



October 14, 2016

Subject: Liner Design Criteria for Existing CCR Surface Impoundments  
Calaveras Power Station  
San Antonio, Texas

To File:

The purpose of this memorandum is to document the liner design criteria of the existing Coal Combustion Residual (CCR) impoundments at the CPS Energy Calaveras Power Station and to comply with Title 40, Code of Federal Regulations, Part 257 (40 CFR §257), Subpart D Coal Combustion Residual (CCR) Rules.

The Calaveras Power Station has five CCR impoundments: the North and South Sludge Recycle Holding (SRH) Ponds, the North and South Bottom Ash Ponds (BAPs), and the Evaporation Pond (EP). All ponds were constructed as diked impoundments. The SRH Ponds were constructed as a single impoundment with a divider wall that separates the impoundment into the North and South Ponds. A gate present in the divider wall is closed during normal operating procedures, but can be opened. The North and South BAPs share a common embankment that separates the BAPs, and are immediately east of the SRH Ponds. Only one BAP is typically in operation at one time. These four ponds are located east of the main plant. The EP is approximately a mile north of the main plant, and receives boiler chemical cleaning wastes via vacuum truck. While this material is not considered CCR under the regulation, the EP was originally constructed as a fly ash landfill in 1990, and then converted to a fly ash impoundment in 1996. It currently contains solids that are six inches to two feet below the top of the impoundment.

40 CFR §257.71 requires that owner and or operators of an existing CCR impoundment document whether or not a unit was constructed under guidelines listed in said portion of the CCR Rules. This particular portion of the CCR Rule regards the composition of the liner and the estimated hydraulic conductivity. A summary and liner description for each impoundment is described in the remainder of this document. The descriptions are based on Construction Drawings and information gathered from review of internal company files.

The North SRH Pond bottom liner consists of a six-inch layer of 4,000 psi concrete over one-foot of compacted sand overlying a 30-mil High Density Polyethylene (HDPE) geomembrane. The South SRH Pond bottom liner also has a six-inch layer of 4,000 psi concrete. Under the concrete is one-foot of compacted fill overlaying a 10-oz. Geotextile, a 30-mil HDPE geomembrane and another 10-oz. Geotextile. The side slopes for both SRH Ponds consist of a 10-oz. Geotextile and a 30-mil HDPE geomembrane over prepared subgrade. There is no mention or description of any clay liner or associated hydrologic conductivity values.

Research into the liner construction of the North and South BAPs resulted in no construction drawings or design specifications. However, historical files identified design standards utilized during the probable time of construction. This standard liner construction would have consisted of 18-inches of clay compacted in 3 to 6 inch lifts. The existence of a clay liner is consistent with field observations and current use of both BAPs. Bottom ash is sluiced into one of the ponds while the other is dewatered, bottom ash harvested and recycled for beneficial use. The operating impoundment holds the wet bottom ash as well as water. The units are inspected weekly and show no signs of seepage along the berm walls and no subsurface drainage is evident. There is no mention or description of any clay liner or associated hydrologic conductivity values.

The EP side and bottom liner consist of a one-foot layer of cohesive soil overlying a 30-mil Polyvinylchloride geomembrane and an additional one-foot of cohesive soil. The subgrade consists of two-feet of soil, with all large rock removed, and compacted to 50% density. There is no mention or description of any clay liner or associated hydrologic conductivity values.

Based on the review of existing construction drawings, files and field observations, each CCR impoundment appears to have either a geomembrane or clay liner on the slopes and base. However, based on the design criteria required per 40 CFR §257.71, each existing CCR impoundment is designated as "Unlined."

Sincerely,



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