STRUCTURAL STABILITY ASSESSMENT
PERIODIC 5-YR REVIEW

30 TAC 352.731 (40 CFR 257.73(d))

Primary Bottom Ash Pond

Welsh Plant
Pittsburg, Texas

October, 2021

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

Pittsburg, Texas

Prepared by: American Electric Power Service Corporation

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Document No. GERS-21-034

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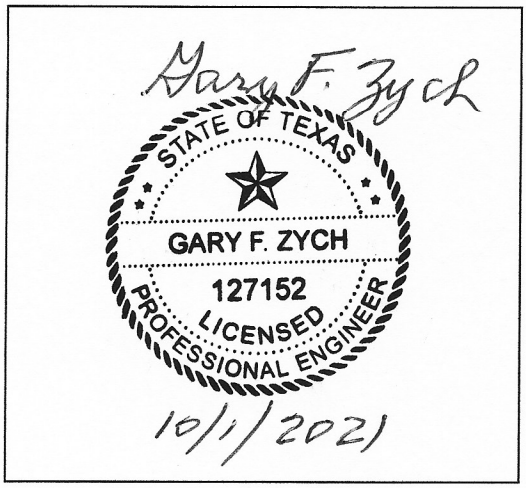

I certify to the best of my knowledge, information and belief that the information contained in this structural stability assessment meets the requirements of 40 CFR 257.73(d)

Table of CONTENTS

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 embankment structure, emergency spillway or the discharge weir structure 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 Primary Bottom Ash Pond. The Primary Bottom Ash Pond CCR unit is located southwest of the Plant and directly west of the Welsh Reservoir.

The Primary Bottom Ash Pond is bounded by natural ground surface (topographically higher areas) to the north and west, and embankment dikes to the south and east. The elevation at the top of embankment along the crest area is approximately 340.0 feet above msl. Presently, economizer ash and bottom ash from the generating plant is sluiced to 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.]

The foundaion materials for the Primary Bottom Ash Pond embankment consist primarily of stiff to hard lean clay (CL) and fat clay (CH) with intermittent layers of medium dense to very dense clayey sand (SC) and silty sand (SM). There is a thick layer of very dense silty sand (SM) which is apparently the native surficial soils near the previous creek bed. Atterberg Plasticity Indices of the tested soils ranged between a low of 9 to a high of 44. Based on the subsurface investigation and engineering properties of the subsurface soils, it is concluded that the Primary Bottom Ash 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 Primary Bottom Ash Pond 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.]

Over the years the Primary Bottom Ash Pond unit has developed a thick layer of economizer and bottom ash on the interior slopes that provide a layer of protection from erosion and wave action and also support a set of ash sluice lines that are no longer in use. The exterior slopes consist of vegetative cover on the upper half of the slope while the lower half of the slope is protected by large rip rap for armor protection. 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 Primary Bottom Ash Pond embankment is constructed of compacted earth fill. The source and type of soils used for earth fill is unknown. However, AEP contracted with ETTL Engineers & Consultants Inc. of Tyler, Texas to perform a Geotechnical Investigation of Existing Ash Storage Ponds Embankments on June 21, 2010. 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 located on the crest and outside toe of the embankments. The embankment for the Primary Bottom Ash Pond was investigated. Three borings were drilled to 50 feet depth at the crest of the embankment. The fill material in the containment berm consists primarily of stiff to hard lean clay (CL), fat clay (CH) and medium dense clayey sand (SC) overlying the native soils which consist primarily of stiff to hard lean clay (CL) and fat clay (CH) with intermittent layers of medium dense to very dense clayey sand (SC) and silty sand (SM). Atterberg Plasticity Indices of the tested soils ranged between a low of 9 to a high 44. Based on the slope stability evaluation and the engineering properties of the subsurface soils, it is concluded that the Primary Bottom Ash 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. The Inflow Design Flood for the Primary Bottom Ash Pond (PBAP) is the 100-year storm event.

The principal spillway weir box for the PBAP is located in the canal connecting the PBAP and the Clear Water Pond. The PBAP receives effluent from the ash sluice lines that transport the ash slurry on the east side of the pond. The ash settles, and the decant water flows to a 48-inch wide concrete weir box and into the Clear Water Pond via an approximate 1,950-foot long discharge canal which originates at the southwest corner of the PBAP. The weir box has a minimum crest elevation of 325.0 feet, and flows through the weir box are controlled by installing 12-inch stop logs that are 55 inches long. Flows are conveyed through the weir box by a sheet piling wall installed across the discharge canal, on either side of the weir box. The PBAP has a 90-foot wide earthen emergency spillway on the south side of the pond; the spillway crest elevation is 334.0 feet. The emergency spillway overflows from the PBAP directly into the discharge canal at approximate midpoint of the discharge canal. Based on the Hydrology and Hydraulic analysis the PBAP 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 in buried beneath and/or in the embankment.]

There are no pipes that are part of the spillway system that are buried within or beneath the embankment structure.

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 downslope is partially inundated by the Swauano Creek reservoir. The reservoir is used to supply the power plant with a source of water for operations. The service spillway is a concrete morning glory drop inlet with a concrete conduit through the dam. It has a low level drain pipe (18-inch diameter) located at the bottom of the drop inlet and discharges into the concrete conduit. The emergency spillway is a broad-crested earthen spillway located in the right abutment of the dam. The service spillway overflow section is only activated during large precipitation events and the emergency spillway section has never been activated since the construction of the dam. The water level of the lake is also maintained via a make-up water line from a nearby reservoir that keeps the reservoir near normal pool levels. The water intake for the plant operations is maintained via pumps. In general, the reservoir area and volume is large compared to the intake pump capacity of the plant. Therefore, since the water level in the lake cannot increase or decrease significantly in a rapid manner, the condition for a sudden drawdown of the reservoir is not feasible.