2022 Annual Landfill Inspection Report

Landfill

Rockport Plant

Indiana Michigan Power Company

Rockport, Indiana

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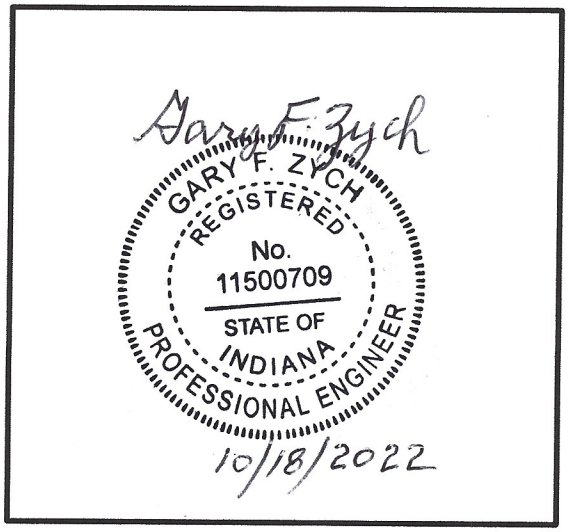


I certify to the best of my knowledge, information and belief the information contained in this report meets the requirements of 40 CFR § 257.84(b).

Table of Contents

Attachments

List of Figures

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. Dan Murphy performed the 2022 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. Larry Hofius, the landfill supervisor for the Plant, was the facility contact. The inspection was performed on September 15, 2022. Weather conditions during the inspection had temperatures near 80°F, sunny skies and dry ground conditions. There was 0.3 inches of rainfall recorded over the seven days prior to the inspection. On 9/3/2022, the Rockport plant received about 4.5 inches of rain and on 9/5/2022 another 2.5 inches of rain.

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 1A, 1B, 2, and 3)
- 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 1.

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 Area (Cells 1A, 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 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. A soil and vegetative cover was placed over the entire area 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 7 day inspection reports, and previous annual inspections has been conducted.

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 2021 annual inspection. The geometry of the landfill has remained essential unchanged, except for the changes in topography of the active landfill area due to placement of ash.

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

The total volume of ash disposed at the landfill up to the 2022 inspection date of September 15, 2022 was estimated to be 2,600,740 tons of Type I ash and 5,647,488 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 it is normal or desired, or which may have affected the ability of the observer to properly evaluate the structure or particular area of interest 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 identified as a deficiency are considered routine maintenance items 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 landfill or perimeter berm. Common signs of displacement are cracks, scarps, 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.

LEACHATE PONDS

1. The North Pond was generally in good condition. At the time of the inspection both cells were filled and operating with about 5 feet of freeboard.
2. A small crack in the concrete liner of the West Pond was observed, and is located just above the leachate outlet pipes entering the pond from the south. There was about 3/8 inch vertical offset across this crack.
3. The West pond concrete lined portion was operating with about 4 feet of freeboard. The concrete lined section in general is in good condition with no signs of damage (except for small crack noted above).
4. The 002 Pond is out of service and was generally in good condition and had 7 feet of freeboard due to ponded freshwater. A new LLDPE liner has been installed in leachate pond 002. The exterior slopes of 002 Pond have been armored with riprap, and a new gravel wearing course added to the crest.
5. A leak detection survey was conducted in leachate pond 002. 4 small liner leaks were identified in the survey. Plans are in place to repair the leaks.
6. Cracks in the above grade concrete thrust blocks for the eastern influent lines into Pond 002 were observed.

7. The concrete lined cell of the North Pond did not appear to have any signs of damage, cracks or spalling. There were no signs of blockage of the inlet and outlet piping. The fence surrounding the leachate pond was in good condition.
8. There was one area at the North Pond, close to the leachate sump, where a circular liner patch appeared to be separating from the liner.

ACTIVE LANDFILL DISPOSAL AREAS (CELL 1A, 1B, 2 & 3)

1. A 10-foot tall soil containment berm has been constructed along the northern edge of Cell 1A in 2021. Standing contact water was observed along the south side of the berm, between the berm and ash.
2. During the inspection, ash was being placed in the active disposal areas. Bottom ash from the cleanout of the East Bottom Ash Pond was drying out in areas of the active landfill. Soil from a 1-foot deep cut below the top of ash from the East Bottom Ash Pond was being placed to supplement near future temporary soil cover.
3. The chimney drains appear to be functioning as designed and there was some pooling of water around the drains and appeared to be related to topography/grade.
4. The surface of Cells 1B, 2 & 3 were being prepared to receive temporary soil cover.
5. An erosional feature near the edge of perimeter berm on the south side of Cell 2 was observed.
6. There was evidence of overtopping of the containment berm on the south side of Cell 2. A small ash delta was observed in the grass cover outside the containment berm. The limits of the ash delta were contained within the permitted landfill boundary. Erosion features inside the limits of the ash have already been repaired.

CLOSED LANDFILL AREAS

1. There was an area of erosion occurring on the northern edge of a riprap channel adjacent to the landfill access road. The erosion rill was about 2 feet deep. Rodent burrows were also found in this area.
2. The closed landfill area was observed to have a thick grass cover over the entire capped area that had recently been mowed. There were no signs of settlement, signs of movement or distress of the landfill area. The closed landfill area was in good condition and well maintained.

2016 CONSTRUCTION AREA (CELL 4A & 5)

1. Cell 4A & 5 had temporary grass cover that was in good condition. There were no signs of settlement, movement or distress in this area. The resoiling efforts performed last year have improved the grass coverage.

INACTIVE LANDFILL AREAS (CELL 4B, 6 & 7)

1. The inactive landfill cells 4B, 6 and 7 were in good condition. The vegetative cover was well established and in good condition.
2. Repairs to the intermediate berm were recently completed in 2021 a leachate seepage deficiency. Grass cover was well established and there were no signs of leachate seepage in this area.

3. There was a small section on the exterior slope of the perimeter berm of Cell 7 that showed sparse vegetation with minor erosion.

STORM WATER DRAINAGE DITCHES

1. 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.

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. Several improvement to the facility have been completed over the past three years, including efforts to improve the temporary grass cover, new pond liner installation in leachate pond 002 and the leachate seepage repair to address a previous deficiency.

   The Plant is performing regular maintenance and inspections as required. 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:

1) Improve the ash surface grades near the north side of Cell 1A so that contact water runoff if directed to the chimney drains.

2) Repair the peeling circular patch on the exposed liner in the north leachate pond.

3) Repair the erosion feature on the perimeter berm on the south side of Cell 2.

4) Remove the ash outside of the containment on the south side of Cell 2 and repair the grass cover.

5) Improve the grass cover in a small area on the exterior slope of perimeter berm of Cell 7.

6) Repair the erosion rill and rodent burrow noted adjacent to the riprap channel located on the closed landfill.

7) Install a suitable sealant in the crack in the concrete lined section of the west pond, located above the leachate discharge pipe.

8) Continue with plans to repair the small liner leaks in leachate pond 002.

5.3 ITEMS TO MONITOR

1) Monitor the interim berm seepage repair area for any signs of seepage.

2) Monitor the cracked thrust block on the leachate influent lines on the east side of pond 002 for any additional movement or distress.

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.

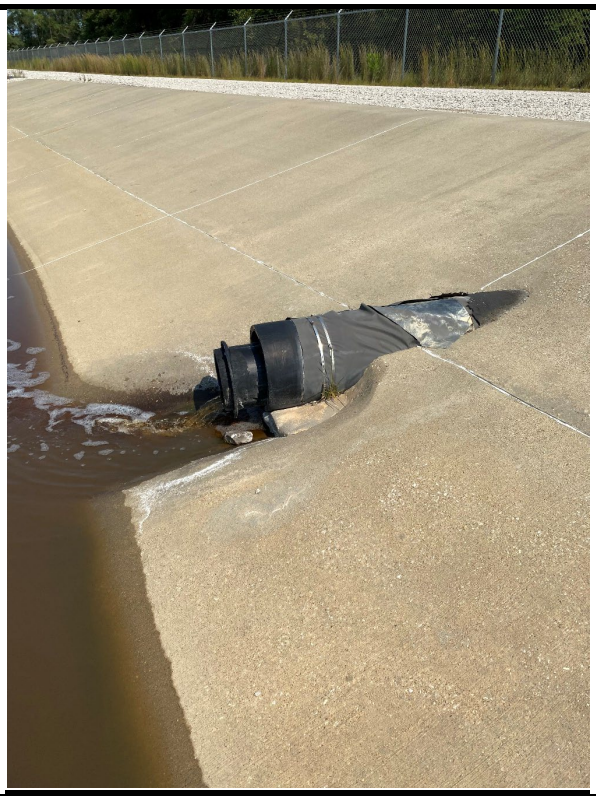
Based on the review of the data there were no signs of actual or potential structural weakness or adverse conditions. A deficiency is defined as either 1) uncontrolled seepage (leachate outbreak), 2) displacement of the embankment, 3) blockage of control features, or 4) erosion, more than minor maintenance. If any of these conditions occur before the next annual inspection contact AEP Geotechnical Engineering immediately.

ATTACHMENT A

Photos

	Photograph 1: View of the leachate influent line at the west leachate pond. The crack in the concrete noted by the red arrow.
	Photograph 2: View of the west leachate pond.

	Photograph 3: View of the discharge structure at leachate pond 002.
	Photograph 4: View of a crack in the exposed thrust block on the east side of pond 002.

	Photograph 5: View of some sparse grass cover and minor erosion on the exterior perimeter berm of Cell 7.
	Photograph 6: View of the leachate influent line into the north pond complex.

	Photograph 7: View of rodent burrow on the closed landfill section.
	Photograph 8: View of the erosional feature on the south side of Cell 2.

	Photograph 9: Another view of the erosional feature on the south side of Cell 2.
	Photograph 10: View of the containment berm on the south side of Cell 2. Notice the ash delta has overtopped the containment berm. The area noted by the red arrow was an erosion feature that was already repaired.

	Photograph 11: View showing evidence of ash delta in the grass cover, but within the landfill boundary.
	Photograph 12: View showing standing contact water between the soil berm and ash in Cell 1A.

	Photograph 13: View showing the leachate seepage outbreak area that was repaired in 2021.
	Photograph 14: View of a chimney drain near Cell 1A.

		Photograph 15: View of the active placement waste area.

Figures

Inspection Map

N

HORIZONTAL DATUM NAD27
INDIANA WEST ZONE
VERTICAL DATUM NGVD29

BRIDGE
ENERGY RIP RAP APRONS
RIP RAP ENERGY DISSIPATER
STREAM LINE
APPROXIMATE WETLAND AREA
RIP RAP CHANNEL
MAIN HAUL ROAD
RIP RAP EMERGENCY SPILLWAY
NORTH POND
ENERGY RIP RAP APRONS
CULVERT
CULVERT
CIRCULAR LINER PATCH LOOSE
EROSION & RODENT BURROW ON NORTH SIDE OF RIPRAP
DRAINAGE DITCH
CELL 4B
CELL 4A
2016 CONSTRUCTION (TYPE I LINER)
TWO 8" HDPE
CONTAINMENT BERM
CELL 5
CLOSED LANDFILL (TYPE II LINER)
SPARSE VEGETATION & MINOR EROSION
LEACHATE
CELL 6
CRACKED THRUST BLOCK
CULVERT
IMPROVE GRADING TO SLOPE TOWARDS CHIMNEY DRAINS
CELL 7
002 POND
CULVERT
WEST POND
GRAVEL HAUL ROAD
CELL 1A
RIP RAP DOWN SLOPE CHANNEL
PAVED ACCESS ROAD
CELL 1B
CULVERT
CLOSED LANDFILL
CELL 3 (TYPE I LINER)
CELL 2 (TYPE I LINER)
DRAINAGE DITCH
RIP RAP DOWN SLOPE CHANNEL
ASH DELTA FROM RECENT RAIN EVENT
2015 CONSTRUCTION (TYPE I LINER)
NEW HAUL ROAD
EROSIONAL FEATURE

GRAPHIC SCALE
500 250 0 500 1000
SCALE: 1"=500'

LEGEND:

- 510 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
- MH LEACHATE MANHOLE

Annual Inspection
By Dan Murphy
Date: September 15, 2022

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