

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
RESOURCE CONSERVATION AND RECOVERY ACT**

BASIC INFORMATION

Facility Name: Cherokee Station

Facility Location: 6198 Franklin Street
Denver, CO 80216

RCRA ID: COD980286017

Notification Status: SQG

Facility Contact: (b) (6), (b) (7)(C)
Environmental Analyst

Date of Inspection: November 13, 2023

Start Time: 12:57 p.m.

End Time: 3:10 p.m.

Lead Inspector: Linda Jacobson, EPA RCRA Inspector

Other Attendees:

1. (b) (6), (b) (7)(C) CDPHE, Permitting Unit Leader
2. (b) (6), (b) (7)(C), Xcel Environmental Plant Analyst
3. (b) (6), (b) (7)(C), Xcel Environmental Analyst (Section 9)
4. (b) (6), (b) (7)(C), Xcel Manager of Environmental Services, by phone

Type and Purpose of Inspection: Compliance Evaluation of management of coal combustion residuals (CCR) units

Facility Type: NAICS: 221112, Fossil Fuel Electric Power Generation

Applicable Regulations to Inspection: 40 CFR 257-258

Inspection Type: Announced Inspection

OPENING CONFERENCE

☒ CBI warning to facility provided

Inspection Scope: The EPA conducted a compliance evaluation to gain familiarity with the location, management, and monitoring of the four CCR units at the facility, three closed ash ponds (West, Center, and East) and the closed Cooling Tower 4 retention pond. Additional ponds at the facility that are non-CCR include the emergency spill pond, which now operates to collect overflow for the lift station, stormwater, and east and west polishing ponds.

I explained during the opening conference that I would draft a report and a copy would be sent to them and to the state. We would allow them to screen any photos taken for potential confidential business information (CBI).

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(b) (6), (b) (7)(C) explained that she would look at new impoundment to determine its Section 9 exempt status.

The following information was obtained from documents reviewed prior to the inspection or verbally during the inspection from (b) (6), (b) (7)(C) unless otherwise noted. (b) (6), (b) (7)(C) gave an overview of the construction, use, and closure of the CCR units and the current groundwater monitoring network as a slide presentation.

Company Ownership: Cherokee Station is owned by Public Service Company of Colorado

General Facility and Process Description:

Cherokee Station was a coal-fired steam turbine plant consisting of four generating units (Units 1, 2, 3 and 4). Unit 1 was built in 1957, Unit 2 went into service in 1959, and Units 3 and 4 in the 1960s. Cherokee Station has been converted from coal to natural gas for fuel. Units 1 and 2 have been retired. Unit 4 was converted to natural gas in 2017, and Unit 3 ceased operating on coal in 2017. In 2015, three units were brought online, creating a combined cycle natural gas plant, consisting of units, 5, 6 and 7, two natural gas-fired combustion turbines, and one steam turbine, which sources its heat from the exhaust of the two combustion turbines. These units will run through 2050. Unit 4, the converted boiler, has been converted to gas, was shut down at the time of the inspection, and will be taken offline in 2028.

There are 57 full-time employees, including an operations team of 5 to 7 operators. The facility operates 24 hours, 7 days/week, working two 12-hour shifts.

There are currently four CCR units subject to the CCR Rule. Three of these, the Center Ash Pond, the East Ash Pond, and the West Ash Pond, were constructed as unlined, incised ponds which received only bottom ash. The facility did not have a landfill, and all fly ash was stored in silos prior to being sent for offsite disposal or beneficial use. All ash ponds have been cleaned, closed, and converted to new uses. The fourth unit is the former Cooling Tower Retention Pond (CTRP) of Cooling Tower 4.

The Center and East CCR impoundments were closed by the removal of all CCR in December 2018. The West CCR impoundment was modified in 2012 and converted for use as a stormwater pond. Prior to 2012, some but not all of the CCR ash was removed. The West CCR impoundment was closed by the removal of all CCR in December 2018 and was reconstructed in 2019 for use as a stormwater containment pond.

The former CTRP received overflow from Cooling Tower 4. The inactive CTRP became subject to the groundwater monitoring requirements under the Direct Final Rule effective October 4, 2016. The pond was closed by the removal of all CCR in March 2017.

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The Center and East ash ponds were combined into a new lined pond, now the North Equalization Pond. The West Ash Pond is now clay lined and used for stormwater as a conveyance pond to the wastewater treatment system. The West and East Polishing Ponds were combined into the North Evaporation Pond and synthetic lined. The South Evaporation Pond, which is synthetic lined, was installed over the former coal storage area. The CTRP had all CCR removed, was upgraded and lined, and is now the South Equalization Pond.

The facility is zero discharge. Water is treated by reverse osmosis (RO) following clarification/flocculation, then by multimedia filters. The RO is the last step. The RO brine is allowed to evaporate in the ponds. The wastewater treatment system operates continuously with flow constantly discharging into the equalization ponds. RO quality water is stored in a one-million-gallon tank.

We discussed the CCR groundwater monitoring network, modified in the summer of 2023 at the EPA's request. The uppermost aquifer under Cherokee Station is the alluvial aquifer associated with the South Platte River. The predominant groundwater flow direction is to the east, perpendicular to the South Platte River, where it ultimately discharges to the river. The groundwater level is measured between 7 and 20 feet. The alluvial aquifer is between 8 and 38 feet thick, underlain by the low permeability claystone deposits of the Denver Formation, which is over 70 feet thick in this area. Groundwater velocities across the site are estimated to be 90 to 200 feet per year.

A multi-unit monitoring system was established for the East, Center and West ash impoundments. Five wells were drilled to serve as the monitoring system with one upgradient/background well and four downgradient wells. MW-13 is the original background well with MW-8, 9, 10 as the downgradient wells. The CTRP has its own monitoring network. MW-14 is the background well for the CTRP, and wells 15, 16, 17 are the downgradient wells.

New wells were installed in June and July 2023. MW-21 was installed as the new background well, and MW-18, 19, 20 wells were installed as new downgradient wells for the ash ponds monitoring system. No new wells were installed for the CTRP, as all of the original wells have water. There is not enough groundwater data on the new wells to perform a statistical assessment. No additional well installations were planned at the time of the inspection.

CBI: No CBI was discussed during the inspection.

Areas of the facility toured:

The inspection team did a driving tour of the facility, stopping periodically to observe, ask questions and collect photographs. We stopped first at the Cooling Tower 3 Basin. (b) (6), (b) (7)(C) confirmed that it would be Section 9 exempt. (b) (6), (b) (7)(C) left after this.

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The inspection team then continued the tour looking at the location of the monitoring wells and the existing ponds. We saw the locations of Wells 13 and 21, which serve as background wells for the ash ponds, Wells 8, 10, and 19, Wells 9 and 18, and Well 15.

The facility is having to manage extra water. The amount of evaporation does not match the produced water to allow a zero liquid discharge. They have added new evaporators. The extra water from the evaporation ponds is being disposed of at the Pawnee Landfill.

Records Review: In preparation for the inspection, I reviewed the Location Restriction Criteria Certification Report, the Groundwater Monitoring System Certification, the Cherokee Drill Plan, and the 2022 Annual Groundwater Monitoring and Corrective Action Report. No records were reviewed onsite.

Closing Conference and Identified Issues:

Following the tour, I asked the age of the pond liners. The liners are 2 to 3 years old. They discovered a leak in the South Equalization Pond upper liner. A leak at the bottom of the pond was discovered in June 2023. They have identified two leaks at the bottom leak detection system and have been working with the state to evaluate it. (b) (6), (b) (7)(C) indicated that sediment at the bottom is closing the leak. They are doing weekly gauge readings as well as the groundwater monitoring. If necessary, they can empty the pond and repair it.

Collected photographs were shared with (b) (6), (b) (7)(C) who confirmed that all photos are releasable. They are labeled and attached to this report.

No concerns were noted for the scope of the onsite evaluation conducted. This report will be provided to the facility representatives and to the state.

SIGNATURE

LINDA JACOBSON

Digitally signed by LINDA
JACOBSON
Date: 2024.01.23 08:24:59 -07'00'

Lead Inspector: _____

JANICE PEARSON

Digitally signed by JANICE
PEARSON
Date: 2024.01.23 10:12:36 -07'00'

RCRA & OPA Enforcement Branch Manager: _____

Attachment 1: Photographs