Bottom Ash Pond
Periodic Inflow Design Flood Control System Plan
General James Gavin Power Plant
Cheshire, Ohio
S&ME Project No. 26170100

PREPARED FOR:

Gavin Power, LLC
7398 State Rt. 7 N.
Cheshire, Ohio 45620

PREPARED BY:

S&ME, Inc.
6190 Enterprise Court
Dublin, OH 43016

October 13, 2026

October 13, 2026

Gavin Power, LLC
7397 St. Rt. 7 N.
Cheshire, OH 45620

Attention: Ms. De Vann S. Sago

Reference: **Periodic Inflow Design Flood Control System Plan**
Bottom Ash Pond Complex
General James Gavin Power Plant Cheshire, Ohio
S&ME Project No. 26170100

Dear Ms. Sago:

S&ME, Inc. (S&ME) has completed a periodic plan for the Inflow Design Flood Control System Plan of the Bottom Ash Pond at the Gavin Power Plant in Cheshire, Ohio. This plan was carried out to fulfill the requirements of 40 CFR § 257.73, 257.82. S&ME, Inc. previously prepared the H&H analysis for the Initial Design Flood Control System Plan (dated October, 2016) for this CCR unit.

Sincerely,

S&ME, Inc.

Daniel J. Tobergte, PE
Project Engineer
Registration No. 87825



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1.0 Introduction

In accordance with the Federal coal combustion residuals (CCR) Regulations as codified in Subpart D of Part 257 of Title 40 of the Code of Federal Regulations, this report has been prepared to fulfill the requirements of 40 CFR § 257.82(c) Inflow design flood control system plan for the periodic (defined as every 5 years) plan. Included in this report is a background of the Plan, a description of the current conditions and operation of the CCR unit, and an update to the hydrologic and hydraulic (H&H) analysis previously performed for the CCR unit.

Throughout this report, the CCR unit is identified as the "Bottom Ash Pond" which is separate from the "Reclaim Pond", even though both comprise the "Gavin Bottom Ash Pond" per the ODNR Dam Inventory Sheet we currently have on file (2022). This report addresses the Bottom Ash Pond only as discussed further in this report.

1.1 Background

In response to the national regulations for disposal of CCR from electric facilities formally published by the US Environmental Protection Agency (EPA) in April of 2015, American Electric Power, the owner of the Gavin Power Plant at that time, developed the initial Design Flood Control System Plan for the CCR unit based on the initial H&H analysis performed by S&ME (AEP report dated October 2016). This initial Plan assessed the H&H characteristics of the CCR unit and the Reclaim Pond at that time considering the Probable Maximum Precipitation (PMP) event based on the Probable Maximum Precipitation Study for the State of Ohio report (Applied Weather Associates, LLC, February 2013).

In October 2021, S&ME developed the first periodic plan for the Inflow Design Flood Control Plan for the CCR unit which included a revision to the H&H analysis based on an updated topographic survey, records of the normal operating pool levels, and updated pond inflow rates and volumes from the plant.

This periodic plan includes a revised H&H analysis representing the current condition of the Bottom Ash Pond. As discussed in Sections 1.2 and 3.0 of this report, all bottom ash has been removed, the Bottom Ash Pond no longer receives plant flows and the spillway conduit between the Bottom Ash Pond and the Reclaim Pond has been effectively abandoned.

In addition to this periodic inflow design flood control system plan, S&ME has also prepared the periodic hazard potential classification assessment (40 CFR § 257.73(a)(2)), the periodic structural stability assessment (40 CFR § 257.73(d)), and the periodic safety factor assessment (40 CFR § 257.73(e)) under separate cover. Note that the evaluation of the spillway performed as part of the periodic structural stability assessment (40 CFR § 257.73(d)(v)(B)) is based on the hydraulic calculations presented in this report.

The elevations presented in this study refer to the North American Vertical Dam of 1988 (NAVD88).

1.2 Location and General Conditions

The Gavin Power Plant, as shown in Figure 1-1, is located along the Ohio River in Gallia County, Ohio, approximately 10 miles north of Gallipolis, Ohio. As indicated in Figure 1-1, the Bottom Ash Pond is situated

immediately south (and downstream) of the plant and consists of an above-ground earthen embankment structure. The Reclaim Pond abuts the northwest portion of the Bottom Ash Pond such that the east and south embankments of the Reclaim Pond are shared with the Bottom Ash Pond . The Bottom Ash Pond and the Reclaim Pond both comprise the "Gavin Bottom Ash Pond" which is classified by the Ohio Department of Natural Resources (ODNR) Division of Soil and Water Resources as a Class I Dam; however, as the Reclaim Pond currently serves as a clear-water pond and does not treat, store, or dispose of CCR, the Reclaim Pond is not considered a CCR Surface Impoundment as defined by 40 CFR § 257.53 and therefore is not addressed in this report.

Figure 1-1 – Gavin Plant Aerial View (Google Earth™ Imagery, 2025/ 2026)



The Bottom Ash Pond was put into service in 1974. Within the pond is a smaller embankment separating the main pond from the Reclaim Pond. The total length of the exterior embankment is 6,550 feet and the embankment varies in height, as measured above the exterior grade, from 28 to 39 feet. The pond is completely isolated from exterior surface water inflow. The Bottom Ash Pond and Reclaim Pond both cover a footprint of approximately

58.1 acres. The original construction drawings indicated that the inboard and outboard slopes were designed with 2H:1V slope angles.

The natural soils beneath the Bottom Ash Pond generally include a laterally extensive, predominantly fine-grained separation layer composed primarily of clay and silt, with localized occurrences of fine sand. The separation layer is underlain by coarser-grained glacial outwash consisting predominantly of medium- to coarse-grained sand and gravel, which comprises the alluvial aquifer. Based on available geologic information and site-specific boring and monitoring well data, the alluvial aquifer extends to the underlying bedrock surface, which occurs at variable depths but is generally approximately 60 feet below natural ground surface beneath the Bottom Ash Pond.

2.0 Scope of Work

The scope of work was to review and update the periodic Inflow Design Flood Control System Plan in accordance with 40 CFR § 257.82(c). The following work items were performed by S&ME:

1. S&ME completed a targeted review of previously conducted Plans performed by S&ME, as well as the information provided by Gavin Power (refer to Section 3.0).

2. S&ME visited the site along with personnel from Gavin Power, LLC. The site visit was not a formal inspection, but rather served to understand the modifications or changed conditions that have taken place since the previous Inflow Design Flood Control System Plan (October 14, 2021). Current operation of the CCR unit was discussed with plant staff.

3. S&MR updated the Hydrologic and Hydraulic (H&H) analysis performed for the previous two Plans.

3.0 Information Review and Site Visit

To support the H&H analyses, S&ME conducted a targeted review of documents related to the Bottom Ash Pond available on the facility CCR website; namely, the Annual Engineering Inspection Reports over the past five years. Additionally, S&ME used the latest site survey information obtained in 2023 by Burns & McDonnell depicting the topography of the Bottom Ash Pond following the removal of the CCR from the Bottom Ash Pond during the same year.

On June 5, 2026, the undersigned S&ME Project and Senior Engineers met with the Plant Superintendent and Environmental Process Owner for Water of Gavin Power at the plant and conducted a site visit at the Bottom Ash Pond . The participants discussed and observed the current operations of the Bottom Ash and Reclaim Ponds, as well as changes or modifications to the ponds since the previous periodic October 2021 Plan. Note that although the site visit was not a formal inspection, visual observations of the Bottom Ash Pond did not reveal dam safety concerns.

The most significant changes to the CCR unit since the previous periodic October 2021 Plan include the current operation and condition of the Bottom Ash Pond and the Reclaim Pond. Per the Plant Superintendent, pumping of plant flows have been ceased and approximately 1.5 million yards of CCR material was removed from the Bottom

Ash Pond in 2023. The removal of CCR was evidenced by the exposure of the underlying clay soil during removal operations. At the time of our site visit, the presence of ash material was not apparent across the exposed surface of the Bottom Ash Pond as viewed from the embankment crest. Additionally, the plant flows which historically were discharged into the Bottom Ash Pond along the north embankment are currently being diverted to above-ground temporary water treatment structures prior to being discharged into the Reclaim Pond. As such, the Reclaim Pond is currently used as a equalization basin before either the water is recirculated to the plant or discharged to the Ohio River at the NPDES outfall. A post-construction site survey and bathymetric survey for the Bottom Ash Pond and the surrounding areas was performed by Burns & McDonald in 2023. This survey was provided to S&ME by Gavin Power on June 17, 2026. The spillway pipe between the Bottom Ash Pond and the Reclaim Pond has been taken out of service.

The Plant Superintendent reported that the only flow that currently enters the Bottom Ash Pond is direct rainfall, and that the water level within the Bottom Ash Pond is kept at a depth of approximately three feet or less. The water is pumped out of the Bottom Ash Pond and into the Reclaim Pond using a 6-inch diesel pump rated at 800 gallons per minute with a float intake. Pumping typically occurs about 2 weeks after a rain event to allow any soil particles eroded from the inside face of the embankments to settle prior to pumping.

4.0 Hydrologic and Hydraulic Study

The purpose of revising the H&H study is to satisfy the requirements of 40 CFR § 257.82(c) with respect to the current use of the Bottom Ash Pond along with the updated site survey. As the spillway has been abandoned, the Bottom Ash Pond has been modeled as a stand-alone above-ground basin considering the requirements of the ODNR Division of Soil and Water Resources Class I Dam status.

To support the revision to the H&H analysis included in the 2021 periodic Inflow Design Flood Control System Plan, S&ME utilized the data summarized in Section 3.0 of this report and the topography data from the 2023 post-construction survey. The survey information was used to revise the pond stage vs. storage capacity. Since the plant flows no longer enter the Bottom Ash Pond, only stormwater runoff was included in the revised analysis.

4.1 Hydrologic Routing

The design storm was routed through the drainage area, corresponding to the footprint of the embankment crest of the Bottom Ash Pond, using both of the ODNR PMP distributions to determine the controlling rainfall distribution in accordance with the ODNR PMP guidance. Based on the guidance, the one square mile drainage area charts for the 6-hour and 24-hour events were used. Note, one square mile is the smallest drainage area for which PMP values are presented in the ODNR document. At the location of the site, the 6-hour PMP value is 19.1 inches and the 24-hour PMP value is 27.3 inches. Refer to the "Probable Maximum Precipitation Determination" included in Appendix I of this report for additional information.

The Technical Release No. 20, Project Formulation – Hydrology (TR-20) hydrologic routing methodology developed by the Natural Resources Conservation Service (NRCS) was used to calculate the runoff volume for the PMP rainfall event. For this calculation, a Curve Number of 98 was used to model the precipitation primarily falling on open water even though less than half of the bottom of the pond currently has standing water. The intent was to evaluate the pond as if virtually all precipitation were stored within the pond. Refer to the "PMF Inflow

Calculation" presented in Appendix I of this report for the storm runoff (which equates to the total inflow for the Bottom Ash Pond in its current condition) calculations. The runoff volume from the design PMP value of 27.3 inches was determined to be approximately 131 acre-feet.

4.2 Hydraulic Routing

As the plant flows to the Bottom Ash Pond have been ceased and the spillway has been effectively abandoned, the hydraulic analysis was limited to comparing the stage-storage capacity of the pond to the inflow volume determined from the PMP design event. The stage-storage capacity of the Bottom Ash Pond was estimated using 5-foot contours from the computer-aided design (CAD) file developed from the post-construction topographic survey. The surface areas of each contour were calculated by Civil3D in units of square feet. Based on the post-construction survey, the bottom of the pond is at approximately El. 550 feet. Since the plant reportedly maintains the current water depth in the pond to at most three feet, the available Bottom Ash Pond storage was assumed to begin at El. 555 feet prior to the occurrence of the PMP storm event. The storage volumes were calculated using the average-end-area method. The total available storage volume was calculated to be 1,303 acre-feet vs. an inflow of 131 acre-feet from the design storm, suggesting that the pond meets the inflow design flood requirements. Refer to the "Cumulative Stage-Storage Volume Calculation" included in Appendix I of this report for additional information.

4.3 Discussion

Based on the H&H analysis, the Bottom Ash Pond in its current state is capable of impounding the design PMP event. As such, the updated analysis demonstrates compliance with the requirements under 40 CFR § 257.82(c) Inflow design flood control system plan.

5.0 Certification

Based on our previous investigations and current Plan of the Bottom Ash Pond facility, S&ME certifies that this Plan meets the requirements 40 CFR § 257.82(c).

Appendices

Appendix I – H&H Analysis

Probable Maximum Precipitation Determination

Reference: Ohio Department of Natural Resources, Division of Water Resources. *Technical Guidance for Dam Break Studies*. Ohio Department of Natural Resources, 2023.

Table 1: Guidance for Determination of PMP

Drainage Basin Size	Storm Duration	Rainfall Depth and Spatial Extent	Temporal Distribution
<1 mi^2	6 hours	Obtain the rainfall depth from the 1 mi^2 PMP chart. The spatial extent of the storm is 1 mi^2.	Dimensionless Design Storm Distribution[A]
	24 hours	Obtain the rainfall depth from the 1 mi^2 PMP chart. The spatial extent of the storm is 1 mi^2.	SCS Type II at 1.5-hour time step[B]

Site: Gavin Power Plant – Bottom Ash Pond, Cheshire – Gallia County, OH

Figure 1: All-Season PMP values (inches) for 1 square mile, 6-hour event

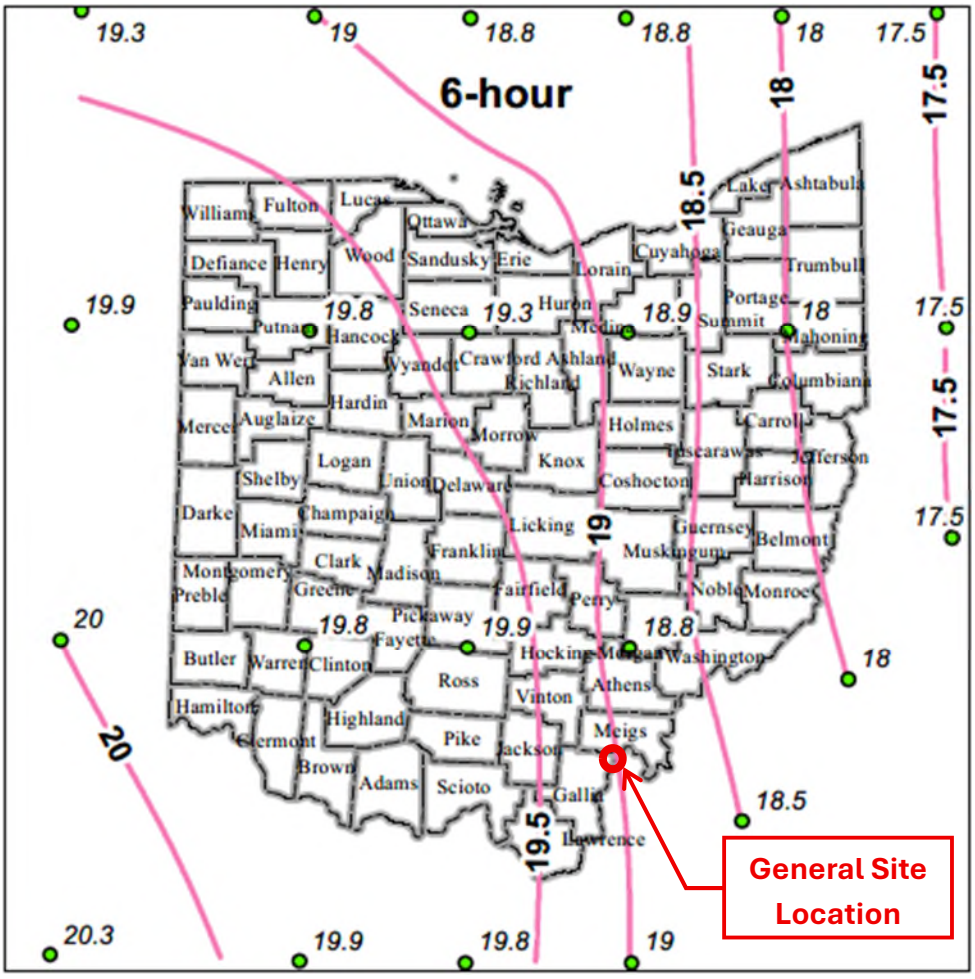


Figure 2: All-Season PMP values (inches) for 1 square mile, 24-hour event

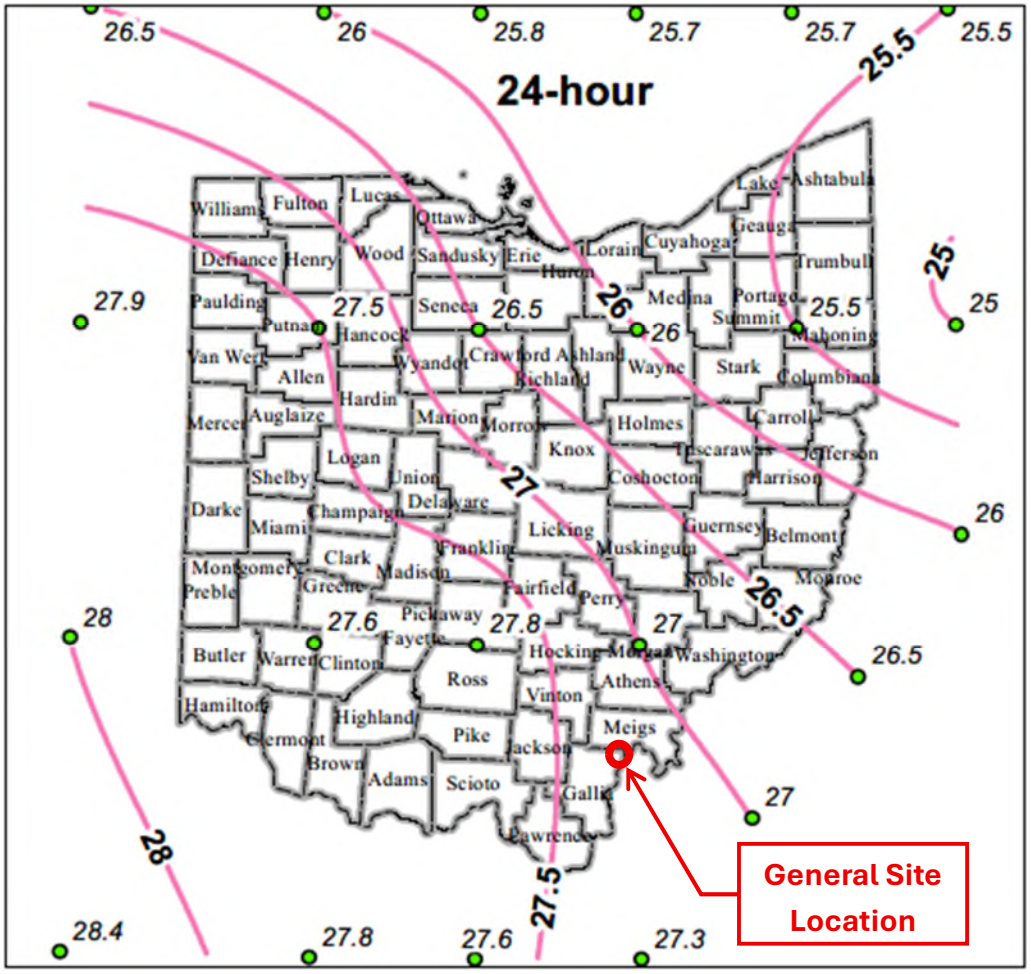


Table 2: PMP Values

ODNR PMP Chart	PMP Value (inches)
1 mi^2, 6-hour	19.1
1 mi^2, 24-hour	27.3

PMF Inflow Calculation

Site: Gavin Power Plant - Bottom Ash Pond

Assumptions:

- Use PMP values determined per ODNR Technical Guidance for Dam Break Studies (2023).
- Use NRCS TR-20 procedure to determine volume of runoff (inflow into the pond) during PMF event.
- Curve Number (CN) = 98 to model the precipitation falling primarily on open water.

Given:

$A := 58.1\ acre$ (from CAD)

Runoff for ODNR PMP 1 square mile, 6-hour event:

Total Rainfall: $P := 19.1\ in$ $Volume := P \cdot A = 92.5\ acre \cdot ft$

Total Inflow: $CN := 98$ $S := \left(\frac{1000}{CN} - 10\right) in$ $I_a := 0.2 \cdot S$

$$Q := \frac{(P - I_a)^2}{(P - I_a) + S}$$

$Q = 18.9\ in$

$Inflow := Q \cdot A = 91.3\ acre \cdot ft$

Runoff for ODNR PMP 1 square mile, 24-hour event:

Total Rainfall: $P := 27.3\ in$ $Volume := P \cdot A = 132.2\ acre \cdot ft$

Total Inflow: $CN := 98$ $S := \left(\frac{1000}{CN} - 10\right) in$ $I_a := 0.2 \cdot S$

$$Q := \frac{(P - I_a)^2}{(P - I_a) + S}$$

$Q = 27.1\ in$

$Inflow := Q \cdot A = 131.0\ acre \cdot ft$

Cumulative Stage-Storage Volume Calculation

JOB NAME: Gavin Bottom Ash Pond
SUBJECT: Bottom Ash Pond Stage-Storage Function

SOURCE: Burns & McDonnell site survey dated 12/16/2023

Elevation (feet) [1,2]	2023 Contours Area (square feet) [3]	Avg. Area (square feet) [4]	Height (feet) [5]	Volume (cubic feet) [6]	Cum. Vol. (cubic feet) [7]	Cum. Vol. (acre-feet) [8]
555	**763303**				**0**	**0**
		1062741	5	5313703		
560	1362178				5313703	122
		1683798	5	8418988		
565	2005417				13732690	315
		2044966	5	10224828		
570	2084514				23957518	550
		2119888	5	10599440		
575	2155262				34556958	793
		2188761	5	10943803		
580	2222259				45500760	1045
		2254547	5	11272733		
585	2286834				56773493	1303

Notes:

1) Above mean sea level NAVD88.
2) Assumed water level during PMF event at El. 555 ft. which is above reported normal level.
3) Surface area based on CAD measurement.
4) Average Area = (previous 2023 Contours Area + next 2023 Contours Area) / 2
5) Height = next Elevation - previous Elevation
6) Volume = Average Area x Height
7) Cumulative Volume (cubic feet) = sum of previous Volumes
8) Cumulative Volume (acre-feet) = Cumulative Volume (cubic feet) / 43560 square feet per acre