

MWVG

Midwest Generation, LLC

Will County Generating Station

2023 Inflow Design Flood Control System Plan for Pond 1N & Pond 1S

Revision 0

October 13, 2023

Issue Purpose: Use

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1.0 PURPOSE

Pond 1N and Pond 1S at Midwest Generation, LLC's (MWG) Will County Generating Station ("Will County" or the "Station") are former ash ponds that are regulated as inactive coal combustion residual (CCR) surface impoundments under 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 annual inflow design flood control system plan documenting how the inflow design flood control systems for Ponds 1N and 1S 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.

This report documents the 2023 inflow design flood control system plan prepared in accordance with the Illinois CCR Rule by Sargent & Lundy (S&L) on behalf of MWG for Ponds 1N and 1S at Will County. This report:

- Lists the inputs and assumptions used to determine whether Ponds 1N and 1S can manage the inflow design flood,
- Discusses the methodology used to prepare the 2023 inflow design flood control system plan,
- Summarizes the results of the March 2022 hydrologic and hydraulic calculations performed to support the conclusion of whether the Ponds 1N and 1S meet the hydrologic and hydraulic requirements for CCR surface impoundments promulgated by the Illinois CCR Rule,
- Evaluates potential changes to the inputs used in the March 2022 hydrologic and hydraulic calculations to determine whether new or updated calculations are warranted, and
- Provides the results of the hydrologic and hydraulic calculations used to determine whether Ponds 1N and 1S can manage the inflow design flood.

2.0 INPUTS

Inflow Design Flood Control System

The inflow design flood control systems for Ponds 1N and 1S are documented in the initial federal inflow design flood control system plan for South Ash Ponds 2 and 3, which was prepared by Geosyntec Consultants in October 2016 (Ref. 2). The 2016 plan analyzed all inputs into Will County's bottom ash sluice water treatment system, which includes stormwater runoff from Ponds 1N and 1S. The 2016 plan is provided in its entirety in Appendix A.

Inflow Design Flood Event

Per the former ash ponds' 2023 hazard potential classification assessment (Ref. 3), Ponds 1N and 1S are classified as Class 2 CCR surface impoundments pursuant to 35 Ill. Adm. Code 845.440(a)(1). Therefore, the inflow design flood event used in this hydrologic and hydraulic assessment of both former ash ponds is based on the 1,000-year storm (Ref. 1, § 845.510(a)(3)). Per the National Oceanic and Atmospheric Administration's (NOAA) Atlas 14 (Ref. 4), 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 Ponds 1N and 1S and the surrounding areas was obtained from the U.S. Department of Agriculture's (USDA) Geospatial Data Gateway (Ref. 5). This topography reflects publicly available elevation data collected in 2021.

Aerial Images

Historical and recent aerial images of the Station and surrounding areas were obtained from Google Earth Pro (Ref. 6).

Former Ash Pond Conditions

The physical conditions for Ponds 1N and 1S were based on discussions with MWG personnel, the 2022 annual inspection for both former ponds (Ref. 7), and as-built construction plans.

3.0 ASSUMPTIONS

There are no assumptions in this document that require verification.

4.0 METHODOLOGY

The inputs for the latest hydrologic and hydraulic calculations performed for Ponds 1N and 1S, which were completed in March 2022, were reviewed to determine if any changes have occurred since these calculations were completed. Identified changes were then evaluated to determine if updates to these calculations were warranted. If no changes were identified, or if identified changes were determined to have no impact to the results and conclusions of these calculations, then the latest hydrologic and hydraulic calculations performed for Ponds 1N and 1S were considered to still be valid for this 2023 inflow design flood control system plan.

5.0 HYDROLOGIC & HYDRAULIC ASSESSMENT

5.1 SUMMARY OF MARCH 2022 HYDROLOGIC & HYDRAULIC CALCULATIONS

The latest hydrologic and hydraulic calculations for Will County's Ponds 1N and 1S were completed in March 2022. The inputs, methodology, and results of these calculations are documented in the ponds' March 2022 inflow design flood control system plan (Ref. 8). As stated in the March 2022 plan, these calculations were performed by conservatively assuming that the hydraulic structures downstream of the former ponds were full at the time of the design storm event. It is important to note that Ponds 1N and 1S are former ash ponds and, therefore, do not impound water. The results of the March 2022 assessment indicated that water entering the former ponds during the inflow design flood event would not overtop the ponds' dikes. The freeboards in Ponds 1N and 1S during the design event were estimated to be 0.49 foot and 1.45 feet, respectively. Based on these results, it was concluded that the former ponds have adequate hydraulic capacities to retain the 1,000-year flood event without water overtopping the former ponds' dikes and were therefore in conformance with 35 Ill. Adm. Code 845.510(a).

5.2 CHANGES TO INPUTS FOR 2022 HYDROLOGIC & HYDRAULIC CALCULATIONS

The following subsections summarize the evaluation conducted to determine if changes to the inputs used in the latest hydrologic and hydraulic calculations for Ponds 1N and 1S have occurred since the calculations were completed in March 2022 that warrant updating the calculations.

5.2.1 CHANGES IN ASH POND OPERATIONS

Pond 1N and Pond 1S are inactive CCR surface impoundments and were taken out of service around 2010. The operating conditions at Pond 1N and Pond 1S have not changed since the latest hydrologic and hydraulic calculations were prepared in March 2022. Thus, there have been no significant changes to the operations of these former ash ponds that warrant updating the March 2022 hydrologic and hydraulic calculations.

5.2.2 CHANGES IN ASH POND TOPOGRAPHY

Based on correspondence with station personnel, review of the 2022 annual inspection report (Ref. 7), and reviews of Google Earth aerial images (Ref. 6), there have been no significant modifications to embankments for Ponds 1N and 1S (mass excavations, mass fill placement, *etc.*) since the latest hydrologic and hydraulic calculations were completed in March 2022. Therefore, the topographic data (Ref. 5) used in these calculations are unchanged and remain valid for use in this 2023 assessment.

5.2.3 CHANGES TO INFLOW DESIGN FLOOD EVENT

Per the ponds' 2023 hazard potential classification assessment (Ref. 3), Ponds 1N and 1S are both classified as Class 2 CCR surface impoundments pursuant to 35 Ill. Adm. Code 845.440(a)(1). Therefore, the inflow design flood event for both former ponds remains the 1,000-year storm (Ref. 1, § 845.510(a)(3)). As documented in the former ponds' March 2022 inflow design flood control system plan (Ref. 8), the precipitation value for the 1,000-year, 24-hour storm event used in the latest hydrologic and hydraulic calculations completed for Pond 1N and Pond 1S was 13.3 inches per NOAA's Atlas 14. As stated in Section 2.0, NOAA's 1,000-year, 24-hour precipitation value for the Will County site remains 13.3 inches. Therefore, the inflow design flood event used in the March 2022 hydrologic and hydraulic calculations is unchanged and remains valid for use in this 2023 assessment.

5.3 RESULTS

Based on the preceding subsections, there have been no significant modifications to Ponds 1N and 1S and no changes to the former ponds' inflow design flood event since the latest hydrologic and hydraulic calculations were prepared in March 2022. Therefore, the results and conclusions documented for Pond 1N's and Pond 1S's inflow design flood control systems in the March 2022 inflow design flood control system plan remain valid.

Table 5-1 summarizes the results from the hydrologic and hydraulic calculations performed for Ponds 1N and 1S. Based on these results, water entering Ponds 1N and 1S during the inflow design flood event will not overtop either former ash pond's dikes. The water levels in Ponds 1N and 1S during the design event were estimated to be 0.49 foot and 1.45 feet below the pond dikes, respectively.

Table 5-1 – Summary of Hydrologic & Hydraulic Assessment Results for Ponds 1N & 1S

| Inactive CCR Surface Impoundment | Illinois Hazard Potential Classification | Inflow Design Flood | Maximum Surface Water Elevation | Former Pond Crest Elevation |
|----------------------------------|--|---------------------|---------------------------------|-----------------------------|
| Pond 1N | Class 2 | 1,000 Year | 589.51 feet | 590.00 feet |
| Pond 1S | Class 2 | 1,000 Year | 588.55 feet | 590.00 feet |

6.0 CONCLUSIONS

Based on the results in Table 5-1, Will County's Pond 1N and Pond 1S have adequate hydraulic capacities to retain the 1,000-year flood event without water overtopping the former ponds' dikes. Therefore, Ponds 1N and 1S are able to collect and control the inflow design flood event specified in 35 Ill. Adm. Code 845.510(a)(3).

7.0 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.
- I am a registered professional engineer under the laws of the State of Illinois.

Certified By: _____ Thomas J. Dehlin _____

Date: _____ October 13, 2023 _____

Seal:



8.0 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, 2023.
2. Geosyntec Consultants. "Inflow Design Flood Control System Plan, South Ash Pond 2S and South Ash Pond 3S, Will County Station." October 2016.
3. Civil & Environmental Consultants, Inc. "Annual Hazard Potential Classification Assessment Report, Ash Ponds 1N and 1S - Will County Station." CEC Project No. 312-192.0220. September 2023.
4. National Oceanic and Atmospheric Administration. "Point Precipitation Frequency Estimates." NOAA Atlas 14, Volume 2, Version 3.
5. U.S. Department of Agriculture, Natural Resources Conservation Service, Geospatial Data Gateway (2021 Survey).
6. Google Earth Pro v7.3.0.3832. Accessed October 13, 2023.
7. Civil & Environmental Consultants, Inc. "Annual Inspection Report, Ash Ponds 1N and 1S - Will County Station." CEC Project 302-771.0422. September 30, 2022.
8. Sargent & Lundy. "2022 Inflow Design Flood Control System Plan for Pond 1N & Pond 1S." Rev. 0. S&L Project No. 12661-124. March 25, 2022.

APPENDIX A: 2016 FEDERAL INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN FOR SOUTH ASH PONDS 2 & 3

