

**LANDFILL EXPANSION
PHASE 7 LOCATION RESTRICTIONS DEMONSTRATION
SOLID WASTE PERMIT NO. WV 0075795**

Prepared For:



**MONONGAHELA POWER COMPANY
A FIRSTENERGY COMPANY
HARRISON POWER STATION
HARRISON COUNTY, WEST VIRGINIA**

Prepared By:

**CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
PITTSBURGH, PENNSYLVANIA**

CEC Project 320-970

March 2025



Civil & Environmental Consultants, Inc.

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1.0 INTRODUCTION

The Harrison Power Station (Station) is a coal-fired electric generating station located near the community of Shinnston, in Harrison County, West Virginia (WV). Coal combustion residuals (CCR)s generated at the Station are placed in the captive CCR landfill (Landfill), which is located approximately one mile north-northeast of the Station. Approximately 95 percent of the waste consists of fixated flue gas desulfurization (FGD) material. Fly ash, bottom ash, and miscellaneous wastes comprise the remaining five percent.

The landfill is a Class F CCR Solid Waste Disposal Facility. The approximate center of the existing landfill is located at coordinates 39° 24' 16" north latitude, and 80° 19' 56" west longitude. Approximately 350 acres are currently permitted for ultimate landfill development under WVDEP Permit No. WV0075795. The landfill is divided into three areas, referred to as the Lower Area, Upper Area, and Main Area. The Phase 7 landfill area consists of an approximately 14 acre section of liner located on the eastern side of the previously permitted and constructed Phase 6A landfill area as shown on the Waste Disposal Area Plan provided in Attachment B.

This Demonstration was prepared in accordance with § 257.60, § 257.61, § 257.62, § 257.63, and § 257.64 of the United States Environmental Protection Agency (USEPA) 40 Code of Federal Regulations (CFR) Part 257, Criteria for Classification of Solid Waste Disposal Facilities and Practices (CCR Rule).

2.0 § 257.60 PLACEMENT ABOVE THE UPPERMOST AQUIFER

In accordance with 40 CFR § 257.60, the Phase 7 Expansion of the landfill area was constructed with a base that is located more than 1.52 meters (five feet) above the upper limit of the uppermost aquifer. Interpreted groundwater flow data from the 1st and 3rd quarters of 2021 through 2023 indicate that the ground water elevations below the Phase 7 Expansion area range from elevation 1020 to elevation 1090. The minimum proposed Phase 7 Expansion area base of landfill elevation is 1216. Therefore, the minimum separation distance between the base of the Phase 7 Expansion area and the groundwater elevations is 196-feet. Refer to Section 2.4.3 of the Application for Renewal for Solid Waste Permit No. WV 0075795, revised May 2024, for a description of the site hydrology, and Section 5.0 of the same application for a description of the monitoring network that has been utilized over the past years, and the monitoring program for this permit application.

3.0 § 257.60 WETLANDS

In accordance with 40 CFR § 257.61, new CCR landfills, existing and new surface impoundments, and all lateral expansions of CCR units must not be located in wetlands. The Phase 7 Expansion of the CCB Landfill area is not located within wetlands. The Phase 7 expansion area is constructed in areas of the landfill that had previously been disturbed as part of construction activities for earlier landfill phases. The previous construction activities were performed under Department of Army permit application 20010244. No wetlands were identified in the proposed Phase 7 Expansion of the CCB Landfill area.

4.0 § 257.62 FAULT AREAS

In accordance with 40 CFR § 257.62, the Phase 7 Expansion of the CCB Landfill area is not located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time. A review of the United States Geological Survey (USGS), Earthquake Hazards Program, Quaternary Faults interactive map reveals that the Harrison CCB Landfill does not reside within 200 feet of a Holocene aged fault area. Refer to Section 2.4 of the Application for Renewal for Solid Waste Permit No. WV 0075795, revised May 2024, for additional Geologic and Hydrogeologic Information.

5.0 § 257.63 SEISMIC IMPACT ZONES

In accordance with 40 CFR § 257.63, the Phase 7 Expansion of the CCB Landfill area is not located in seismic impact zones. A seismic impact zone is defined as an area having a two percent or greater probability that the maximum expected horizontal acceleration, expressed as a percentage of the earth's gravitational pull (g), will exceed 0.10 g in 50 years. A review of the Long-term Model, USGS, Earthquake Hazards Program, Seismic Hazard Maps and Site-Specific Data reveals that the Harrison CCB Landfill does not reside within a seismic impact zone. In addition, the peak ground acceleration at the site is 0.047 g for the same probability and time period (2% in 50 years). Refer to Section 3.7 of the Application for Renewal for Solid Waste Permit No. WV 0075795, revised May 2024, which describes the stability analysis which verifies an acceptable slope stability analysis for the Phase 7 Expansion area liner system.

6.0 § 257.64 UNSTABLE AREAS DEMONSTRATION

In accordance with 40 CFR § 257.64, the Phase 7 Expansion of the CCB Landfill area is not located in an unstable area. An Unstable Areas Demonstration and certification was prepared by GAI Consultants in October 2018 and determined that the Harrison CCB Landfill is not located in an unstable area or were addressed as part of the engineering design and construction of the Landfills. Refer to Section 3.7 of the Application for Renewal for Solid Waste Permit No. WV 0075795, revised May 2024, which describes the stability analysis which verifies an acceptable slope stability analysis for the Phase 7 Expansion area liner system.

7.0 CONCLUSION

Available documents were reviewed, and it was determined that the Phase 7 Landfill expansion area was constructed with a base that is located more than 1.52 meters (five feet) above the upper limit of the uppermost aquifer, does not reside within a wetland, is not located within 60 meters (200 feet) of the outermost damage zone of a fault that has had displacement in Holocene time, is not located in seismic impact zones, and is not located in an unstable area.

A figure showing the waste disposal limits, including the recently constructed Phase 7, is provided in Attachment B.

8.0 REFERENCES

1. GAI Consultants, Inc. February 2016. Phase 6 Permit Renewal Application, Harrison Power Station.
2. GAI Consultants, Inc. December 2017. Phase 6A Permit Renewal Application, Harrison Power Station.
3. GAI Consultants, Inc. October 2018. Harrison Landfill Unstable Areas Demonstration.
4. Tetra Tech, Inc. January 2019. Placement Above Uppermost Aquifer-Location Restriction Report.
5. Civil & Environmental Consultants, Inc. March 2021. Phase 7 Permit Renewal Application, Harrison Power Station.
6. Tetra Tech, Inc. March 2021, and August 2021. CCR Rule Groundwater Monitoring System, Interpretated Groundwater Flow Maps.
7. Tetra Tech, Inc. February 2022, and August 2021. CCR Rule Groundwater Monitoring System, Interpretated Groundwater Flow Maps.
8. Tetra Tech, Inc. February 2022, and August 2021. CCR Rule Groundwater Monitoring System, Interpretated Groundwater Flow Maps.
9. Tetra Tech, Inc. January 2023, and July 2023. CCR Rule Groundwater Monitoring System, Interpretated Groundwater Flow Maps.
10. Civil & Environmental Consultants, Inc. May 2024. Phase 7 Permit Renewal Application Modification, Harrison Power Station

ATTACHMENT A

CERTIFICATION/STATEMENT OF PROFESSIONAL OPINION

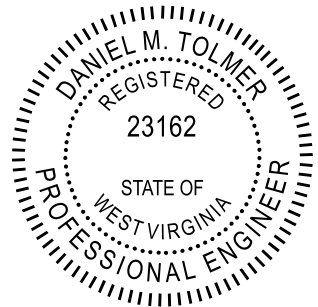
CERTIFICATION/STATEMENT OF PROFESSIONAL OPINION

The Location Restrictions Demonstration (Demonstration) for the Harrison CCB Landfill was prepared by Civil & Environmental Consultants, Inc. (CEC). This Demonstration is based on review of certain information that CEC has relied on, other than information originally prepared by CEC, but not independently verified. Therefore, this Certification/Statement of Professional Opinion is limited to the information available to CEC at the time this document was written. Therefore, subject to the preceding statements, it is my opinion as a Professional Engineer licensed in the State of West Virginia, that this document has been prepared in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances. It is my professional opinion that the Demonstration was prepared consistent with the requirements of the United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," published in the Federal Register on April 17, 2015, which became effective on October 4, 2016 with subsequent revisions, the final rule became effective on May 8, 2024. (40 CFR 257 Subpart D). This Certification/Statement of Professional Opinion is limited to § 257.60, § 257.61, § 257.62, § 257.63, and § 257.64 pertaining to Location Restrictions for the Harrison CCB Landfill.

The use of the words "certification" and/or "certify" in this document shall be interpreted and construed as a Statement of Professional Opinion and is not and shall not to be interpreted or construed as a guarantee, warranty, or legal opinion.

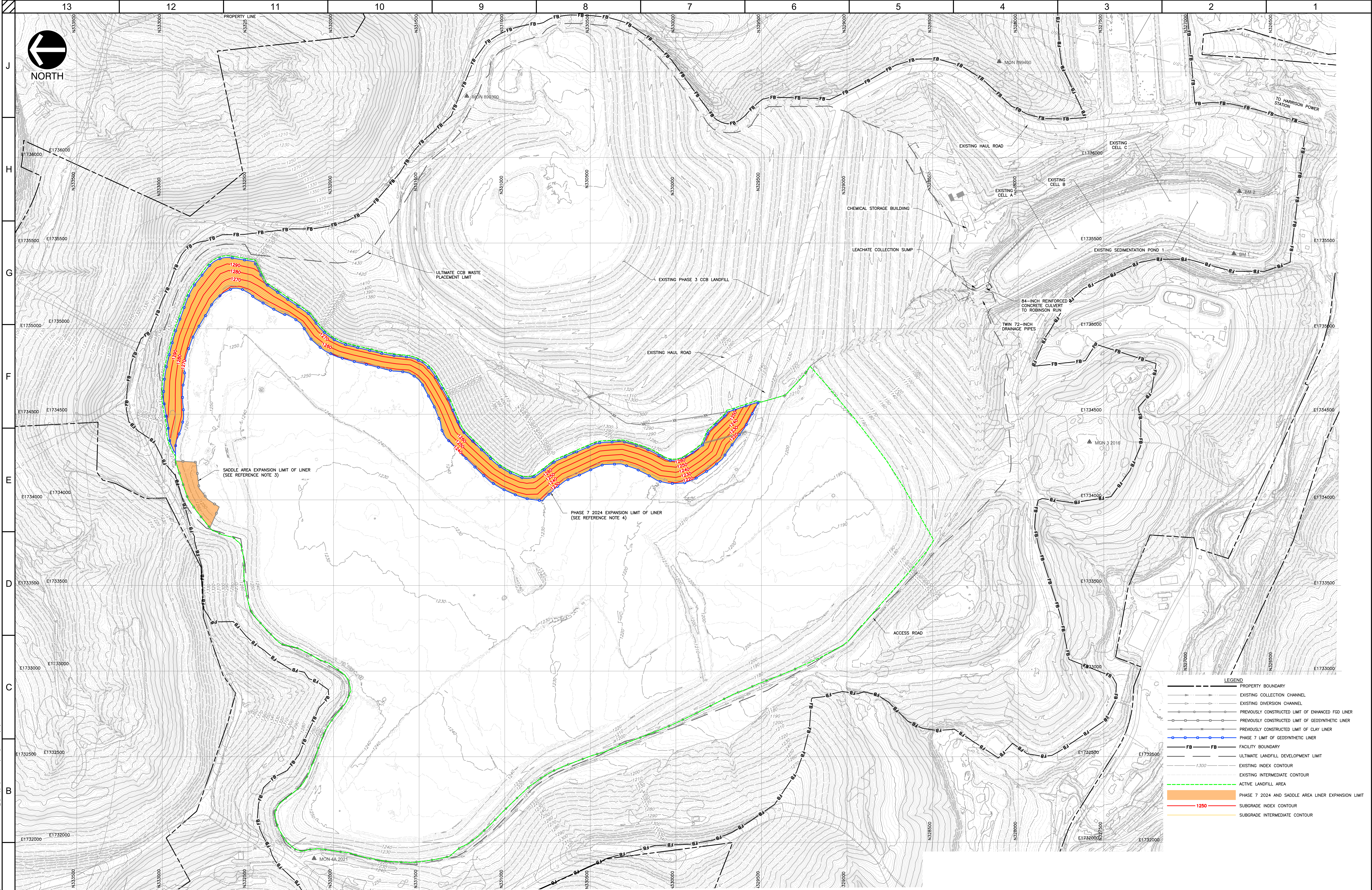
SIGNATURE:  DATE: 03/19/2025

ADDRESS: Civil & Environmental Consultants, Inc.
700 Cherrington Parkway
Moon Township, PA 15108

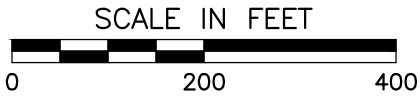


ATTACHMENT B

PHASE 7 LINER EXPANSION WASTE DISPOSAL AREA PLAN



- LEGEND**
- PROPERTY BOUNDARY
 - EXISTING COLLECTION CHANNEL
 - EXISTING DIVERSION CHANNEL
 - PREVIOUSLY CONSTRUCTED LIMIT OF ENHANCED FGD LINER
 - PREVIOUSLY CONSTRUCTED LIMIT OF GEOSYNTHETIC LINER
 - PREVIOUSLY CONSTRUCTED LIMIT OF CLAY LINER
 - PHASE 7 LIMIT OF GEOSYNTHETIC LINER
 - FB FB FACILITY BOUNDARY
 - ULTIMATE LANDFILL DEVELOPMENT LIMIT
 - EXISTING INDEX CONTOUR
 - EXISTING INTERMEDIATE CONTOUR
 - ACTIVE LANDFILL AREA
 - PHASE 7 2024 AND SADDLE AREA LINER EXPANSION LIMIT
 - SUBGRADE INDEX CONTOUR
 - SUBGRADE INTERMEDIATE CONTOUR



- REFERENCE**
- THE GRID SHOWN ON THIS DRAWING IS APPROXIMATE AND IS BASED ON THE WEST VIRGINIA STATE PLANE COORDINATE SYSTEM, NORTH ZONE, 1983 NORTH AMERICAN DATUM.
 - EXISTING TOPOGRAPHY PROVIDED BY FIRST ENERGY, DATED MARCH 6, 2023.
 - THE SADDLE AREA EXPANSION LIMIT OF AS DESIGNED BY CEC DATED JUNE 2021.
 - THE PHASE 7 2024 LIMIT OF LINER SHOWN IS BASED ON AS CONSTRUCTED SURVEYS PERFORMED BY CEC SURVEYORS FROM MAY 29 THROUGH DECEMBER 2, 2024.



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FUNCTIONAL LOCATION NO. *HAND SIGNATURE ON FILE

REVISION					REVISION					REVISION					REVISION					REVISION				
NO.	DATE	BY	CHKD	APPD	NO.	DATE	BY	CHKD	APPD	NO.	DATE	BY	CHKD	APPD	NO.	DATE	BY	CHKD	APPD	NO.	DATE	BY	CHKD	APPD
1	3/19/2025	MJI			2	3/19/2025	AMH			3	3/19/2025	DMT			4	3/19/2025				5	3/19/2025			
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REFERENCE DRAWINGS		ENGINEERING		DATE		FACILITY		UNIT		COMMON		REV.	
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