
To:	Tennessee Valley Authority Chattanooga, TN	From:	Matthew Dagon, LPG Indianapolis, IN
File:	Notification Identifying Appendix IV Constituents Exceeding Groundwater Protection Standards at the Paradise Fossil Plant Gypsum Disposal Area Multi-Unit CCR Unit	Date:	February 13, 2019

Reference: Notification Identifying Appendix IV Constituents Exceeding Groundwater Protections Standards for the Paradise Fossil Plant Gypsum Disposal Area Multi-Unit CCR Unit 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 Gypsum Disposal Area Multi-Unit CCR unit at its Paradise Fossil Plant (PAF) in Drakesboro, Kentucky. The Gypsum Disposal Area Multi-Unit includes the Gypsum Disposal Area, Gypsum Disposal Area Stilling Pond 1 and the Gypsum Disposal Area Stilling Pond 2, all subject to the CCR Rule with a multi-unit monitoring system. Monitoring at the Gypsum Disposal Area Multi-Unit is in the Assessment phase.

As required by the CCR Rule (40 CFR 257.95(g)), the owner of 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 GWPSs. GWPSs for all Appendix IV parameters have been established as required by 40 CFR 257.95(d)(2) and are on Table 1 (attached).

1. Assessment monitoring groundwater sampling was conducted from May to August 2018 (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 May and August of 2018. 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 of the Appendix IV monitoring data collected both in Year-One and Year-Two 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 its average constituent levels — as estimated via the confidence interval cross-section — currently exceed the groundwater protection standard.

Pursuant to 40 CFR 257.95(g), on January 14, 2019, no SSLs above GWPSs were identified as presented on Table 1 below.

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TABLE 1: Statistically Significant Levels (SSLs) Above GWPSs – PAF Gypsum Disposal Area Multi-Unit

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)	0.0136	None	NA	NA
Barium (mg/l)	2	None	NA	NA
Beryllium (mg/l)	0.05	None	NA	NA
Cadmium (mg/l)	0.005	None	NA	NA
Chromium (mg/l)	0.1	None	NA	NA
Cobalt (mg/l)	0.0889	None	NA	NA
Fluoride (mg/l)	4	None	NA	NA
Lead (mg/l)	0.015	None	NA	NA
Lithium (mg/l)	0.165	None	NA	NA
Mercury (mg/l)	0.002	None	NA	NA
Molybdenum (mg/l)	0.1	None	NA	NA
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 10/15/2018.

(b) Assessment monitoring events May to August 2018 (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 November 2016 and August 2018. Upper confidence band (UCB) not shown as it is greater than the LCB.

(d) SSL is statistically significant level over GWPS.