Pleasants Landfill
Run-on and Run-off Control System Plan

Allegheny Energy Supply Company, LLC
A FirstEnergy Company
Pleasants Power Station
Pleasants County, West Virginia

October 2016

Prepared for:
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Certification/Statement of Professional Opinion

The Run-on and Run-off Control System Plan for the Pleasants Power Station Landfill was prepared by GAI Consultants (GAI). The Plan was based on certain information described in Section 5.0 that, other than for information GAI originally prepared, GAI has relied on but not independently verified. Therefore, this Certification/Statement of Professional Opinion is limited to the infromation available to GAI at the time the Plan was written. 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 Plan has been prepared in accordance with good and accepted engineering practices as exercied 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 Plan 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, and meets the requirements of Part 257.81.

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 be, interpreted or construed as a guarantee, warranty, or legal opinion.

Arica L. DiTullio, P.E.
Engineering Manager

1.0 Introduction

The Pleasants Power Station Landfill (Landfill) is located approximately one-half mile east-southeast of the Pleasants Power Station (Station); a coal-fired electric generating station located near the community of Willow Island in Pleasants County, West Virginia. The Landfill is a Class F Solid Waste Disposal Facility according to the West Virginia Department of Environmental Protection (WVDEP).

Approximately 112 acres are currently permitted for Landfill operations. Approximately 99 percent of the Coal Combustion Residuals (CCR) placed in the Landfill consists of bottom ash, fly ash, and synthetic gypsum. Miscellaneous wastes from operations and maintenance activities at the Station account for the remaining one percent.

Two permanent sedimentation ponds near the toe of the Landfill footprint are designed to receive leachate and surface run-off flows from the Landfill and its associated on-Landfill haul road(s). A portion of the Station haul road, beginning at a high point, located south of the sedimentation ponds, also drains to the sedimentation ponds. Sedimentation Pond No. 1 (SP-1) is the primary sedimentation pond to receive flows. Sedimentation Pond No. 2 (SP-2) is a backup structure that is only used when SP-1 is out of service for cleaning and/or maintenance. Principal spillways of both ponds discharge to the sediment pond effluent return sump, which is then pumped to the McElroy's Run Impoundment.

2.0 Plan Overview

This Run-on and Run-off Control System Plan, prepared in accordance with the requirements set forth in 40 CFR Section 257.81 (including supporting engineering calculations), describes the following control systems for the Landfill, including a description of:

- Stormwater Run-on Control System;
  - Diversion Channel Design;
- Stormwater Run-off Control System;
  - Collection Channel Design; and
  - Sedimentation Pond Design.

The Landfill, other than for the portion abutting the McElroy's Run Impoundment embankment, has a dual-channel perimeter system, which collects contact run-off in collection (interior) channels and diverts non-contact upslope stormwater run-on in diversion (exterior) channels. The collection channels accept stormwater run-off from the Landfill and drain to SP-1 (or SP-2). A designed Landfill expansion is planned to be constructed in 2017/2018. It is to be located adjacent to and north of the Landfill. Refer to Figure 1 for a site drainage map showing Run-on/Run-off Controls.

All channels have been sized for the 25-year, 24-hour design storm. The diversion channels, collection channels, and sedimentation ponds installed at the Landfill meet the requirements set forth in 40 CFR §257.81. Refer to Sections 3.0 and 4.0 of this report, and Figure 1 for details of the Run-on and Run-off Control Systems.

3.0 Stormwater Run-on Control System

Stormwater run-on to the Landfill is controlled by diversion features. The installed features are designed to divert up to the peak discharge from a 24-hour, 25-year storm. Control features consist of diversion channels and culverts.

3.1 Diversion Channel Design

The design of the diversion channels meets the applicable requirements in Section 257.81 of the Federal CCR Rule. Design calculations for the diversion channels can be found in the Permit Applications referenced in Section 5.0.

The perimeter diversion channels are located on the outside of the lined area of the Landfill. The diversion channels are designed to direct flow of stormwater, from up to the 25-year 24-hour storm event that would otherwise run-on to the Landfill and drain the stormwater to McElroy's Run Stream, a tributary to the Ohio River. As with the current Landfill area, the planned Landfill expansion will also be constructed with diversion channels to route run-on stormwater from a 25-year, 24-hour storm event to McElroy's Run Stream.

4.0 Stormwater Run-off Control System

Stormwater that comes into contact with the CCR is collected prior to off-site discharge through a permitted outfall. Stormwater run-off collection systems are sized to accommodate the volume of water from a 24-hour, 25-year storm event through a series of channels, culverts, and sedimentation ponds.

4.1 Collection Channel Design

The design of the collection channels meets the applicable requirements of Section 257.81 of the Federal CCR Rule. Design calculations for the collection channels can be found in the Permit Applications referenced in Section 5.0.

The collection channels gather run-off contacting the Landfill in the inner channels of the dual-channel system that are located along the perimeter of the Landfill, except as noted above is Section 2.0. Run-off from the on-landfill haul road(s) is also collected in the same manner. The portion of the Station haul road, beginning at a high point south of SP-1, is also managed by the collection channels that drain to SP-1 and SP-2.

Run-off water is directed to the sedimentation ponds where it undergoes primary sedimentation before entering a sump that pumps the water to McElroy's Run Impoundment. The water in McElroy's Run Impoundment is used at the Station in its flue gas desulfurization scrubbing system or discharged to the Ohio River under a West Virginia-issued NPDES permit. As with the current Landfill area, the next planned expansion will also be constructed with collection channels to route run-off stormwater from up to a 25-year 24-hour storm event to the sedimentation ponds.

4.2 Sediment Pond Design

Sedimentation ponds SP-1 and SP-2 were retrofitted in 1993 and 1994 by modifying their respective riser structures to handle stormwater runoff from the Landfill's final build-out configuration. SP-2 is used as a backup when SP-1 is removed from service for periodic cleaning and maintenance. The principal spillway in each pond was modified to control discharge to the effluent return pump station, which pumps to McElroy's Run Impoundment.

Calculations have been conducted to demonstrate that SP-1 can store the entire 10-year, 24-hour storm runoff volume for the site plus the required sediment volume, at or below the crest of the principal spillway riser. Assuming no discharge occurs from the principal spillway riser, SP-1 has adequate storage to handle the runoff volume resulting from the 25-year, 24-hour storm below the crest of the embankment. These calculations are based on the size of the current Landfill as well as the acreage covered in the planned West Virginia-permitted Landfill expansion. Design calculations for the sediment ponds can be found in the Permit Applications referenced in Section 5.0.

5.0 References

Allegheny Energy Supply Company. 2011.
"Minor Permit Modification, Stage 2B Area Development. WVDEP Solid Waste Permit No. WV0079171. Pleasants Power Station, Pleasants County, West Virginia." Prepared by GAI Consultants, Inc.

Allegheny Energy Supply Company. 2009.
"Minor Permit Modification, Stage 1G Geosynthetic Liner, WVDEP Solid Waste/NPDES Permit No. WV0079171. Pleasants Power Station, Pleasants County, West Virginia." Prepared by GAI Consultants, Inc.

Allegheny Energy Supply Company. 2015.
"Major Permit Application, Stage 1H Landfill Expansion, WVDEP Solid Waste/NPDES Permit No. WV0079171. Pleasants Power Station, Pleasants County, West Virginia." Prepared by GAI Consultants, Inc.

United States Environmental Protection Agency.
40 CFR 257, *Criteria for Classification of Solid Waste Disposal Facilities and Practices.*

FIGURE

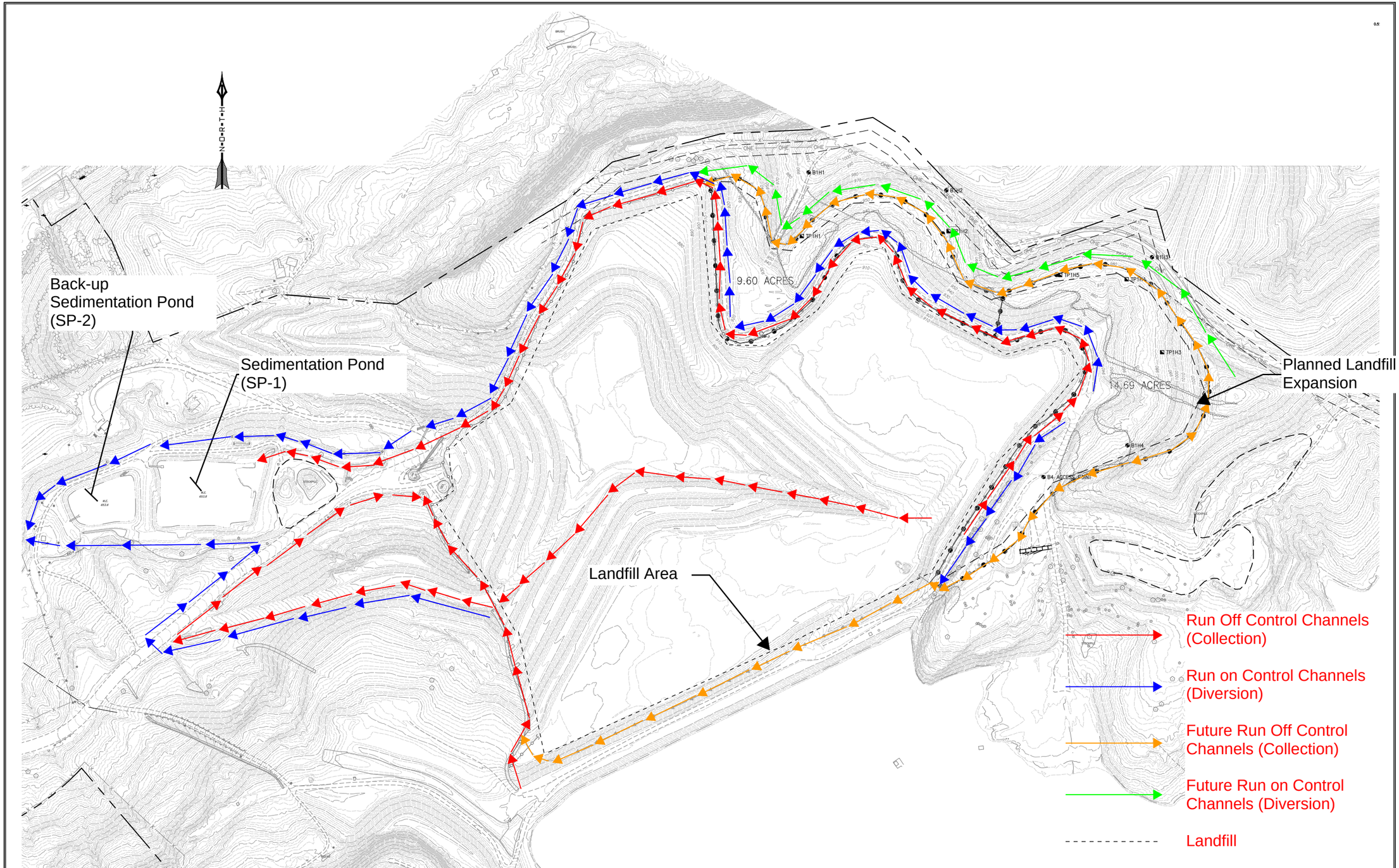

FIGURE 1

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DRAWING TITLE
SITE OVERVIEW

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