

Executive Summary

Environmental Assessment Report – Rev. 0
John Sevier Fossil Plant

Executive Summary

On August 6, 2015, the Tennessee Department of Environment and Conservation (TDEC) issued Commissioner's Order No. OGC15-0177 (TDEC Order) to Tennessee Valley Authority (TVA) to establish a process for investigating, assessing, and remediating unacceptable risks from management of coal combustion residuals (CCR) at TVA coal-fired plants in the state of Tennessee. TVA constructed the JSF Plant between 1952 and 1957, commencing power generation in 1955, and decommissioned the plant in 2012. There are four CCR management units at the John Sevier Fossil (JSF) Plant included in the TDEC Order: the Dry Fly Ash Stack, Ash Disposal Area J, Bottom Ash Pond, and Highway 70 Borrow Area. The Bottom Ash Pond is the only CCR management unit subject to Title 40, Code of Federal Regulations Part 257, Subpart D (CCR Rule). The Dry Fly Ash Stack is the only CCR management with a landfill permit (Chapter 0400-11-01). Each of the CCR management units were previously closed in accordance with applicable regulations in effect at the time of closure.

In accordance with the TDEC Order, TVA and Stantec Consulting Services Inc. (Stantec), on behalf of TVA, prepared an Environmental Investigation Plan (EIP) for the JSF Plant to obtain and provide information requested by TDEC. As specified in the TDEC Order, the objective of the EIP was to "identify the extent of soil, surface water, and groundwater contamination by CCR" from onsite management of CCR material in impoundments and landfills. In addition, per TDEC's information requests, the EIP included assessment of CCR management unit structural stability and integrity.

Between 2019 and 2021, TVA and Stantec conducted the TDEC Order environmental investigations (EI) for the JSF Plant CCR management units. The EI included characterization of the site hydrogeology and investigations of CCR material, groundwater, background soils, seeps, surface streams, sediments, and ecology, as well as a Water Use Survey, which is ongoing. EI activities were implemented in accordance with the approved Sampling and Analysis Plans and Quality Assurance Project Plans, including TVA- and TDEC-approved programmatic and project-specific changes made following approval of the EIP. Based on a comprehensive quality assurance review, the EI data are usable and meet the objectives of the TDEC Order.

The EI data were evaluated along with information collected as part of previous investigations and other ongoing regulatory monitoring programs conducted between the 1970s and 2022. The objectives of the TDEC Order are similar to these other programs, including TDEC landfill permit requirements (Chapter 0400-11-01) and the CCR Rule, that cover certain CCR management units. Collectively, these data provide a broad-based characterization of the CCR management units to meet the objectives of the EIP. Geotechnical data were used for CCR management unit stability and integrity evaluations. Environmental sample data were used to characterize the extent of potential impacts and were compared to constituent-specific TDEC-approved levels to identify CCR constituents that require further evaluation in the next phase of the TDEC Order, the Corrective Action / Risk Assessment (CARA) Plan.

This Environmental Assessment Report (EAR) describes the extent of surface stream water, sediment, and groundwater contamination from the JSF Plant CCR management units and provides the information, data, and evaluations used to make those assessments. As described herein, more than 99% of the environmental sample results from over 600 samples were below the approved levels. The EI data indicate impacts to limited onsite groundwater areas, and that the CCR management units have had minimal, if any, potential impacts to sediment and surface stream water quality in the Holston River and Polly Branch, and ecological communities in the Holston River. The EI data will be used to evaluate the basis and methods for CCR management unit closure in the CARA Plan, including an evaluation of the performance of existing closure methods; modifications to closure methodology will be identified, as needed, in the CARA Plan. The following are overall assessment findings based on data as presented in this EAR:

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- Surface stream water quality is within ranges protective of human health and aquatic life in the Holston River and Polly Branch.
- Sediment quality is generally within ranges protective of aquatic life in the Holston River and Polly Branch adjacent to and downstream of the CCR management units. Mercury results in Holston River sediments are related to a documented source of mercury upstream of the JSF Plant and are not a result of operations of the CCR management units. Additional evaluation of potential risks associated with sediment at one location in the Holston River and two locations in Polly Branch are warranted in the CARA Plan to determine if corrective actions are needed.
- The EI data indicate that fish and benthic communities are healthy in the Holston River adjacent to and downstream of the CCR management units (sport fish and benthic communities are not sufficiently present in Polly Branch for sampling).
- The CCR management units have adequate structural stability, and slopes are stable under current static and seismic loading conditions.
- There were no known active seeps onsite during the EI.
- Most TDEC Appendix I and CCR Rule Appendix IV CCR constituent concentrations in onsite groundwater are below TDEC-approved groundwater screening levels (GSLs), and groundwater impacts are limited to onsite areas downgradient along the perimeter of the CCR management units. However, additional assessments will be included in the CARA Plan to evaluate the need for corrective action for targeted onsite groundwater remediation at locations where statistically significant concentrations of CCR constituents above GSLs exist.
- Drainage improvements or potential corrective actions are expected to reduce concentrations of CCR constituents to below GSLs in groundwater at downgradient monitoring locations.
- Groundwater flow in the unconsolidated materials and upper bedrock is bounded to the north by the Holston River and to the west by Dodson Creek; however, additional evaluation is being conducted as part of the Water Use Survey. Near the southern boundary of the JSF Plant, the groundwater flow direction was consistently from the southern boundary of the JSF Plant to the north toward the Holston River. Based on this finding, potable water wells located south and upgradient of the CCR management units would not be impacted by groundwater associated with the JSF Plant CCR management units.

Exhibit ES-1 shows overall findings of the investigation and the locations where the environmental assessments concluded that no further evaluation is needed. It also shows where further evaluation is needed in the CARA Plan for sediment results and onsite groundwater. The onsite groundwater impacts will require further evaluation regardless of the CCR management unit closure method, and groundwater remediation can be accomplished along with closure in place or closure by removal. TVA continues to evaluate means to beneficially use CCR materials in a manner consistent with regulatory requirements while maximizing value to the Tennessee Valley.

The next step is to complete the Water Use Survey; these results will be included in the JSF Plant EAR Revision 1. Upon TDEC approval of the EAR, and in accordance with the TDEC Order, TVA will further evaluate these findings and prepare a CARA Plan for submittal to TDEC. The CARA Plan, which will be subject to a public review and comment process, will evaluate whether unacceptable risks related to management of CCR material exist at the JSF Plant. The CARA Plan will also specify the actions TVA plans to take at the CCR management units and the basis of those actions. It also will incorporate other modifications to stormwater drainage or cap systems planned or in progress by TVA, including details for CCR beneficial use operations, modification of the CCR management units as needed to meet regulatory standards, and long-term closure and monitoring.



* No sediment or surface water sample results above regulatory values or approved levels in the Holston River

CCR Management Unit

Note: Mercury results in Holston River sediments are not depicted on this exhibit nor recommended for further evaluation in the CARA Plan because they are considered related to a documented source of mercury upstream of the JSF Plant (USEPA 2017).

Exhibit No.

ES-1

Title

Summary of Environmental Assessment Report Findings
John Sevier Fossil Plant

Client/Project

Tennessee Valley Authority
John Sevier Fossil (JSF) Plant TDEC Order

Project Location

Rogersville, Tennessee

175548225

Prepared by KB on 2022-04-24

Key Findings

More than 99% of the environmental sample results from over 600 samples were **below the approved levels**.

Ecological communities are healthy in the Holston River adjacent to and downstream of the CCR management units (ecological sampling could not be performed in Polly Branch).

Based on the Environmental Investigation and other ongoing monitoring results, the Coal Combustion Residual (CCR) management units have had minimal, if any, potential impacts on sediment and surface stream water quality in the Holston River and Polly Branch, and ecological communities in the Holston River.

Investigation and Monitoring Findings

These symbols summarize the findings of the investigation and monitoring:

- No action is needed.
- Further evaluation is required in this area.

Next Steps

With TDEC acceptance of the technical approach proposed in the EAR, TVA will conduct a Water Use Survey to determine whether management of CCR material has impacted offsite wells and springs in the area.

TVA will further evaluate these findings and prepare a CARA Plan for submittal to TDEC.

The CARA Plan will:

- evaluate whether unacceptable risks related to management of CCR exist at the JSF Plant,
- specify the actions TVA plans to take at the JSF Plant CCR management units and the basis of those actions, and
- incorporate other modifications to stormwater drainage or cap systems.