

Fort Martin CCB Landfill Coal Combustion Residual 2016 Annual Report

Monongahela Power Company
Maidsville, Monongalia County, West Virginia

December 2016

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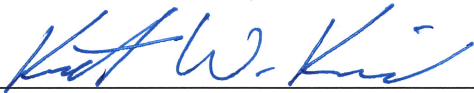
Appendix A Annual Inspection Checklist

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Certification/Statement of Professional Opinion

The Annual Inspection of the Ft. Martin Landfill was performed by GAI Consultants, Inc. (GAI) on Wednesday, September 21, 2016. The Inspection was based on certain information described in Section 3.0 that GAI has relied on but not independently verified and the visual observations made by GAI personnel at the Site during specific site visits. Therefore, this Certification/Statement of Professional Opinion is limited to the information available to GAI at the time the Inspection was performed. On the basis of and subject to the foregoing, it is my professional opinion as a Professional Engineer licensed in the State of West Virginia, that the Inspection has been performed in accordance with good and accepted engineering practices as exercised by other engineers practicing in the same discipline(s), under similar circumstances and at the time and in the same locale. It is my professional opinion that the Annual Inspection Report 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 with an effective date of October 19, 2015.

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.



Kenneth W. Kinder, P.E., C.F.M.



1.0 Purpose

Pursuant to Federal Coal Combustion Residuals (CCR) Rule 40 Code of Federal Regulations (CFR) 257.84, each CCR unit is to have an annual inspection and report prepared by a qualified professional engineer. The inspection is to include:

- ▶ a review of available information regarding the status and condition of the CCR unit, including, but not limited to, files in the operating record; and
- ▶ a visual inspection of the CCR unit to identify signs of distress or malfunction of the CCR unit.

The Inspection Report is to include:

- ▶ any changes in geometry of the structure since the previous annual inspection;
- ▶ the approximate volume of CCR contained in the unit at the time of the inspection;
- ▶ any appearances of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit; and
- ▶ any other change(s) which may have affected the stability or operation of the CCR units since the previous annual inspection.

2.0 Introduction

The Fort Martin Power Station (Station) is a coal-fired electric generating station located in Maidsville, in the Cass District of Monongalia County, West Virginia (WV). The captive landfill facility at the site accepts CCRs from the Station. The facility accepts gypsum, fly ash, bottom ash, and other approved ancillary materials. The Fort Martin Landfill (Landfill) is owned and operated by Monongahela Power Company. The approximate center of the Landfill is located at coordinates 39° 42' 46" north latitude, and 79° 56' 33" west longitude. The Landfill currently operates under WV Department of Environmental Protection (WVDEP) Solid Waste/National Pollutant Discharge Elimination System (NPDES) Water Pollution Control Permit No. WV0075752.

The Landfill consists of two separate areas: the original area south of the haul road, the Fort Martin Landfill (Original Landfill), and the expansion area north of the haul road, the Fort Martin Expansion Area Landfill. The Original Landfill area is constructed with benches at 25-foot intervals and rises to an approximate elevation of 1193 feet mean sea level (msl). The Expansion Area Landfill was permitted to be developed in two phases, Phase 1 and Phase 2. The Phase 1 disposal area was constructed with a liner system and represents the active portion of the expansion area. It has a top elevation of approximately 1142 feet msl.

The area surrounding the Original Landfill contains four sedimentation ponds (No's. 3, 4, 5, and 6) and various stormwater controls. A dual-ditch channel installed around the Original Landfill perimeter separates run-off from the Landfill and guides stormwater to the perimeter collection channel. The area surrounding the Expansion Area Landfill contains a gypsum loading area, Sedimentation Pond No. 2, and various stormwater controls. Force mains from each sedimentation pond connect to a main pipe southeast of the Original Landfill area and drain to the Station's cooling towers. Drainage from the haul road flows into a series of channels and culverts that drain into Sedimentation Pond No. 25. This sedimentation pond discharges through a NPDES Outlet and into an unnamed tributary of the Monongahela River.

3.0 Information Review

CCR Rule §257.84(b)(1)(i) states that an inspection includes “a review of available information regarding the status and condition of the CCR unit, including, but not limited to, files available in the operating record (e.g., the results of inspections by a qualified person, and results of previous annual inspections).”

GAI Consultants, Inc. (GAI) reviewed the following available information prior to performing the inspection:

- ▶ 2016 7-day CCR Inspection Reports;
- ▶ 2015 Annual Inspection Report;
- ▶ 2014 Annual Operations Report;
- ▶ Site Record Drawings; and
- ▶ WVDEP Permit Documents.

GAI reviewed the following information after performing the inspection, as it became available to GAI:

- ▶ 2015 Annual Operations Report.

The reports are listed under the References section. Conversations were held with the landfill operators before the inspection to obtain additional information such as current state of the landfill and repairs and maintenance that occurred since the 2015 annual inspection.

No structural integrity problems were documented in the 2016 7-day inspection reports nor the 2015 Annual Operations Report.

4.0 Visual Inspection

4.1 General Information

The inspection was performed on Wednesday, September 21, 2016. The weather conditions were sunny and the temperature ranged between 70 and 80 degrees Fahrenheit. Messrs. Ron Harris, P.E. and Kenneth Kinder, P.E. performed the inspection.

4.2 Inspection Strategy and Route

The GAI team inspected the landfill and its facilities by making visual observations, recording site conditions, and talking to plant personnel. The site was walked in order to view the critical structures of the landfill.

The inspection of the Original Landfill area began along the north facing embankment. The embankment slopes and benches were observed by traversing on foot around the landfill. The top of the landfill was observed by walking the haul road, then walking along the perimeter and across the landfill. Stormwater channels surrounding the landfill were observed while walking along the benches. Sedimentation Pond No's. 3, 4, 5, and 6 were observed after the inspection of the landfill.

The inspection of the Expansion Area Landfill began at the gypsum loading area. The collection channel located along the perimeter was traversed for the inspection. Leachate cleanouts and groundwater underdrain cleanouts were visually observed. The top of the landfill was walked. Sedimentation Pond No. 2 was observed after the landfill and perimeter channels.

4.3 Facility Conditions

The facility conditions are noted in the Annual Inspection Checklist attached to this report with the observations described in detail below.

The areas observed at both landfills appeared stable and no signs of structural instability such as scarps, cracking, sloughing, surface movements, depressions, or wet areas were observed. Permanent erosion controls were in-place and functioning. No signs of erosion were observed along the landfill slopes nor around the pond embankment slopes. No wet areas or ponding were observed along the landfill benches, along the toe of the landfill, along downstream pond embankments, nor within drainage channels at the time of inspection. The culverts, manholes, drop boxes, and ponds observed at both landfill areas appeared to be working properly. Culverts and channels observed along the haul road appeared to be functioning properly. The fugitive dust control system was functioning. Water quality monitoring is conducted on a regular basis.

There is a contact stormwater collection system installed at the Original Landfill area. At the Original Landfill area, trees were observed growing along landfill benches and slopes. A significant number of trees and brush have been removed since the 2015 inspection and this effort is expected to continue. It was recommended that all trees be removed. Vegetation on landfill slopes and benches precludes observation in some areas; mowing of the benches and slopes before the next annual inspections was recommended.

At the Expansion Area Landfill, all surface water channels were functioning properly. However, some sediment and growing woody vegetation were observed in the collection channels. It was recommended that the woody vegetation be removed and the accumulating sediment be monitored. The leachate collection system appeared to be properly maintained and protected from potential damage due to equipment. Leachate outlet pipes were observed flowing into Sedimentation Pond No. 2 with no signs of clogging.

Erosion of vegetation and soil protective cover has exposed the geosynthetics near the liner anchor trenches along both collection channels in a few locations. Based on a visual inspection, there did not appear to be any damage to the liner system. These areas were identified to the landfill operator during the inspection and he stated that the geosynthetic will be covered and compacted with soil to protect the liner system.

4.4 Geometry

Pursuant to 40 CFR §257.84(b)(2)(i), "any changes in geometry of the structure since the previous annual inspection" are reported.

The Original Landfill area consisted of 20-foot-wide benches built approximately every 25 vertical feet with side slopes of 2.5H:1V. The benches surrounded the active area located on the southwest top of the landfill.

The Expansion Area Landfill was in Phase 1 and no benches have been developed.

Based on a visual inspection and a review of design drawings, no changes to the geometry were observed at either landfill since the 2015 annual inspection.

4.5 Approximate Volume of CCR

Pursuant to 40 CFR §257.84(b)(2)(ii), "the approximate volume of CCR contained in the unit at the time of inspection" is reported.

The approximate volume of CCR contained in the Original Landfill area at the time of the inspection was 3,009,000 cubic yards. The disposed volume of CCR was re-evaluated in 2016 and new calculations were performed based on permitted landfill capacity and remaining capacity. The

approximate volume of CCR contained in the Expansion Area Landfill at the time of the inspection was 332,000 cubic yards.

4.6 Structural Appearance

Pursuant to 40 CFR §257.84(b)(2)(iii) and (iv), "any appearance of an actual or potential structural weakness of the CCR unit, in addition to any existing conditions that are disrupting or have the potential to disrupt the operation and safety of the CCR unit;" and "any other change(s) which may have affected the stability or operation of the CCR unit since the previous annual inspection" are reported.

Based on a visual inspection, both landfills appeared to have no structural weaknesses, no existing conditions that were disrupting, or conditions that have the potential to disrupt the operation and safety of the landfill, at the time of the inspection. No observable changes have occurred to the landfill since the 2015 annual inspection that would affect the stability or operation of the CCR unit.

4.7 Unit Performance

Based on a visual inspection, there did not appear to be any other changes that would affect the stability or operation of either landfill beyond what was mentioned in the Facility Conditions section.

4.8 Completed Repairs

At the Original Landfill area, the channels and slope drains that were observed during the 2015 annual inspection to contain sediment and vegetation were cleaned during routine maintenance operations in 2016. Trees were removed from the north facing slopes to the east of the haul road. Sedimentation Pond No's. 4 and 5 were cleaned in September 2016.

At the Expansion Area Landfill, the 1.5 foot deep gully identified in the 2015 annual inspection report was backfilled and revegetated.

5.0 Conclusions and Recommendations

During the 2016 visual inspection of the landfills, GAI did not identify any signs of distress or malfunction that would affect the structural condition of the landfills. No releases of CCR were observed during the 2016 inspection. As previously discussed, vegetation and sediment should be removed from the collection channels at the Expansion Area Landfill. Trees should be removed and vegetation should be mowed to facilitate observations from all slopes of the Original Landfill. The exposed liner anchor trenches at the Expansion Area Landfill should be covered with compacted soil for protective cover.

6.0 References

- Environmental Protection Agency, 40 CFR Parts 257 and 261, *Hazardous and Solid Waste Management System, Disposal of Coal Combustion Residuals from Electric Utilities*; April 17, 2015.
- GAI Consultants, Inc., *Federal CCR 7-Day Inspection Forms*; April 2016 through December 2016.
- FirstEnergy Corp., *Federal CCR 7-Day Inspection Forms*; January 2016 through March 2016.
- GAI Consultants, Inc. *Active Landfill Permit Compliance Evaluation, Fort Martin Power Station*; July 8, 2011.
- GAI Consultants, Inc., *Permit Renewal Application, Solid Waste/NPDES Water Pollution Control Permit No. WV0075752*; February 2013.
- Monongahela Power Co., *2014 Annual Operations Report, Fort Martin Power Station*; September 30, 2015.
- Monongahela Power Co., *2015 Annual Operations Report, Fort Martin Power Station*; September 30, 2016.
- RMC Environmental Services, Inc., *Supporting Document for Class F Industrial Landfill Facility Application*, Application No. WV0075752; April 1993.
- GAI Consultants, Inc., *2015 Annual Inspection Report, Fort Martin CCB Landfill*; January 2016.

APPENDIX A

Annual Inspection Checklist

CCR Landfill Annual Inspection Checklist

Project Name Fort Martin Original Landfill Inspection
 Project No. C150917.04
 Inspector Name(s) Ron Harris, Kenneth Kinder
 Time 10:00 to 1:00

Landfill No. WV0075752
 Date. 9/21/2016
 Weather Conditions Sunny
 Temperature 70° to 80°

Inspection	CCR Volume (CY)
Current Annual Inspection	Approx. 3,009,000
Annual Volume Disposal	Approx. 28,000

Mark "Yes" or "No" if the condition is observed.

Review Available Information (Preamble and 257.84)	Yes	No	Comments
Status and condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reviewed prior to inspection
Operating record	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reviewed prior to inspection
Previous inspection forms	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reviewed prior to inspection
Proper waste placement (Preamble)			
Waste appears to be placed in stable manner	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Loose piles of waste or other debris staged at site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Slope Stability (Preamble and 257.84)			
Existing slopes and embankments appear stable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surface cracking	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Signs of surface movement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Sloughing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Slides	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Unusual depressions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Erosion Control (Preamble)			
Controls in-place and functioning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Erosion damage (gullies/rills/deep channels) observed within the slopes of the landfill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Gullies over nine inches	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surface Water (Preamble)			
Wet areas/ponding	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Evidence of water percolation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surface run-on	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surface water channels functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vegetation/sediment in channels should be removed
Culverts/manholes/drop boxes for surface water management functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Liner System (Preamble)			
Liner system installed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Damage to liner system	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no liner system installed
Liner system protected from damage from CCR transport and placement equipment	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no liner system installed
Liner system properly maintained	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no liner system installed
Liner designed, constructed and maintained as required to prevent lateral migration of leachate off-site	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no liner system installed

CCR Landfill Annual Inspection Checklist

Project Name Fort Martin Original Landfill Inspection
 Project No. C150917.04
 Inspector Name(s) Ron Harris, Kenneth Kinder
 Time 10:00 to 1:00

Landfill No. WV0075752
 Date. 9/21/2016
 Weather Conditions Sunny
 Temperature 70° to 80°

Leachate Collection/Detection System (Preamble)	Yes	No	
Leachate collection/detection system installed	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Leachate collection system flowing	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no leachate collection/detection system installed
Evidence of clogged piping or drainage materials	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no leachate collection/detection system installed
Leachate system properly maintained	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no leachate collection/detection system installed
Leachate detection zone discharge pipes monitored weekly	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no leachate collection/detection system installed
Leachate detection zone flowing	<input type="checkbox"/>	<input type="checkbox"/>	Not applicable - no leachate collection/detection system installed
Dust Control (Preamble)	Yes	No	
Fugitive dust being controlled	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Contingency Plan (Preamble)	Yes	No	
Plan in place to correct an deficiencies identified during the inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Water Quality Monitoring System (Preamble)	Yes	No	
Water quality monitoring systems properly maintained and functioning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Other Issues (257.84)	Yes	No	
Other issues identified during the inspection which are disrupting or have the potential to disrupt the operation or safety of the landfill	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Remove woody vegetation from landfill slopes

CCR Landfill Annual Inspection Checklist

Project Name Fort Martin Expansion Area Landfill Inspection
 Project No. C150917.04
 Inspector Name(s) Ron Harris, Kenneth Kinder
 Time 10:00 to 1:00

Landfill No. WV0075752
 Date. 9/21/2016
 Weather Conditions Sunny
 Temperature 70° to 80°

Inspection	CCR Volume (CY)
Previous Annual Inspection	Approx. 331,000
Current Annual Inspection	Approx. 332,000
Difference	Approx. 1,000

Mark "Yes" or "No" if the condition is observed.

Review Available Information (Preamble and 257.84)	Yes	No	Comments
Status and condition	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reviewed prior to inspection
Operating record	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reviewed prior to inspection
Previous inspection forms	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Reviewed prior to inspection
Proper waste placement (Preamble)	Yes	No	
Waste appears to be placed in stable manner	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Loose piles of waste or other debris staged at site	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Slope Stability (Preamble and 257.84)	Yes	No	
Existing slopes and embankments appear stable	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Surface cracking	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Signs of surface movement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Sloughing	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Slides	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Unusual depressions	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Erosion Control (Preamble)	Yes	No	
Controls in-place and functioning	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Erosion damage (gullies/rills/deep channels) observed within the slopes of the landfill	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Gullies over nine inches	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surface Water (Preamble)	Yes	No	
Wet areas/ponding	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Evidence of water percolation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surface run-on	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Surface water channels functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Vegetation/sediment in channels should be removed
Culverts/manholes/drop boxes for surface water management functioning properly	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Liner System (Preamble)	Yes	No	
Liner system installed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Damage to liner system	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Liner system protected from damage from CCR transport and placement equipment	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Liner system properly maintained	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Anchor trench geosynthetics exposed along perimeter channels
Liner designed, constructed and maintained as required to prevent lateral migration of leachate off-site	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

CCR Landfill Annual Inspection Checklist

Project Name Fort Martin Expansion Area Landfill Inspection
 Project No. C150917.04
 Inspector Name(s) Ron Harris, Kenneth Kinder
 Time 10:00 to 1:00

Landfill No. WV0075752
 Date. 9/21/2016
 Weather Conditions Sunny
 Temperature 70° to 80°

Leachate Collection/Detection System (Preamble)	Yes	No
Leachate collection/detection system installed	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Leachate collection system flowing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Evidence of clogged piping or drainage materials	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Leachate system properly maintained	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Leachate detection zone discharge pipes monitored weekly	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Leachate detection zone flowing	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Dust Control (Preamble)	Yes	No
Fugitive dust being controlled	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contingency Plan (Preamble)	Yes	No
Plan in place to correct an deficiencies identified during the inspection	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Water Quality Monitoring System (Preamble)	Yes	No
Water quality monitoring systems properly maintained and functioning	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other Issues (257.84)	Yes	No
Other issues identified during the inspection which are disrupting or have the potential to disrupt the operation or safety of the landfill	<input type="checkbox"/>	<input checked="" type="checkbox"/>