STRUCTURAL STABILITY ASSESSMENT
PERIODIC 5-YR REVIEW

30 TAC 352.731 (40 CFR 257.73(d))

East and West Bottom Ash Pond

Pirkey Plant
Hallsville, Texas

October, 2021

Prepared for: Southwest Electric Power Company (SWEPCO) - Pirkey Plant

Hallsville, Texas

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Document No. GERS-21-033

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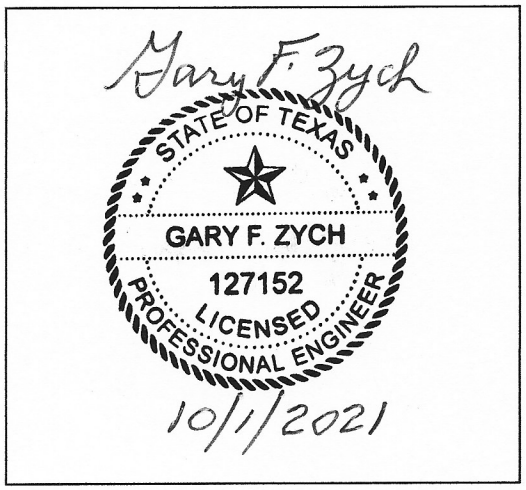

I certify to the best of my knowledge, information and belief that the information contained in this structural stability assessment meets the requirements of (40 CFR 257.73(d)

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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 structures or the discharge weir boxes and discharge pipes passing through the dikes since the initial assessment.

2.0 NAME AND DESCRIPTION OF CCR SURFACE IMPOUNDMENT

The Henry W. Pirkey Power Station is located at 2400 FM 3251 and south of Hallsville, Texas. It is owned and operated by Southwest Electric Power Company (SWEPCO). The facility operates two surface impoundments for storing CCR materials called the East Bottom Ash Pond (East BAP) and the West Bottom Ash Pond (West BAP).

The East BAP is located directly adjacent to and east of the West BAP. The East BAP receives sluiced bottom ash and has a surface area of 30.9 acres and a storage capacity of 188 acre-feet. The pond is almost entirely incised, with a reported maximum embankment height of 4 feet.

The West BAP, which also receives sluiced bottom ash, is located northwest of the main plant and shares its eastern border with the western border of the East BAP. The West BAP receives sluiced bottom ash and has a surface area of 30 acres and a storage capacity of 188 acre-feet. The maximum embankment height is 25 feet. Design documents indicate that the main upstream embankment slopes are 3 feet horizontal to 1 foot vertical (3:1 H:V); while the main downstream slopes are 2.5:1 H:V.

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 East BAP are native soils which consist of stiff to very stiff sandy lean clay (CL) and sandy fat clay (CH) with intermittent layers of medium dense to dense silty sand (SM) and clayey sand (SC). Atterberg Plasticity Indices of tested soils ranged between a low of 16 to a high of 39. Based on the subsurface investigation and engineering properties of the subsurface soils, it is concluded that the East Bottom Ash Pond dikes are supported on a stable foundation base.

The foundation materials for the West BAP are native soils which consist primarily of medium dense to very dense clayey sand (SC) with layers of of dense clayey gravel (GC) and very dense silty clayey sand (SC-SM). Atterberg Plasticity Indices of tested soils ranged between a low of 9 to a high of 46. Based on the subsurface investigation and engineering properties of the subsurface soils, it is concluded that the West 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 East and West Bottom Ash Ponds are 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 east and west CCR impoundments have a layer of bottom ash on the interior slopes of the ash ponds that provide 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 East BAP is primarily incised into native soils with an embankment height of approximately 4 feet (AMEC, 2010). The East BAP embankments are constructed of compacted clay on a 3:1 slope (3 feet horizontal, 1 foot vertical) (Sargent & Lundy, 1983). The soils are primarily stiff to very stiff sandy lean clay (CL) and sandy fat clay (CH) with intermittent layers of medium dense to dense silty sand (SM) and clayey sand (SC). The elevation of the top of embankment around the perimeter of the East BAP is approximately 357 feet amsl, and the normal operating level is approximately 354 feet amsl (Johnson & Pace, May 2011). The interior bottom elevation of the East BAP is approximately 347 feet amsl (Sargent & Lundy, 1983; Johnson & Pace, June 2011). Based on the subsurface investigation and the engineering properties of the subsurface soils, it is concluded that the East bottom Ash Pond embankments are adequately constructed.

The West BAP embankments have maximum height of approximately 25 feet and are constructed of compacted clay on a slope ranging from 2.5:1 (2.5 feet horizontal, 1 foot vertical) to 3:1 (Sargent & Lundy 1983). The elevation at the top of the embankment around the perimeter of the West BAP is approximately 357 feet amsl, and the normal operating level is approximately 354 feet amsl (Johnson & Pace, 2011). The embankment fill materials are primarily stiff to very stiff lean clay (CL) and/or fat clay (CH), overlying native soils consisting of primarily dense to very dense clayey sand (SC) with layers of dense gravel (GC) and very dense silty clayey sand (SC-SM). The interior bottom elevation of the West BAP is approximately 347 feet amsl (Sargent & Lundy, 1983; Akron Consulting, 2012). Based on the slope stability evaluation and the engineering properties of the subsurface soils, it is concluded that the West 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 East and West Bottom Ash Ponds is the 100-year storm event.

The surface water elevation in the East BAP is controlled by a weir box and a manually operated gate valve installed on a 36-inch diameter discharge pipe at the southwest corner of the pond. Clear water overflow from the East BAP discharges through the 36-inch diameter pipe into a 2.7 acre Clearwater Pond located directly south of the East BAP. Water in the Clearwater Pond is either pumped (re-circulated) back into the boiler ash hopper, the FGD make up system or pumped back to the Sabine mine for beneficial reuse as dust suppression water.

The surface water elevation in the West BAP is controlled by a weir box and a manually operated gate valve installed on a 36-inch-diameter discharge pipe at the southeast corner of the pond. Clear water overflow from the West BAP discharges through the 36-inch diameter pipe into a 2.7 acre Clearwater Pond located southeast of the West BAP. Water in the Clearwater Pond is either pumped (re-circulated) back into the boiler ash hopper, the FGD make up system or pumped back to the Sabine mine for beneficial reuse as dust suppression water.

Based on the Hydrology and Hydraulic analysis the East and West BAP's 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.]

Clear water overflow from the East BAP discharges through a 36-inch diameter corrugated steel pipe that passes into a 2.7 acre Clearwater Pond located directly south of the East BAP. The 36-inch diameter corrugated steel pipe passes under the embankment that separates the East Bottom Ash Pond from the clear water pond. In 2012 when the clear Water pond was completely drained exposing the outfall end of the pipe, the 36 CMP appeared to be in stable and functional condition.

Clear water overflow from the West BAP discharges through a 36-inch diameter corrugated steel pipe that passes into a 2.7 acre Clearwater Pond located directly southeast of the West BAP. The 36-inch diameter corrugated steel pipe passes under the embankment that separates the West Bottom Ash Pond from the clear water pond. In 2012 when the clear water pond was completely drained exposing the outfall end of the pipe, the 36 CMP appeared to be in stable and functional condition.

There are no signs of settlement or sinkholes on the ground surface above the pipes. The discharge pipes have not shown signs of excess corrosion or deterioration based on exterior visual inspections 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 slopes of the Bottom Ash Pond dikes will not be inundated from any adjacent water bodies. There have not been any changes to the downstream slope areas of the Bottom Ash Ponds since the initial assessment.