

# 2017 Annual Landfill Inspection Report

**Landfill**

**Rockport Plant  
Indiana Michigan Power Company  
Rockport, Indiana**

**August 10, 2017**

Prepared for: Indiana Michigan Power Company – Rockport Plant

Prepared by: American Electric Power Service Corporation

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Columbus, OH 43215



BOUNDLESS ENERGY™

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Rockport Plant

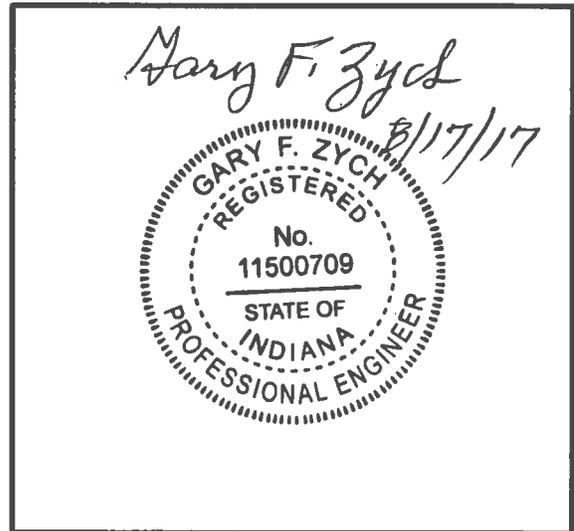
Landfill

Document Number: GERS-17-020

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I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

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## **1.0 INTRODUCTION**

This report was prepared by AEP- Geotechnical Engineering Services (GES) section, in part, to fulfill requirements of 40 CFR 257.84 and to provide the Rockport Plant an evaluation of the facility.

Mr. Daniel W. Pizzino, P.E. performed the 2017 inspection of the Landfill at the Rockport Plant. This report is a summary of the inspection and an assessment of the general condition of the facility. Mr. Mitch Montgomery, the landfill supervisor for the Plant, was the facility contact. The inspection was performed on July 25, 2017. Weather conditions were sunny and the temperature was in the mid 80's(°F). There was 1.3-inch of rainfall over the seven days prior to the inspection. Portions of the landfill had been recently mowed and mowing operations were ongoing during the inspection.

## **2.0 DESCRIPTION OF LANDFILL**

The overall features of the landfill were categorized into the following components as a means of organizing the inspection and reporting:

- Closed Landfill Area
- Active Landfill Disposal Areas (Cells 1B, 2, and 3)
- 2015 Landfill Construction Area (Cell 1A)
- 2016 Landfill Construction Area (Cell 5 and 4A)
- Inactive Landfill Areas (Cells 4B, 6, and 7)
- Leachate Ponds
- Storm Water Drainage Ditches

These features, including the approximate limits of each area, are shown on the Figure 1of Attachment B. Selected photographs taken during the inspection and used to illustrate the visual observations presented in the report are presented in Attachment A. Additional inspection photos can be made available to the Plant upon request.

The Closed Landfill Area is located on the north and east sides of the landfill as shown on Figure 1. This area of the landfill was constructed between 1985 and 1987 and was used for disposal of Type II ash. The area was closed and final cover was placed between 2000 and 2007. The final cover consists of twenty-four (24) inch thick compacted clay cover and a six (6) inch thick topsoil cover to support vegetation.

The Active Landfill Disposal Areas (Cells 1B, 2 and 3) is currently where waste is being placed. The constructions of these lined cells were completed in 2015 in order to dispose of the Type I Dry Sorbent Injection Ash.

The 2015 Landfill Construction Area (Cell 1A) was completed in 2015. A portion of this cell was constructed over the slope of the previously filled Type II landfill area and a perimeter berm constructed along the southeastern edge of the cell is tied into the existing landfill cap. Intermediate cover over the area consisting of soil and vegetative cover was placed over the area in 2016.

The 2016 Landfill Construction Area (Cell 5 and 4A) was completed in 2016. A portion of this cell was built over the slope of the previously filled Type II landfill area and a perimeter berm construction along the eastern edge of Cell 5 is tied into the existing landfill cap. Protective cover has been placed over the entire area consisting of ash. Discussions with the Plant indicate that soil and vegetative cover will be placed over the entire area starting in 2017.

Inactive Landfill Areas (Cell 4B, 6, and 7) consist of a Perimeter berm and Type II soil liner construction that was completed for these cells during the period from 2012 to 2014 and the area is reserved for future composite liner construction. A layer of intermediate cover soils is in place over part of the Type II soil liner area and is generally vegetated.

### **3.0 REVIEW OF AVAILABLE INFORMATION (257.84(b)(1)(i))**

A review of available information regarding the status and condition of the Landfill which include files available in the operating record, such as design and construction information, previous periodic structural stability assessments, previous 7 day inspection reports, and previous annual inspections has been conducted. Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions.

### **4.0 INSPECTION (257.84(b)(1)(ii))**

#### **4.1 CHANGES IN GEOMETRY SINCE LAST INSPECTION (257.84(b)(2)(i))**

No modifications have been made to the geometry of the Landfill since the 2016 annual inspection. The geometry of the landfill has remained essential unchanged.

#### **4.2 VOLUME (257.84(b)(2)(ii))**

The total volume of ash disposed at the landfill up to the 2017 inspection date of July 25, 2017 was estimated to be 745,866 tons of Type I ash and 5,647,448 tons of Type II ash.

#### **4.3 DEFINITIONS OF VISUAL OBSERVATIONS AND DEFICIENCIES**

This summary of the visual observations uses terms to describe the general appearance or condition of an observed item, activity or structure. The meaning of these terms is as follows:

- Good: A condition or activity that is generally better or slightly better than what is minimally expected or anticipated from a design or maintenance point of view.
- Fair/Satisfactory: A condition or activity that generally meets what is minimally expected or anticipated from a design or maintenance point of view.
- Poor: A condition or activity that is generally below what is minimally expected or anticipated from a design or maintenance point of view.
- Minor: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is below what is normal or desired, but which is not currently causing concern from a structure safety or stability point of view.
- Significant: A reference to an observed item (e.g. erosion, seepage, vegetation, etc.) where the current maintenance program has neglected to improve the condition. Usually conditions that have been identified in the previous inspections, but have not been corrected.
- Excessive: A reference to an observed item (e.g., erosion, seepage, vegetation, etc.) where the current maintenance condition is above or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the

structure or particular area being observed or which may be a concern from a structure safety or stability point of view.

This document also uses the definition of a “deficiency” as referenced in the CCR rule section §257.84(b)(5) Inspection Requirements for CCR Landfills. This definition has been assembled using the CCR rule preamble as well as guidance from MSHA, “Qualifications for Impoundment Inspection” CI-31, 2004. These guidance documents further elaborate on the definition of deficiency. Items not defined by deficiency are considered maintenance or items to be monitored.

A “deficiency” is some evidence that a landfill has developed a problem that could impact the structural integrity of the landfill. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage (Leachate Outbreak)  
Leachate outbreak is the uncontrolled release of leachate from the landfill.
2. Displacement of the Embankment  
Displacement of the embankment is large scale movement of part of the dam. Common signs of displacement are cracks, scraps, bulges, depressions, sinkholes and slides.
3. Blockage of Control Features  
Blockage of Control Features is the restriction of flow at spillways, decant or pipe spillways, or drains.
4. Erosion  
Erosion is the gradual movement of surface material by water, wind or ice. Erosion is considered a deficiency when it is more than a minor routine maintenance item.

#### **4.4 VISUAL INSPECTION (257.84(b)(1)(ii))**

A visual inspection of the Landfill was conducted to identify any signs of distress or malfunction of the landfill and appurtenant structures. Specific items inspected included all structural elements of the landfill perimeter berms, temporary and final covers, drainage features, leachate ponds, open cells, and appurtenances such as chimney drains etc.

Overall the facility is in good condition. The landfill is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of the landfill. Inspection photos are included in Attachment A. Additional pictures taken during the inspection can be made available upon request. A map presenting locations of the inspection observations is included in Attachment B.

#### **Closed Landfill Areas**

1. The closed landfill area was observed to have a thick stand of grass cover over the entire capped area. Runoff from the cap was draining as designed. There were no signs of settlement, signs of movement or distress of the landfill area. Access roads on top and adjacent to the landfill area were in good condition.
2. At the north west side of the Closed Landfill Area adjacent to Cell 4A along the south side of the haul road there was minor erosion discovered along the drainage channel (Observation 1).
3. At the south east side of the landfill there was an area of minor erosion observed on the cap (Observation 2).

### **Active Landfill Disposal Areas (Cell 1B, 2 & 3)**

4. During the inspection the active disposal areas were being used for waste placement. The chimney drains were functioning as designed and there was no pooling water around the drains. Waste was being compacted as it was placed.
5. At an area to the north and west of Cell 1B minor erosion was observed. The erosion extended approximately 50-feet along a steepened section where drainage collects off the face of the cell. In several isolated areas the erosion was over 12-inches deep and has eroded the intermediate cover. (Observation 3)
6. The perimeter berms of Cell 2 and 3 were vegetated in 2016. The areas appear to have been seeded with a mixture of perennial and annual grasses to help promote initial growth. It was observed that the annual grasses were in general well established to prevent erosion but have now died. The establishment of the perennial grasses is currently thin. (Observation 4) In several areas the soil is bare and is experiencing minor erosion. (Observation 5)
7. Due to heavy rains several days prior to the inspection ponding water was observed in the lower pockets of the active area along the north side of Cell 2 and Cell 3. (Observation 6)

### **2015 Construction Area (Cell 1A)**

8. Cell 1A was well vegetated and was recently mowed. There were no signs of depressions, cracks, sloughs or other signs of distress. In general the area was in good condition.
9. There was an area of minor erosion observed on the west edge of Cell 1A. The erosion was approximately 6" in depth and isolated to the temporary cover soil. (Observation 7)

### **2016 Construction Area (Cell 5 & 4A)**

10. A majority the surface of Cell 5 and 4A consisted of ash which was placed as protective cover over the newly constructed cells. In general the ash surface was in fair condition with minor erosion rills observed in the surface of the protective cover (Observation 8).
11. The perimeter berm located on the eastern side of Cell 5 and Cell 4A ties into the final cover of the Closed Landfill Area. There were no signs of depressions, cracks, bulges or other signs of distress. The area was seeded in 2016 and in general the area was well vegetated however there were several thin areas of vegetation (Observation 9). A silt fence used during construction is damaged in several areas and does not appear to be need any longer. (Observation 10).
12. Several areas of the 4A were observed to have standing water. This was observed after a significant rain event several days prior to the inspection but appear to draining slowly.

### **Inactive Landfill Areas (Cell 4B, 6 & 7)**

13. The inactive landfill cells 4B, 6 and 7 were in good condition. The vegetative cover was well established and in good condition. The perimeter drainage culverts appeared to be functioning as designed. There were several areas of ponded water that were observed which appear to be from the significant rain event several days prior to the inspection.

### **Leachate Ponds**

14. The North Pond was generally in good condition. At the time of the inspection both cells were filled. The concrete lined cell did not appear to have any signs of damage, cracks or spalling. The exposed lined section did not show any signs of damages such as tears or holes. There were no signs of blockage of the inlet and outlet piping. The fence surrounding the leachate pond was in good condition.
15. The West Pond was generally in good condition. At the time of the inspection the West Pond was filled. The concrete lined portion appeared to be in good condition with no damage, cracks

or spalling. The exposed lined section was in good condition with no signs of tears or holes. The inlet and outlet pipes were clear with no blockage.

16. There were recently installed fountain feature as well as baffle curtains to create a serpentine flow through the concrete lined portion of the West Pond. These baffles were constructed as part of the water quality treatment for the leachate effluent by adding residence time within the basin. These features appeared to be functioning as designed (Observation 11).
17. The 002 Pond was generally in good condition. At the time of the inspection the 002 pond was filled. The exposed liner was in good condition with no signs of tears or holes. The embankment structure of the pond was well vegetated and showed no signs of distress. The inlet and outlet pipes were clear with no blockage.

#### **Storm Water Drainage Ditches**

18. The perimeter ditches to the West and South were in good condition with no signs of erosion or blockage and appeared to be functioning as designed.
19. The drainage ditch to the north of Cell 4A at the corner near the Closed Landfill Area was partially blocked with sediment. The energy rip rap apron were covered with soil that appears to be from erosion of the upstream ditch. The partial blockage created ponding in this area. Sediment fence in this area was damaged and full of sediment (Observation 12).

#### **4.5 CHANGES THAT EFFECT STABILITY OR OPERATION (257.84(b)(2)(iv))**

Based on interviews with plant personnel and field observations there were no changes to the Landfill since the last annual inspection that would affect the stability of the Landfill.

## **5.0 SUMMARY OF FINDINGS**

### **5.1 GENERAL OBSERVATIONS**

The following general observations were identified during the visual inspection:

- 1) In general the landfill is functioning as intended and the active cells, inactive cells, closed areas, leachate ponds and ditches are in good condition. The Plant is performing regular maintenance and inspections as required. Due to heavy rain several days prior to the inspection there was standing water in areas. Pumping systems can be utilized to drain any areas that are not free draining prior to meeting final grades. Several maintenance items have been noted and are described in Section 5.2.

### **5.2 MAINTENANCE ITEMS**

The following maintenance items were identified during the visual inspection, see inspection map for locations. Contact GES for specific recommendations regarding repairs:

- 2) Repair eroded channel along the north west of the Closed Landfill Area adjacent to Cell 4A along the haul road. (Observation 1)
- 3) Repair erosion at the south east portion of the Closed Landfill Area by placement of soil and vegetative cover. If necessary install erosion control blankets. (Observation 2)
- 4) Repair erosion located along the north east side of Cell 1B by placement of rip rap within the channel and seed adjacent areas. (Observation 3)
- 5) Reseed thin and bare areas of vegetation and repair any erosion along the perimeter berm of

- Cell 2 and 3. If necessary perform an agriculture soil analysis for specific soil amendment recommendations. (Observation 4 & 5)
- 6) Within the Active Landfill Disposal Areas provide positive drainage to areas that currently pool runoff. Runoff should be directed to the West Pond. (Observation 6)
  - 7) Repair erosion located on within the intermediate cover of Cell 1A by regrading and placement of soil and vegetative cover within the erosion rill. If necessary install erosion control blankets. (Observation 7)
  - 8) Periodically regrade exposed ash protective cover within Cell 4A and Cell 5 to repair and prevent erosion. As planned, place intermediate soil cover and vegetate surface over exposed ash. (Observation 8)
  - 9) Reseed thin and bare areas of vegetation cover along the perimeter berm of Cell 4A and 5. (Observation 9)
  - 10) Repair or remove silt fence located along the perimeter berm of Cell 4A and 5. Contact plants environmental representative to determine if silt fence can be removed. (Observation 10)
  - 11) Remove sediments in the channel at the corner of Cell 4A and the Closed Landfill Area to allow for positive drainage. Repair sediment fence in channel or remove once upstream areas have been stabilized. (Observation 12)

### **5.3 ITEMS TO MONITOR**

The following items were identified during the visual inspection as items to be monitored, see inspection map for locations:

- 12) No items were noted for monitoring.

### **5.4 DEFICIENCIES (257.84(b)(2)(iii))**

There were no signs of structural weakness or disruptive conditions that were observed at the time of the inspection that would require additional investigation or remedial action. There were no deficiencies noted during this inspection or during any of the periodic 7-day inspections. A deficiency is defined as either 1) uncontrolled seepage (leachate outbreak), 2) displacement of the embankment, 3) blockage of control features, or 4) erosion, more than minor maintenance. If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

**ATTACHMENT A**

**Photos**

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1

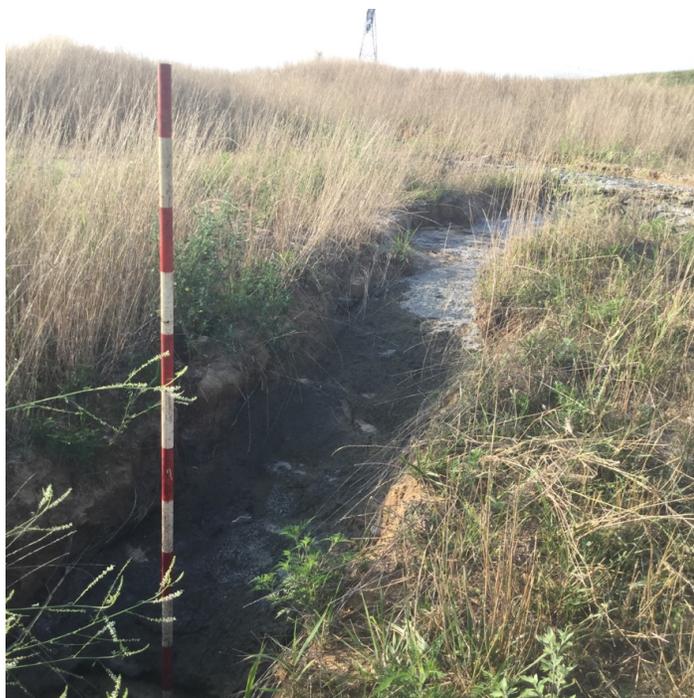


Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



Recommendations:

# AEP GES Landfill Inspection

Plant Name:

Observation #:

Unit:

Date:

Observation:

Location:

Photo #1



Photo #2



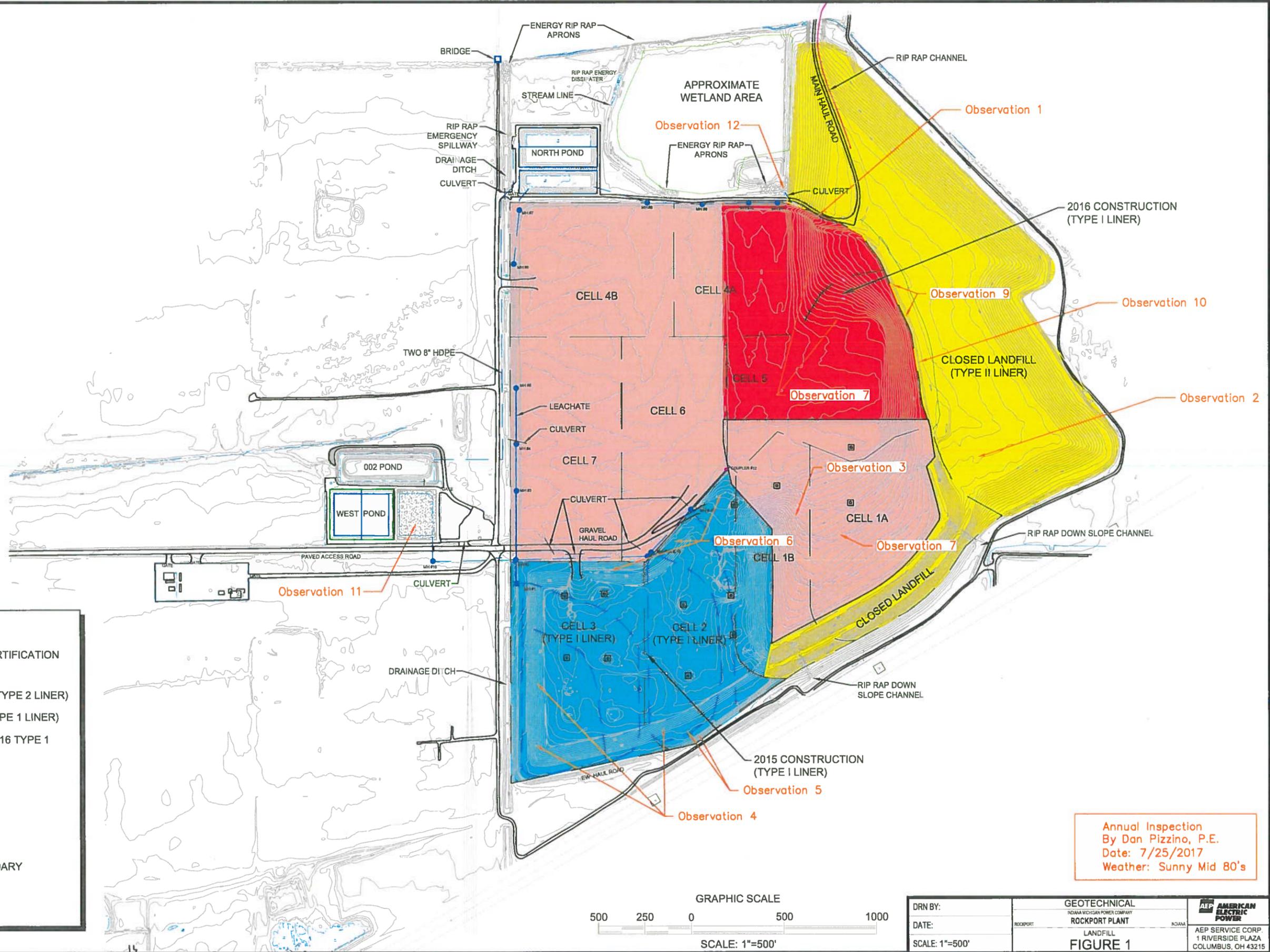
Recommendations:

**ATTACHMENT B**

**Inspection Map**



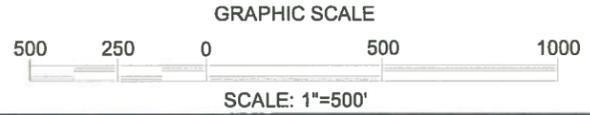
HORIZONTAL DATUM NAD27  
INDIANA WEST ZONE  
VERTICAL DATUM NGVD29



**LEGEND:**

- TOPOGRAPHIC CONTOURS ASBUILT SURFACE FOR CERTIFICATION
- CLOSED LANDFILL AREA
- INACTIVE DISPOSAL AREA (TYPE 2 LINER)
- ACTIVE DISPOSAL AREA (TYPE 1 LINER)
- APPROXIMATE LIMITS OF 2016 TYPE 1 LINER CONSTRUCTION
- RIP RAP
- CONCRETE
- SURFACE WATER STREAM OR DRAINAGE CHANNEL
- CULVERT PIPE
- LEACHATE PIPE
- APPROXIMATE CELL BOUNDARY
- CONTROL POINT
- CHIMNEY DRAIN
- LEACHATE MANHOLE

Annual Inspection  
By Dan Pizzino, P.E.  
Date: 7/25/2017  
Weather: Sunny Mid 80's



DRN BY:	GEOTECHNICAL	
DATE:	INDIANA MICHIGAN POWER COMPANY ROCKPORT PLANT	
SCALE: 1"=500'	LANDFILL	AEP SERVICE CORP. 1 RIVERSIDE PLAZA COLUMBUS, OH 43215
<b>FIGURE 1</b>		