

# Memo

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To: Tennessee Valley Authority  
Chattanooga, TN

From: Matthew Dagon, LPG  
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File: Notification Identifying Appendix IV  
Constituents Exceeding Groundwater  
Protection Standards at the Bull Run  
Fossil Plant Fly Ash Stilling Pond and  
Sluice Channel and Main Ash Pond  
Vacatur CCR Units

Date: August 13, 2020

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**Reference: Notification Identifying Appendix IV Constituents Exceeding Groundwater Protection Standards at the Bull Run Fly Ash Stilling Pond and Sluice Channel and Main Ash Pond CCR Units Pursuant to 40 CFR § 257.95(g)**

In accordance with federal regulations for management of coal combustion residuals (the CCR Rule; 40 CFR § 257), the Tennessee Valley Authority (TVA) is monitoring groundwater at the Fly Ash Stilling Pond and Sluice Channel and Main Ash Pond Vacatur CCR units at its Bull Run Fossil Plant (BRF) in Clinton, Tennessee. The Fly Ash Stilling Pond and Sluice Channel and Main Ash Pond are all subject to the CCR Rule and share a common, multiunit groundwater monitoring well network. Monitoring at the Fly Ash Stilling Pond and Sluice Channel and Main Ash Pond CCR Units is in the Assessment phase.

As required by the CCR Rule (40 CFR § 257.95(g)), the owner or operator of a CCR unit shall establish groundwater protection standards (GWPSs) for Appendix IV parameters detected during Assessment monitoring and determine if one or more Appendix IV parameters are detected at statistically significant levels (SSLs) above their GWPS. GWPSs for all Appendix IV parameters have been established as required by 40 CFR § 257.95(d)(2) and are provided on Table 1 (attached).

Assessment monitoring groundwater sampling was conducted in February and March 2020 (40 CFR § 257.95(b) and 257.95(d)). The groundwater monitoring data for the assessment monitoring events were evaluated using statistical procedures as required by 40 CFR § 257.93(f) through 257.93(h) and using procedures recommended in the USEPA's Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA 530/R-09-007, March 2009). The sampling results used to identify potential groundwater protection standards exceedances were obtained during five distinct monitoring events that were performed between January 2019 and March 2020. Comparisons were made against a fixed groundwater protection standard via a confidence interval or confidence interval band. No retesting was conducted and none of the individual compliance point measurements were directly compared against the groundwater protection standard. All the Appendix IV monitoring data collected in 2019 and 2020 were used to construct the confidence interval bands. Cross-sections of each confidence interval band were then compared to the groundwater protection standard for the most recent Assessment Monitoring event in each case for the purpose of identifying any SSLs. A well constituent pair is considered out of compliance only if the lower confidence interval band at the last assessment monitoring event exceeds the GWPS.

Pursuant to 40 CFR § 257.95(g), on July 14, 2020, the SSLs above GWPSs that are presented on Table 1 below were detected.

August 13, 2020

Tennessee Valley Authority

Page 2 of 2

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**TABLE 1: Statistically Significant Levels (SSLs) Above GWPSs – BRF Fly Ash Stilling Pond and Sluice Trench and Main Ash Pond**

Appendix IV Parameter	GWPS (a)	Downgradient wells with Assessment monitoring results above GWPSs (b)	Calculated LCB on the mean (c)	SSL (d) LCB > GWPS
Antimony (mg/l)	0.006	None	NA	NA
Arsenic (mg/l)	0.01	49	0.0207	<b>Yes</b>
		10-52	0.0281	<b>Yes</b>
Barium (mg/l)	2	None	NA	NA
Beryllium (mg/l)	0.004	None	NA	NA
Cadmium (mg/l)	0.005	None	NA	NA
Chromium (mg/l)	0.1	None	NA	NA
Cobalt (mg/l)	0.006	48	0.0077	<b>Yes</b>
		49	0.0118	<b>Yes</b>
Fluoride (mg/l)	4	None	NA	NA
Lead (mg/l)	0.015	None	NA	NA
Lithium (mg/l)	0.04	47	0.3384	<b>Yes</b>
		49	0.3043	<b>Yes</b>
Mercury (mg/l)	0.002	None	NA	NA
Molybdenum (mg/l)	0.1	49	0.2036	<b>Yes</b>
Radium-226+228 (pCi/l)	5	None	NA	NA
Selenium (mg/l)	0.05	None	NA	NA
Thallium (mg/l)	0.002	None	NA	NA

NA – Not applicable

(a) GWPSs documented in notice dated 04/14/2020

(b) Assessment monitoring events February and March 2020 (per 40 CFR § 257.95(b) and (d))

(c) Value of 99% lower confidence band (LCB) on the mean of Appendix IV groundwater sampling events between January 2019 and March 2020. Upper confidence band (UCB) not shown as it is greater than LCB.

(d) SSL is statistically significant level over GWPS