

Harrison CCB Landfill Coal Combustion Residual Annual Report

Monongahela Power Company
Shinnston, Harrison County, West Virginia

January 2016

Prepared for:
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Certification/Statement of Professional Opinion

The Annual Inspection of Harrison Power Station's CCB Landfill was performed by GAI Consultants, Inc. (GAI) on Tuesday, November 10, 2015. The Inspection was based on 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". The signature is written over a horizontal line.

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

According to the WV Department of Environmental Protection (WVDEP), the landfill is a Class F CCR Solid Waste Disposal Facility. The approximate center of the landfill is located at coordinates 39° 24' 16" north latitude, and 80° 19' 56" west longitude. Approximately 250 acres are currently permitted for landfill operations under WVDEP Permit No. WV0075795. The landfill is divided into three areas, referred to as the Lower Valley, Upper Valley, and Main Valley.

The landfill areas are contained within the same watershed. Surface runoff generally flows south/southeast through the Main Valley. The lower portion of the site is occupied by Sedimentation Pond No. 1 (Pond), which is used as a settling pond for stormwater runoff and leachate flows. An 84-inch reinforced concrete pipe is used to convey runoff around the Pond from undisturbed areas, then discharges through a National Pollutant Discharge Elimination System Outlet into Robinson Run via a grouted riprap channel.

An underdrain at the interface in the Phase 4 (overbuild of Upper and Main Valleys) area collects water from springs, and seeps. The underdrain consists of perforated pipes in gravel trenches and conveys the water separately from the leachate detection/groundwater underdrain.

Water from the Pond underdrain and the underdrain system installed in the Lower Valley is collected and pumped to the treatment wetlands. Leachate and groundwater that is collected in the leachate detection/ground water underdrain and leachate collection systems drain to the Pond to undergo treatment.

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:

- ▶ 2015 7-day CCR Inspection Reports;
- ▶ 2015 Quarterly Landfill Inspection Reports;
- ▶ 2014 Annual Operations 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 operation and maintenance procedures; current state of the landfill; and the typical process for the operators’ weekly and quarterly reports.

4.0 Visual Inspection

4.1 General Information

The inspection was performed on Tuesday November 10, 2015. The weather conditions were cloudy and rainy with temperatures ranging from 40 to 50 degrees Fahrenheit. Mr. Ron Harris, P.E., Mr. James Shields, P.E., and Mr. Charles Straley, P.E., P.S., of GAI 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 began in the Lower Valley by observing the top, then walking along the benches starting on the east side of the landfill and finishing on the west side. The Main and Upper Valleys were observed by driving to critical locations, such as the active disposal area and the toe of the Main Valley. The treatment wetlands and Pond were observed last.

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.

Landfill embankment slopes appeared to be stable, and no signs of structural instability such as scarps, cracking, sloughing, surface movements, depressions, or wet areas were observed. Erosion control features are in place and appeared to be functioning, as no signs of recent erosion were observed along the embankment slopes, nor around any landfill facility. However, an old two- to three-foot deep erosion gully that has been grassed over was observed along two landfill slopes in the Lower Valley.

Surface water conveyance features (*i.e.* channels, culverts, manholes, drop boxes, etc.) appeared to be operating properly. No signs of water leaving the conveyance features were observed. Some vegetation and sediment were observed in the channels. The landfill operator indicated that the vegetation and sediment will be removed. No wet areas, nor ponding, were observed along the landfill benches, along the toe of the landfill, along downstream embankments for the Pond and treatment wetland, nor within drainage channels at the time of inspection.

No damage to the liner system was observed, as it was protected by adequate CCR cover.

The leachate collection system appeared to be functioning properly, as leachate was observed flowing out of the pipes and into the drainage channels located at the toe of the Lower and Main Valleys. No signs of clogging nor improper functioning of the leachate collection system were observed. No wet areas were observed at or around the toe of the Lower and Main Valleys.

The treatment wetlands and the Pond appeared to be functioning properly. The downstream embankments appeared stable and no signs of structural instability such as scarps, cracking, sloughing, surface movements, depressions, or wet areas were observed. No signs of clogging nor improper functioning of the riser structures and pipes system were observed.

No fugitive dust was observed at the time of the inspection. Water quality monitoring is conducted on a regular basis.

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 existing landfill embankments consist of 20-foot wide benches, constructed every 25 vertical feet, with 2.5H:1V slopes between benches. Based on visual inspection and a review of the design drawings, no changes to the geometry of the landfill 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 landfill at the time of the inspection was 56.8 million 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 visual inspection, the landfill appeared to have no structural weaknesses, no existing conditions that are disrupting, or have the potential to disrupt the operation and safety of the CCR unit 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 or operation of the landfill beyond what was mentioned in the Facility Conditions section.

5.0 Conclusions and Recommendations

During the 2015 visual inspection of the landfill, GAI did not identify any signs of distress or malfunction that would affect the structural condition of the landfill. No releases of CCR were observed during the 2015 inspection. The gully along the landfill benches and the sediment and vegetation in the channels are maintenance issues that will be addressed by the landfill operator as soon as weather conditions permit.

6.0 References

United States 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 13, 2015.

FirstEnergy, Federal CCR 7-Day Inspection Form; October 20, 2015.

FirstEnergy, Federal CCR 7-Day Inspection Form; October 27, 2015.

FirstEnergy, Federal CCR 7-Day Inspection Form; November 3, 2015.

FirstEnergy, Quarterly Landfill Inspection Form, 2015 Quarter 1.

FirstEnergy, Quarterly Landfill Inspection Form, 2015 Quarter 2.

FirstEnergy, Quarterly Landfill Inspection Form, 2015 Quarter 3.

FirstEnergy, 2014 Annual Operations Report, Harrison Power Station.

Application for Renewal, Solid Waste Permit No. WV0075795, Harrison Power Station, January 2011.

APPENDIX A

Annual Inspection List

CCR Landfill Annual Inspection Checklist

Project Name Harrison CCR Landfill
 Project No. C150917.03
 Inspector Name Ron Harris, James Shields, Charlie Straley
 Time 10:00 to 14:00
 Volume of CCR at Last Inspection See Note 1

Volume of CCR placed since last Inspection See Note 1

Landfill No. Lower, Upper, Main Areas
 Date. 11/10/2015
 Weather Conditions Clouds and rain
 Temperature 40° to 50°
 Total CCR Volume 56.8 million cubic yards

Review of Available Information (Preamble and 257.84)		Comments
Status and Condition of Landfill	yes	Reviewed prior to inspection
Review Files in Operating Record	yes	Reviewed prior to inspection
Review Previous Inspection Forms	yes	Reviewed prior to inspection
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?	yes	2 to 3-FT deep gully along two slopes in Lower Area
Surface Water (Preamble)		
Any wet areas/ponding?	no	
Evidence of water percolation?	no	
Any runoff?	no	
Are surface water channels functioning properly?	yes	Vegetation/sediment in channels should be removed
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	
Barrier designed, constructed and maintained as required to prevent lateral migration of leachate off-site.	NA	

