/L)		
COC	Date	
	2/18/2015	8/19/2015
Trichloroethene	ND	ND
Vinyl Chloride	ND	ND

MW-05 (µg/L)		
COC	Date	
	2/23/2015	8/18/2015
Trichloroethene	2.2	2.6
Vinyl Chloride	ND	ND

MW-11 (µg/L)		
COC	Date	
	2/18/2015	8/19/2015
Trichloroethene	ND	ND (ND)
Vinyl Chloride	ND	ND (ND)

MW-06 (µg/L)		
COC	Date	
	2/23/2015	8/18/2015
Trichloroethene	1.8	2
Vinyl Chloride	0.26 J	ND

LEGEND

- Monitoring Well
- µg/L micrograms per liter
- COC Constituent of Concern
- VOCs Volatile Organic Compounds
- J Indicates an estimated result. Result is less than laboratory reporting limits.
- ND The analyte was not detected above the detection limit.

RG Summary Table

COC	RG (µg/L)
Trichloroethene	5
Vinyl Chloride	2

Notes:
1. Duplicate sample results are provided in parenthesis adjacent to results presented for the parent sample.
2. Bolded and grey shaded values indicate concentrations above the Remedial Goal (RG).

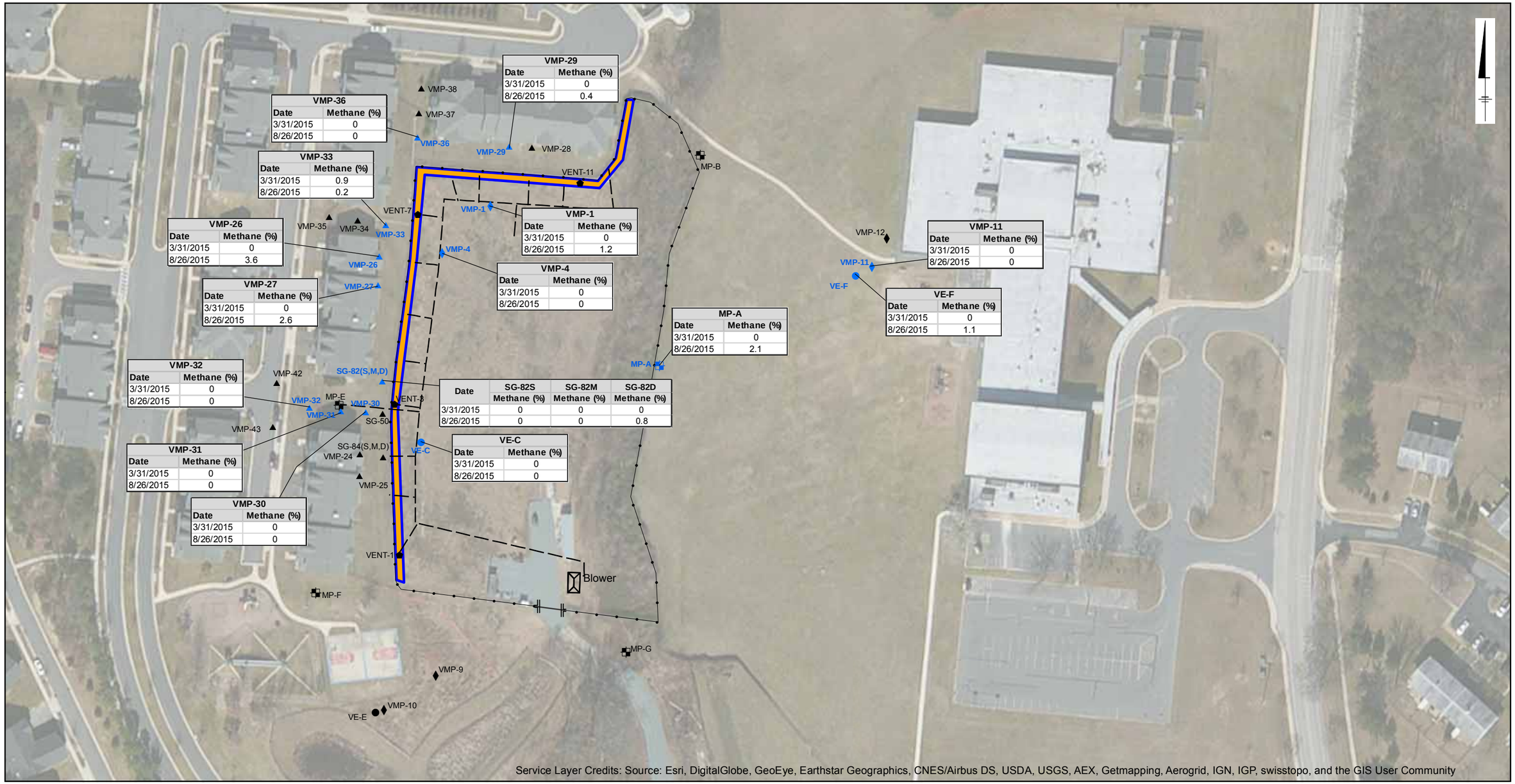
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

GROUNDWATER ANALYTICAL RESULTS - VOCS

PIKA INTERNATIONAL, INC. A JOINT VENTURE
MALCOLM PIRNIE

FIGURE
12

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Document Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\12_GW_VOCs_2015.mxd



LEGEND:

- Monitoring Point
- Trench Well
- Deep Vapor Monitoring Point
- Shallow Vapor Monitoring Point
- Former Vapor Extraction Well
- Perimeter Fence
- Gate
- Subsurface Piping Network Associated with the Dormant Soil Vapor Extraction System (2012 - Present)
- Capped Passive Gas Collection Trench

0 100 200 Feet

GRAPHIC SCALE

Note:
1. Monitoring locations included in the long-term monitoring program are displayed in blue.
2. Results exceeding the lower explosive limit for methane (5%) are boldfaced and grey shaded.
3. The 2015 sampling events were conducted in accordance with the long-term monitoring program presented in the Remedial Design.
4. S - Shallow; M- Mid-depth; D - Deep

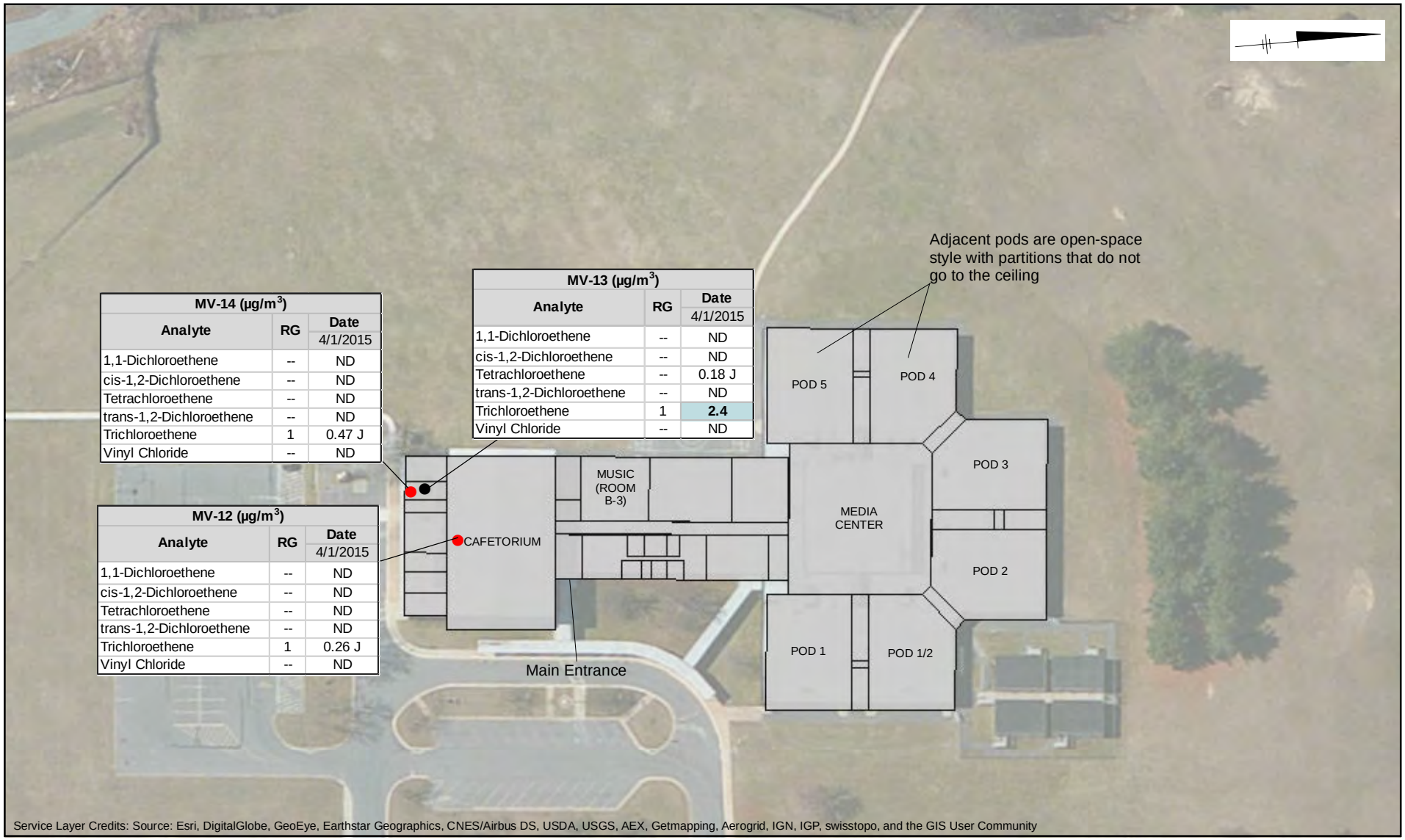
FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

SOIL GAS MONITORING RESULTS

PIKA INTERNATIONAL, INC. A JOINT VENTURE
MALCOLM PIRNIE

FIGURE 13

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 9\3\2015\13_SoilGas_Databoxes_2015.mxd



MV-14 (µg/m³)

Analyte	RG	Date 4/1/2015
1,1-Dichloroethene	--	ND
cis-1,2-Dichloroethene	--	ND
Tetrachloroethene	--	ND
trans-1,2-Dichloroethene	--	ND
Trichloroethene	1	0.47 J
Vinyl Chloride	--	ND

MV-13 (µg/m³)

Analyte	RG	Date 4/1/2015
1,1-Dichloroethene	--	ND
cis-1,2-Dichloroethene	--	ND
Tetrachloroethene	--	0.18 J
trans-1,2-Dichloroethene	--	ND
Trichloroethene	1	**2.4**
Vinyl Chloride	--	ND

MV-12 (µg/m³)

Analyte	RG	Date 4/1/2015
1,1-Dichloroethene	--	ND
cis-1,2-Dichloroethene	--	ND
Tetrachloroethene	--	ND
trans-1,2-Dichloroethene	--	ND
Trichloroethene	1	0.26 J
Vinyl Chloride	--	ND

LEGEND:

- ● Indoor Air Sample
- ● Additional Indoor Air Monitoring Locations, sampled per regulatory comments on the Remedial Action Completion Report

NOTE:
1. Bolded and grey shaded values indicate concentrations above the Remedial Goal (RG).
2. µg/m3 - microgram per cubic meter
   ND - The analyte was not detected above the detection limit.
   J - Indicates an estimated result. Result is less than laboratory reporting limits.

0 100 200 Feet

GRAPHIC SCALE

FORT GEORGE G. MEADE, MARYLAND
MANOR VIEW DUMP SITE

INDOOR AIR SAMPLE RESULTS

PIKA INTERNATIONAL, INC. A JOINT VENTURE MALCOLM PIRNIE

FIGURE 14

CITY: MPLS DIV/GROUP: IM DB: MG LD: HA
FORT MEADE
Path: Z:\GISPROJECTS_ENV\Fort_Meade\ArcMap\Manor_View\Remedial Design for FGGM 93\2015\14_SiteMap_IndoorAirResults.mxd

Appendix A

Field Forms

Appendix B

Safety Data Sheets for Chemicals
Stored near the Manor View
Elementary School Crawl Space
(Provided on CD)

Appendix C

Inspection Forms

Appendix D

Laboratory Reports (Provided on CD)

Appendix E

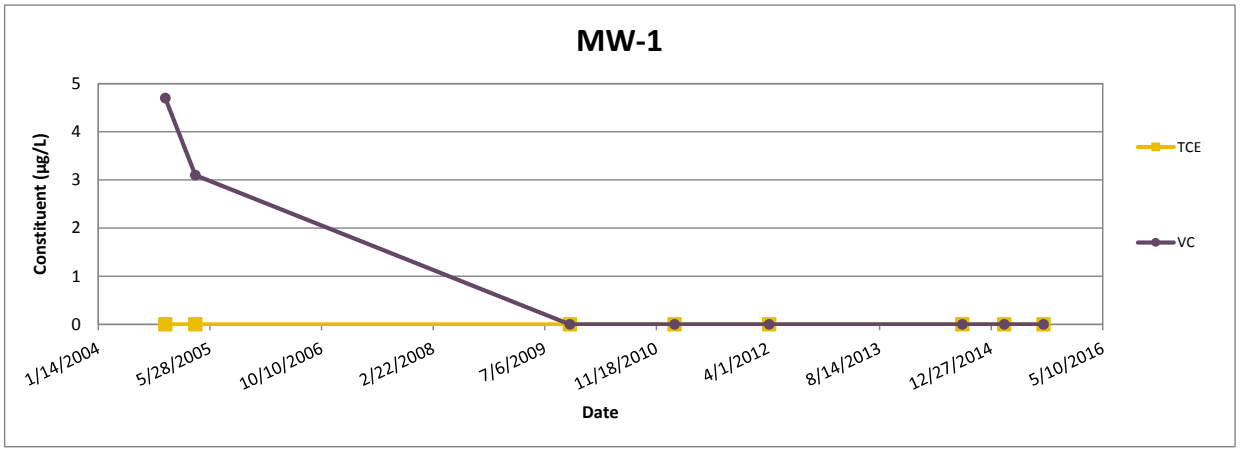
Data Validation Reports (Provided on CD)

Appendix F

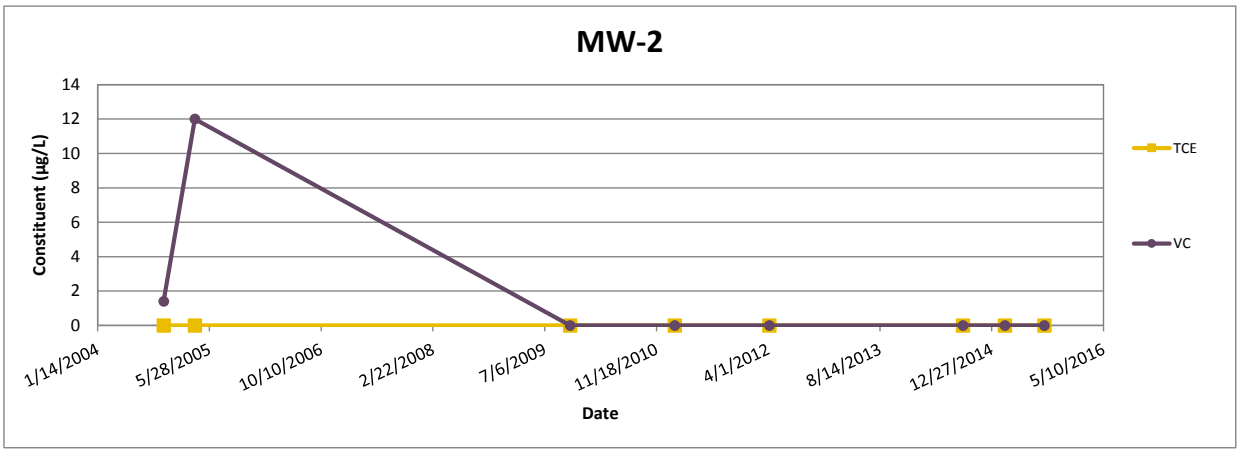
Volatile Organic Compound
Groundwater Trend Plots

Appendix F
Volatile Organic Compound Groundwater Trend Plots
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Chlorinated Volatile Organic Compounds

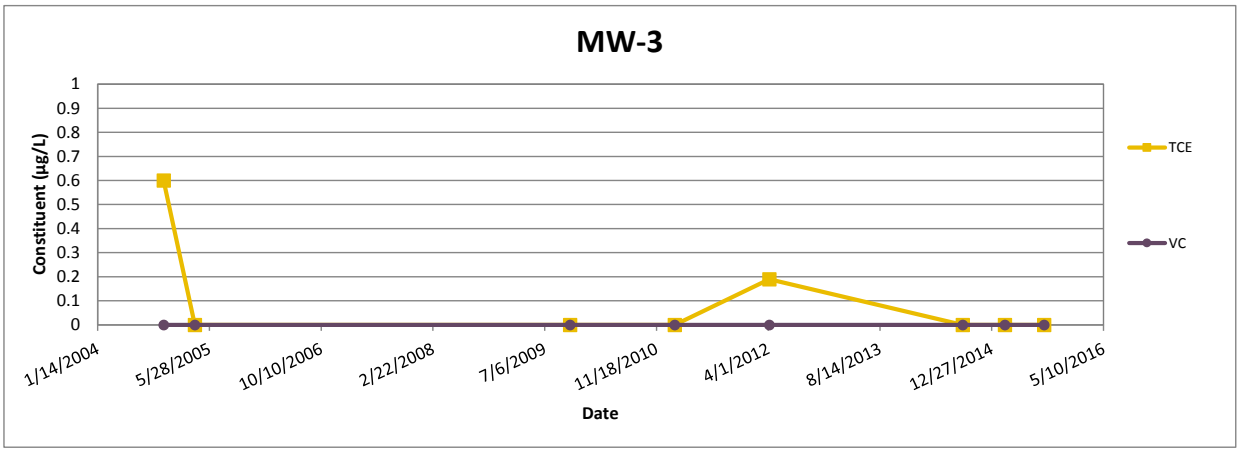


Analyte	SCL	11/9/2004	3/24/2005	10/27/2009	2/8/2011	4/6/2012	8/20/2014	2/24/2015	8/18/2015
TCE	5	< 0.37 U	< 0.71 U	< 0.250 U	< 0.17 U	< 0.17 U	<0.50 U	< 0.50 U	< 1.0 U
VC	2	**4.7**	**3.1**	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

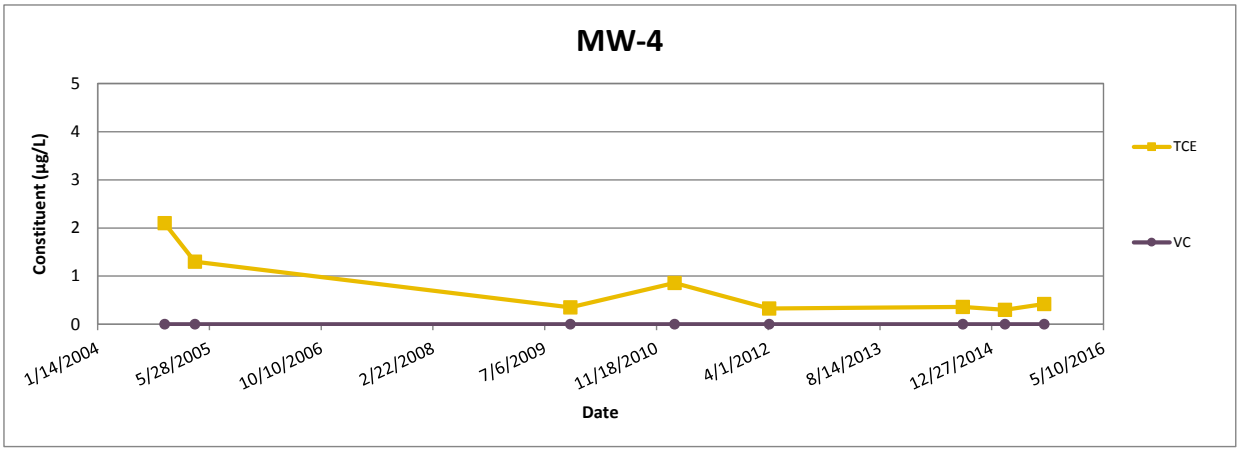


Analyte	SCL	11/4/2004	3/24/2005	10/27/2009	2/8/2011	4/6/2012	8/20/2014	2/24/2015	8/19/2015
TCE	5	< 0.37 U	< 0.71 U	< 0.250 U	< 0.17 U	< 0.17 U	<0.50 U	< 0.50 U	< 1.0 U
VC	2	1.4 J	**12**	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

Appendix F
Volatile Organic Compound Groundwater Trend Plots
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

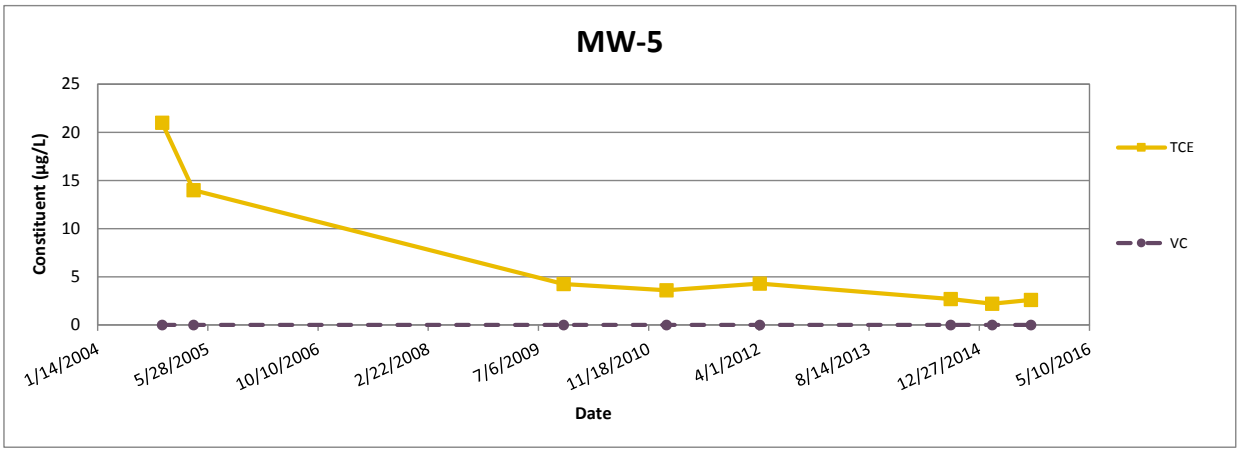


Analyte	SCL	11/8/2004	3/25/2005	10/27/2009	2/8/2011	4/5/2012	8/19/2014	2/24/2015	8/18/2015
TCE	5	0.6 J	< 0.71 U	< 0.250 U	< 0.17 U	0.19 J	<0.50 U	< 0.50 U	< 1.0 U
VC	2	< 0.56 U	< 0.92 U	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

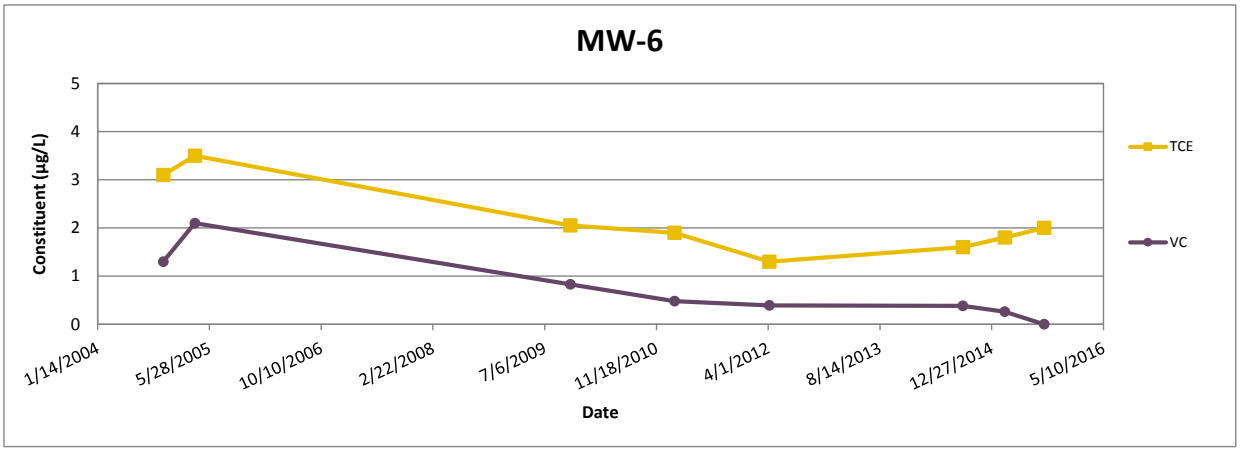


Analyte	SCL	11/8/2004	3/24/2005	10/28/2009	2/7/2011	4/5/2012	8/19/2014	2/24/2015	8/18/2015
TCE	5	2.1	1.3 J	0.352 J	0.86 J	0.33 J	0.36 J	0.30 J	0.42 J
VC	2	< 0.56 U	< 0.92 U	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

Appendix F
Volatile Organic Compound Groundwater Trend Plots
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

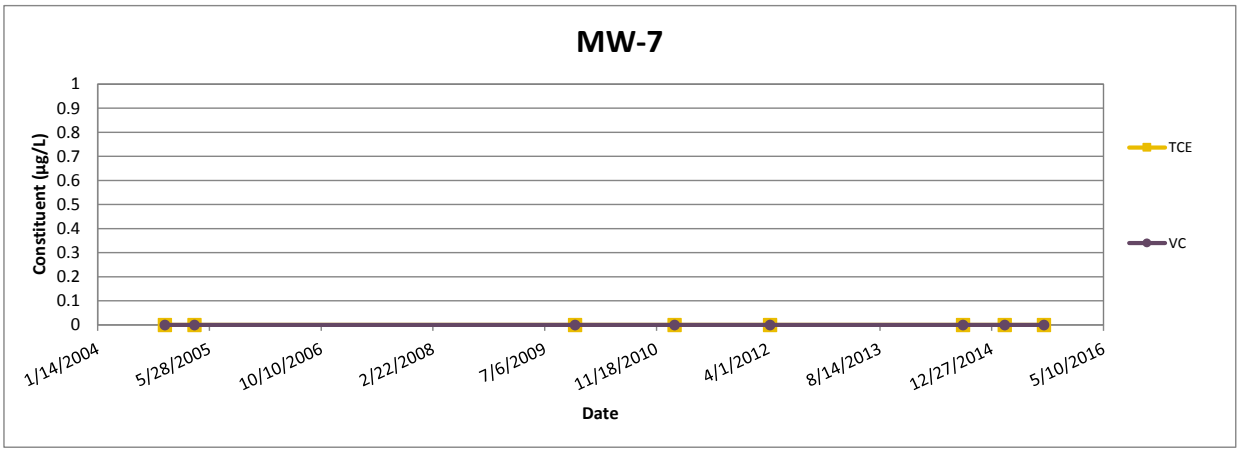


Analyte	SCL	11/1/2004	3/24/2005	10/28/2009	2/7/2011	4/5/2012	8/19/2014	2/23/2015	8/18/2015
TCE	5	**21**	**14**	4.24 J	3.6 J	4.3 J	2.7	2.2	2.6
VC	2	< 0.56 U	< 0.92 U	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

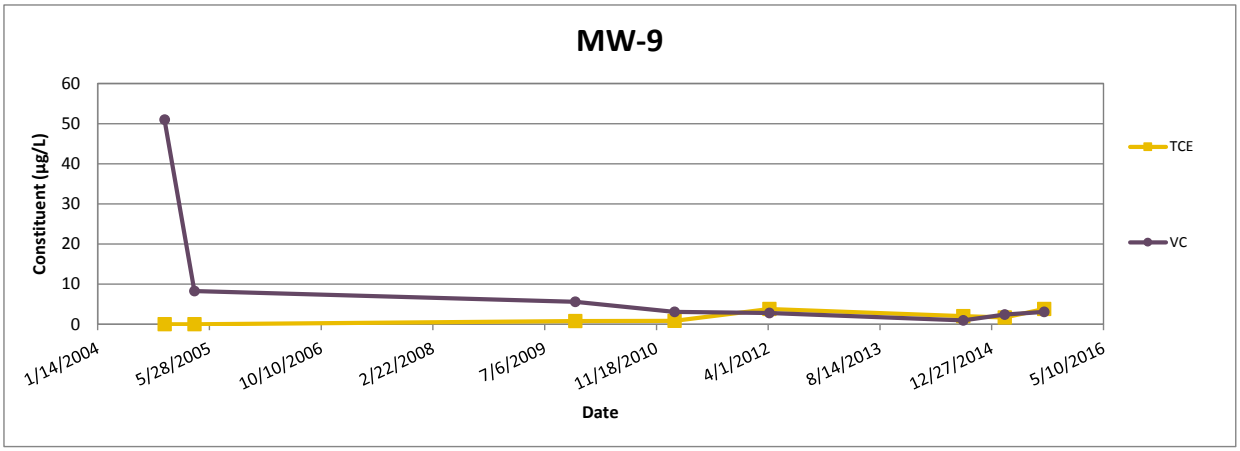


Analyte	SCL	11/2/2004	3/24/2005	10/28/2009	2/7/2011	4/6/2012	8/19/2014	2/23/2015	8/18/2015
TCE	5	3.1	3.5	2.05 J	1.9 J	1.3 J	1.6	1.8	2
VC	2	1.3 J	**2.1 J**	0.827 J	0.48 J	0.39 J	0.38 J	0.26 J	< 1.0 U

Appendix F
Volatile Organic Compound Groundwater Trend Plots
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

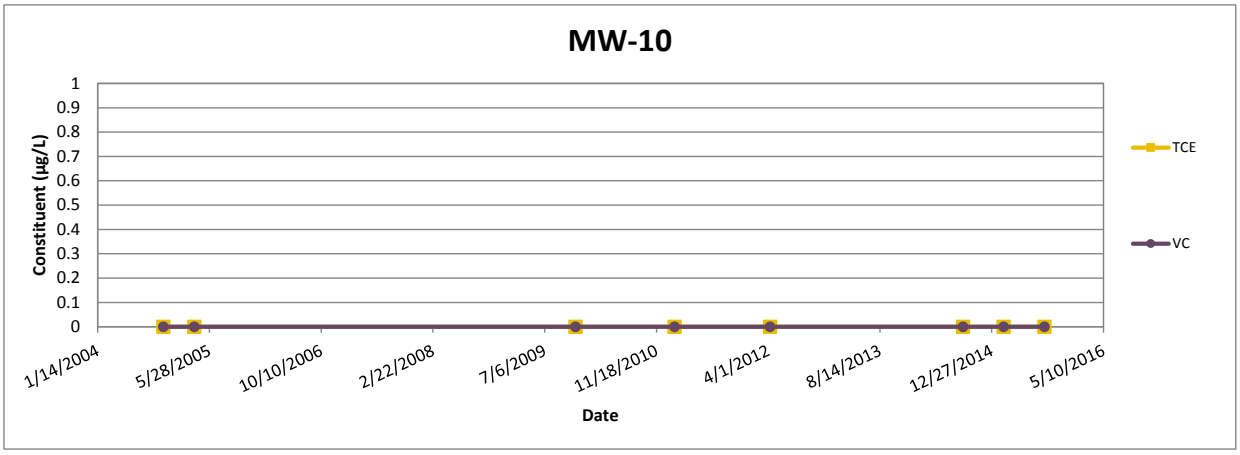


Analyte	SCL	11/9/2004	3/22/2005	11/18/2009	2/7/2011	4/9/2012	8/20/2014	2/23/2015	8/17/2015
TCE	5	< 0.37 U	< 0.71 U	< 0.250 U	< 0.17 U	< 0.17 U	<0.50 U	< 0.50 U	< 1.0 U
VC	2	< 0.56 U	< 0.92 U	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

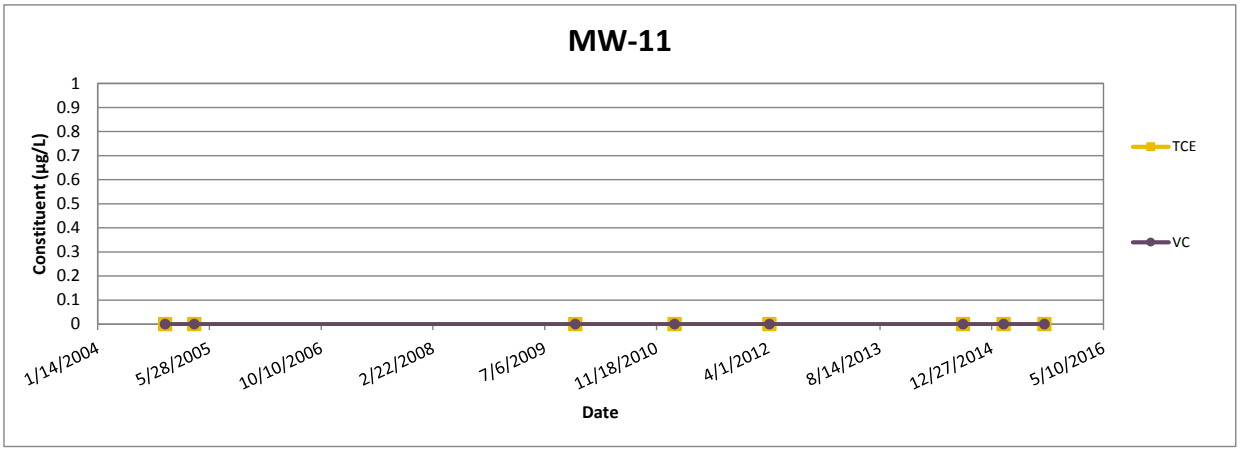


Analyte	SCL	11/8/2004	3/22/2005	11/19/2009	2/7/2011	4/6/2012	8/21/2014	2/23/2015	8/18/2015
TCE	5	< 0.37 U	< 0.71 U	0.773 J	0.83 J	3.8 J	2	1.7	3.8
VC	2	**51**	**8.3**	**5.60 J**	**3.1**	**2.8**	0.97	**2.4**	**3.1**

Appendix F
Volatile Organic Compound Groundwater Trend Plots
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland



Analyte	SCL	11/2/2004	3/21/2005	11/20/2009	2/7/2011	4/9/2012	8/20/2014	2/18/2015	8/19/2015
TCE	5	< 0.37 U	< 0.71 U	< 0.250 U	< 0.17 U	< 0.17 U	<0.50 U	< 0.50 U	< 1.0 U
VC	2	< 0.56 U	< 0.92 U	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U



Analyte	SCL	11/10/2004	3/21/2005	11/19/2009	2/7/2011	4/9/2012	8/20/2014	2/18/2015	8/19/2015
TCE	5	< 0.37 U	< 0.71 U	< 0.250 U	< 0.17 U	< 0.17 U	<0.50 U	< 0.50 U	< 1.0 U
VC	2	< 0.56 U	< 0.92 U	< 0.250 U	< 0.14 U	< 0.14 U	<0.50 U	< 0.50 U	< 1.0 U

Notes:

1. Concentrations exceeding the applicable screening criterion are boldfaced and shaded.
2. Concentrations below the detection limit are represented graphically as zero.
3. All concentrations are presented in microgram per liter.
4. Sampling was conducted using low flow sample methodologies (4/14/10 - 4/16/10) and hydrasleeve samplers (4/22/10) for comparison purposes.

1,1-DCE - 1,1,-Dichloroethene

cis-1,2-DCE - cis-1,2,-Dichloroethene

PCE - Tetrachlorethene

TCE - Trichlorethene

VC - Vinyl Chloride

H - Sample analyzed outside of holding time.

J - Indicates an estimated result. Result is less than laboratory reporting limits.

ND - Analyte was not detected above reporting limits.

P - The relative percent difference between two gas chromatography columns exceeded 40%.

Appendix G

Photo Log

Appendix G
Photo Log
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Photo 1: Southwest corner of fenced area
Date: July 9, 2015
Location Taken: Access gate
Direction Facing: Southwest

Photo 2: Mowed field
Date: July 9, 2015
Location Taken: Southeast corner of fenced area
Direction Facing: North

Photo 3: SVE system shed and electrical panels
Date: July 9, 2015
Location Taken: Access gate
Direction Facing: Northeast

Photo 4: Mowed field and shed
Date: July 9, 2015
Location Taken: Access gate
Direction Facing: North

Photo 5: Utility closet
Date: March 31, 2015
Location Taken: Manor View Elementary School
Direction Facing: ---

Photo 6: Crawl space hatch.
Date: March 31, 2015
Location Taken: Manor View Elementary School
Direction Facing: ---

Photo 7: Sign Location #1
Date: July 9, 2015
Location Taken: Entrance Gate
Direction Facing: North

Photo 8: Sign Location #2
Date: July 9, 2015
Location Taken: Access Road
Direction Facing: North

Photo 9: Sign Location #3
Date: July 9, 2015
Location Taken: Basketball Court
Direction Facing: Northeast

Photo 10: Sign Location # 4
Date: July 9, 2015
Location Taken: Northwest Corner of Fenced Area
Direction Facing: South

Appendix G
Photo Log
FGGM 93 Manor View Dump Site
Fort George G. Meade, Maryland

Photo 11: Sign Location #5
Date: July 9, 2015
Location Taken: Northernmost Extent of Fence
Direction Facing: South