

Fort Martin CCB Landfill Coal Combustion Residual Annual Report

Monongahela Power Company
Maidsville, Monongalia County, West Virginia

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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 Thursday, November 5, 2015. 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.

Charles F. Straley, P.E., P.S.



A handwritten signature in blue ink that reads "Charles Straley".

1.0 Purpose

Pursuant to Federal Coal Combustion Residuals (CCR) Rule 40 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 is owned and operated by Monongahela Power Company (MPC). The center of the landfill is located at approximately N 39°42'46" W 79°56'33". 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, and the expansion area north of the haul road, the Fort Martin FGD Landfill. The Fort Martin Landfill area is constructed with benches at 25-foot intervals and rises to an approximate elevation of 1193 feet mean sea level (msl). The Fort Martin FGD Landfill area 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 Fort Martin Landfill contains four sedimentation ponds (Nos. 3, 4, 5, and 6) and various stormwater controls. A dual-ditch channel installed around the Fort Martin Landfill perimeter separates run-off from the landfill and guides stormwater to the perimeter collection channel. The area surrounding the Fort Martin FGD 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 Fort Martin 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 reviewed the following available information prior to performing the inspection:

- ▶ 2015 7-day CCR Inspection Reports;
- ▶ 2015 Quarterly Inspection Checklists;
- ▶ 2014 Annual Operations Report;
- ▶ 2011 Landfill Inspection Report;
- ▶ Site record drawings; and
- ▶ WVDEP Permit documents.

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 the typical process for the operators’ weekly and quarterly reports.

No structural integrity problems were documented in the 2015 Quarterly reports nor the July 2011 Landfill Inspection Report.

4.0 Visual Inspection

4.1 General Information

The inspection was performed on Thursday, November 5, 2015. The weather conditions were partially cloudy to sunny and the temperature ranged between 60 and 75 degrees Fahrenheit. Messrs. Charles Straley, P.E., P.S., Kevin Bortz, P.E., Ron Harris, P.E., Kenneth Kinder, P.E., and Max Wallack, E.I.T., 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 Fort Martin Landfill area began along the north facing embankment. The embankment slopes and benches were observed by traversing on foot in a counter-clockwise direction. Sedimentation Pond Nos. 4, 5, and 6 were observed during this inspection route. The top of the landfill was observed by driving the haul road, then driving along the perimeter and across the landfill. Stormwater channels surrounding the landfill were observed while walking along the benches. Sedimentation Pond No. 3 was observed after the inspection of the landfill.

The inspection of the Fort Martin FGD 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.

The haul road was driven and stops were made to observe the culverts and channels. Sedimentation Pond No. 25, which collects the haul road drainage, was also reviewed.

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, except as discussed below. 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 Fort Martin Landfill area. At the Fort Martin Landfill area, tree removal from the north and northwest landfill slopes was recommended. A few animal burrows were found along the downstream embankment of Sedimentation Pond No. 6 that were recommended to be backfilled. Channel V-D had sediment and vegetation in a section of the engineered channel. GAI recommended that the sediment and vegetation be removed from the channel, riprap lining be restored, and vegetation trimmed from the areas around the channel. Slope Drain V-B also contained some sediment. GAI recommended that sediment be removed from the slope drain. The landfill operator stated that these issues will be addressed.

At the Fort Martin FGD Landfill area, all surface water channels were functioning properly. The leachate 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. A 1.5-foot-deep gully has formed above the liner anchor trench and exposed the liner system near Collection Channel 2, which drains to Sedimentation Pond No. 2. Based on a visual inspection, there did not appear to be any damage to the liner system and the system appeared to be properly maintained. The landfill operator stated that the erosion gully will be backfilled with compacted material 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. As this is the first annual inspection report, the current geometry of the landfill is included.

The Fort Martin Landfill area consisted of 20-foot-wide benches built approximately every 25 vertical feet with side slopes of 2H:1V. The benches surrounded the active area located on the southwest top of the landfill.

The Fort Martin FGD Landfill area 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.

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 Fort Martin Landfill area at the time of the inspection was 960,000 cubic yards. The approximately volume of CCR contained in the Fort Martin FGD Landfill area at the time of the inspection was 331,000 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.

4.7 Unit Performance

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

5.0 Conclusions and Recommendations

During the 2015 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 2015 inspection. As previously discussed, vegetation and sediment should be removed from the channels at the Fort Martin Landfill area and trees removed from the slopes of the landfill. The erosion gully that exposed the liner system at the Fort Martin FGD Landfill area should be backfilled with compacted material 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.
- FirstEnergy. Federal CCR 7-Day Inspection Form; October 15, 2015.
- FirstEnergy. Federal CCR 7-Day Inspection Form; October 22, 2015.
- FirstEnergy. Federal CCR 7-Day Inspection Form; October 29, 2015.
- FirstEnergy. Quarterly Landfill Inspection Checklist; March 20, 2015.
- FirstEnergy. Quarterly Landfill Inspection Checklist; May 29, 2015.
- FirstEnergy. Quarterly Landfill Inspection Checklist; September 12, 2015.
- 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.
- MonPower. 2014 Annual Operations Report, Fort Martin Power Station; September 30, 2015.

APPENDIX A

Annual Inspection Checklist

**CCR Landfill
Annual Inspection Checklist**

Project Name FE Ft. Martin Landfill CCR Compliance
 Project No. C150917.04
 Inspector Name GAI Consultants, Inc., Charles F. Straley, P.E., P.S.
 Time 10:30 AM
 Volume of CCR at Last Inspection See note 2

Landfill No. WV0075752
 Date. 11/5/2015
 Weather Conditions Cloudy - Sunny
 Temperature 60° - 75°
 Total CCR Volume 960,000 cubic yards

Volume of CCR placed since last Inspection See note 2

Review of Available Information (Preamble and 257.84)		Comments
Status and Condition of Landfill	Yes	Active landfill, good operating condition
Review Files in Operating Record	Yes	Site drawings, permit documents
Review Previous Inspection Forms	Yes	2015 7-Day Reports, 2015 Quarterly Reports, 2014 Annual Operations Report, 2011 Landfill Inspection Report
Proper waste placement (Preamble)		
Does waste appear to be placed in stable manner?	Yes	
Any loose piles of waste or other debris staged at the Site?	No	
Slope Stability (Preamble and 257.84)		
Do existing slopes or embankments appear to be Stable?	Yes	
Any signs of surface cracking?	No	
Any signs of surface movement?	No	
Sloughing?	No	
Slides?	No	
Unusual depressions?	No	
Erosion Control (Preamble)		
Are all Permanent Erosion Controls in-place and functioning?	Yes	
Any erosion damage (gullies/rills/deep channels) within the slopes of the Landfill?	No	
Surface Water (Preamble)		
Any wet areas/ponding?	No	
Evidence of water percolation?	No	
Any runoff?	No	
Are surface water channels functioning properly?	No	Remove sediment and vegetation from channel V-D, and restore channel to original condition. Remove sediment from slope drain V-B. Trim vegetation and remove sediment in other channels.
Are culverts/manholes/drop boxes for surface water management working properly?	Yes	
Liner System (Preamble)		
Liner system Installed?	No	There is no liner system installed.
Any damage to liner system observed?	n/a	
Is liner system protected from damage from CCR transport and placement equipment?	n/a	
Is liner system properly maintained?	n/a	
Does protective cover protect primary liner and leachate collection system and allow free flow of leachate into the collection system?	n/a	
Barrier designed, constructed and maintained as required to prevent lateral migration of leachate off-site.	Yes	

CCR Landfill Annual Inspection Checklist

Project Name FE Ft. Martin FGD Landfill CCR Compliance
 Project No. C150917.04
 Inspector Name GAI Consultants, Inc., Charles F. Straley, P.E., P.S.
 Time 10:30 AM
 Volume of CCR at Last Inspection See note 2

Volume of CCR placed since last Inspection See note 2

Landfill No. WV0075752
 Date. 11/5/2015
 Weather Conditions Cloudy - Sunny
 Temperature 60° - 75°
 Total CCR Volume 331,000 cubic yards

Review of Available Information (Preamble and 257.84)		Comments
Status and Condition of Landfill	Good	Active landfill, good operating condition
Review Files in Operating Record	Yes	Site drawings, permit documents
Review Previous Inspection Forms	Yes	2015 7-Day Reports, 2015 Quarterly Reports, 2014 Annual Operations Report, 2011 Landfill Inspection Report
Proper waste placement (Preamble)		
Does waste appear to be placed in stable manner?	Yes	
Any loose piles of waste or other debris staged at the Site?	No	
Slope Stability (Preamble and 257.84)		
Do existing slopes or embankments appear to be Stable?	Yes	
Any signs of surface cracking?	No	
Any signs of surface movement?	No	
Sloughing?	No	
Slides?	No	
Unusual depressions?	No	
Erosion Control (Preamble)		
Are all Permanent Erosion Controls in-place and functioning?	Yes	
Any erosion damage (gullies/rills/deep channels) within the slopes of the Landfill?	No	
Surface Water (Preamble)		
Any wet areas/ponding?	No	
Evidence of water percolation?	No	
Any runoff?	No	
Are surface water channels functioning properly?	Yes	
Are culverts/manholes/drop boxes for surface water management working properly?	Yes	
Liner System (Preamble)		
Liner system Installed?	Yes	
Any damage to liner system observed?	No	
Is liner system protected from damage from CCR transport and placement equipment?	Yes	
Is liner system properly maintained?	Yes	
Does protective cover protect primary liner and leachate collection system and allow free flow of leachate into the collection system?	No	Backfill 1.5' deep erosion gully over liner in Collection Channel 2
Barrier designed, constructed and maintained as required to prevent lateral migration of leachate off-site.	Yes	

