MWG
Midwest Generation, LLC

Will County Generating Station

2024 Inflow Design Flood Control System Plan for Pond 1N & Pond 1S

Revision 0

October 13, 2024

Issue Purpose: Use

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55 East Monroe Street
Chicago, IL 60603-5780 USA
312-269-2000
www.sargentlundy.com

Sargent & Lundy

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EXECUTIVE SUMMARY

This report presents the 2024 inflow design flood control system plan for Pond 1N and Pond 1S at Midwest Generation, LLC's (MWG) Will County Generating Station ("Will County" or the "Station"). This annual plan, prepared by Sargent & Lundy (S&L) on behalf of MWG, documents how the inflow design flood control systems for Pond 1N and Pond 1S have been designed and constructed to meet the hydrologic and hydraulic capacity requirements for coal combustion residual (CCR) surface impoundments promulgated by 35 Ill. Adm. Code 845.510.

To complete this assessment, S&L re-evaluated the bases of the most recent hydrologic and hydraulic calculations prepared for Pond 1N and Pond 1S, which were completed in March 2022. These calculations were performed using a 1,000-year design storm and by conservatively assuming that the hydraulic structures downstream of the former ponds were full at the time of the design storm event. However, it is important to note that Ponds 1N and 1S are former ash ponds and, therefore, do not impound water. To verify that the results of the March 2022 hydrologic and hydraulic calculations were still valid, S&L determined (1) whether any changes to the calculation inputs have occurred since March 2022, and (2) whether identified changes warrant updating the calculations. Where no changes were noted for a given input, or where identified changes were determined to have no impact to the results and conclusions of the 2022 hydrologic and hydraulic calculations, the previous evaluation of that input was considered to still be valid for this 2024 inflow design flood control system plan.

Ponds 1N and 1S were taken out of service around 2010 and were subsequently re-designed to not permanently impound water; these conditions have not changed since the latest hydrologic and hydraulic calculations were prepared in March 2022. Moreover, there have been no significant modifications to embankments for Ponds 1N and 1S (mass excavations, mass fill placement, *etc*.). Finally, per the ponds' 2024 hazard potential classification assessment prepared in accordance with 35 Ill. Adm. Code 845.440(a)(1), Ponds 1N and 1S remain classified as Class 2 CCR surface impoundments; therefore, the inflow design flood event for both former ponds remains the 1,000-year storm per 35 Ill. Adm. Code 845.510(a)(3).

Because there have been no significant modifications to Ponds 1N and 1S and no changes to the ponds' inflow design flood event since the latest hydrologic and hydraulic calculations were prepared in March 2022, 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 ES-1 presents the results from the hydrologic and hydraulic calculations performed for Pond 1N and Pond 1S at Will County in accordance with 35 Ill. Adm. Code 845.510(c)(1). 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 ES-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

1.0 PURPOSE

Pond 1N and Pond 1S at Midwest Generation, LLC's 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 2024 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 2024 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

Former Ash Pond Conditions & Inflow Design Flood Control System

The physical conditions for Ponds 1N and 1S and for their inflow design flood control systems were based on the following inputs:

- Discussions with MWG personnel.
- The 2023 annual inspection for both former ponds (Ref. 7).
- As-built construction plans.
- The initial federal inflow design flood control system plan for South Ash Ponds 2 and 3, which analyzed all inputs into Will County's bottom ash sluice water treatment system, including stormwater runoff from Ponds 1N and 1S (Ref. 2).

Inflow Design Flood Event

Per the former ash ponds' 2024 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).

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 2024 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 & INFLOW DESIGN FLOOD CONTROL SYSTEMS

Pond 1N and Pond 1S are inactive CCR surface impoundments and were taken out of service around 2010 and were subsequently regraded to pipes that drain into a concrete trough that directs stormwater run-off to the Station's Recycle Pump Station. Consequently Ponds 1N and 1S have been designed to not permanently impound water, and there are no inflows into the former ponds except for direct precipitation. These 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 2023 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 2024 assessment.

5.2.3 CHANGES TO INFLOW DESIGN FLOOD EVENT

Per the ponds' 2024 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 2024 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

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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, even under the very conservative assumption that the hydraulic structures downstream of the former ponds are full at the time of the design storm event. 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).

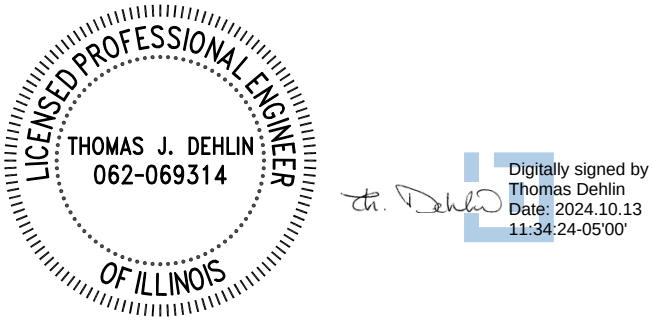
7.0 CERTIFICATION

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, 2024

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 1, 2024.
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 2024.
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 September 27, 2024.
7. Civil & Environmental Consultants, Inc. “Annual Inspection Report, Ash Ponds 1N and 1S - Will County Station.” CEC Project 302-771.0422. September 30, 2023.
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.