

## **Cherokee Station CCR Surface Impoundments SSI and Assessment Monitoring Notification**

Public Service Company of Colorado (PSCo), an Xcel Energy Company, owns and operates Cherokee Station, which historically was a coal-fired, steam turbine electric generating station. Cherokee Station ceased burning coal in August 2017, and is now reconfigured to burn natural gas. During the active coal operations, the West, Center, and East impoundments were used for temporary storage of bottom ash prior to disposal at permitted offsite disposal facilities. All three CCR impoundments ceased receiving CCR in 2017, and are scheduled to be clean closed in 2018 by removal of CCRs pursuant to 257.102(c), and as described in the Written Closure Plan (HDR, 2016).

### *Protecting the environment is a core value for Xcel Energy*

PSCo conducts all of our business in an environmentally responsible manner and that includes regularly monitoring our operations and taking steps to protect our air, water and other natural resources. Pursuant to 40 CFR Part 257.93(h)(2) of the Disposal of Coal Combustion Residuals from Electrical Utilities Rule (Federal CCR Rule), finalized on April 17, 2015, PSCo has made a determination of Statistically Significant Increases (SSIs) over background levels for the constituents listed in Appendix III as required by 257.94(a). The attached Memo, Determination of Statistically Significant Increases over Background per 257.93(h)(2), identifies those constituents for which SSIs have been identified. These test results do not indicate there is any impact on local drinking water. The monitoring wells evaluate groundwater immediately adjacent to the CCR impoundments, and measure groundwater conditions within the Cherokee Station property boundary. The 2017 Annual Groundwater Monitoring Report for Cherokee Station documents monitoring activities through 2017 and will be available on the CCR website no later than March 2<sup>nd</sup> at [xcelenergy.com](http://xcelenergy.com) (under Environment, under Responsible Operations, Coal Ash Management.)

As a next step, and pursuant to 257.94(e)(1), PSCo is establishing an assessment monitoring program for the CCR Impoundments at Cherokee Station. The assessment monitoring program will sample and analyze for Appendix IV constituents in groundwater from wells in the certified CCR Groundwater Monitoring System at Cherokee Station. This next step of the investigation is intended under the rule to help determine further information about groundwater conditions and to determine whether any corrective actions might be warranted. However, at Cherokee we were already undertaking steps to shut down coal operations and to clean close the ash ponds under the rule and State of Colorado solid waste regulations. Completion of clean closure includes removal of CCR constituents and is measured by groundwater monitoring results that show CCR constituent concentrations do not exceed the groundwater protection standards.

# Memo

Date: Monday, January 15, 2018

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To: Jennifer McCarter, Public Service Company of Colorado

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From: Matt Rohr, HDR, Inc.

Subject: Cherokee Station CCR Units

Determination of Statistically Significant Increases over Background per 257.93(h)(2)

The U.S. Environmental Protection Agency's (EPA's) final Coal Combustion Residuals (CCR) Rule establishes a comprehensive set of requirements for the management and disposal of CCR (or coal ash) in landfills and surface impoundments by electric utilities. Cherokee Station, located in Denver, Colorado has three incised active impoundments subject to the CCR Rule: the West, Center, and East bottom ash impoundments. The CCR units operation and monitoring are described further in the Cherokee Station Groundwater Monitoring System Certification (HDR 2016).

The objective of this memorandum is to document the identification of statistically significant increases (SSIs) over background water quality at the multi-unit CCR facility at Cherokee. Groundwater monitoring has been conducted to collect eight rounds of background sampling plus the first detection monitoring event (completed before October 17, 2017) as specified under CCR Rule Part 257.94. The water quality collected from the monitoring well located upgradient of the CCR units has been compiled and statistically analyzed to develop background threshold values (BTVs) for each constituent of interest (COI). The Background Water Quality Statistical Certification (HDR 2018) documents the background sample events and describes the data evaluation performed to select the appropriate statistical method in the background data. The first detection monitoring event was conducted in September 2017. The downgradient monitoring well data were compared against the BTVs and SSIs were identified.

Hydrogeologic characterization of the site is provided in the Cherokee Station Groundwater Monitoring System Certification (HDR 2016). Groundwater monitoring occurs at five wells around the CCR units: MW-13 (background well) and at wells MW-7, MW-8, MW-9, and MW-10 for comparison against background water quality.

As stipulated in the CCR Rule, eight background groundwater sampling events were completed on a quarterly basis between fourth quarter 2015 and third quarter 2017. Background groundwater samples were analyzed for all of the parameters in Appendices III and IV of CCR Rule Part 257. Background sampling is described in detail in the Background Water Quality Statistical Certification (HDR 2018). The first detection monitoring event was conducted on September 6-7, 2017. Detection monitoring groundwater samples were analyzed for all of the parameters in Appendix III of CCR Rule Part 257. The detection monitoring event will be described in detail in the first Annual

Groundwater Monitoring and Corrective Action Report due January 31, 2018. The annual report will include all laboratory data for the reporting period.

## SSI Determination

Groundwater sampling for detection monitoring was analyzed for the CCR Rule Appendix III COIs. All of the five monitoring wells were sampled except for downgradient well MW-8, which was dry.

The concentrations of Appendix III COIs from each downgradient monitoring well were compared against the BTVs. Wells MW-7, MW-9, and MW-10 were observed to have SSIs for the following COIs:

- Boron
- Calcium
- Chloride
- Fluoride
- Sulfate
- Total Dissolved Solids

In addition MW-10 has an SSI for pH values above the upper BTV.

The identification of SSIs begins the process of further investigation at Cherokee. Within 90 days of triggering an assessment monitoring program Public Service Company of Colorado will either sample and analyze for Appendix IV constituents under an assessment monitoring program or document that the SSI resulted from an alternative source, an error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

## References

HDR, 2016. Groundwater Monitoring System Certification - Compliance with the Coal Combustion Residuals Rule Cherokee Station. April 26, 2016.

HDR, 2018. Background Water Quality Statistical Certification for Compliance with the Coal Combustion Residuals Rule. January 12, 2018.