

STRUCTURAL STABILITY ASSESSMENT PERIODIC 5-YR REVIEW

30 TAC 352.731 (40 CFR 257.73(d))

Bottom Ash Storage Pond

Welsh Plant
Pittsburg, Texas

October, 2021

Prepared for: Southwest Electric Power Company (SWEPCO) – Welsh Plant
Pittsburg, Texas

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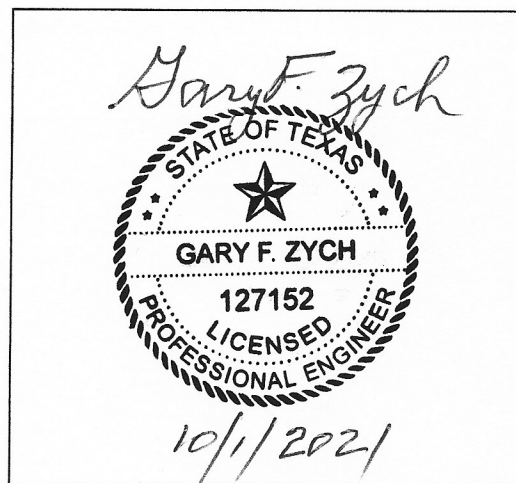
Document No. GERS-21-035

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Welsh Plant
Bottom Ash Storage Pond

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I certify to the best of my knowledge, information and belief that the information contained in this structural stability assessment meets the requirements of 40 CFR 257.73(d)

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1.0 OBJECTIVE 257.73(d)

This report was prepared by AEP- Geotechnical Engineering Services (GES) section to fulfill requirements of 30 TAC 352.731 (40 CFR 257.73(d)) and document whether the design, construction, operations, and maintenance of the CCR unit is consistent with recognized and generally accepted good engineering practices. This is the first periodic 5-year review of the initial assessment as per the rule.

Note: There has not been any changes to the diking structure, emergency spillway, primary spillway or the primary discharge pipe through the dike system since the initial assessment.

2.0 NAME AND DESCRIPTION OF CCR SURFACE IMPOUNDMENT

The AEP J. Robert Welsh Plant is located in southern Titus County, approximately 8 miles northeast of Pittsburg, Texas, and approximately two miles northwest of Cason, Texas. The facility operates two surface impoundments for storing CCR materials called the Primary Bottom Ash Pond and the Bottom Ash Storage pond. This report addresses the Bottom Ash Storage Pond. The Bottom Ash Storage Pond CCR unit is located at the south end of the Plant and approximately 1,000 feet west of the Welsh Reservoir.

The Bottom Ash Storage Pond embankments are approximately 20 feet in height and are constructed on a 3:1 slope (3 feet horizontal, 1 foot vertical). The elevation at the base of the embankment is approximately 340 feet above msl, and the elevation at the top of the embankment around the perimeter of the Bottom Ash Storage Pond is approximately 360 feet above msl. Presently a combination of economizer ash, bottom ash and some fly ash is sluiced to the bottom ash storage pond from the primary bottom ash pond.

3.0 STABLE FOUNDATION AND ABUTMENTS 257.73(d)(1)(i)

[Was the facility designed for and constructed on stable foundations and abutments? Describe any foundation improvements required as part of construction.]

Native coarse grained (or sandy) material underlying the Bottom Ash Storage Pond generally consists of medium dense to very dense silty sand (SM), clayey sand (SC) and silt (ML) and fine grained (clayey) material consist of medium stiff to hard lean clay and fat clay (CL and CH) soils. Based on the subsurface investigation and engineering properties of the subsurface soils, it is concluded that the Bottom Ash Storage Pond dikes are supported on a stable foundation base.

Operation of the impoundment is performed so as to not adversely affect the foundation and abutments. As required by the CCR rules the Bottom Ash Pond Complex is inspected at least every 7 days by a qualified person. Also as a requirement of the CCR rules, the impoundment is also inspected annually by a professional engineer. Maintenance items are addressed as they are discovered as a part of those inspections.

4.0 SLOPE PROTECTION 257.73(d)(1)(ii)

[DESCRIBE THE SLOPE PROTECTION MEASURES ON THE UPSTREAM AND DOWNSTREAM SLOPES.]

The bottom ash storage pond interior has been constructed with a geomembrane liner. The impoundment's storage area is lined with a 60 mil HDPE liner. The geomembrane extends all the way to the crest of the interior slope to protect areas that require protection from erosion and wave action. The exterior slopes consist of vegetative cover. Any erosion that may occur is repaired within a timely period.

5.0 EMBANKMENT CONSTRUCTION 257.73 (d)(1)(iii)

[Describe the specifications for compaction and/or recent boring to give a relative comparison of density.]

The Bottom Ash Storage Pond embankment is constructed of compacted earth fill. The source and type of soils used for earth fill is unknown. However, AEP contracted with Auckland Consulting, Inc. of Tyler, Texas to perform a Geotechnical Investigation of Existing Bottom Ash Storage Pond Embankments in 2016. The evaluation of the existing earthen embankments consisted of slope stability and seepage analyses for the embankments. The evaluation was performed using information obtained from soil borings drilled on the crest and outside toe of the embankments. The embankments for the Bottom Ash Storage Pond were investigated. The subsurface exploration of the embankment consisted of advancing a total of seven (7) borings located in potentially critical areas of the embankment. Four (4) borings (Boring Nos. 2 through 5) were completed along the embankment crest with termination depths ranging from approximately 40 to 50 feet. Three (3) borings (Boring Nos. 6 through 8) were completed along the embankment toe and were advanced to termination depths of approximately 40 feet.

Based on subsurface soils and field sampling and testing, the existing embankment is primarily lean clay (CL) with existing side slopes (upstream and downstream) of approximately 3:1 (H:V). Based on the slope stability evaluation and the engineering properties of the subsurface soils, it is concluded that the Bottom Ash Storage Pond embankments are adequately constructed.

6.0 VEGETATION CONTROL 257.73 (d)(1)(iv)

[Describe the maintenance plan for vegetative cover.]

The vegetative slopes/areas are mowed to facilitate inspections and maintain the growth of the vegetative layer; and prevent the growth of woody vegetation.

7.0 SPILLWAY SYSTEM 257.73(d)(1)(v)

[Describe the spillway system and its capacity to pass the Inflow Design Flood as per its Hazard Classification.]

Hydrology and Hydraulic Analysis which includes calculations for each spillway structure are included in Inflow Design Flood Control Plan. As of April 11, 2021, the plant has ceased all sluicing operations and all surface water run-on to the Bottom Ash Storage Pond area. The only inflows to the Bottom Ash Storage Pond is direct rainfall within the pond's dikes. The Inflow Design Flood for the Bottom Ash Storage Pond is the 100-year storm event.

The principal spillway for the Bottom Ash Storage Pond is an 18-inch HDPE pipe with an invert elevation of 350.5 feet penetrating a 40 foot wide interior spillway that feeds into a sump area that is ultimately controlled by a 30-inch HDPE pipe with an invert elevation of 350.0 feet. Flows through the 30-inch HDPE pipe are directed back to Primary Bottom Ash Pond by gravity. The Bottom Ash Storage Pond has an 8-foot wide emergency spillway with a crest elevation of 358.0 feet. The emergency spillway channel is lined with rock riprap and discharges into an unnamed tributary of Swauano Creek just upstream of the south end of the Welsh Reservoir emergency spillway. Based on the Hydrology and Hydraulic analysis the bottom ash storage pond spillway system can handle the 100-year storm event.

8.0 BURIED HYDRAULIC STRUCTURES 257.73 (d)(1)(vi)

[Describe the condition of the sections of any hydraulic structure that is buried beneath and/or in the embankment.]

The 30-inch diameter HDPE discharge pipe for the principal spillway area extends through the top portion of the embankment of the bottom ash pond. The elevation of the pipe through the embankment is equal to the normal operating pool level of the pond. Once the pipe exits the embankment, it runs along the outside slope area until it reaches its discharge point. Based on examination of the exposed areas of the pipe along the outside slope area, the pipe appears to be in satisfactory condition.

There are no signs of settlement or sinkholes on the ground surface above the sections of pipe that are buried. The discharge pipe is a HDPE solid wall plastic pipe and no deterioration or shape changes have been observed on the visible sections of the pipe since the initial assessment.

9.0 SUDDEN DRAWDOWN 257.73 (d)(1)(vii)

[If the downstream slope is susceptible to inundation, discuss the stability due to a sudden drawdown.]

The downstream slope of the Bottom Ash dikes will not be inundated from any adjacent water bodies.