

Executive Summary

Environmental Assessment Report – Rev. 1
Johnsonville 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 began construction of the Johnsonville Fossil (JOF) Plant in 1949 and commenced power generation operations in 1951. The JOF Plant coal-fired units have been inactive since 2017. There are four CCR management units¹ at the JOF Plant included in the TDEC Order: Ash Disposal Area 1, DuPont Road Dredge Cell, South Rail Loop Area 4, and Active Ash Pond 2. The former Coal Yard is also included in the TDEC Order, therefore, when discussing overall site findings herein the former Coal Yard is included.

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 JOF 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 JOF 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 2023. The objectives of the TDEC Order are similar to these other programs, including TDEC landfill permit requirements (Chapter 0400-11-01) and the United States Environmental Protection Agency CCR Rule (Title 40, Code of Federal Regulations Part 257, Subpart D) 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 JOF Plant CCR management units, and provides the information, data, and evaluations used to make those assessments. As described herein, more than 97% of the environmental sample results from over 1,800 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, and ecological communities in the Tennessee 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.

¹ The term “CCR management unit” is used in this document generally and is not intended to be a designation under federal or state regulations.

Executive Summary

Environmental Assessment Report – Rev. 1
Johnsonville Fossil Plant

The following are the overall assessment findings based on data as presented in this EAR:

- Surface stream water quality is within ranges protective of human health and aquatic life in the Tennessee River
- Sediment quality is within ranges protective of aquatic life in the Tennessee River adjacent to and downstream of the CCR management units. Additional evaluation of potential risks associated with sediments in the Boat Harbor and Intake Channel is warranted in the CARA Plan to determine if corrective actions are needed
- The EI data indicate that ecological communities are healthy in the Tennessee River adjacent to and downstream of the CCR management units
- The CCR management units have adequate structural stability, and slopes are stable under current static and seismic loading conditions
- For the seep investigation, three areas of interest (AOIs) were identified during the EI. One AOI has been mitigated under a TDEC approved plan. The remaining two AOIs are currently being monitored and will be further evaluated in the CARA Plan.
- 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 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 for Active Ash Pond 2, Ash Disposal Area 1, and the Former Coal Yard
- The groundwater flow direction within the uppermost aquifer beneath the CCR management units and former Coal Yard is generally to the west-southwest toward the Tennessee River. Groundwater flow in the vicinity of the CCR management units is bounded to the west by the Tennessee River. A higher elevation ridge to the east of the plant and a watershed boundary along the southern border are topographic divides for groundwater flow.

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, AOIs, and onsite groundwater. Onsite groundwater impacts may 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 ways to beneficially use CCR material 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 JOF 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 JOF Plant. The CARA Plan will also specify the actions TVA plans to take at the TDEC Order CCR management units and the basis of those actions. It will also incorporate other operational changes planned or in progress by TVA, including details for CCR beneficial use operations, modification of the TDEC Order CCR management units as needed to meet regulatory standards, and long-term closure and monitoring.

Exhibit No.

ES-1

Title

**Summary of Environmental Assessment Report Findings
Johnsonville Fossil Plant**

Client/Project

Tennessee Valley Authority
Johnsonville Fossil (JOF) Plant TDEC Order

Project Location

New Johnsonville, Tennessee

175548286

Prepared by KB on 2023-08-18

Key Findings




The ecological communities are healthy in the Kentucky Lake/Tennessee River adjacent to and downstream of the CCR management units based on the results of the environmental assessment and other monitoring efforts.

Nearly all of the environmental sample results were below the approved levels.

The health of the aquatic life is a key indicator of the health of the Kentucky Lake/Tennessee River. This means that TVA is managing its CCR units in a way that's protective of the environment.

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.
-  Corrective action is being evaluated for onsite groundwater along the perimeter of the unit in this area.



Next Steps

With TDEC acceptance of the environmental assessment, TVA will further evaluate certain areas for potential corrective action and will conduct a water use survey to better understand groundwater conditions around the Johnsonville Fossil Plant.

TVA will use the findings from the environmental assessment to prepare and submit a corrective action plan to TDEC. This plan, which will be released for public review and comment, will specify measures TVA plans to take to address unacceptable risks.

TVA's efforts will continue until regulators are satisfied, and monitoring of groundwater will continue for many years.



-  CCR Management Unit
-  Former Stilling Pond
-  Former Coal Yard

Disclaimer: Stantec assumes no responsibility for data supplied in electronic format. The recipient accepts full responsibility for verifying the accuracy and completeness of the data. The recipient releases Stantec, its officers, employees, consultants and agents, from any and all claims arising in any way from the content or provision of the data.



\\u0204-ap0101\workgroup\1756\active\175668286\technical_production\molesta\venibh\jot_02