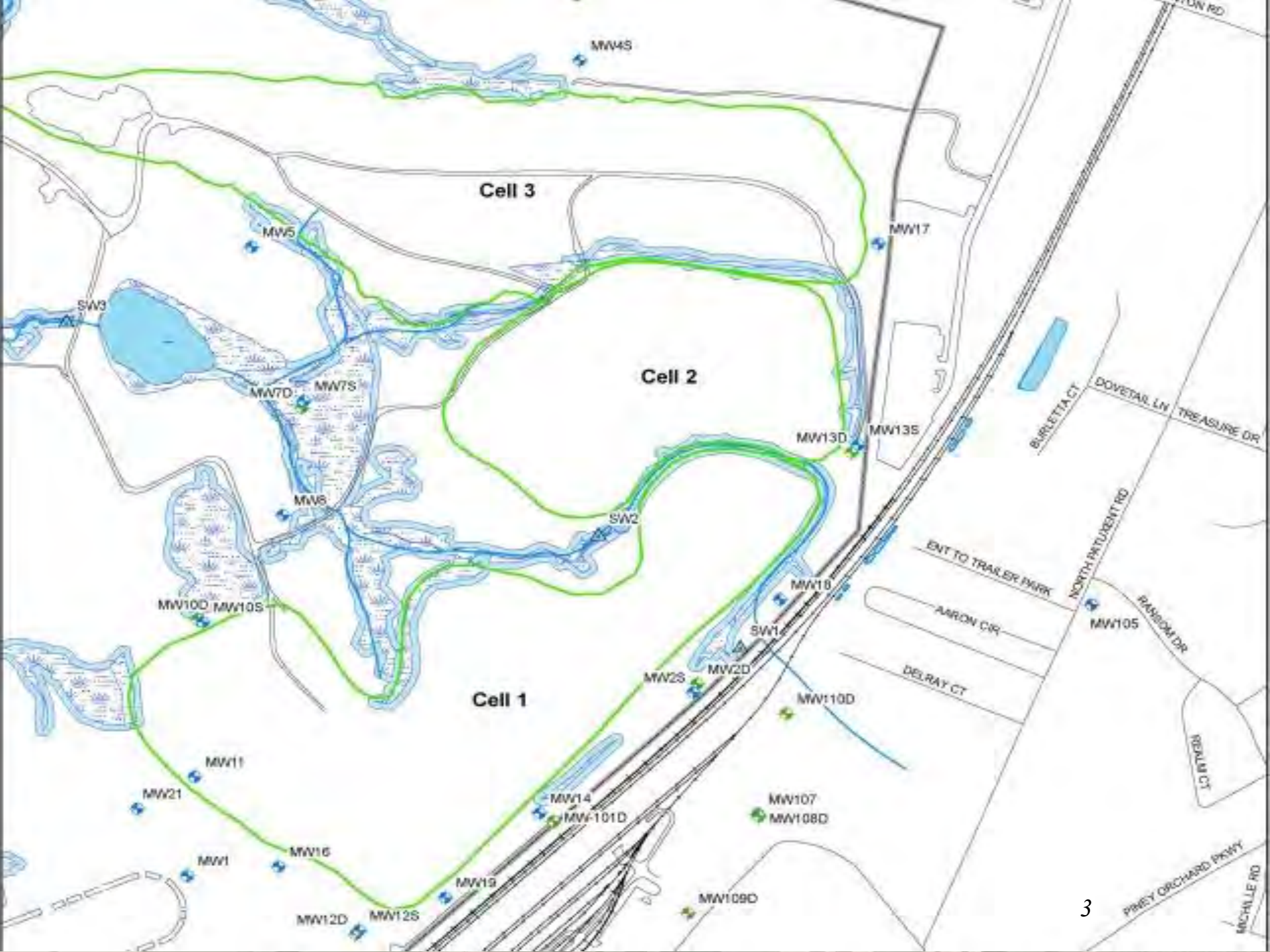
Fort George G. Meade

Restoration Advisory Board (RAB) Meeting
September 15, 2016

Cell 3 (FGGM 97) of Closed Sanitary Landfill (CSL) at Fort George G. Meade (FGGM)

Results of Preliminary Data Collection
and
Remedial Investigation Work Plan (RIWP)

Cell 3 and CSL Location

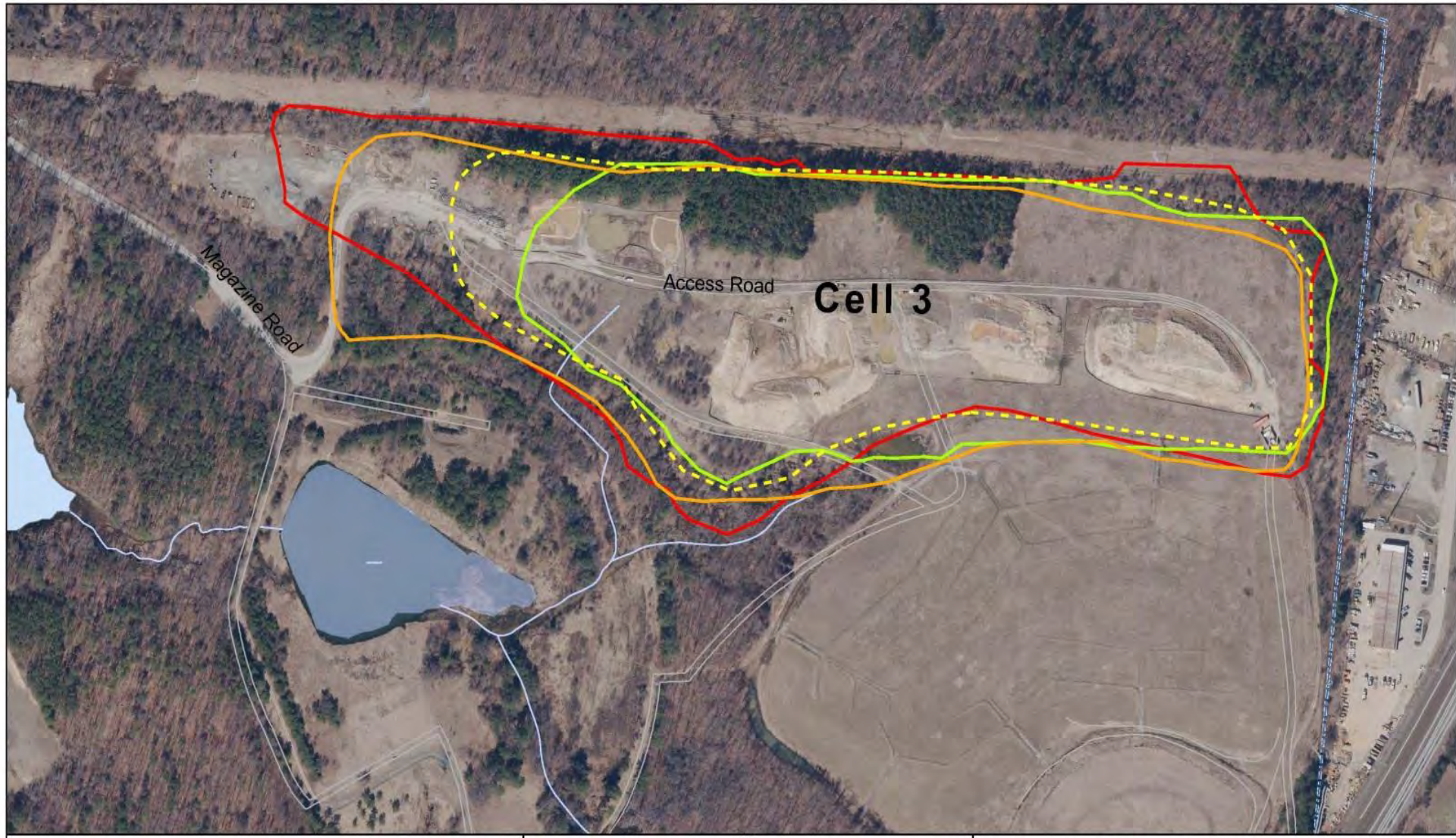

Cell 3
Cell 2
Cell 1
MW4S
MW5
MW17
SW3
MW7D
MW7S
MW13D
MW13S
MW6
SW2
MW10D
MW10S
MW18
SW1
MW2S
MW2D
MW110D
MW11
MW21
MW14
MW-101D
MW107
MW108D
MW1
MW16
MW19
MW109D
MW12D
MW12S
BURLETTA CT
DOVETAIL LN
TREASURE DR
NORTH PKTUXENT RD
ENT TO TRAILER PARK
AARON CIR
DELRAY CT
MW105
RANSOM DR
REALM CT
PINEY ORCHARD PKWY

Background

- Landfill operations at the CSL began in 1958 using the trench fill method and ceased in 1976.
- Cell 3 was closed in 1976 with 2-feet of soil cover (AEHA, 1990).
- USACHPPM (1994) Initiation of Detection Monitoring Program.
- Remedial Investigation of Cells 1 and 2 (EM Federal 2007).
- Methane study of the CSL (Plexus, 2009).

Background (cont'd)

- CSL Landfill Gas Monitoring Plan (FGGM, 2012).
- Soil stockpiles from ongoing construction projects.
- FGGM renewed their Erosion and Sediment Control (E&SC) permit for the stockpiled soil at Cell 3 (FGGM, 2015).



Installation Boundary

Cell 3 Boundary Inferred from Historic Aerial Photography

Cell 3 Boundary from USACHPPM Initiation of Detection Monitoring Program (1994)

Cell 3 Boundary from RI of Cell 1 and 2 (2007)

Cell 3 Boundary from OU-4

Pond

Stream

Roads

N

SCALE 1 :240

0 120 240 480 720 960 Feet

TITLE	**Inferred Outlines of Cell 3**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	MD iMAP, DoIT, MDP

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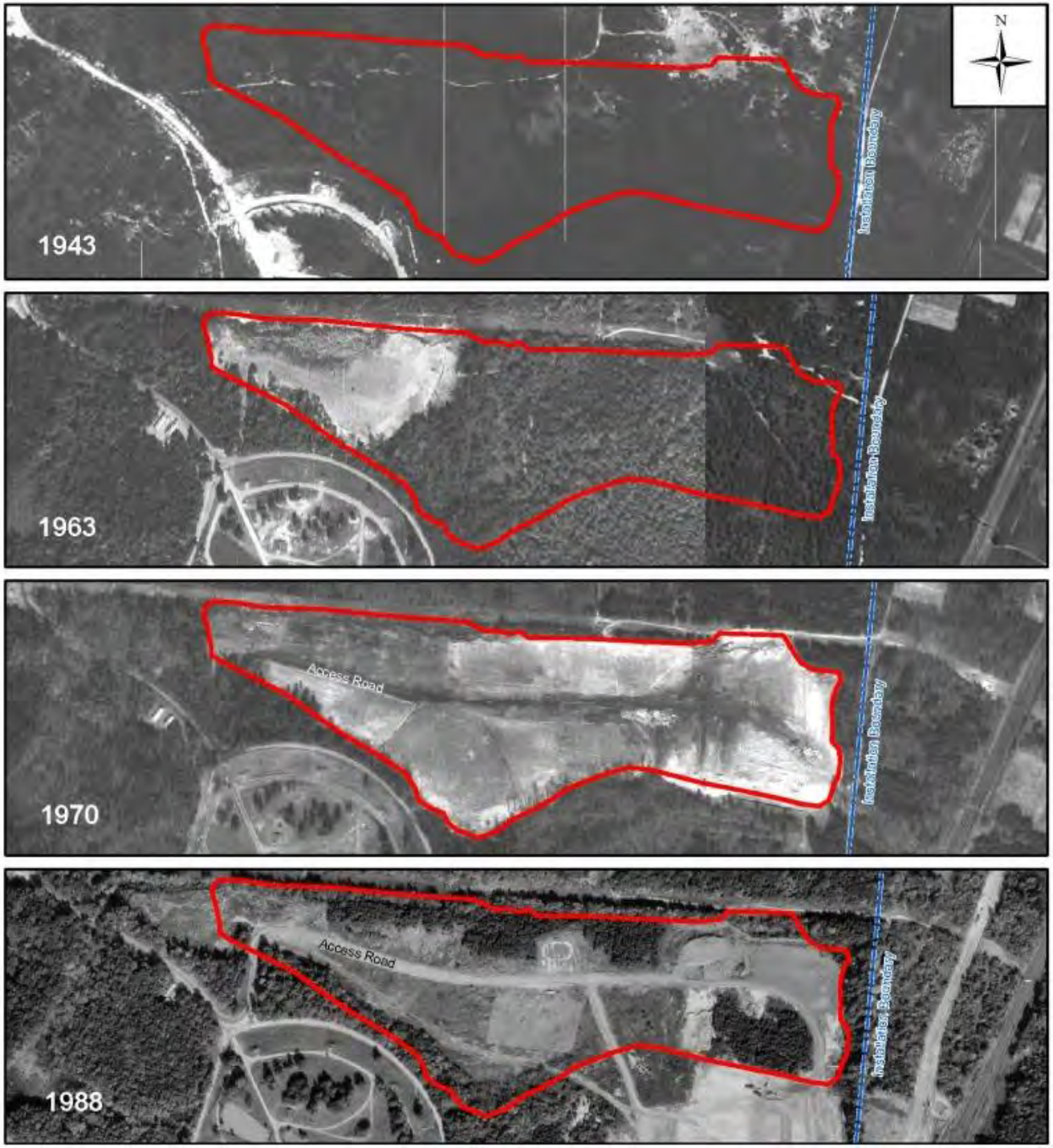
Figure 2-8

G:\Projects\Fort_Meade\PA_SI_New\Projects\Cell3\2-8_Cell3_PotentialOutlines.mxd



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A potential outline of Cell 3 that encompasses the disturbed areas observed in the historic aerial photography is shown as the red line on this slide

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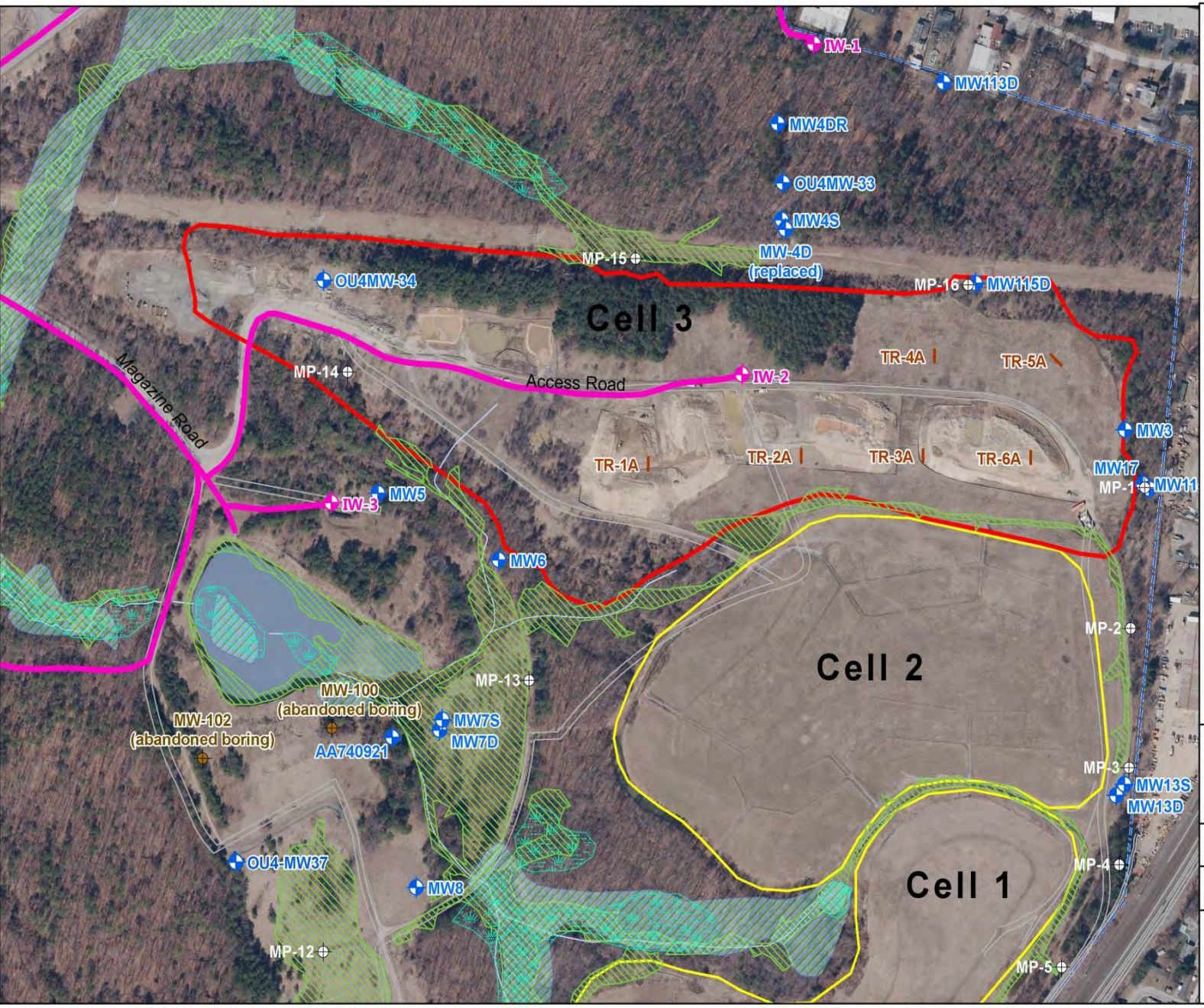

Figure 2-4

Location of Features On and Around Cell 3

CLIENT: U.S. Army Corps of Engineers
REPORT: Preliminary Data Collection Site Activities Memorandum, Cell 3 of CSL, FGGM (2015)

LOCATION: Cell 3 Landfill, Ft. Meade, MD

FILE: G:\Projects\Fort_Meade\PA_SI_New\Projects\Cell3\2-4_Cell3_NearbyWells_rev2.mxd
GIS: AER
CHK: JK
DATE: 11/9/2015 rev 7/8/2016

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Results of Preliminary Data Collection Site Activities at Cell 3 (FGGM 97) of Closed Sanitary Landfill at Fort George G. Meade, MD

Purpose/Objective

- Collect information on lateral extent of Cell 3 and thickness of existing soil cover at test pit locations through a geophysical survey and the excavation of test pits.

Legend

- Test Pit - Surface Debris Only
- Surface Feature
- Cell 3 Boundary Inferred from Historic Aerial Photography

N

SCALE 1:220

0 250 500 1000

TITLE	**Surface Debris at Cell 3 - FGGM**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	Aerial Image: USGS National Map Digital Orthoimage, January 2013. http://nationalmap.gov/viewer.html

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Figure 4-1

EM31 Line Path

Cell 3 Boundary Inferred from historic Aerial Photographs

N

SCALE 1 :240

0 120 240 480 720 960 Feet

Transit Lines for EM31 Geophysical Investigation of Cell 3

LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	MD iMAP, DoIT, MDP

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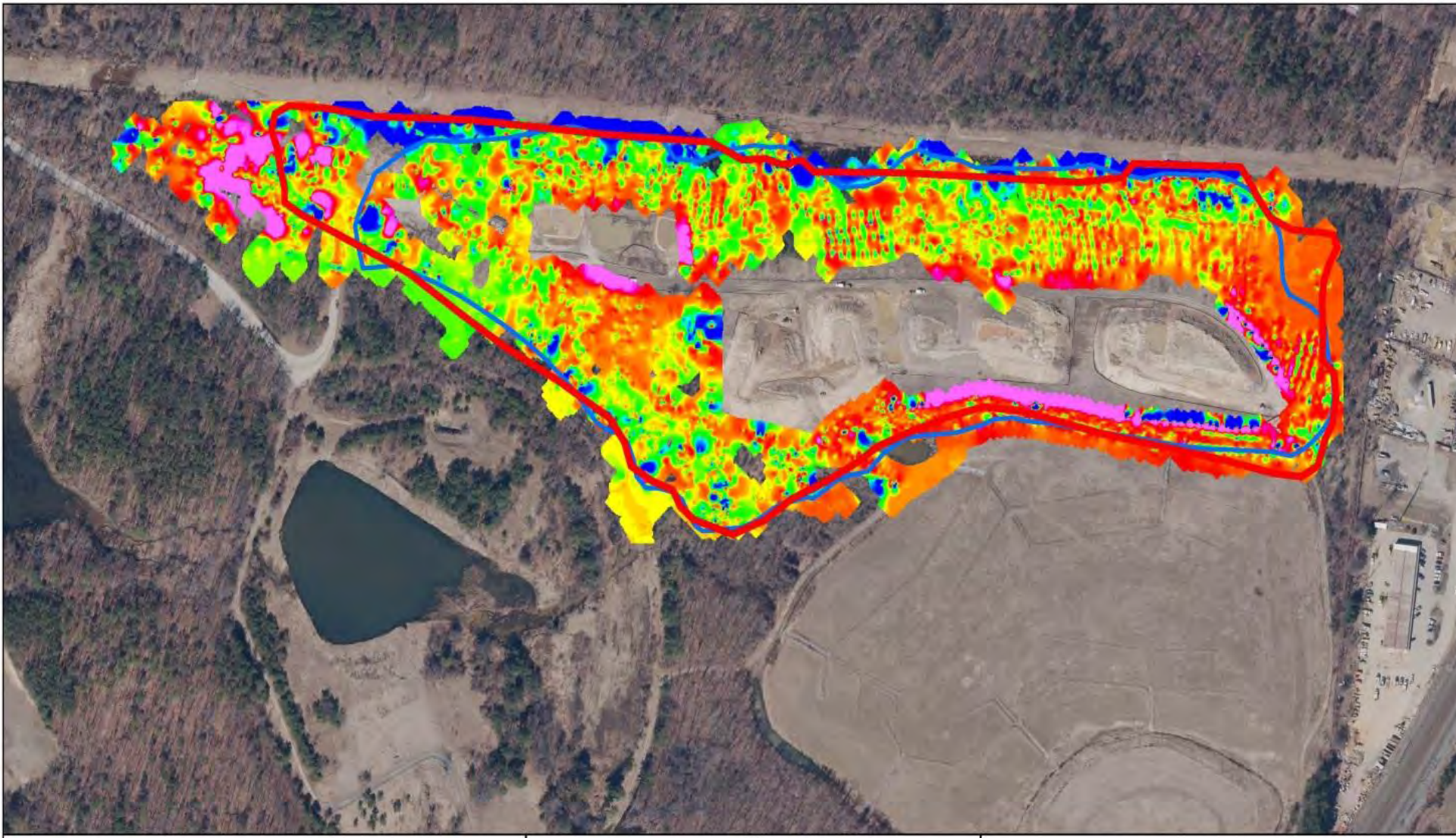
Figure 3-1



Cell 3 Boundary Inferred from Historic Aerial Photography

In-Phase Boundary

InPhase

ppt

-10 -6 -4 -3 -2 -1 0 1 2 3 4 5 7 10

N

SCALE 1 :240

0 120 240 480 720 960 Feet

TITLE	**EM31 In-Phase Response at Cell 3 - FGGM**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	MD iMAP, DoIT, MDP

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Figure 4-3

Q:\Projects\ENG\Geophysics\Fort-Mead-Landfill\Cell3-Delineation\F_Data\GIS\MXD\Ft_Meade_Figure4-3.mxd

TITLE	**Cell 3 Slope Gradient Map**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	Slope Map BaseMap: Slope\MD_Annerundel_slope_m; MD iMAP Slope Services

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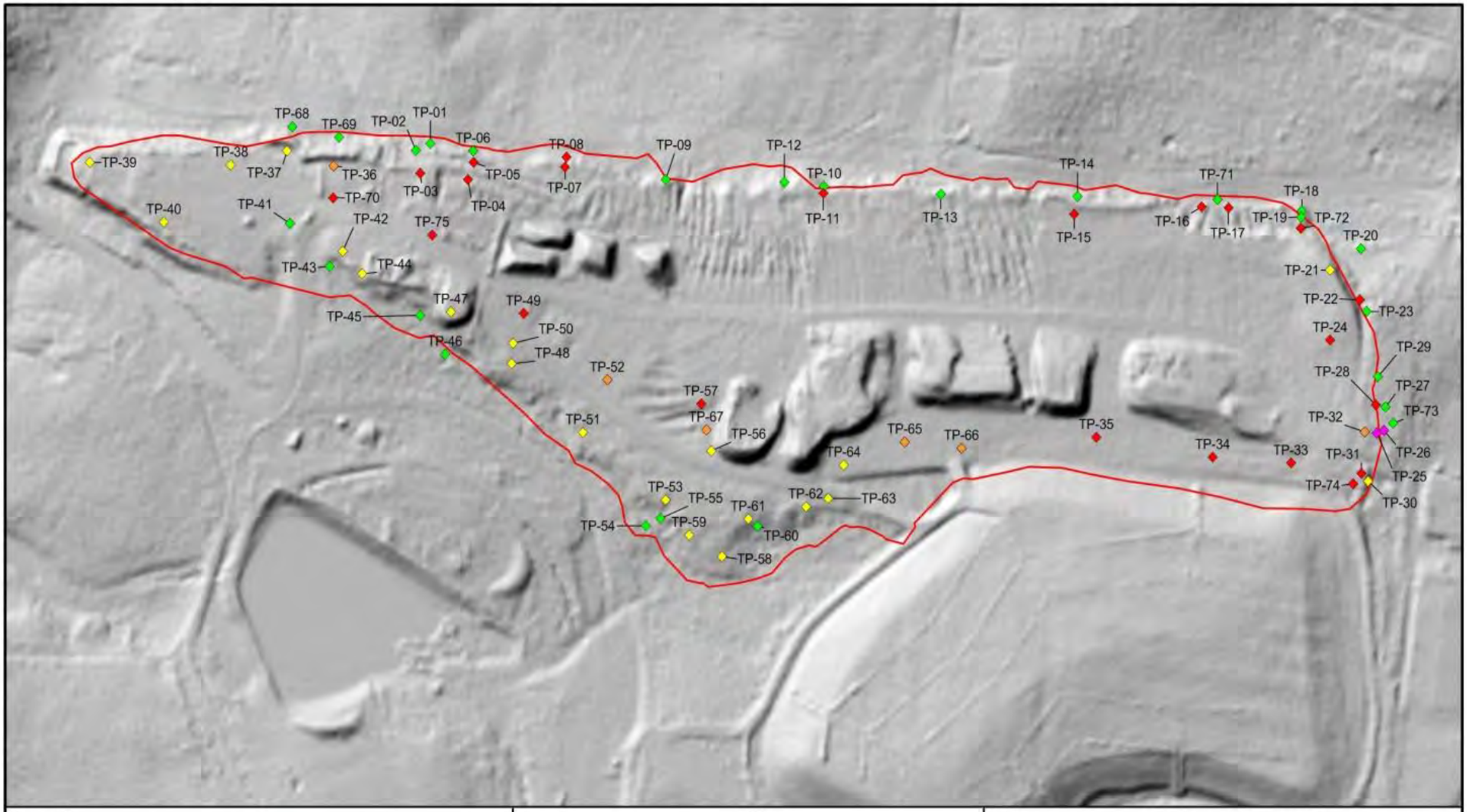
Figure 4-19

Q:\Projects\TechSol\GIS\Projects\Fort_Meade\Collector\Ft_Meade_Slope_Map.mxd



Legend

- Test Pit - No Landfill
- Test Pit - Construction Debris
- Test Pit - Trash Landfill
- Test Pit - Construction Debris over Trash
- Test Pit - Surface Debris Only
- Geophysical Survey Landfill Boundary

N

SCALE 1:220

0 250 500 1000

TITLE	**Test Pit Investigation Results**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	Hillshade Basemap: Hillshade/MD_annearundel_hillshade_M; MD iMAP Hillshade Services

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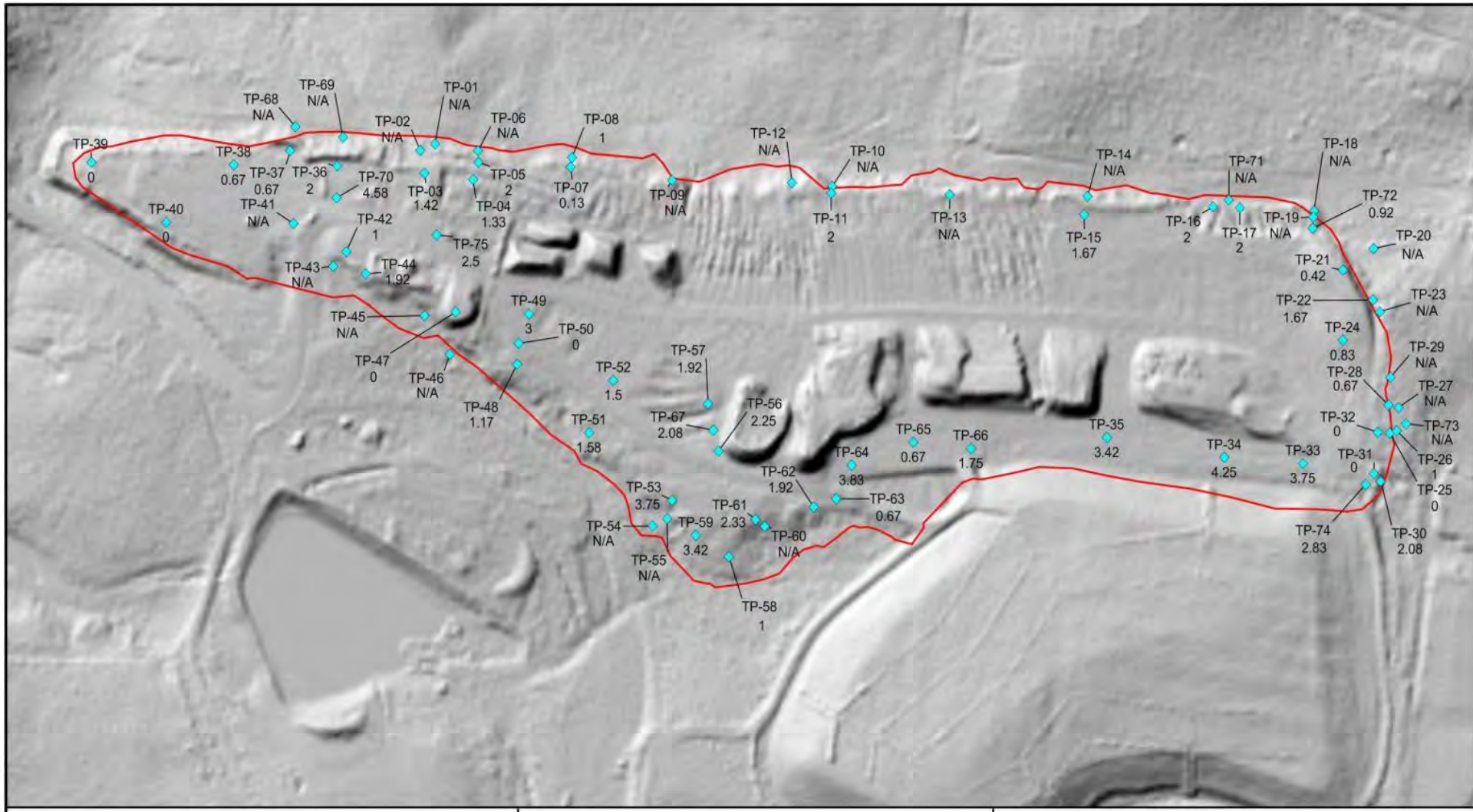
Figure 4-7



Legend

- Test Pit with Soil Cover Thickness (ft)
- Geophysical Survey Landfill Boundary

N

SCALE 1:220

0 250 500 1000

TITLE	**Soil Cover Thickness at Test Pit Locations**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	Hillshade Basemap: Hillshade/MD_annearundel_hillshade_M; MD iMAP Hillshade Services

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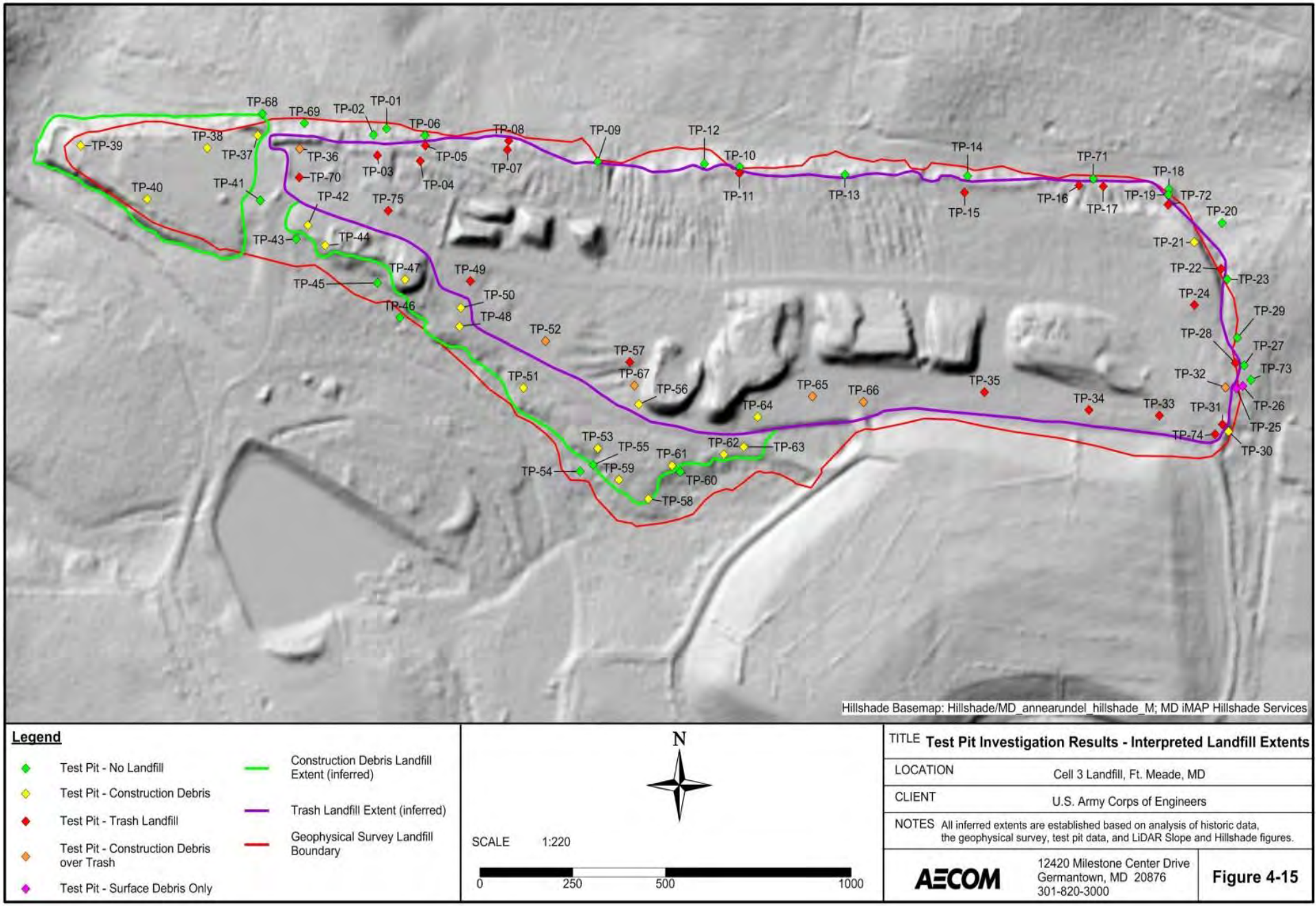
Figure 4-8



Legend

- Test Pit - No Landfill
- Test Pit - Construction Debris
- Test Pit - Trash Landfill
- Test Pit - Construction Debris over Trash
- Test Pit - Surface Debris Only
- Construction Debris Landfill Extent (inferred)
- Trash Landfill Extent (inferred)
- Geophysical Survey Landfill Boundary

N

SCALE 1:220

0 250 500 1000

TITLE **Test Pit Investigation Results - Interpreted Landfill Extents**

LOCATION Cell 3 Landfill, Ft. Meade, MD

CLIENT U.S. Army Corps of Engineers

NOTES All inferred extents are established based on analysis of historic data, the geophysical survey, test pit data, and LiDAR Slope and Hillshade figures.

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Figure 4-15

Legend

- Cell 3 Boundary Interpreted From Geophysical, Test Pit, and LiDAR Data
- Cell 3 Boundary Inferred from Historic Aerial Photography

N

SCALE 1:220

0 250 500 1000

TITLE	**Cell 3 Boundary Inferred from Preliminary Field Activities**
LOCATION	Cell 3 Landfill, Ft. Meade, MD
CLIENT	U.S. Army Corps of Engineers
NOTES	Hillshade Basemap: Hillshade/MD_annearundel_hillshade_M; MD iMAP Hillshade Services

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Figure 5-1

Conclusions

- The geophysical and test pitting activities successfully delineated the boundary of Cell 3.
- The test pits revealed different types of buried waste – household trash and construction debris.
- The orange boundary depicted on previous slide encompasses all of the buried household trash and buried construction debris

Recommendations

- Conduct the RI/FS (Feasibility Study) of Cell 3, and based on the results, prepare a Cell 3 cover maintenance plan for regulatory approval and implement the measures in that plan.
- The boundary of Cell 3 depicted here will be used going forward on all Cell 3 work plans, reports, and figures.

RIWP for CSL Cell 3

Purpose/Objective

- Complete an RI/FS for Cell 3 and a Screening Level Ecological Risk Assessment (SLERA) for the entire CSL

Site History

- 2007 Groundwater RI for the CSL (EM Federal Corporation, 2007) included limited trenching and sampling at Cell 3:
  - one surface soil and two subsurface soil samples were collected from six test pit trenches.
- A Proposed Plan and Record of Decision for the CSL Cells 1 and 2 are under regulatory review. These documents exclude Cell 3 and do not address any potential ecological environmental impacts presented by the CSL.

Cell 3 Remedial Investigation

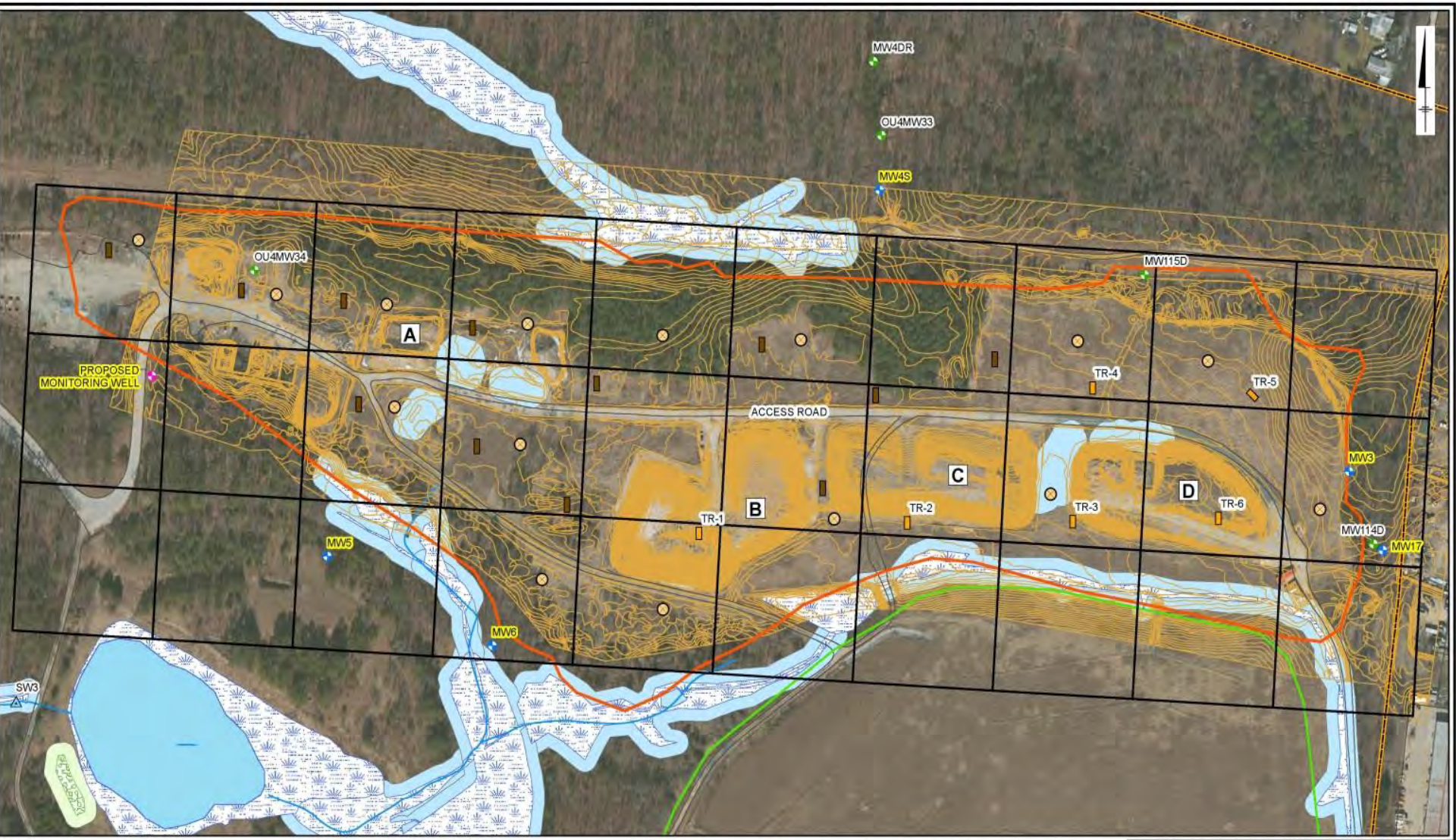
- Further investigation is necessary to complete a comprehensive RI for Cell 3.
  - The RI will include a Human Health Risk Assessment (HHRA) for Cell 3.
- Additional RI field activities are necessary to complete a SLERA for the entire CSL area.

Objectives

- Identify and delineate the nature and extent of landfill material at Cell 3;
- Characterize the nature and extent of contaminants in surface and subsurface soil across Cell 3;
- Characterize the nature and extent of contaminants in groundwater and confirm groundwater flow gradients at Cell 3; and
- Evaluate human health (Cell 3) and ecological risk (entire CSL Study Area).

Cell 3 RI Field Effort

- 12 additional test pits (6 were installed during the 2007 RI) to visually document the nature and extent of landfill material and collect soil samples beneath the trash.
- 15 Direct Push Technology (DPT) sampling locations. Collect 2 soil samples per location – ground surface and at water table.
- 15 soil gas samples collected in proximity to each DPT borehole,
- 1 additional shallow monitoring well (5 existing shallow wells are located in the vicinity of Cell 3).
- 2 groundwater sampling events.



LEGEND:

- PROPOSED SOIL BORING/SOIL GAS SAMPLE LOCATION
- PROPOSED UPPER AQUIFER MONITORING WELL
- UPPER AQUIFER WELL
- LOWER AQUIFER WELL
- SURFACE WATER LOCATION
- TOPOGRAPHIC CONTOURS (2015 SURVEY)
- APPROXIMATE CELL BOUNDARIES
- CELL 3 INFERRED BOUNDARY
- 2007 TEST PIT (LOCATION AND DIMENSIONS APPROXIMATE)
- PROPOSED TEST PIT LOCATION
- INSTALLATION BOUNDARY
- A SOIL STOCKPILE AREA
- STREAM
- SURFACE WATER
- ISOLATED WETLAND (MDE)
- ISOLATED WETLAND BOUNDARY (25 FT MDE)
- JURISDICTIONAL WETLANDS & WATERS OF THE UNITED STATES
- CZM RIPARIAN & WETLAND BUFFER (25 FT)

0 200 400 Feet

GRAPHIC SCALE

NOTES:

WELLS HIGHLIGHTED IN YELLOW WILL BE SAMPLED AS A COMPONENT OF THE RI FIELD EFFORT.

MDE (MARYLAND DEPARTMENT OF THE ENVIRONMENT), FT (FEET), CZM (COASTAL ZONE MANAGEMENT)

SERVICE LAYER CREDITS: SOURCE: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, USDA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY

CLOSED SANITARY LANDFILL, CELL 3 (FGGM-97)
FORT GEORGE G. MEADE, MARYLAND

PROPOSED SAMPLE LOCATION MAP

ARCADIS

FIGURE 3

HHRA and SLERA

Objective of the CSL Cell 3 HHRA:

- Determine if site-related concentrations of constituents of potential concern in environmental media (e.g., groundwater, surface water, sediment) at Cell 3 pose an unacceptable risk to human health.

Objective of the CSL SLERA:

- Determine if site-related concentrations of constituents of potential ecological concern in environmental media (e.g., groundwater, soil, surface water, sediment) at CSL Cells 1, 2, and 3 pose an unacceptable risk to ecological receptors (e.g., fish and wildlife).

SLERA Summary

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CSL Field Effort:

Ten co-located surface water and sediment grab samples will be collected from stream and waterbodies across the entirety of the CSL Study Area, spanning all three cells and the surrounding wooded areas, to support completion of a SLERA for the CSL.

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Schedule

- 23 June 2016 - Draft RIWP submitted to EPA and MDE.
  - 24 August 2016 - MDE submitted comments.
- 18 October 2016 - Estimated submittal of Draft Final RIWP to EPA and MDE
- 16 December 2016 - Estimated submittal of Final RIWP to EPA and MDE
- 10 January 2017 – Estimate when field work begins


Questions?

Acronyms and Abbreviations

- AECOM – AECOM Technical Services, Inc.
- COE – Corps of Engineers
- CSL – Closed Sanitary Landfill
- DPT – Direct Push Technology
- E&SC – Erosion and Sediment Control
- EM – electromagnetics
- EPA – U.S. Environmental Protection Agency
- FGGM – Fort George G. Meade
- FS – Feasibility Study
- ft – foot

Acronyms and Abbreviations (cont'd)

- GIS – Geographic Information System
- HHRA – Human Health Risk Assessment
- MDE – Maryland Department of the Environment
- OU – Operable Unit
- RAB – Restoration Advisory Board
- RI – Remedial Investigation
- RIWP – Remedial Investigation Work Plan
- SLERA – Screening Level Ecological Risk Assessment
- TP – test pit

Points of Contact

U.S. Army Garrison Fort George G. Meade
Directorate of Public Works-Environmental Division
Mailing address:
4216 Roberts Ave, Suite 5115, Fort Meade, Maryland 20755-7068
Physical Address (FedEx):
Building 2460, 85th Medical Battalion Avenue, Fort Meade MD 20755

Points of Contact:
Mr. Michael “Mick” Butler, Environmental Div. Chief
301.677.9188
michael.p.butler50.civ@mail.mil

Mr. George Knight, Installation Restoration Program, Manager
301.677.7999
george.b.knight7.civ@mail.mil