

MWG

Midwest Generation, LLC
Will County Generating Station

2021 Inflow Design Flood Control System Plan for South Ash Pond 2 & South Ash Pond 3



Revision 0

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Issue Purpose: Use

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1.0 PURPOSE & SCOPE

1.1 PURPOSE

South Ash Pond 2 and South Ash Pond 3 at Midwest Generation, LLC's (MWG) Will County Generating Station ("Will County" or the "Station") are existing coal combustion residual (CCR) surface impoundments that are regulated by the Illinois Pollution Control Board's "Standards for the Disposal of Coal Combustion Residuals in CCR Surface Impoundments." These regulations are codified in Part 845 to Title 35 of the Illinois Administrative Code (35 Ill. Adm. Code 845, Ref. 1) and are also referred to herein as the "Illinois CCR Rule." Pursuant to 35 Ill. Adm. Code 845.510(c)(1), MWG must prepare an inflow design flood control system plan that documents how the inflow design flood control systems for South Ash Ponds 2 and 3 have been designed and constructed to meet the hydrologic and hydraulic capacity requirements for CCR surface impoundments promulgated by 35 Ill. Adm. Code 845.510.

South Ash Ponds 2 and 3 are also regulated by the U.S. Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments," 40 CFR Part 257 Subpart D (Ref. 2), also referred to herein as the "Federal CCR Rule." Pursuant to 40 CFR 257.82(c)(4), the Federal CCR Rule requires MWG to prepare a periodic inflow design flood control system plan in accordance with 40 CFR 257.82(c)(1) for South Ash Ponds 2 and 3 every five years.

This report documents the 2021 inflow design flood control system plan prepared in accordance with the Illinois and Federal CCR Rules by Sargent & Lundy (S&L) on behalf of MWG for South Ash Ponds 2 and 3 at Will County. This report:

- Lists the inputs and assumptions used to determine whether South Ash Ponds 2 and 3 can manage the inflow design flood,
- Discusses the methodology used to determine whether South Ash Ponds 2 and 3 can manage the inflow design flood,
- Evaluates potential changes to the design inputs used in the initial hydrologic and hydraulic assessment completed for South Ash Ponds 2 and 3 that was conducted in accordance with the Federal CCR Rule, and
- Summarizes the results of the hydrologic and hydraulic calculations performed to support the conclusion of whether South Ash Ponds 2 and 3 meet the hydrologic and hydraulic requirements for CCR surface impoundments promulgated by both the Federal and Illinois CCR Rules.

1.2 SCOPE

Per the 2016 Water Infrastructure Improvements for the Nation (WIIN) Act, South Ash Ponds 2 and 3 will continue to be subject to both the Illinois and Federal CCR Rules until the U.S. EPA approves the Illinois

EPA's CCR permit program. The Illinois EPA has yet to publish a timeline for submitting its proposed CCR permit program to the U.S. EPA for approval, and so MWG must prepare an inflow design flood control system plan pursuant to both sets of regulations at this time.

2.0 INPUTS

Inflow Design Flood Control System

The inflow design flood control systems for South Ash Ponds 2 and 3 are documented in the ponds' initial inflow design flood control system plan, which was prepared by Geosyntec Consultants in October 2016 (Ref. 3). This plan is provided in its entirety in Appendix A.

Inflow Design Flood Event

Per the ponds' 2021 hazard potential classification assessment (Ref. 4), South Ash Ponds 2 and 3 are classified as Class 2 CCR surface impoundments pursuant to 35 Ill. Adm. Code 845.440(a)(1) and as significant hazard potential CCR surface impoundments pursuant to 40 CFR 257.73(a)(2). Therefore, the inflow design flood event used in this hydrologic and hydraulic assessment of both ponds is based on the 1,000-year storm (Ref. 1, § 845.510(a)(3); Ref. 2, § 257.82(a)(3)). Per the National Oceanic and Atmospheric Administration's Atlas 14 (Ref. 5), the precipitation depth for the 1,000-year, 24-hour storm event at the Will County site is 13.3 inches.

Site Topography

Topographic data for South Ash Ponds 2 and 3 and the surrounding areas was obtained from the U.S. Department of Agriculture's (USDA) National Digital Elevation Program (Ref. 6). This topography reflects elevation data collected in 2010 at a 1-meter resolution.

Aerial Images

Historical and recent aerial images of the Station and surrounding areas were obtained from Google Earth Pro (Ref. 7).

Ash Pond Conditions

The operating and physical conditions for South Ash Ponds 2 and 3 were based on discussions with MWG personnel.

3.0 ASSUMPTIONS

There are no assumptions in this document that require verification.

4.0 HYDROLOGIC & HYDRAULIC ASSESSMENT

4.1 CHANGES SINCE INITIAL INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN

4.1.1 CHANGES IN ASH POND OPERATIONS

In early October 2020, Will County took South Ash Pond 3 out of service for routine cleaning and is dewatered as necessary. In April 2021, MWG filed a notice of intent to close South Ash Pond 3 in accordance with the Federal CCR Rule's closure criteria (Ref. 2, § 257.102). Meanwhile, Will County continues to operate South Ash Pond 2 to manage CCR wastestreams and various non-CCR wastestreams from the Station in accordance with 40 CFR 257.103(f)(1). Operating conditions at this pond have not changed since the pond's initial inflow design flood control system plan was prepared in 2016.

Based on reviews of Google Earth aerial images (Ref. 7), there have been no significant modifications to South Ash Pond 2 or South Ash Pond 3 (mass excavations, major embankment modifications, *etc.*) since the ponds' initial inflow design flood control system plan was completed. Therefore, there is no basis to reevaluate the embankment geometry for this 2021 assessment.

4.1.2 CHANGES IN ASH POND TOPOGRAPHY

Based on reviews of Google Earth aerial images (Ref. 7), there have been no significant modifications to the embankments for South Ash Ponds 2 and 3 (mass excavations, mass fill placement, *etc.*) since the initial inflow design flood control system plan was completed. Therefore, the 2010 USDA topography for the site (Ref. 4) and the original construction drawings for the ponds (see Appendix A) remain valid for use in this 2021 assessment.

4.2 METHODOLOGY

PondPack (Ref. 8) was used to analyze the abilities of South Ash Ponds 2 and 3 to manage direct precipitation and stormwater run-on from the 1000-year, 24-hour storm event. The analysis conservatively assumed that the hydraulic structures downstream of the ponds were full at the time of the storm event and, therefore, the ponds would need to contain the inflow design flood without water overtopping their dikes (EL. 590.50 feet). The surface water elevations in the ponds at the time of the design storm event were assumed to be at the elevation of the overflow weir in each pond (EL. 589.00 feet). This assumption is conservative for South Ash Pond 3, which, as previously mentioned, is no longer in service and is dewatered as necessary. Finally, the time of concentration for this hydrologic and hydraulic assessment was assumed to be 5 minutes in accordance with the minimum time of concentration recommended in the U.S. Department of Agriculture's Technical Release No. 55, *Urban Hydrology for Small Watersheds* (Ref. 9).

4.3 RESULTS

Table 4-1 summarizes the results from the hydrologic and hydraulic calculations performed for South Ash Ponds 2 and 3 (Ref. 10). Based on these results, water entering South Ash Ponds 2 and 3 during the inflow design flood event will not overtop the either pond's dikes. The freeboard in each pond during the design event was estimated to be 0.15 foot.

Table 4-1 – Summary of Hydrologic & Hydraulic Assessment Results for Ash Pond 2

CCR Surface Impoundment	Illinois Hazard Potential Classification	Federal Hazard Potential Classification	Inflow Design Flood	Maximum Surface Water Elevation	Pond Crest Elevation
South Ash Pond 2	Class 2	Significant	1,000 Year	590.35 feet	590.50 feet
South Ash Pond 3	Class 2	Significant	1,000 Year	590.35 feet	590.50 feet

5.0 CONCLUSIONS

Based on the hydrologic and hydraulic calculations performed for South Ash Ponds 2 and 3 (Ref. 10), the ponds have adequate hydraulic capacities to retain the 1000-year flood event without water overtopping the ponds' dikes. Therefore, South Ash Ponds 2 and 3 are able to collect and control the inflow design flood event specified in 35 Ill. Adm. Code 845.510(a)(3) and 40 CFR 257.82(a)(3).

6.0 CERTIFICATION

I certify that:

- This inflow design flood control system plan was prepared by me or under my direct supervision.
- The work was conducted in accordance with the requirements of 35 Ill. Adm. Code 845.510 and with the requirements of 40 CFR 257.82.
- I am a registered professional engineer under the laws of the State of Illinois.

Certified By: Thomas J. Dehlin

Date: October 14, 2021

Seal:



Th. Dehlin
10/14/2021
Exp. 11/30/2021

7.0 REFERENCES

1. Illinois Pollution Control Board. "Standards for Disposal of Coal Combustion Residuals in CCR Surface Impoundments." 35 Ill. Adm. Code 845. Accessed October 13, 2021.
2. U.S. Environmental Protection Agency. "Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments." 40 CFR Part 257 Subpart D. <https://www.ecfr.gov/current/title-40/chapter-I/subchapter-I/part-257/subpart-D>. Accessed October 13, 2021.
3. Geosyntec Consultants. "Inflow Design Flood Control System Plan, South Ash Pond 2S and South Ash Pond 3S, Will County Station." October 2016.
4. Sargent & Lundy. "2021 Hazard Potential Classification Assessment for South Ash Pond 2 & South Ash Pond 3." Rev. 0. S&L Project No. 12661-124. October 2021.
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6. U.S. Department of Agriculture, Natural Resources Conservation Service, National Geospatial Center of Excellence. "LiDAR Elevation Dataset - Bare Earth DEM - 1 Meter." 2010. Processed June 2021.
7. Google Earth Pro v7.3.0.3832. Accessed October 13, 2021.
8. Bentley PondPack V8i Version 10.02.00.01.
9. U.S. Department of Agriculture. *Urban Hydrology for Small Watersheds*. Technical Release No. 55. 1986.
10. Sargent & Lundy. "South Ash Ponds 2 and 3 Hydraulic Capacity Calculation." S&L Calc. No. MG-WC-C001, Rev. 0. S&L Project No. 12661-124. October 2021.

**APPENDIX A: 2016 SOUTH ASH POND 2 & SOUTH ASH
POND 3 INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN**

