



Bottom Ash Complex 2024 Annual Dam and Dike Inspection Report

Mitchell Plant, Marshall County, West Virginia

Submitted to:

American Electric Power Service Corporation
1 Riverside Plaza
Columbus, OH 43215

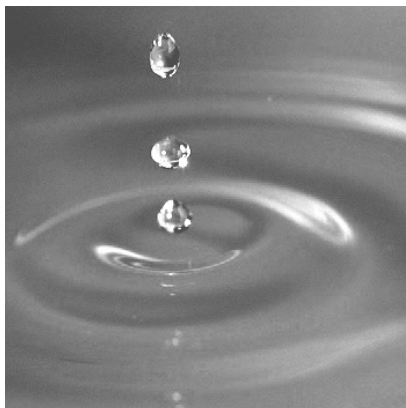
Submitted by:

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October 28, 2024

Project 2305686

AEP Document ID: GEVR-24-030



Pedro Amaya, PE
Senior Consultant

Jeff Piaskowski, PE
Senior Engineer

2024 Annual Inspection Report

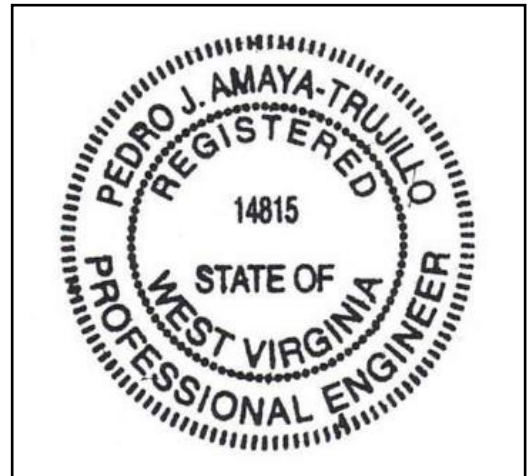


**Bottom Ash Complex
Mitchell Power Plant
AEP Document ID: GEVR-24-030**

A handwritten signature in black ink that reads "Pedro J. Amaya". The signature is written in a cursive style with a horizontal line underneath it.

Signature

Pedro Amaya, PE
Senior Consultant
GEI Consultants Inc.



November 5, 2024

Date


SEAL

I certify, to the best of my knowledge, that the information provided in this report satisfies the requirements of 40 CFR 257.83(b).

OWNER'S ENGINEER INSPECTION VERIFICATION STATEMENT

For Compliance with Dam Safety Rule 47CSR34-15.4.c

I hereby verify that I *or an experienced engineer under my supervision*, conducted a visual inspection of the Mitchell Bottom Ash Complex Dam (ID # 05108) and its appurtenances on September 4, 2024. The attached signed and sealed inspection report documents: 1) the current conditions as observed; 2) any maintenance items necessary to prolong safe functioning of the dam; 3) any conditions observed during the inspection which indicate that the dam has a serious problem* and 4) any conditions that will not allow proper operation of the dam during normal or maximum reservoir water level conditions.



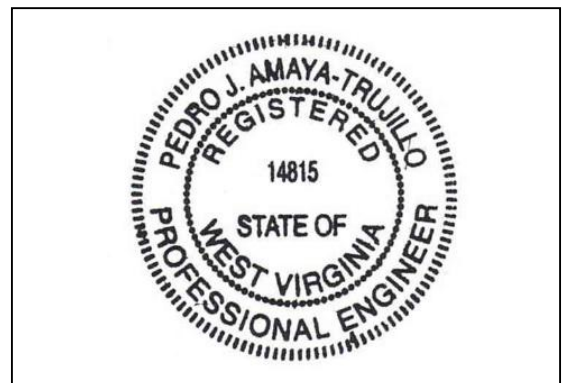
Signature

Pedro Amaya, PE

Printed Name and Title

November 5, 2024

Date



*as defined in Section 2.56 of the Dam Safety Rule

Submit to:
DEP Dam Safety Section
601 57th Street SE
Charleston, WV 25304
DEPDamSafetyProgram@wv.gov

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Appendix A – Photolog

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1. Introduction

GEI Consultants, Inc. was retained by AEP to implement the 2024 Dam Inspection and Maintenance Program (DIMP) at AEP facilities. As part of the program, GEI's Pedro Amaya, P.E. performed the 2024 inspection of the Bottom Ash Complex at the Mitchell Power Generating Plant in general accordance with the requirements of 40 CFR 257.83 and West Virginia Dam Safety Regulations §47-34-15.4.c. Mr. Dennis Henderson was the AEP facility contact. This report was prepared by Pedro Amaya, PE and Jeff Piaskowski, PE of GEI and serves as a summary of the inspection and an assessment of the general conditions of the Bottom Ash Complex at the Mitchell Power Generating Plant.

The inspection was performed on September 4, 2024, in general accordance with the Mining Safety and Health Administration (MSHA) Dam Inspection Guidelines. Weather conditions were partly cloudy with mild temperatures between 70- and 80-degrees Fahrenheit. Approximately 1.75-inches of precipitation was recorded regionally in the 7 days prior to the inspection.

The Mitchell Power Generating Plant is located near Moundsville, West Virginia as shown on Figure 1 – Site Location Map. The facility arrangement is provided on Figure 2 – Facility Plan. The Bottom Ash Complex and its accessory structures are shown on Figure 3 – Site Plan.

2. Description of Impoundments

The Bottom Ash Complex is comprised of the West Bottom Ash Pond, East Bottom Ash Pond, and the Clear Water Pond as shown on Figure 3 – Site Plan. Within the Bottom Ash Complex, the BAP is positioned immediately north of the Clear Water Pond and the south dike of the Bottom Ash Ponds separates it from the Clearwater Pond. The Bottom Ash Pond is an active CCR surface impoundment. AEP does not recognize the Clear Water Pond as a CCR Unit.

The Mitchell BAP was constructed with compacted local sandy soils for the north, west and south perimeters and is partially incised into a natural hillside along the east side. The interior slopes of the Bottom Ash Pond were lined with a polyvinyl chloride (PVC) liner and is overlain with 3 feet of soil. The exterior and interior pond/dike slopes are vegetated (above the pool level on the interior slopes) to minimize erosion.

In order to meet the requirement, set forth in 40 CFR Part 257 (CCR Rule) and 40 CFR Part 423 the Effluent Limit Guidelines (ELG), the Bottom Ash Complex was modified with a new geomembrane liner and new inflow and outflow piping. These modifications were completed in October 2024 and Bottom Ash is no longer sluiced to the Mitchell Bottom Ash Complex.

3. Review of Available Information (257.83(b)(1)(i))

A review of available information regarding the status and condition of the Bottom Ash Complex 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 noted.

4. Inspection (257.83(b)(1)(ii))

4.1 Changes in Geometry Since Last Inspection (257.83(b)(2)(i))

The pond complex has undergoing construction activities in order to meet the CCR and ELG requirements. The ongoing changes affected the operation of the ponds, however, the geometry of the impoundments has remained essentially unchanged with the exception of lowering the height of the outer dikes of the Bottom Ash Pond by approximately 4-feet.

4.2 Impoundment Characteristics (257.83(b)(2)(iii, iv, v))

Table 2 – Bottom Ash Pond Complex Storage Summary provides the minimum, maximum, and present depth and elevation of the impounded water & CCR since the previous annual inspection; the storage capacity of the impounding structure at the time of the inspection; and the approximate volume of the impounded water and CCR at the time of the inspection.

Table 2: Bottom Ash Pond Complex Storage Summary

IMPOUNDMENT CHARACTERISTICS	
	Bottom Ash Pond
Approximate Minimum depth (elevation) of impounded water since last annual inspection	25 ft. (680.0 ft msl)
Approximate Maximum depth (elevation) of impounded water since last annual inspection	25 ft. (680.0 ft msl)
Approximate Present depth of impounded water at the time of the inspection	25 ft. (680.0 ft msl)
Approximate Minimum depth (elevation) of CCR since last annual inspection	0 ft. (655.0 ft msl)
Approximate Maximum depth (elevation) of CCR since last annual inspection	20 ft. (675.0 ft msl)
Approximate Present depth (elevation) of CCR at the time of the inspection	0 ft. (655.0 ft msl)

IMPOUNDMENT CHARACTERISTICS	
	Bottom Ash Pond
Approximate Storage Capacity of impounding structure at the time of the inspection	145,000 C.Y.
Approximate volume of impounded water at the time of the inspection	50,000 C.Y.
Approximate volume of CCR at the time of the inspection	0 C.Y.

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, cracks, concrete surface 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, cracks, concrete surface etc.) where the current maintenance program has neglected to improve the condition. Usually, conditions that have been identified in previous inspections, but have not been corrected.

Excessive: A reference to an observed item (e.g. erosion, seepage, vegetation, cracks, concrete surface etc.) where the current maintenance condition is below or worse than what is normal or desired, and which may have affected the ability of the observer to properly evaluate the structure or 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 the CCR Unit has developed a problem that could impact its structural integrity. There are four general categories of deficiencies. These four categories are described below:

1. Uncontrolled Seepage

Uncontrolled seepage is an uncontrolled release from the unit.

2. Displacement of the Embankment

Displacement of the embankment is large scale movement of part of the pond embankment. 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 (257.83(b)(2)(i))

A visual inspection of the Bottom Ash Pond Complex was conducted to identify signs of distress or malfunction of the impoundment and accessory structures. Specific items inspected included structural elements of the dam such as upstream and downstream slopes, crest, and toe; as well as accessory structure and drainage features.

Overall, the facility is in good condition. The impoundment is functioning as intended with no signs of potential structural weakness or conditions which are disrupting to the safe operation of

the impoundment. Inspection photos are included in Appendix A. The locations of the inspection photos are included on Figure 3 – Site Plan.

4.4.1 Bottom Ash Pond

1. The East Bottom Ash Pond was in good condition. The upstream slope Fabriform lining was in good condition as shown in Photograph No. 1. The East Bottom Ash Pond East Crest was in good condition and recently paved with asphalt as shown in Photograph No. 2. The East Bottom Ash Pond downstream slope was also well vegetated on the south end as shown in Photograph No. 3.
2. The West Bottom Ash Pond was in good condition. The upstream slope geomembrane lining was in good condition as shown in Photograph No. 4. The West Bottom Ash Pond Crest was paved with gravel and in good condition as shown in Photograph No. 5, No. 7, and No. 8. The West Bottom Ash Pond downstream slope was well vegetated but had some areas that should be maintained to 12-inches or less as shown in Photograph No. 5, No. 6, and No. 9. Two railroad ties were identified in the crest that should be removed and regraded as well.

4.4.2 Clear Water Pond

1. The Clear Water Pond was in good condition. The vegetation on the upstream slope was in good condition and maintained to 12-inches or less as shown in Photograph No. 10, No. 12, and No. 13. The Clear Water Pond Crest was paved with gravel and observed in good condition. The Clear Water Pond Outlet/Drainage features were in good condition with no obstructions as shown in Photograph No. 14 and No. 15.

4.5 Instrumentation (257.83(b)(2)(ii))

Four standpipe piezometers exist around the Bottom Ash Complex as shown on Figure 3. Regular readings are recorded for each piezometer at a minimum 30-day interval. The piezometer readings exhibited minor fluctuations month to month during 2024 but were 0.1 to 1.7 feet higher than elevations record in 2023 – which can be attributed to the temporary conditions that were presented as the ponds were being modified. A graph of the piezometer readings is provided in Appendix B – Instrumentation Data.

Table 1: Maximum Annual Piezometer Elevation

Piezometer	Max Groundwater Elevation 2023	Max Groundwater Elevation 2024	Difference (feet)
B-2	660.5	660.4	0.1
B-3	665.1	665.2	0.1
B-4	669.4	667.8	1.6
B-5	664.2	665.9	1.7

Note: Elevations reported in feet mean sea level.

4.6 Changes that Effect Stability or Operation (257.83(b)(2)(vii))

The Bottom Ash Pond Complex was modified to meet the CCR and ELG requirements. The ongoing changes affected the operation of the Bottom Ash Pond Complex, however, the outer geometry of the impoundments has remained unchanged with the exception of lowering the Bottom Ash Pond crest by approximately 4-feet. The modifications were appropriately designed by professional engineer registered in the state of West Virginia who confirmed the modified Bottom Ash Pond design meets acceptable stability factors of safety.

5. Summary of Findings

5.1 General Observations

The facility is generally in good condition. The Bottom Ash Pond Complex appears to be functioning as intended with no signs of structural weakness. The constructed dikes appear in good condition. The vegetation was generally maintained to 12-inches or less and the drainage features were clear of obstructions and appear to be functioning as designed. AEP should continue with the following monitoring activities:

- Monitor the dikes for movement or changes in conditions.
- Record the pond pool stages on a periodic basis with the piezometers.
- Monitor embankment side slopes for animal burrows.

5.2 Items to Monitor

No items were identified as items to be monitored.

5.3 Maintenance Items

The following maintenance items were identified during the visual inspection:

- Continue to maintain the vegetation on the embankment side slopes to a height of 12-inches or less.
- Remove items that could block drainage features.

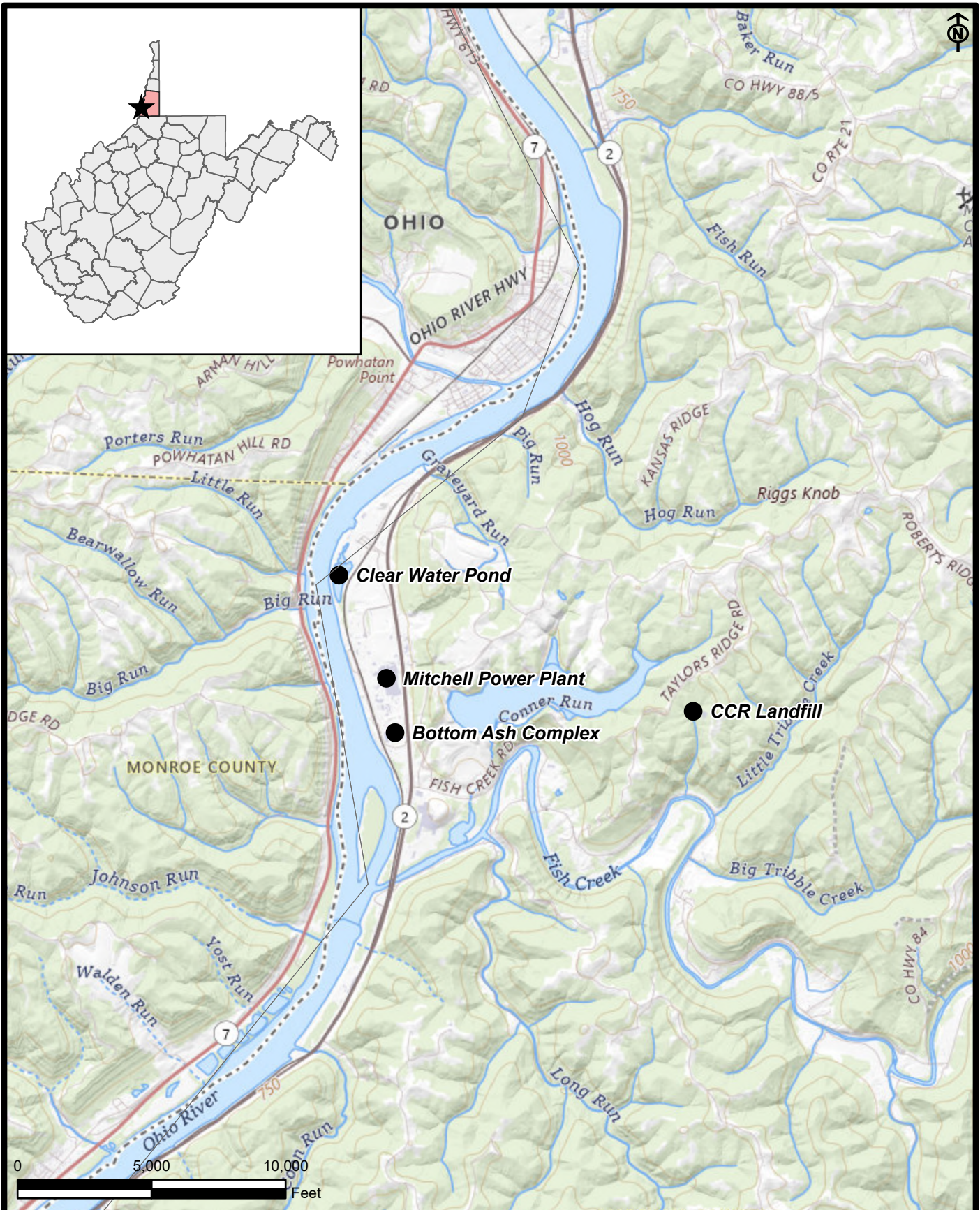
6. Deficiencies (257.83(b)(2)(i))

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 inspections. A deficiency is defined as either:

- uncontrolled seepage
- displacement of the embankment
- blockage of control features
- erosion, more than minor maintenance

If any of these conditions occur or if you have any questions with regard to this report, please contact Mohammad Ajlouni at 614-716-2939 maajlouni@aep.com or Bryan Brunton at 614-716-3090 bwbrunton@aep.com.

Figure 1 – Site Location Map



2024 Annual CCR Bottom Ash Pond Complex Inspection Report
 Mitchell Power Plant
 Marshall County, West Virginia

American Electric Power Service Corporation
 Columbus, OH 43215



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SITE LOCATION DIAGRAM

August 2024

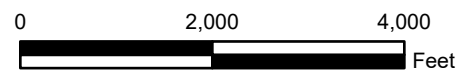
Fig. 1

Figure 2 – Facility Plan



NOTES:

1. Aerial image obtained from USDA NAIP. Image captured spring of 2021.
2. Site conditions may change over time, accuracy is not guaranteed.



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Project 2305686

August 2024


FACILITY PLAN

Fig. 2

Figure 3 – Site Plan

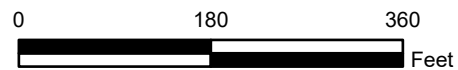


LEGEND:

 General Observation

NOTES:

1. Aerial image obtained from USDA NAIP. Image captured spring of 2021.
2. Points shown represent site conditions during time of inspection. Conditions may change overtime, accuracy is not guaranteed. Map should not be used for measurement.



2024 Annual CCR Bottom Ash Pond Complex Inspection Report
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 Marshall County, West Virginia

American Electric Power Service Corporation
 Columbus, OH 43215



Project 2305686

SITE PLAN

September 2024



Fig. 3

Appendix A - Photolog

Photographic Log





Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 1	DATE: September 4, 2024 8:27 AM	LATITUDE: 39.82433006	LONGITUDE: -80.81438777
DIRECTION: 230°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: East Bottom Ash Pond. Upstream Slope. Note Good Condition of Fabriform Revetment.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 2	DATE: September 4, 2024 8:29 AM	LATITUDE: 39.82432968	LONGITUDE: -80.81412916
DIRECTION: 284°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: East Bottom Ash Pond. Downstream Slope. Note Asphalt Surface on Crest of Eastern Dike.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log





Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 3	DATE: September 4, 2024 8:32 AM	LATITUDE: 39.8242526	LONGITUDE: -80.81426778
DIRECTION: 163°		SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA	
DESCRIPTION: East Bottom Ash Pond. Downstream Slope. General Photo. Note Gravel Surface on Crest of Southern Dike.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 4	DATE: September 4, 2024 8:34 AM	LATITUDE: 39.8241844	LONGITUDE: -80.81510526
DIRECTION: 221°		SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA	
DESCRIPTION: West Bottom Ash Pond. Upstream Slope. Exposed Liner in good condition.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log





Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 5	DATE: September 4, 2024 8:40 AM	LATITUDE: 39.82391542	LONGITUDE: -80.81582125
DIRECTION: 14°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: West Bottom Ash Pond. Downstream Slope. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 6	DATE: September 4, 2024 8:41 AM	LATITUDE: 39.82399621	LONGITUDE: -80.81615071
DIRECTION: 261°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: West Bottom Ash Pond. Downstream Slope. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log





Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 7	DATE: September 4, 2024 8:57 AM	LATITUDE: 39.82550773	LONGITUDE: -80.81666012
DIRECTION: 87°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: West Bottom Ash Pond. Crest of Dam. Ground Cover, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 8	DATE: September 4, 2024 8:59 AM	LATITUDE: 39.82565721	LONGITUDE: -80.81668722
DIRECTION: 354°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: Crest of Northern Perimeter Dam. Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log





Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH NO: 9	DATE: September 4, 2024 9:01 AM	LATITUDE: 39.82587134	LONGITUDE: -80.81670748
DIRECTION: 154°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: East Bottom Ash Pond. Downstream Slope. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH NO: 10	DATE: September 4, 2024 9:18 AM	LATITUDE: 39.82416613	LONGITUDE: -80.81427553
DIRECTION: 100°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: Clear Water Pond. Upstream Slope. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log





Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686

PHOTOGRAPH No: 11	DATE: September 4, 2024 9:21 AM	LATITUDE: 39.82364514	LONGITUDE: -80.81427256
DIRECTION: 113°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: Clear Water Pond. Upstream slope. Stabilized area of erosion.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH No: 12	DATE: September 4, 2024 9:33 AM	LATITUDE: 39.82301954	LONGITUDE: -80.81548728
DIRECTION: 4°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: Clear Water Pond. Upstream Slope. General Photo, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log



Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power **GEI Project:** 2305686


PHOTOGRAPH No: 13	DATE: September 4, 2024 9:35 AM	LATITUDE: 39.823015	LONGITUDE: -80.81549148
DIRECTION: 263°		SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA	
DESCRIPTION: Clear Water Pond. Upstream Slope. Ground Cover, Typical Conditions.			
PHOTO BY: GEI CONSULTANTS, INC.			
PHOTOGRAPH No: 14	DATE: September 4, 2024 9:39 AM	LATITUDE: 39.82346205	LONGITUDE: -80.81554678
DIRECTION: 11°		SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA	
DESCRIPTION: Clear Water Pond. Decant Structure / Control Mechanism. Water Elevation ~ 662.0			
PHOTO BY: GEI CONSULTANTS, INC.			

Photographic Log

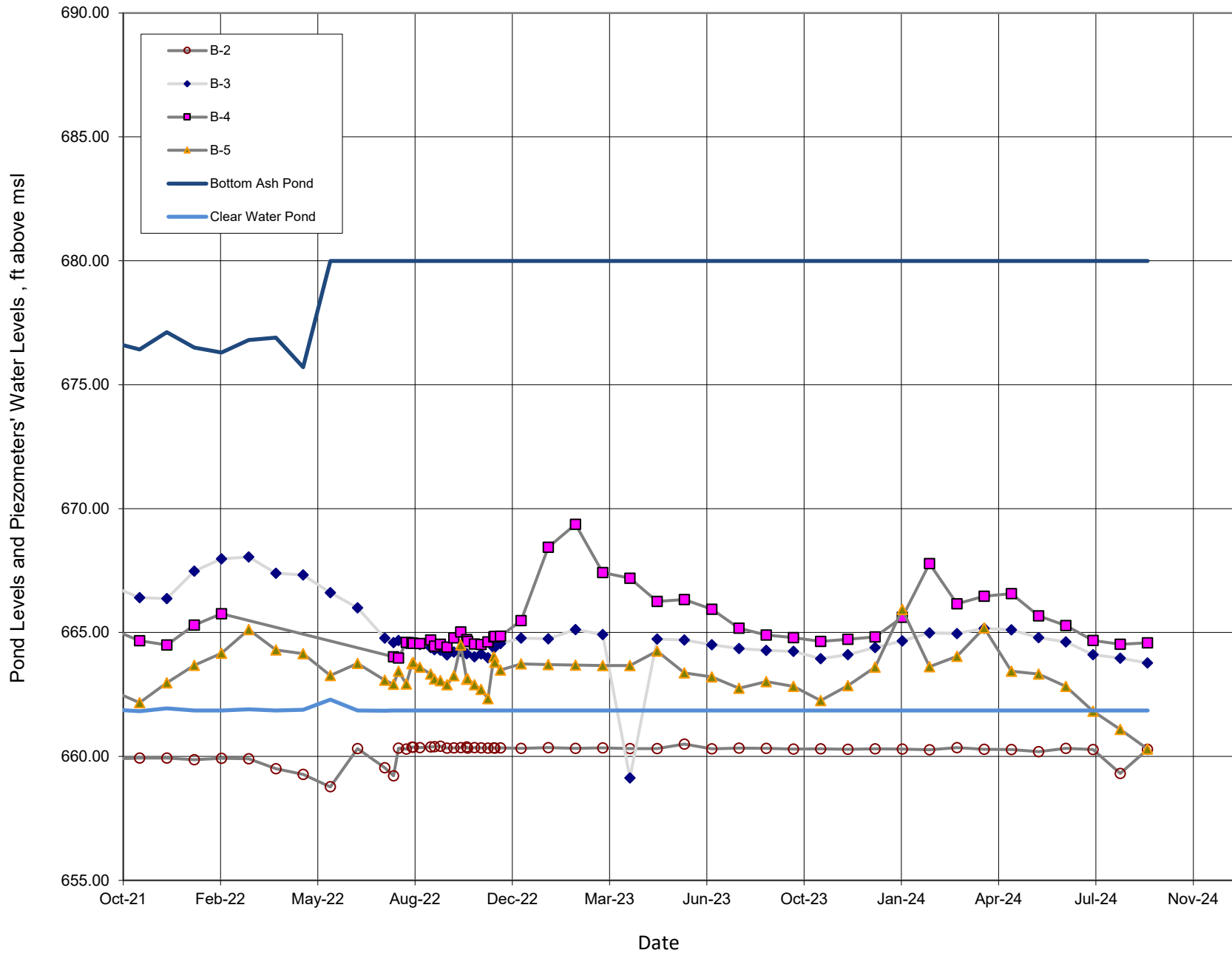


Project: Mitchell Power Plant, Bottom Ash Complex Inspection
Client: American Electric Power

GEI Project: 2305686

PHOTOGRAPH No: 15	DATE: September 4, 2024 9:42 AM	LATITUDE: 39.82346754	LONGITUDE: -80.81555916
DIRECTION: 30°	SITE LOCATION: MARSHALL COUNTY, WEST VIRGINIA		
DESCRIPTION: Clear Water Pond. Outlet Structure. General Photo. Typical conditions			
PHOTO BY: GEI CONSULTANTS, INC.			

Appendix B – Instrumentation Data



Mitchell Bottom Ash Pond Complex Piezometers & Ponds Level