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Memorandum

Date:	January 11, 2019
To:	David Miller (AEP)
Copies to:	Jill Parker-Witt (AEP)
From:	Allison Kreinberg and Bruce Sass, Ph.D. (Geosyntec)
Subject:	Evaluation of Detection Monitoring Data at Northeastern Plant's Landfill (LF)

In accordance with Oklahoma Department of Environmental Quality rules regarding the disposal of coal combustion residuals (CCR) in landfills and surface impoundments (OAC 252.517) detection monitoring events were completed on May 30, 2018 and October 15, 2018 at the Landfill (LF), an existing CCR unit at the Northeastern Power Plant located in Oologah, Oklahoma.

Eight background monitoring events were conducted at the Northeastern LF 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 13, 2018 which resulted in a revision to the calculated prediction limits for boron and pH.

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. In practice, if the initial result did not exceed the UPL, a second sample was not collected or analyzed.

Detection monitoring results and the relevant background values are compared in Table 1 and the noted exceedance is described below.

- Fluoride concentrations exceeded the intrawell UPL of 2.24 mg/L in both the initial (2.33 mg/L) and second (2.27 mg/L) samples collected at MW-15. Therefore, an SSI over background is concluded for fluoride at MW-15.

In response to the exceedance noted above the Northeastern LF CCR unit will either transition to assessment monitoring or an alternate source demonstration for fluoride will be conducted.

No other exceedances of UPLs were observed during these detection monitoring events.

The statistical analysis was conducted within 90 days of completion of sampling and analysis in accordance with OAC 252:517-9-4(h)(6). A certification of these statistics by a qualified professional engineer is provided in Attachment A.

Table 1: Detection Monitoring Data Evaluation
Northeastern Plant - Landfill

Geosyntec Consultants, Inc.

Parameter	Units	Description	MW-3D	MW-6D	MW-9D	MW-15	
			5/30/2018	5/30/2018	--	5/30/2018	10/15/2018
Boron	mg/L	Intrawell Background Value (UPL)	0.975	4.35	8.11	10.6	
	mg/L	Detection Monitoring Result	0.952	3.35	--	8.76	--
Calcium	mg/L	Intrawell Background Value (UPL)	190	285	463	132	
	mg/L	Detection Monitoring Result	129	269	--	105	--
Chloride	mg/L	Intrawell Background Value (UPL)	16.2	33.9	383	78	
	mg/L	Detection Monitoring Result	13	32	--	33	--
Fluoride	mg/L	Intrawell Background Value (UPL)	1.00	0.941	2.28	2.24	
	mg/L	Detection Monitoring Result	0.896	0.922	--	**2.33**	**2.27**
pH	SU	Intrawell Background Value (UPL)	8.03	8.32	7.77	9.14	
	SU	Intrawell Background Value (LPL)	6.17	5.98	6.74	6.56	
	SU	Detection Monitoring Result	7.46	7.39	--	7.713	--
Total Dissolved Solids	mg/L	Intrawell Background Value (UPL)	853	1159	3591	1152	
	mg/L	Detection Monitoring Result	724	1090	--	1128	--
Sulfate	mg/L	Intrawell Background Value (UPL)	251	543	1524	649	
	mg/L	Detection Monitoring Result	214	401	--	549	--

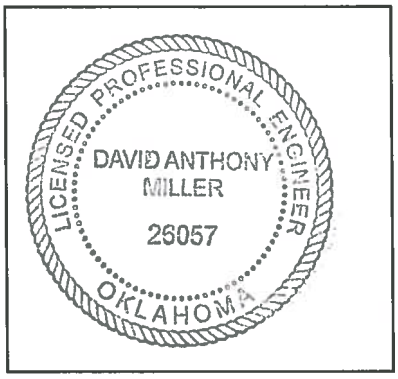
Notes:
UPL: Upper prediction limit
LPL: Lower prediction limit
-: Not Sampled
Bold values exceed the background value.
Background values are shaded gray.

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 Northeastern LF 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

26057	OKLAHOMA	01.17.19
License Number	Licensing State	Date