

## CORRESPONDENCE COVER SHEET WASTE PERMITS DIVISION TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Date: 30 January 2024 Facility Name: Calaveras Plant Site Permit or Registration No.: CCR102 Nature of Correspondence: Initial/New Response/Revision\*

\*If Response/Revision, please provide previous TCEQ Tracking No.: (Previous TCEQ Tracking No. can be found in the Subject line of the TCEQ's response letter to your original submittal.)

This cover sheet should accompany all correspondences submitted to the Waste Permits Division and should be affixed to the front of your submittal as a cover page. Please check the appropriate box for the type of correspondence being submitted. For questions regarding this form, please contact the Waste Permits Division at (512) 239-2335.

APPLICATIONS	REPORTS and RESPONSES		
New Notification	Closure Report		
□ New Permit (including Subchapter T)	Groundwater Alternate SRC Demonstration		
□ New Registration (including Subchapter T)	Groundwater Corrective Action		
🗌 Major Amendment	Groundwater Monitoring Report		
🗌 Minor Amendment	Groundwater Statistical Evaluation		
Limited Scope Major Amendment	Landfill Gas Corrective Action		
□ Notice Modification	🗌 Landfill Gas Monitoring		
□ Non-Notice Modification	Liner Evaluation Report		
☐ Transfer/Name Change Modification	🗌 Soil Boring Plan		
Temporary Authorization	🔲 Special Waste Request		
□ Voluntary Revocation	Other:		
🗋 Subchapter T Workplan			
Other.			

### Table 1 - Municipal Solid Waste

Table 2 - Industrial	& Hazardous Waste	
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APPLICATIONS	REPORTS and RESPONSES			
🗌 New	Annual/Biennial Site Activity Report			
🗌 Renewal	CfPT Plan/Result			
Post-Closure Order	Closure Certification/Report			
🗌 Major Amendment	Construction Certification/Report			
🗌 Minor Amendment	CPT Plan/Result			
Class 3 Modification	Extension Request			
Class 2 Modification	Groundwater Monitoring Report			
Class 1 ED Modification	☐ Interim Status Change			
Class 1 Modification	Interim Status Closure Plan			
Endorsement	Soil Core Monitoring Report			
Temporary Authorization	Treatability Study			
□ Voluntary Revocation	🗌 Trial Burn Plan/Result			
335.6 Notification	Unsaturated Zone Monitoring Report			
□ Other:	□ Waste Minimization Report			
	Other: Annual Inspection and Fugitive Dust			
	Control Report - CCR Units			



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erm.com

CPS Energy Mr. Michael Malone 500 McCullough Avenue San Antonio, Texas 78215 DATE January 30, 2024

SUBJECT CCR Units – 2023 Annual Inspection and Fugitive Dust Control Report Calaveras Power Station San Antonio, Texas

REFERENCE 0681818

Dear Mr. Malone:

CPS Energy owns and operates the Calaveras Power Station which consists of two power plants [J.T. Deely (ceased operation at the end of December 2018) and J.K. Spruce] that are subject to regulation under Title 40, Code of Federal Regulations, Part 257 (40 CFR §257) Subpart D (a.k.a. the Federal CCR Rule) and Title 30, Texas Administrative Code, Chapter 352 (30 TAC §352), Subchapter H (a.k.a. the Texas CCR Rule), collectively referred to as the CCR Rules. The CCR Rules require an annual inspection of coal combustion residual (CCR) landfills and surface impoundments by a qualified professional engineer. Environmental Resources Management Southwest, Inc. (ERM) conducted the inspection of the CCR units at the Calaveras Power Station on November 16, 2023. This letter report provides a summary of the CCR units inspected, results of the annual inspection, and an assessment of the fugitive dust control at the Calaveras Power Station.

# 1. FACILITY SUMMARY

Currently, two CCR units [Fly Ash Landfill (FAL) and Plant Drains Pond (PDP)] are in operation and three CCR units [Bottom Ash Ponds (BAPs), Evaporation Pond (EP) and Sludge Recycle Holding Pond (SRHP)] are undergoing closure. Although CCR and non-CCR wastes are no longer being received at the inactive BAPs, EP, and SRHP, these CCR units will continue to be inspected until the units have undergone closure. The CCR units at the Calaveras Power Station are described in Table 1.



Unit Name	Unit ID	Purpose of Unit
Fly Ash Landfill (FAL) (a.k.a. 5-Year Landfill)	010	Receives fly ash, bottom ash, economizer ash, scrubber sludge from flue gas desulphurization (FGD) ponds, FGD gypsum (temporary storage) and other authorized solid waste.
Evaporation Pond (EP)	021	Formerly received boiler chemical cleaning waste and other authorized liquid wastes.
North Bottom Ash Pond (North BAP)	005	Formerly received sluiced bottom ash.
South Bottom Ash Pond (South BAP)	006	Formerly received sluiced bottom ash.
Sludge Recycle Holding Pond (SRHP)	026	Formerly received FGD scrubber sludge.
Plant Drains Pond (PDP)	036	Receives FGD scrubber sludge, inflows from plant discharges, and direct precipitation.

#### Table 1. Calaveras Power Station CCR Unit Descriptions

The annual inspection was conducted by Mr. Charles Johnson, P.E., on November 16, 2023. Photographs taken during the inspection are provided in Attachment 1. No issues were observed that indicated immediate stability or operational issues at the CCR units. Details of the observations made by Mr. Johnson are provided below.

#### **Unit Descriptions**

All units are built with above-grade earthen embankments reportedly composed of sandy clay and clayey sand fill. Some units have CCR ash used in the surface roadways of the features (e.g., FAL and BAPs). Figure 1, provided in Attachment 2, shows the locations of each CCR unit. Dimensions of the CCR units were not measured during the annual inspection.

Since last year's annual letter report, the only new CCR unit construction was the PDP, completed in October 2023, to replace the SRHP.

Based on a comparison of recent and historical aerial photographs dating back to 1995, no significant changes in the dimensions or geometry of the CCR units were observed (except for the newly completed PDP). Table 2 provides a summary of the unit dimensions. The dimensions presented below are approximate and are based on publicly available imagery, an assessment conducted by CDM Smith (June 2014), and construction plans and as-builts prepared for the PDP.



Dimension	FAL	EP	North BAP	South BAP	SRHP	PDP
Length (feet)	1,000	535	500	395	414	435
Width (feet)	950	404	392-702 (a)	702	343	115
Depth (feet)	31.5	23	11	11	7.5	7.9
Avg. Crest Width (feet)	15	20	15	15	15	20
Perimeter (feet)	3,845	1,878	2,215	2,194	1,514	1,360
Interior Slopes, H:V	3:1	3:1	2:1	2:1	3:1	3.5:1
Exterior Slopes, H:V	3:1	3:1	3:1	3:1	3:1	3.5:1
Total Area (acres)	20.3	4.85	6.0	6.4	3.2	3.9

#### **Table 2: Calaveras Power Station CCR Unit Dimensions**

(a) Width ranges from 392 to 702 feet along the southern and northern sides of the North BAP.

The FAL is reportedly lined with a 30-mil HDPE liner covered with a 10-ounce geotextile and 12 inches of sand. The bottom of the FAL slopes from west-to-east, from approximately 515 feet MSL to 504 feet MSL. The top berm is at an approximate elevation of 535.5 feet MSL, for a total landfill depth of approximately 31.5 feet at the deepest point. Stormwater collects in the southeast corner of the FAL and is allowed to settle. A water quality sample is collected and analyzed prior to discharge through a TPDES permitted outfall.

The EP is reportedly lined with 30-mil polyvinylchloride (PVC) geomembrane. The top of the EP is at an approximate elevation of 522 feet MSL and the bottom is at an approximate elevation of 500 feet MSL. There are no inlet or outlet structures to the EP. A four-inch polyethylene pipe is present in the eastern embankment and supplies water for equipment washout purposes within the EP area. Liquid from boiler chemical cleanouts and other authorized liquid wastes were trucked to the EP and allowed to evaporate. Periodically, dried material was removed from the EP and placed in the FAL. CCR and non-CCR wastes have not been received at the EP since September 2022 and minimal water is present in this CCR unit.



The North and South BAPs are reportedly lined with clay, but the thickness and hydraulic conductivity of the clay are unknown. Both BAPs have two discharge points. One 24-inch steel pipe in each BAP allows water to be returned to the plant for reuse. Both BAPs also have outlet structures consisting of a horizontal 12-inch steel discharge pipe at an approximate elevation of 489 feet MSL (bottom drain used to empty the pond), and a vertical 12-inch steel overflow pipe at an approximate of elevation 499 feet MSL (normal operation level pool drain). The outfall structure is in one corner of each BAP (northeast for North BAP and southeast for South BAP) and is partially surrounded by steel sheet piling. The sheet piling and pond berms create an opening for water to reach the discharge pipes. This opening is typically protected by floating sorbent booms. Water from these outlets discharges to Calaveras Lake through a TPDES-permitted outfall. Sluiced bottom ash has not been received at the BAPs since the end of December 2018 and water is no longer present in these CCR units.

The interior slopes of the SRHP are reportedly covered with 30-mil HDPE liner and a 6inch thick concrete slab. The top of the SRH Pond embankments is at an approximate elevation of 500 feet MSL, and the bottom at an approximate elevation of 492 feet MSL. The SRHP is delineated into a north side and south side by a concrete divider wall with a sluice gate that allows the two sides to be isolated from each other. Water is pumped from the SRHP to clarifiers via two 18-inch steel pipes. The SRHP had two eight-foot-wide concrete overflow chutes that discharged to the South BAP. These overflow chutes have been filled with road base/caliche as of the 2019 annual inspection since the BAPs are undergoing closure. CCR and non-CCR wastes have not been received at the SRHP since October 2023 and only minor amounts of water is present in this CCR unit.

The PDP liner design consists of a composite liner. The upper component consists of a 60-mil thick high density polyethene (HDPE) geomembrane liner. The lower component consists of a geosynthetic clay liner (GCL). The HDPE geomembrane was installed in contact with the lower GCL liner. The reinforced concrete top layer covers the bottom of the PDP and was designed to protect the geomembrane liner during removal of solids. The PDP embankments have a 3.5:1 slope and a width of 20 feet at the crown. The bottom of the west and east cells of the PDP range from 508.17 to 507.11 feet MSL and top of pond berm is at an approximate elevation of 515.00 feet MSL, for a total depth of 7.9 feet at the deepest point. The maximum normal operating water surface elevation is set at 512.8 feet msl, providing 2.0 feet of freeboard. The PDP was designed to receive nonhazardous wastewater, treated to reduce the total suspended solids (TSS) which is then recycled to the FGD system or discharged through a permitted outfall. The PDP was designed to replace operational features of the SRHP and also receive inflows from plant discharges and direct precipitation. The PDP includes a separator wall, sump to collect supernatant water, and clarifiers to reduce the TSS in the water prior to discharge through a TPDES-permitted outfall.



No electronic instrumentation is associated with the CCR units. Rebar rods, used by CPS Energy to monitor water levels, are present at the EP. Staff gauges are present in both PDP cells to monitor water levels.

#### **Unit History**

The FAL was constructed in 1992. Liner on the side slopes was originally not covered with a protective layer, and began to show signs of deterioration. Portions of the liner on the north and west side embankments were repaired in 2010 and all side slopes are currently covered with a protective layer of coarse CCR.

The EP was originally constructed as a fly ash landfill. In 1990, a pond liner was installed. Then in 1996, the unit was converted from a landfill to an impoundment. Fly ash was placed in the landfill prior to it being used as an impoundment.

The North and South BAPs were constructed in 1977, and the SRHP was constructed in 1992. Embankments are reported to have been constructed of on-site material. Up to a foot of ash and other material have been added to the roads on the top of the BAPs embankments.

Construction of the PDP was completed in October 2023. The PDP was designed to replace operational features of the SRHP and also receive inflows from plant discharges and direct precipitation.

Except for the ceased operations at the BAPs, the EP, and the SRHP, and construction of the PDP, no other changes to unit operations or dimensions were reported to have occurred during the life of the CCR units.

# 2. STRUCTURAL INTEGRITY

There is no reported historic evidence of structural instability in the CCR units.

Geotechnical properties of the foundation and abutment materials, on which the ponds were constructed, are provided in *Geotechnical Engineering Study for Ash Pond Berms* – *Spruce/Deely Generation Units, San Antonio, Texas* by Raba Kistner Consultants, Inc. (May 2014), and are summarized in *Assessment of Dam Safety of Coal Combustion Surface Impoundments Final Report* for the J.K. Spruce and J.T. Deely Power Plants by CDM Smith (June 2014). As summarized in the CDM Smith report, embankment material is light clay (ASTM "CL") with a clay fraction of approximately 45%, and an assumed liquid limit between 35 and 47. Foundation material for the BAPs and SRHP consists of sandy clay (ASTM "CL") with a clay fraction between 50% and 60%, and a liquid limit of approximately 51; or clayey sand (ASTM "ML") with a clay fraction of approximately 35%, and a liquid limit of approximately 33. EP material is similar, except the liquid limit for the foundation materials is approximately 55.

Geotechnical properties of the existing soil conditions, foundation, and abutment materials, on which the PDP cells were constructed, are provided in the *Geotechnical* 

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Engineering Study J.K. Spruce-Calaveras Lake Power Plant Proposed New Coal Combustion Residual Ponds, San Antonio, Texas by Raba Kistner Consultants, Inc. (February 2018). According to that study, the soils underlying the PDP are generally characterized by approximately 7 feet to 15 feet of consolidated material (sands, silts, and low to medium plasticity clays), underlain by a clayey/silty sand to poorly-sorted sand (groundwater bearing unit) that is at least 27 feet thick, but may be greater than 40 feet thick.

No information on the embankment and foundation materials were available for the FAL, but foundation materials are anticipated to be similar to those of the EP based on the proximity of the CCR units.

## 3. ANNUAL INSPECTION SUMMARY

Signage was present at each CCR unit and no issues were observed that presented an immediate threat to structural integrity of the CCR units.

### Fly Ash Landfill

The FAL was at approximately 49% of the approximate 900,000 cubic yard capacity based on calculations provided by CPS Energy. Approximately 4 to 6 acres of the FAL interior were covered with discrete piles of ash, the largest piles approximately 20 feet in height.

Grass along the exterior embankment slopes was observed to be generally well maintained and no woody plants were observed. No significant rutting, erosion, animal burrows, or other problems were observed at the time of the annual inspection.

Weekly inspection records from January 3, 2023 through December 28, 2023 reported no observations of stability, maintenance, or operational issues of the FAL.

Since the 2022 annual inspection, there have been no noticeable changes in the geometry of the FAL, or any other changes that appear likely to have affected the stability or operation of the FAL.

### **Evaporation Pond**

The inactive EP had approximately 6 feet of freeboard available at the time of the inspection. This corresponds to approximately 4 feet below the top of the geomembrane liner as measured by a set of rebar rods recently installed within the EP by CPS Energy. Based on information provided by CPS Energy, accounting for accumulated solids, the EP had an available capacity of approximately 30% or 25 acrefeet, with approximately 58 acre-feet of water and CCR contained within the EP.

Grass along the exterior embankment slopes was observed to be generally well maintained and no woody plants were observed. No significant rutting, erosion, animal burrows, seepage, or other problems were observed at the time of the annual inspection.

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Weekly inspection records from January 3, 2023 through December 28, 2023 reported some high grass in need of mowing and fence corrosion with gaps in places.

Since the 2022 annual inspection, there have been no noticeable changes in the geometry of the EP, or any other changes that appear likely to have affected the stability of the EP. Based on information provided by CPS Energy, the maximum depth of the water in the EP was approximately 1 ft and at a minimum was dry. The majority of waste contained within the EP are solids. ERM estimates the minimum and maximum combined water and waste volume in the EP during 2023 to be 52 and 58 acre-feet, 63% and 70% of available capacity, respectively.

#### **North Bottom Ash Pond**

The inactive North BAP was offline, drained, and substantially empty of water and CCR at the time of the inspection.

Grass along the western and eastern exterior embankment slopes was observed to be generally well maintained. Some minor erosion was observed on the north interior embankment slope. As long as the CCR unit is inactive, substantially empty of CCR, and maintained dry, minor erosion of interior side slopes does not present a substantial risk to stability or operation of the unit. No significant rutting, erosion, animal burrows, seepage, or other problems were observed at the time of the annual inspection.

Weekly inspection records from January 3, 2023 through December 28, 2023 reported young trees starting to grow in the interior and the need for mowing. These items should be addressed and maintained until unit closure is completed.

Since the 2022 annual inspection, there have been no noticeable changes in the geometry of the North BAP, or any other changes that appear likely to have affected the stability of the North BAP. Based on information provided by CPS Energy, the North BAP was substantially empty of water and CCR for all of 2023.

#### South Bottom Ash Pond

The inactive South BAP was offline, drained, and substantially empty of water and CCR at the time of the inspection.

Grass along the external embankment slopes was observed to be generally well maintained and no woody plants were observed on exterior embankments. Some young trees were observed in the unit interior. Corrosion was observed on the overflow discharge pipe and nearby sheet piling. No significant erosion, animal burrows, seepage, or other problems were observed at the time of the annual inspection.

Weekly inspection records from January 3, 2023 through December 28, 2023 reported the occasional need for mowing.

Since the 2022 annual inspection, there have been no noticeable changes in the geometry of the South BAP, or any other changes that appear likely to have affected



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#### Sludge Recycle Holding Pond

The inactive SRHP contained a minor amount of water and appeared to be substantially empty of CCR at the time of the inspection. Neither side of the CCR unit was in use during the inspection. This corresponds to a combined available capacity (including freeboard) of approximately 23 acre-feet, with only a minor amount of water contained within the SRHP.

Grass along the external embankment slopes was observed to be generally well maintained. No significant rutting, erosion, animal burrows, seepage, or other problems were observed at the time of the annual inspection.

Weekly inspection records from January 3, 2023 through December 28, 2023 reported the growth of young trees on the interior embankments, the need for mowing, and blockage of emergency spillways by gravel. Some accumulated gravel was observed in the spillways at the time of inspection, but does not pose a threat to stability or operation of the CCR unit as it is no longer in operation.

Since the 2022 annual inspection, there have been no noticeable changes in the geometry of the SRHP, or any other changes that appear likely to have affected the stability of the SRHP. Based on information provided by CPS Energy, the maximum depth of the water and CCR in the SRHP during 2023 was 6 feet, which corresponds to two feet of freeboard and a volume of approximately 17 acre-ft. The minimum depth was 0 feet.

#### **Plant Drains Pond**

The east and west cells of the PDP contained water at the time of the inspection although only the west cell was in operation. The total combined capacity (including freeboard) is approximately 19 acre-feet, with approximately 2.5 acre-feet of water contained within the combined cells of the PDP at time of inspection. The east cell contained approximately 2.5 ft of water during the inspection, which corresponds to 1.9 acre-feet with 7.6 acre-feet of capacity available (including freeboard). The west cell contained approximately 0.5 ft of water during the inspection, which corresponds to 0.2 acre-feet with 9.3 acre-feet of capacity available (including freeboard).

Since the PDP was recently constructed, the grass along the exterior embankment slopes was not well established. However, seed and erosion control matting have been installed with no significant rutting, erosion, animal burrows, seepage, or other problems observed at the time of the annual inspection.

Based on information provided by CPS Energy, the maximum depth of the water in the cells of the PDP during 2023 was 6 feet, which corresponds to two feet of freeboard and a volume of approximately 12.5 acre-ft. The minimum depth was 0 feet.



Weekly inspection records from September 12, 2023 through December 28, 2023 had no significant reports.

## 4. FUGITIVE DUST CONTROL

ERM assessed compliance with the *Fugitive Dust Control Plan (FDCP)* in conjunction with the annual inspection. CPS Energy reported no citizen complaints regarding fugitive dust emissions from the CCR units or the handling equipment. Paved roads are reportedly swept twice per month, which is more frequent than the minimum monthly requirement specified in the *FDCP*. Haul roads were reportedly watered daily each morning and additionally as needed when handling CCR. Releases from conveyors are monitored and cleaned as needed. Visual observations are made quarterly at each CCR unit and at CCR handling facilities.

Emission observations are recorded on a standard opacity form utilized for non-CCR inspections and not on the form provided in the *FDCP*. The standard opacity form contains more detailed information than the *FDCP* form. Emissions were observed and recorded during various operations (i.e., truck loading at ash silos/dust collectors, ash dumping at landfill) associated with the CCR units and handling equipment. Reported opacity observations were within the limits of the New Source Performance Standard.

ERM appreciates the opportunity to work with CPS Energy on this project. Should you have any questions, please contact us at 281-600-1000.

Sincerely,

Environmental Resources Management Southwest, Inc.

when ( Charles Johnson, F CHARLES O. JOHNSON 28280



# ATTACHMENT 1 PHOTOGRAPHS























CPS Energy – Calaveras Power Station CCR Units

ERM

Attachment 1

ERM Project Number 0681818

2023 Annual Inspection and Fugitive Dust Control Report



Photo taken 11/16/2023.



Photograph: 10 Fly Ash Landfill – standing on southwest corner – facing north. Photo taken 11/16/2023.





**Photograph:** 11 Evaporation Pond – standing on the northeast corner – facing west. Photo taken 11/16/2023.





Photograph: 13 Evaporation Pond – standing on the northeast corner – facing south. Photo taken 11/16/2023.





**Photograph:** 15 Evaporation Pond – standing on the southwest corner – facing north. Photo taken 11/16/2023.





Photograph: 17 Evaporation Pond – standing on the southeast corner – facing north. Photo taken 11/16/2023.





Photograph: 19 Photo taken 1

North Bottom Ash Pond – standing on southwest corner – facing northeast. Photo taken 11/16/2023.



**Photograph:** 20 North Bottom Ash Pond – standing on northwest corner – facing east. Minor erosion noted on the north interior slope. Photo taken 11/16/2023.







**Photograph:** 22 North Bottom Ash Pond – standing on southwest corner – facing east. Photo taken 11/16/2023.





Photograph: 23 North Bottom Ash Pond – standing on northwest corner – facing southeast. Photo taken 11/16/2023.

























**Photograph:** 33 South SRH Pond – standing on the northwest corner – facing east. Photo taken 11/16/2023.



Photograph: 34

South SRH Pond – standing on the northeast corner – facing west. Photo taken 11/16/2023.





Photograph:35South SRH Pond – standing on the southwest corner – facing north.<br/>Photo taken 11/16/2023.







Photograph: 37 North SRH Pond – standing on the southeast corner – facing west. Photo taken 11/16/2023.



**Photograph:** 38 North SRH Pond – standing on the southeast corner – facing northwest. Photo taken 11/16/2023.





Photo taken 11/16/2023.







Photo taken 11/16/2023.







Photo taken 11/16/2023.









Photo taken 11/16/2023.





**Photograph:** 47 West Plant Drains Pond – standing on the northeast corner – facing southwest. Photo taken 11/16/2023.







**Photograph:** 49 West Plant Drains Pond – standing on the southeast corner – facing north. Photo taken 11/16/2023.







**Photograph:** 51 West Plant Drains Pond – standing on the southeast corner – facing west. Photo taken 11/16/2023.













**Photograph:** 55 East Plant Drains Pond – standing on the northeast corner – facing southeast. Photo taken 11/16/2023.



















Photo taken 11/16/2023.







# ATTACHMENT 2 FIGURES

