



December 28, 2021

Tennessee Valley Authority
1101 Market Street
Chattanooga, Tennessee 37402

Reference: Groundwater Monitoring System – 2021 Update Sluice Trench and Area East of Sluice Trench - TVA Kingston Fossil Plant, Harriman, Tennessee

1.0 INTRODUCTION

This letter documents Stantec Consulting Services Inc. (Stantec) certification of the 2021 groundwater monitoring system update for the Tennessee Valley Authority (TVA) Kingston Fossil Plant Sluice Trench and Area East of Sluice Trench. This coal combustion residuals (CCR) unit is an inactive surface impoundment under the CCR Rule (i.e., a vacatur unit). This 2021 update to the groundwater monitoring system certification replaces the prior certification dated April 17, 2019¹. The 2021 update removes monitoring well KIF-107 from the well network and adds new monitoring well KIF-109. These changes will be discussed in the 2021 Annual Groundwater Monitoring and Corrective Action Report for the TVA Kingston Fossil Plant Sluice Trench and Area East of Sluice Trench CCR Unit, which will be prepared by January 31, 2022 (<https://www.tva.com/environment/environmental-stewardship/coal-combustion-residuals/kingston/surface-impoundment---sluice-trench-and-area-east-of-sluice-trench-documents>).

2.0 COMPARISON OF UPDATED MONITORING SYSTEM TO CCR RULE

When preparing the 2021 update to the groundwater monitoring system for the Sluice Trench and Area East of Sluice Trench at the Kingston Fossil Plant in Harriman, Tennessee, Stantec reviewed the performance standard specified in the CCR Rule at 40 CFR § 257.91, the hydrogeologic characterization of the site, construction information for monitoring wells selected for the system, and available groundwater data. Based upon review of the available information, the groundwater monitoring system for the Sluice Trench and Area East of Sluice Trench meets the performance standard specified in 40 CFR § 257.91, in accordance with the following criteria:

- There are a sufficient number of wells installed at appropriate locations and depths to yield groundwater samples that accurately represent the quality of background groundwater unaffected by CCR and the quality of groundwater at the downgradient waste boundary (40 CFR § 257.91(a)(1) and (2)).
- The wells provide samples from the uppermost aquifer (40 CFR § 257.91(a) and 257.53).

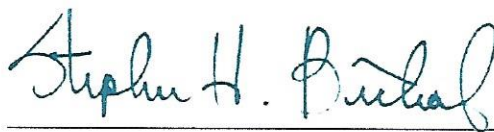
¹ Stantec, 2019. Groundwater Monitoring System Sluice Trench and Area East of Sluice Trench TVA Kingston Fossil Plant Harriman, Tennessee. April 17, 2019.

Reference: **Groundwater Monitoring System – 2021 Update Sluice Trench and Area East of Sluice Trench - TVA Kingston Fossil Plant, Harriman, Tennessee**

- The groundwater monitoring system contains one background monitoring well and five downgradient monitoring wells; thus, the number of wells in the system exceeds the minimum specified in 40 CFR § 257.91(c)(1).
- The system contains one background well (AD-1) representing conditions unaffected by CCR (40 CFR § 257.91(a)(1) and (c)(1)).
- The system contains five wells located downgradient (KIF-105, KIF-106, KIF-109, AD-2, and AD-3) to monitor groundwater near the waste boundary (40 CFR § 257.91(a)(2) and (c)(1)).
- The system includes additional wells as needed to meet the performance standard (40 CFR § 257.91(c)(2))
- The wells are constructed appropriately (40 CFR § 257.91(e)).

3.0 QUALIFIED PROFESSIONAL ENGINEER CERTIFICATION

I, Stephen H. Bickel, being a Registered Professional Engineer in good standing in the State of Tennessee, do hereby certify to the best of my knowledge, information, and belief that the information contained in this certification is prepared in accordance with the accepted practice of engineering; that the information contained herein is accurate as of the date of my signature below; and that the design and construction of the groundwater monitoring system as described above meets the requirements of 40 CFR § 257.91. Opinions relating to environmental, geologic, and hydrogeologic conditions or other estimates are based on available data; actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

 12/28/2021

Stephen H. Bickel, PE
Tennessee Professional Engineer
License No. 113134

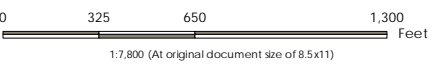
Stantec Consulting Services Inc.
10509 Timberwood Circle Suite 100
Louisville, KY 40223-5308
Phone: (502) 212-5075



Attachments: Figure 1 – Sluice Trench and Area East of Sluice Trench Groundwater Monitoring System
Table 1 – Well Construction Information



- Background Well
- Downgradient Well
- Former Downgradient Well
- ▲ Staff Gauge
- Surface Water Flow Direction
- 2018 Imagery Boundary
- CCR Unit Subject to CCR Rule
- TVA Property Boundary (Approximate)



Notes
 1. Coordinate System: NAD 1983 StatePlane Tennessee FIPS 4100 Feet
 2. Imagery Source: Tuck Mapping Solutions, INC (2017-03-16) and TVA (2018-09-12)

Project Location 182603655
 City of Kingston Prepared by LMB on 2021-11-23
 Roane County, Tennessee Technical Review by MD on 2021-11-23
 Independent Review by BS on 2021-11-23

Client/Project
 Tennessee Valley Authority
 Kingston Fossil Plant
 CCR Rule

Figure No.
 1

Title
Sluice Trench and Area East of Sluice Trench Groundwater Monitoring System



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TABLE 1
WELL CONSTRUCTION INFORMATION
CCR RULE GROUNDWATER MONITORING SYSTEM 2021 UPDATE SLUICE TRENCH AND AREA EAST OF SLUICE TRENCH
TVA KINGSTON FOSSIL PLANT

Well ID	Unique Identification Number	Position Relative to CCR Unit	Top of Casing Elevation (ft)	Ground Elevation (ft)	Screened Interval (ft btoc)	Screened Formation	Total Well Depth (ft btoc)	Pump Intake Depth (ft btoc)	Well Diameter (inch) / Material	Well Coordinates	
										TN State Plane NAD83 Northing (ft)	TN State Plane NAD83 Easting (ft)
AD-1	KIF-00-GW-43-006	Background	781.13	777.4	25.5 - 35.4	Residuum	35.7	30	2-in PVC	576822.00	2406886.98
AD-2	KIF-00-GW-43-007	Downgradient	757.1	753	18.5 - 28.4	Residuum	28.6	23	2-in PVC	574675.84	2408290.88
AD-3	KIF-00-GW-43-008	Downgradient	752.3	748.4	13.9 - 18.8	Residuum	18.9	17	2-in PVC	575150.21	2409231.74
KIF-105	KIF-00-GW-43-033	Downgradient	757.26	753	38.7 - 48.7	Residuum	49.1	43	4-in PVC	574819.38	2408462.83
KIF-106	KIF-00-GW-43-034	Downgradient	761.27	757.6	32.7 - 42.7	Residuum	43.1	38	4-in PVC	574439.09	2408024.18
KIF-109	KIF-00-GW-43-037	Downgradient	761.23	757.6	42.5 - 53.1	Residuum	53.5	48	4-in PVC	575305.85	2409009.99

Well construction and survey information based on data provided by TVA Well Inventory, August 6, 2021.

Elevation in National Geodetic Vertical Datum 1929.

ft btoc - feet below top of casing