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Memorandum

Date:	February 8, 2019
To:	David Miller (AEP)
Copies to:	Terence Wehling (AEP)
From:	Allison Kreinberg and Bruce Sass, Ph.D. (Geosyntec)
Subject:	Evaluation of Detection Monitoring Data at Flint Creek Plant's Primary Bottom Ash Pond (PBAP)

In accordance with the United States Environmental Protection Agency's (USEPA's) regulations regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (40 CFR 257 Subpart D, "CCR rule"), a detection monitoring event was completed on August 28, 2018 at the Primary Bottom Ash Pond (PBAP), an existing CCR unit at the Flint Creek Power Plant located in Gentry, Arkansas. Because the sample analyses for chloride, fluoride, and sulfate were completed out of past holding time, resampling was completed on October 22, 2018.

Ten background monitoring events were conducted at the Flint Creek PBAP prior to these detection monitoring events, and upper prediction limits (UPLs) were calculated for each Appendix III parameter to represent background values. Lower prediction limits (LPLs) were also calculated for pH. Details on the calculation of these background values are described in Geosyntec's *Statistical Analysis Summary* report, dated January 15, 2018. An alternative source demonstration (ASD) was certified on April 3, 2018 which resulted in a revision to the calculated prediction limits for all Appendix III parameters.

To achieve an acceptably high statistical power while maintaining a site-wide false-positive rate (SWFPR) of 10% per year or less, prediction limits were calculated based on a one-of-two retesting procedure. With this procedure, a statistically significant increase (SSI) is only concluded if both samples in a series of two exceeds the UPL. Because the initial result did not exceed the UPL, a second sample was not required.

Detection monitoring results and the relevant background values are summarized in Table 1. No SSIs were observed at the Flint Creek PBAP CCR unit, and as a result the Flint Creek PBAP will remain in detection monitoring.

The statistical analysis was conducted within 90 days of completion of sampling and analysis in accordance with 40 CFR 257.93(h)(2). A certification of these statistics by a qualified professional engineer is provided in Attachment A.

Table 1: Detection Monitoring Data Evaluation
Flint Creek Plant - Primary Bottom Ash Pond

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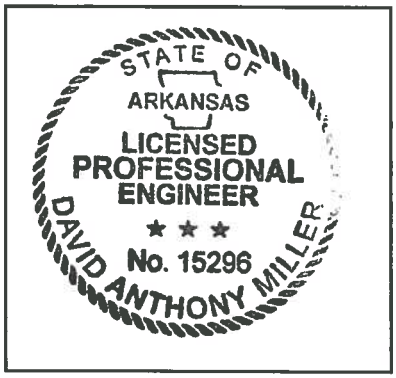
Parameter	Units	Description	AP-58	AP-59	AP-60
			10/22/2018	10/22/2018	10/22/2018
Boron	mg/L	Intrawell Background Value (UPL)	2.20	0.424	1.55
		Detection Monitoring Result	0.237	0.277	1.27
Calcium	mg/L	Intrawell Background Value (UPL)	85.1	43.6	48.7
		Detection Monitoring Result	76	42	31.1
Chloride	mg/L	Intrawell Background Value (UPL)	29	19	17
		Detection Monitoring Result	13	19	16
Fluoride	mg/L	Intrawell Background Value (UPL)	1.09	0.774	0.950
		Detection Monitoring Result	<0.083	0.548	<0.083
pH	SU	Intrawell Background Value (UPL)	9.42	7.91	9.26
		Intrawell Background Value (LPL)	5.78	6.41	6.90
		Detection Monitoring Result	6.90	7.07	7.76
Sulfate	mg/L	Intrawell Background Value (UPL)	296	49	181
		Detection Monitoring Result	76	27	135
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	822	258	409
		Detection Monitoring Result	300	180	276

Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
Bold values exceed the background value.
Background values are shaded gray.
Chloride, Fluoride, and Sulfate parameters analyzed on October 22, 2018, all other Appendix III parameters analyzed on August 28, 2018
Based on a 1-of-2 resampling, a statistically significant increase (SSI) is only identified when both samples in the detection monitoring period are above the calculated background value.

ATTACHMENT A
Certification by Qualified Professional Engineer

CERTIFICATION BY QUALIFIED PROFESSIONAL ENGINEER

I certify that the selected statistical method, described above and in the January 15, 2018 *Statistical Analysis Summary* report, is appropriate for evaluating the groundwater monitoring data for the Flint Creek PBAP CCR management area and that the requirements of 40 CFR 257.93(f) have been met.



DAVID ANTHONY MILLER

Printed Name of Licensed Professional Engineer

David Anthony Miller

Signature

15296	ARKANSAS	02.18.19
License Number	Licensing State	Date