

Prepared for:  
Gavin Power, LLC

# Fly Ash Reservoir Demonstration

Gavin Fly Ash Reservoir

Gavin Plant

Cheshire, Ohio

09 September 2020

Project No.: 0545239

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**Signature Page**

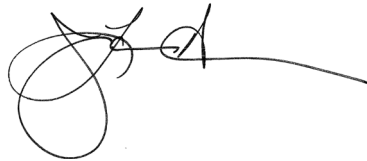
9 September 2020

# **Fly Ash Reservoir Demonstration—40 CFR 257.102(f)(2)**

## **Gavin Fly Ash Reservoir**

Gavin Plant

Cheshire, Ohio



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### FIGURE 1 CUMULATIVE ANNUAL PRECIPITATION

#### Acronyms and Abbreviations

Name	Description
CCR	Coal Combustion Residual
CCR Rule	40 CFR 257
CFR	Code of Federal Regulations
ERM	ERM Consulting & Engineering, Inc.
FAR	Fly Ash Reservoir
Gavin	Gavin Power, LLC

## 1. OBJECTIVE

ERM Consulting & Engineering, Inc. (ERM) has prepared this report on behalf of Gavin Power, LLC (Gavin) to fulfill the requirements of 40 Code of Federal Regulations (CFR) 257 (CCR Rule) for the Fly Ash Reservoir (FAR) coal combustion residual (CCR) unit at the General James M. Gavin Power Plant (Plant or Site) in Cheshire, Ohio. In early 2017, Lightstone Generation LLC purchased the Plant from American Electric Power (AEP); however, AEP has retained the obligation to close the FAR under the CCR Rule (40 CFR 257.102) and a State of Ohio-approved closure plan.

The closure of the FAR has been proceeding in accordance with the closure plan since 2015. However, above average precipitation in 2019 reduced the effective rate for the dewatering of CCR materials in the FAR, and slowed production of earthwork operations required for closure. As a result of these challenges, closure cannot be completed in 2020 as originally programmed in the Closure Plan (AEP and Geosyntec Consultants, 2016). In accordance with 40 CFR 257.102(f)(2), the timeframe for completing closure of the CCR unit may be extended if the owner or operator can demonstrate that it was not feasible to complete closure of the CCR unit within the required timeframes due to factors beyond the facility's control. For the purpose of this demonstration, precipitation data was reviewed for both 2018 and 2019; however, for reasons discussed below, precipitation in 2019 resulted in a larger impact to Site activities.

### 1.1 Purpose and Scope

The purpose of this report is demonstrate that it was not feasible to complete closure of the CCR unit within the initial five year timeframe as programmed in the Closure Plan due to above average precipitation at the Site in 2018 and 2019, and the advanced stage of the project at the time the delays were encountered in 2019. This demonstration includes a narrative discussion providing the basis for additional time beyond that specified in the Closure Plan, and how these delays impacted the project schedule. The proposed time extension necessary to complete the closure is also provided.

## 2. SITE BACKGROUND

### 2.1 Description of the CCR Unit

The FAR is approximately 300 acres in area, and located about 2.5 miles northwest of the Plant. The FAR extends from the fly ash dam towards the west and northwest in three topographic valleys referred to as the south valley, middle valley, and north valley. The pre-closure ground surface elevation (i.e., top of ash) for the middle and south valley were approximately 20 to 30 feet higher in elevation than the north valley based on pre-closure drawings (AEP and Geosyntec Consultants, 2016). This topography resulted in the natural accumulation of runoff and formation of a small pond in the north valley during initial construction activities after the majority of the FAR was drained. The north valley has since been drained of surface water as construction has shifted to this area.

The outfall from the FAR drains to Stingy Run, which is a tributary to Kyger Creek. Kyger Creek flows into the Ohio River approximately 3 miles downstream and south of the Plant. In 1994, the Plant ceased fly ash slurry discharges into the FAR and since that time, only direct precipitation and stormwater from upstream areas has entered the FAR.

The fly ash dam is an earthen embankment that was constructed to retain settled fly ash within the FAR. The original elevation of the top of the dam was approximately 735 feet above mean sea level (amsl) but significant grading has occurred since 2018, and the crest has been lowered and widened as part of the ongoing closure process. The new lower crest elevation is now approximately 691 feet amsl, while the elevations of the north and south groins remain at 735 feet amsl (ERM, 2020).

## 2.2 Current Regulatory Status

AEP submitted initial closure plans to the Ohio Environmental Protection Agency (OEPA) in December 2013 and received approval in December 2014. The closure plan was revised and resubmitted in March 2016 to incorporate federal CCR Rule requirements (AEP and Geosyntec Consultants, 2016). AEP submitted a Notice of Intent to close the FAR to OEPA in October 2015 (AEP 2015) and closure of the FAR began in 2015 with targeted closure by 2020. The revised FAR Closure Plan was approved by the OEPA in September 2016 (OEPA 2016) and closure is currently in progress. Following the promulgation of the CCR Rule, AEP prepared a Closure Plan under the requirements of §257.102 in October 2016; this document indicated the FAR would be closed by 2020 (AEP, 2016). In 2018, Gavin submitted a National Pollutant Discharge Elimination System (NPDES) permit renewal application that indicated that closure would be completed by 30 June 2020.

## 2.3 FAR Closure Plan

The FAR Closure Plan specified that the CCR unit would be capped and closed in place (AEP, 2016). Closure consists of regrading and backfilling the existing onsite materials followed by the installation of an impermeable cap with a vegetative cover. The subgrade or contouring fill is first being graded to promote positive surface-water runoff, and then covered with a flexible geomembrane and 2-feet of soil capable of sustaining native plant growth.

Closure of the FAR is occurring incrementally with fly ash being dewatered, transported, stabilized and capped within the FAR, upstream of the dam (ERM, 2020). Closure of the FAR began in the south valley and then progressed to the middle valley and finally the north valley. The capping process includes the excavation and movement of a significant amount of CCR and cover material to be used within the FAR for subgrade, fill, and capping. Materials used include clay soil and bottom ash from the former FAR embankment (ERM, 2020).

## 3. DEMONSTRATION TO EXEND CLOSURE TIMEFRAME

Closure of the FAR has proceeded in accordance with the methodology presented in the Closure Plan. Through 2018, the project met the production requirements necessary to complete the work in a 5-year period as programmed; however, above average precipitation in 2019 significantly reduced productivity. As a result, closure of the FAR within the programmed Closure Plan schedule is no longer feasible. Discussion of the factors that have impacted Site activities are presented below as the basis for this demonstration.

### 3.1 Climate and Weather—§257.102(f)(2)(i)(A)

AEP operates an onsite weather station at the project Site in order to monitor local climate data, including precipitation. Measured onsite daily cumulative precipitation for 2018 and 2019 were compared to precipitation data from a local weather station managed by the National Oceanic and Atmospheric Administration (NOAA) in Racine, West Virginia, located 13 miles east of the Site (Station ID: USC00467287). Figure 1 presents cumulative annual precipitation data for 1970 to 2019 for Racine (NOAA, 2020a). This type of figure, referred to as a Haywood plot, provides cumulative data for different years and is useful to depict divergence from average. A comparison of all Racine data to the average calculated precipitation for this station indicates 2018 and 2019 were the sixth and eleventh wettest years, respectively, during this period at this station. The 51.00 inches of precipitation in 2018 and the 48.29 inches of precipitation in 2019 were 10 and 6 inches above average, respectively, and further, were experienced in adjacent years. Additionally, annual precipitation measured by AEP in 2018 and 2019 for

the Site was 66.73 and 54.86 inches, respectively, which would be the highest (2018) and fourth highest (2019) precipitation amounts relative to the Racine records. The variability in precipitation totals seen for the Site relative to Racine is consistent with the Ohio climate where localized thunderstorms and heavy rains are common in the summer months (NOAA, 2017).

Similar observations were also made at NOAA stations in Charleston, West Virginia (50 miles southeast), and Columbus, Ohio (85 miles northwest) as a means to bracket the Site location (NOAA, 2020b). Haywood plots for the State of Ohio for September 2018 to August 2019 indicate that these high precipitation totals for Ohio were the highest in the 124-year state record by more than six inches and were 14 inches above normal (NOAA, 2020c). The Midwest region similarly set consecutive precipitation records in both 2018 and 2019 (NOAA, 2020d).

Earthwork program delays as a result of weather impacts were considered in the FAR Closure Plan. The project baseline schedule assumed 20% lost days (approximately 50 work days per year) due to direct weather delays and work cancellation out of approximately 250 potential work days per year (AEP, 2020). Observed lost days for the project for 2019 accounted for 28%, (approximately 70 work days) of possible work days. Delays from indirect impacts account for additional lost time due to the cumulative time required to drain ponded water, to allow subgrade material to stabilize for construction traffic, and for subsequent dewatering of CCR materials. Lost time due to indirect impacts approximately doubled the number of impacted days in 2019 to 61% of potential work days, which is equivalent to approximately 152 work days or 7 months (AEP, 2020).

Potential factors influencing the impact of precipitation to the project schedule include the amount, intensity, and timing of precipitation events relative to Site activities. The periodicity (i.e., frequency) of precipitation events partially explains why 2019, although with less precipitation than 2018, had more lost and impacted days due to precipitation. 2019 experienced more frequent precipitation than 2018 for May through August for Racine, with an average of 2.4 days between precipitation events (greater than or equal to 0.10 inches) in 2019 compared to an average of 4.0 days for 2018 (NOAA, 2020a). This higher frequency resulted in fewer days between precipitation events for materials to dewater in order to be managed, ultimately leading to lower production. Lost productivity due to higher frequency of precipitation was compounded by working in the north valley where wetter conditions prevailed due to topography and hydrology.

### **3.2 Time to Dewater—§257.102(f)(2)(i)(B)**

In addition to work cancellation due directly to increased precipitation, additional lost production in 2019 was incurred due to indirect factors including additional time required to dewater CCR material, subgrade, fill, and capping material. This is related to increased frequency of precipitation events in 2019 which decreased the number of days where earthwork was possible. Material impacted includes fly ash that is excavated from the lower areas and relocated to the north valley to be used as fill material. This material must meet moisture content requirements to be able to be properly compacted and provide a stable foundation for the overlying cap. When this material becomes over-saturated from heavy rains, the moisture content must be reduced below the liquid limit before it can be safely hauled, which can require one or two days after each precipitation event (AEP 2020). The high moisture content also resulted in unstable work and transport surfaces that required time to be suitable for site traffic. The saturated material also required mobilization of additional equipment in May 2019 to accommodate the wet conditions, which also created a delay due to equipment procurement and delivery. These indirect consequences were enhanced by work progressing to the north valley where wetter conditions prevailed due to topography and hydrology.

## 4. SUMMARY EXPLANATION FOR EXTENSION OF CLOSURE

Above average precipitation was observed at the Site in 2018 through 2019 which resulted in direct and indirect delays beyond those assumed when project completion schedules were developed. Site and NOAA weather station data indicate that from 2018 through 2019, Ohio and the Site received extended periods of above-average precipitation. Since the Closure Plan schedule was based on weather patterns within a reasonable range of average patterns, and despite contingency for weather delays, this level and periodicity of precipitation resulted in a significant loss of productivity due to Site conditions that forced work stoppages and caused dewatering challenges. These delays resulted in the loss or impact to 61% of the 2019 construction season. As a result, closure of the FAR in 2020 as originally programmed in the Closure Plan is not attainable. Based on current Site conditions, the anticipated revised date of FAR closure is currently March 2021.

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## OWNER/OPERATOR CERTIFICATION STATEMENT—§257.102(f)(2)(iii)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this demonstration and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.



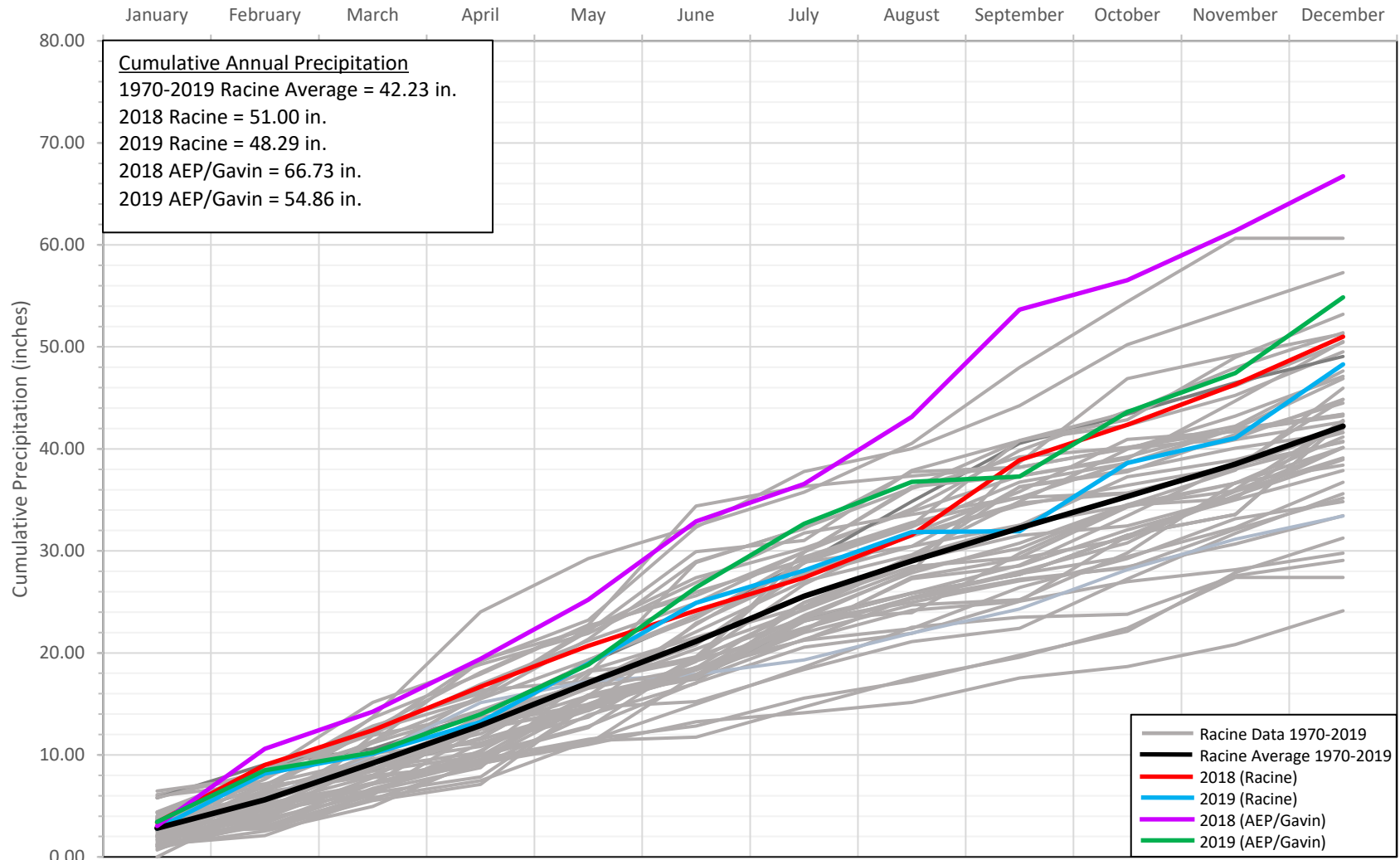
Laurie Jodziewicz, Vice President of Gavin Power, LLC

Date: 9/10/2020

## **FIGURES**

# Cumulative Annual Precipitation Haywood Plot

Racine, West Virginia - NOAA Station USC00467287 (1970-2019)  
and AEP/Gavin Onsite (2018-2019)



Source: <https://www.ncdc.noaa.gov/cdo-web/datasets/GSOM/stations/GHCND:USC00467287/detail> and AEP 2020

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