Geosyntec consultants

941 Chatham Lane, Suite 103
Columbus, Ohio 43212
PH 614.468.0415
FAX 614.468.0416
www.geosyntec.com

Memorandum

Date:	January 11, 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 257.90-257.98, "CCR rule"), a detection monitoring event was completed on March 26, 2018 at the Primary Bottom Ash Pond (PBAP), an existing CCR unit at the Flint Creek Power Plant located in Gentry, Arkansas.

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 - PBAP

Geosyntec Consultants, Inc.

Parameter	Units	Description	AP-58	AP-59	AP-60
			3/26/2018	3/26/2018	3/26/2018
Boron	mg/L	Intrawell Background Value (UPL)	2.20	0.424	1.55
		Detection Monitoring Data	0.228	0.218	0.645
Calcium	mg/L	Intrawell Background Value (UPL)	85.1	43.6	48.7
		Detection Monitoring Data	77.2	43.2	45.5
Chloride	mg/L	Intrawell Background Value (UPL)	29	19	17
		Detection Monitoring Data	8	12	9
Fluoride	mg/L	Intrawell Background Value (UPL)	1.09	0.774	0.95
		Detection Monitoring Data	0.083	0.083	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 Data	7.41	7.04	8.62
Sulfate	mg/L	Intrawell Background Value (UPL)	296	49	181
		Detection Monitoring Data	70	40	113
TDS	mg/L	Intrawell Background Value (UPL)	822	258	409
		Detection Monitoring Data	262	180	284

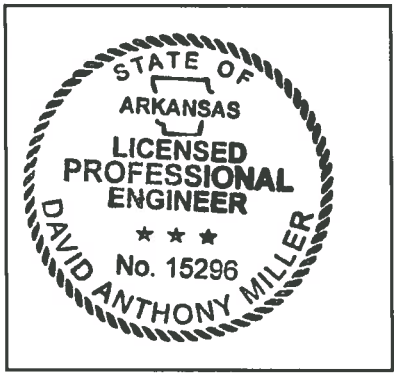
Notes
UPL: Upper prediction limit
LPL: Lower prediction limit
TDS: Total dissolved solids
Bold values exceed the background value.
Background values are shaded gray.

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	01.17.19
License Number	Licensing State	Date