2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

FLY ASH IMPOUNDMENT SIBLEY GENERATING STATION SIBLEY, MISSOURI

Presented To:

Evergy Missouri West, Inc. (f/k/a KCP&L Greater Missouri Operations Co.)

SCS ENGINEERS

27213169.19 | January 2020, Revised December 20, 2022

8575 W 110th Street, Suite 100 Overland Park, Kansas 66210 913-681-0030

CERTIFICATIONS

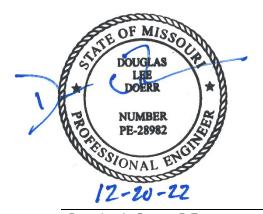
I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify that the 2019 Annual Groundwater Monitoring and Corrective Action Report for the Fly Ash Impoundment at the Sibley Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).



John R. Rockhold, R.G.

SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Missouri, do hereby certify that the 2019 Annual Groundwater Monitoring and Corrective Action Report for the Fly Ash Impoundment at the Sibley Generating Station was prepared by me or under my direct supervision and fulfills the requirements of 40 CFR 257.90(e).



Douglas L. Doerr, P.E.

SCS Engineers

2019 Groundwater Monitoring and Corrective Action Report

Revision	Revision	Revision Section	Summary of Revisions
Number	Date		
0	January 2020	NA	Original Report.
1	December 20, 2022	Addendum 1	Added Addendum 1

Table of Contents

Sect	ion		P	age
CERT	IFICA	TIONS		i
1	INTR	ODUCTI	ON	1
2			ANNUAL REPORT REQUIREMENTS	
	2.1	§ 257.	.90(e)(1) Site Map	1
	2.2		.90(e)(2) Monitoring System Changes	
	2.3	§ 257.	.90(e)(3) Summary of Sampling Events	2
	2.4	§ 257.	.90(e)(4) Monitoring Transition Narrative	2
	2.5		.90(e)(5) Other Requirements	
		2.5.1	§ 257.90(e) Program Status	2
		2.5.2	§ 257.94(d)(3) Demonstration for Alternative Detection Monitoring Frequence	уЗ
		2.5.3	§ 257.94(e)(2) Detection Monitoring Alternate Source Demonstration	3
		2.5.4	§ 257.95(c)(3) Demonstration for Alternative Assessment Monitoring Freque	•
		2.5.5	§ 257.95(d)(3) Assessment Monitoring Concentrations and Groundwater Protection Standards	4
		2.5.6	§ 257.95(g)(3)(ii) Assessment Monitoring Alternate Source Demonstration	4
		2.5.7	§ 257.96(a) Demonstration for Additional Time for Assessment of Corrective Measures	
3	GENI	FRAL CO	OMMENTS	5

Appendices

Appendix A Figures
Figure 1: Site Map

Appendix B Tables

Table 1: Appendix III Detection Monitoring Results Table 2: Detection Monitoring Field Measurements

Appendix C Alternative Source Demonstrations

- C.1 CCR Groundwater Monitoring Alternative Source Demonstration Report November 2018 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2019).
- C.2 CCR Groundwater Monitoring Alternative Source Demonstration Report May 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2019).

Addendum 1 2019 Annual Groundwater Monitoring and Corrective Action Report Addendum 1

1 INTRODUCTION

This 2019 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" (Rule) published by the United States Environmental Protection Agency (USEPA) in the Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, dated April 17, 2015 (USEPA, 2015). Specifically, this report was prepared for Evergy Missouri West, Inc. (f/k/a KCP&L Greater Missouri Operations Company, Inc.) to fulfill the requirements of 40 CFR 257.90 (e). The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2019 Annual Groundwater Monitoring and Corrective Action Report for the Fly Ash Impoundment at the Sibley Generating Station.

2 § 257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

2.1 § 257.90(E)(1) SITE MAP

A map, aerial image, or diagram showing the CCR unit and all background (or upgradient) and downgradient monitoring wells, to include the well identification numbers, that are part of the groundwater monitoring program for the CCR unit;

A site map with an aerial image showing the Fly Ash Impoundment and all background (or upgradient) and downgradient monitoring wells with identification numbers for the Fly Ash Impoundment groundwater monitoring program is provided as **Figure 1** in **Appendix A**.

2.2 § 257.90(E)(2) MONITORING SYSTEM CHANGES

Identification of any monitoring wells that were installed or decommissioned during the preceding year, along with a narrative description of why those actions were taken;

No new monitoring wells were installed and no wells were decommissioned as part of the CCR groundwater monitoring program for the Fly Ash Impoundment in 2018.

2.3 § 257.90(E)(3) SUMMARY OF SAMPLING EVENTS

In addition to all the monitoring data obtained under §§ 257.90 through 257.98, a summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs;

Only detection monitoring was conducted during the reporting period (2019). Samples collected in 2019 were collected and analyzed for Appendix III detection monitoring constituents as indicated in **Appendix B**, **Table 1** (Appendix III Detection Monitoring Results, and **Table 2** (Detection Monitoring Field Measurements). The dates of sample collection, the monitoring program requiring the sample, and the results of the analyses are also provided in these tables. These tables include Fall 2018 semiannual detection monitoring event verification data taken in 2019; Spring 2019 semiannual detection monitoring data; and the initial Fall 2019 semiannual detection monitoring data.

2.4 § 257.90(E)(4) MONITORING TRANSITION NARRATIVE

A narrative discussion of any transition between monitoring programs (e.g., the date and circumstances for transitioning from detection monitoring to assessment monitoring in addition to identifying the constituent(s) detected at a statistically significant increase over background levels); and

There was no transition between monitoring programs in 2019. Only detection monitoring was conducted in 2019.

2.5 § 257.90(e)(5) OTHER REQUIREMENTS

Other information required to be included in the annual report as specified in §§ 257.90 through 257.98.

A summary of potentially required information and the corresponding section of the Rule is provided in the following sections. In addition, the information, if applicable, is provided.

2.5.1 § 257.90(e) Program Status

Status of Groundwater Monitoring and Corrective Action Program.

The groundwater monitoring and corrective action program is in detection monitoring.

Summary of Key Actions Completed.

- a. completion of the Fall 2018 verification sampling and analyses per the certified statistical method,
- b. completion of the statistical evaluation of the Fall 2018 semiannual detection monitoring sampling and analysis event per the certified statistical method,
- c. completion of the 2018 Annual Groundwater Monitoring and Corrective Action Report,
- d. completion of a successful alternative source demonstration for the Fall 2018 semiannual detection monitoring sampling and analysis event,

2019 Groundwater Monitoring and Corrective Action Report

- e. completion of the Spring 2019 semiannual detection monitoring sampling and analysis event, and subsequent verification sampling per the certified statistical method,
- f. completion of the statistical evaluation of the Spring 2019 semiannual detection monitoring sampling and analysis event per the certified statistical method,
- g. completion of a successful alternative source demonstration for the Spring 2019 semiannual detection monitoring sampling and analysis event, and
- h. initiation of the Fall 2019 semiannual detection monitoring sampling and analysis event.

Description of Any Problems Encountered.

No noteworthy problems were encountered.

Discussion of Actions to Resolve the Problems.

Not applicable because no noteworthy problems were encountered.

Projection of Key Activities for the Upcoming Year (2020).

Completion of verification sampling and data analysis, and the statistical evaluation of Fall 2019 detection monitoring sampling and analysis event. Semiannual Spring and Fall 2020 groundwater sampling and analysis. Completion of the statistical evaluation of the Spring 2020 detection monitoring sampling and analysis event, and, if required, alternative source demonstration(s).

2.5.2 § 257.94(d)(3) Demonstration for Alternative Detection Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable because no alternative monitoring frequency for detection monitoring and certification was pursued.

2.5.3 § 257.94(e)(2) Detection Monitoring Alternate Source Demonstration

Demonstration that a source other than the CCR unit caused the statistically significant increase (SSI) over background levels for a constituent or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. In addition, certification of the demonstration is to be included in the annual report.

The following demonstration reports are included as **Appendix C**:

- C.1 CCR Groundwater Monitoring Alternative Source Demonstration Report November 2018 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2019).
- C.2 CCR Groundwater Monitoring Alternative Source Demonstration Report May 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2019).

2.5.4 § 257.95(c)(3) Demonstration for Alternative Assessment Monitoring Frequency

The owner or operator must obtain a certification from a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority stating that the demonstration for an alternative groundwater sampling and analysis frequency meets the requirements of this section. The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable because there was no assessment monitoring conducted.

2.5.5 § 257.95(d)(3) Assessment Monitoring Concentrations and Groundwater Protection Standards

Include the concentrations of Appendix III and detected Appendix IV constituents from the assessment monitoring, the established background concentrations, and the established groundwater protection standards.

Not applicable because there was no assessment monitoring conducted.

2.5.6 § 257.95(g)(3)(ii) Assessment Monitoring Alternate Source Demonstration

Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the constituents in appendices III and IV to this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

Not applicable because there was no assessment monitoring conducted.

2.5.7 § 257.96(a) Demonstration for Additional Time for Assessment of Corrective Measures

Within 90 days of finding that any constituent listed in appendix IV to this part has been detected at a statistically significant level exceeding the groundwater protection standard defined under § 257.95(h), or immediately upon detection of a release from a CCR unit, the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore affected area to original conditions. The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measures due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for no longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

Not applicable because there was no assessment monitoring conducted.

3 GENERAL COMMENTS

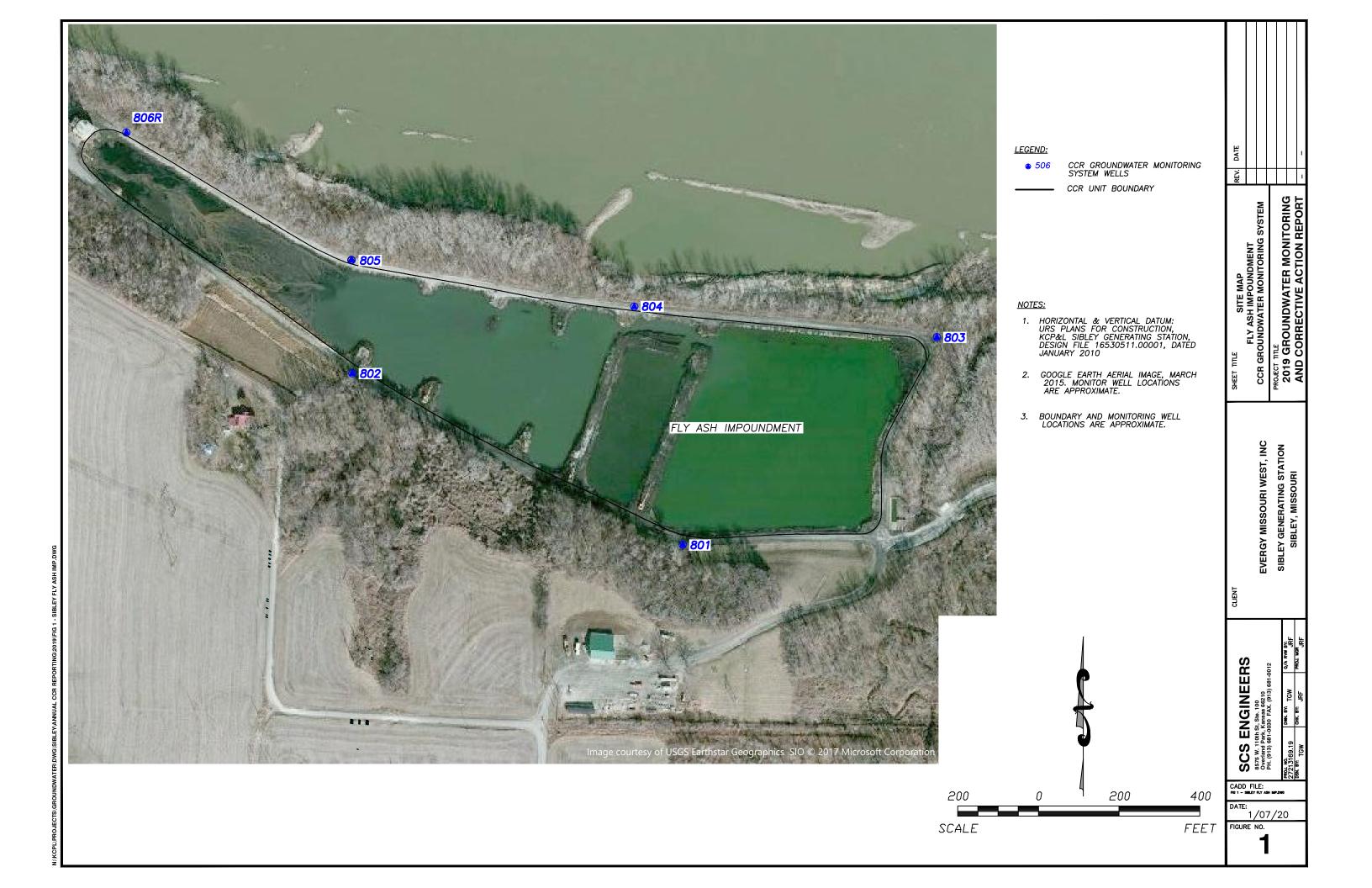
This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. The information contained in this report is a reflection of the conditions encountered at the Sibley Generating Station at the time of fieldwork. This report includes a review and compilation of the required information and does not reflect any variations of the subsurface, which may occur between sampling locations. Actual subsurface conditions may vary and the extent of such variations may not become evident without further investigation.

Conclusions drawn by others from the result of this work should recognize the limitation of the methods used. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client's directives. It is intended for the exclusive use of Evergy Missouri West, Inc. for specific application to the Sibley Generating Station Fly Ash Impoundment. No warranties, express or implied, are intended or made.

APPENDIX A

FIGURES

Figure 1: Site Map



APPENDIX B

TABLES

Table 1: Appendix III Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements

Table 1 Fly Ash Impoundment Appendix III Detection Monitoring Results Evergy Sibley Generating Station

				Apper	ndix III Consti	tuents		
Well Number	Sample Date	Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	Dissolved Solids (mg/L)
MW-801	1/11/2019			*124		**6.58		
MW-801	3/12/2019			*144		**6.84		
MW-801	5/22/2019	0.549	178	154	0.151	6.87	88.3	817
MW-801	7/16/2019	*0.326	*152	*127		**6.71	*56.6	*613
MW-801	8/21/2019			*124		**6.65		
MW-801	11/6/2019	0.278	144	109	0.172	6.69	59.0	567
MW-802	1/11/2019		*111			**6.66		
MW-802	3/12/2019		*107			**6.91		
MW-802	5/22/2019	<0.200	85.5	62.0	0.227	6.77	35.4	383
MW-802	11/6/2019	<0.200	52.2	32.0	0.157	6.46	49.9	285
MW-803	1/11/2019			*16.0		**7.14		
MW-803	5/22/2019	2.77	119	15.9	0.272	7.01	120	535
MW-803	11/6/2019	2.74	112	17.7	0.300	7.11	107	495
MW-804	1/11/2019	*8.71			*0.234	**6.97	*31.8	
MW-804	3/12/2019	*5.71				**7.11	*<5.00	
MW-804	5/22/2019	7.64	169	17.7	0.233	6.93	<5.00	719
MW-804	7/16/2019	*7.59				**7.48		*585
MW-804	8/21/2019	*8.14				**6.95		
MW-804	11/6/2019	8.31	151	19.2	0.269	7.32	<5.00	615
MW-805	5/22/2019	<0.200	98.7	8.65	0.201	7.03	51.1	357
MW-805	11/6/2019	<0.200	94.0	8.65	0.197	7.05	50.5	302
MW-806R	1/11/2019	*5.76	*175			**7.05	*237	*739
MW-806R	3/12/2019	*5.75	*173			**7.27	*256	*681
MW-806R	5/22/2019	5.58	171	28.7	0.215	6.99	238	731
MW-806R	7/16/2019	*5.64	*172			**7.37	*244	*671
MW-806R	8/21/2019	*5.66	*170			**7.08	*241	
MW-806R	11/6/2019	5.62	164	28.2	0.213	7.17	249	691

^{*} Verification Sample obtained per certified statistical method and Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.

mg/L - miligrams per liter

pCi/L - picocuries per liter

S.U. - Standard Units

--- Not Sampled

^{**}Extra Sample for Quality Control Validation or per Standard Sampling Procedure

Table 2
Fly Ash Impoundment
Detection Monitoring Field Measurements
Evergy Sibley Generating Station

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (°C)	Turbidity (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-801	1/11/2019	**6.58	1080	10.98	2.1	160	0.97	20.72	709.64
MW-801	3/12/2019	**6.84	1120	11.92	0.0	164	1.52	21.05	709.31
MW-801	5/22/2019	6.87	1120	16.19	0.0	160	1.39	15.39	714.97
MW-801	7/16/2019	**6.71	1010	14.80	0.0	57	2.21	15.60	714.76
MW-801	8/21/2019	**6.65	995	15.47	0.0	254	1.83	16.78	713.58
MW-801	11/6/2019	6.69	1070	13.03	0.0	51	2.68	17.13	713.23
MW-802	1/11/2019	**6.66	817	11.11	4.6	100	0.00	14.06	717.11
MW-802	3/12/2019	**6.91	814	11.19	0.0	78	0.53	13.83	717.34
MW-802	5/22/2019	6.77	663	12.41	0.0	45	1.17	10.90	720.27
MW-802	11/6/2019	6.46	615	12.70	0.0	71	6.21	11.07	720.10
MW-803	1/11/2019	**7.14	825	11.69	1.4	-298	0.00	22.31	704.58
MW-803	5/22/2019	7.01	820	16.69	0.0	-127	1.98	14.14	712.75
MW-803	11/6/2019	7.11	750	14.81	0.0	-136	0.79	20.25	706.64
MW-804	1/11/2019	**6.97	1050	11.78	20.5	-312	0.00	29.10	699.36
MW-804	3/12/2019	**7.11	1010	13.65	23.1	-129	0.46	27.90	700.56
MW-804	5/22/2019	6.93	1110	17.20	12.2	-135	0.89	15.09	713.37
MW-804	7/16/2019	**7.48	1090	19.50	28.0	-148	5.17	21.05	707.41
MW-804	8/21/2019	**6.95	1020	20.19	25.5	-60	0.00	22.19	706.27
MW-804	11/6/2019	7.32	1120	15.09	10.4	-123	0.55	23.74	704.72
MW-805	5/22/2019	7.03	604	15.29	8.6	-65	6.93	14.08	714.71
MW-805	11/6/2019	7.05	540	14.79	0.0	-67	0.37	27.34	701.45
MW-806R	1/11/2019	**7.05	1070	11.70	5.1	-219	0.00	22.31	706.85
MW-806R	3/12/2019	**7.27	1110	12.93	0.0	-103	0.43	22.34	706.82
MW-806R	5/22/2019	6.99	1010	14.61	19.3	-99	7.65	14.25	714.91
MW-806R	7/16/2019	**7.37	1020	22.19	18.4	-99	5.84	18.17	710.99
MW-806R	8/21/2019	**7.08	987	20.33	0.0	-20	0.00	18.70	710.46
MW-806R	11/6/2019	7.17	1050	14.68	16.4	-78	0.66	19.53	709.63

^{*} Verification Sample obtained per certified statistical method and Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.

S.U. - Standard Units

 μS - microsiemens

°C - Degrees Celsius

ft btoc - Feet Below Top of Casing

ft NGVD - National Geodetic Vertical Datum (NAVD 88)

NTU - Nephelometric Turbidity Unit

 $^{{\}tt **Extra\ Sample\ for\ Quality\ Control\ Validation\ or\ per\ Standard\ Sampling\ Procedure}$

APPENDIX C

ALTERNATIVE SOURCE DEMONSTRATIONS

- C.1 Groundwater Monitoring Alternative Source Demonstration Report November 2018 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2019)
- C.2 Groundwater Monitoring Alternative Source Demonstration Report May 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2019)

C.1	Groundwater Monitoring Alternative Source Demonstration Report November 2018 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (June 2019)

CCR GROUNDWATER MONITORING ALTERNATIVE SOURCE DEMONSTRATION REPORT NOVEMBER 2018 GROUNDWATER MONITORING EVENT

FLY ASH IMPOUNDMENT SIBLEY GENERATING STATION SIBLEY, MISSOURI

Presented To:

KCP&L Greater Missouri Operations Company

Presented By:

SCS ENGINEERS

 $8575 \; \mathrm{West} \; 110 \mathrm{th} \; \mathrm{Street}$, Suite $100 \;$

Overland Park, Kansas 66210

June 2019

File No. 27213169.19

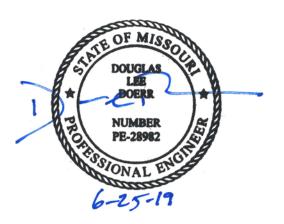
CERTIFICATIONS

I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted hydrogeological practices and the local standard of care.



John R. Rockhold, R.G. SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted engineering practices and the local standard of care.



Douglas L. Doerr, P.E. SCS Engineers

Table of Contents

Sec	tion		Page
CER	TIFICATIO	NS	i
1		ory Framework	
2	_	cal Results	
3		tive Source Demonstration	
		ogradient Well Location	
	3.2 B	ox and Whiskers Plots	3
	3.3 Pi	per Diagram Plots	4
	3.5 B	oron Stable Isotope Ratio Evaluation	4
4	Conclus	sion	5
5	Referer	ıces	5
6	Genera	l Comments	5
Αp	pendi	ces	
Арр	endix A	Figure 1	
Арр	endix B	Box and Whiskers Plots	
Арр	endix C	Piper Diagram and Laboratory Results	
Арр	endix D	Boron and Stable Isotope Plots and Laboratory Results	



1 REGULATORY FRAMEWORK

Certain owners or operators of Coal Combustion Residuals (CCR) units are required to complete groundwater monitoring activities to evaluate whether a release from the unit has occurred. Included in the activities is the completion of a statistical analysis of the groundwater quality data as prescribed in § 257.93(h) of the CCR Final Rule. If the initial analysis indicates a statistically significant increase (SSI) over background levels, the owner or operator may perform an alternative source demonstration (ASD). In accordance with § 257.94(e)(2), the owner or operator of the CCR unit may demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a SSI over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under § 257.94. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

2 STATISTICAL RESULTS

Statistical analysis of monitoring data from the groundwater monitoring system for the Fly Ash Impoundment at the Sibley Generating Station has been completed in substantial compliance with the "Statistical Method Certification by A Qualified Professional Engineer" dated October 12, 2017. Detection monitoring groundwater samples were collected on November 15, 2018. Review and validation of the results from the November 2018 Detection Monitoring Event was completed on January 2, 2019, which constitutes completion and finalization of detection monitoring laboratory analyses. A statistical analysis was then conducted to determine whether there was a SSI over background values for each constituent listed in Appendix III to Part 257-Constituents for Detection Monitoring. Two rounds of verification sampling were conducted for certain constituents on January 11, 2019 and March 12, 2019.

The completed statistical evaluation identified seven Appendix III constituents above their respective prediction limit in monitoring wells MW-801, MW-802, MW-804, and MW-806R.

The prediction limit for boron in monitoring well MW-804 is $5.133 \, \text{mg/L}$. The detection monitoring sample was reported at $8.07 \, \text{mg/L}$. The first verification re-sample was collected on January 11, 2019 with a result of $8.71 \, \text{mg/L}$. The second verification re-sample was collected on March 12, 2019 with a result of $5.71 \, \text{mg/L}$.

The prediction limit for boron in monitoring well MW-806R is 5.323 mg/L. The detection monitoring sample was reported at 5.56 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 5.76 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 5.75 mg/L.

The prediction limit for calcium in upgradient monitoring well MW-802 is 100.7 mg/L. The detection monitoring sample was reported at 101 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 111 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 107 mg/L.



The prediction limit for calcium in monitoring well MW-806R is 151.8 mg/L. The detection monitoring sample was reported at 168 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 175 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 173 mg/L.

The prediction limit for chloride in upgradient monitoring well MW-801 is 104.1 mg/L. The detection monitoring sample was reported at 115 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 124 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 144 mg/L.

The prediction limit for sulfate in monitoring well MW-806R is 191.9 mg/L. The detection monitoring sample was reported at 236 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 237 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 256 mg/L.

The prediction limit for total dissolved solids (TDS) in monitoring well MW-806R is 679.2 mg/L. The detection monitoring sample was reported at 699 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 739 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 681 mg/L.

Therefore, in accordance with the Statistical Method Certification, the detection monitoring samples for boron from monitoring wells MW-804 and MW-806R, for calcium in monitoring wells MW-802 and MW-806R, for chloride in monitoring well MW-801, and for sulfate and TDS in monitoring well MW-806R exceeds their respective prediction limits and are confirmed statistically significant increases (SSI) over background.

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The statistical evaluation identified SSIs above the background prediction limits for chloride in upgradient monitoring well MW-801, for calcium in upgradient monitoring well MW-802, for boron in monitoring wells MW-804, and for boron, calcium, sulfate, and TDS in monitoring well MW-806R.

3 ALTERNATIVE SOURCE DEMONSTRATION

An Alternative Source Demonstration is a means to provide supporting lines of evidence that something other than a release from a regulated CCR unit caused an SSI. For the above-identified SSIs for the Fly Ash Impoundment at the Sibley Generating Station, there are multiple lines of supporting evidence to indicate the above SSIs were not caused by a release from the Fly Ash Impoundment. Select multiple lines of supporting evidence are described as follows.

3.1 UPGRADIENT WELL LOCATION

Figure 1 in **Appendix A** shows a potentiometric surface contour map indicating the direction of groundwater flow at and near the Fly Ash Impoundment at the time of sampling. As seen on the map, monitoring wells MW-801 and MW-802 are located upgradient from the Fly Ash Impoundment indicating the SSI for chloride in MW-801 and the SSI for calcium in MW-802 are not caused by a release from the Fly Ash Impoundment. This demonstrates that a source other than the Fly Ash Impoundment caused the SSIs over background levels for chloride and calcium in these wells or that



the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.2 BOX AND WHISKERS PLOTS

A commonly accepted method to demonstrate and visualize the distribution of data in a given data set is to construct box and whiskers plots. The basic box plotted graphically locates the median, 25th and 75th percentiles of the data set; the "whiskers" extend to the minimum and maximum values of the data set. The range between the ends of a box plot represents the Interquartile Range, which can be used as an estimate of spread or variability. The mean is denoted by a "+".

When comparing multiple wells or well groups, box plots for each well can be lined up on the same axis to roughly compare the variability in each well. This may be used as an exploratory screening for the test of homogeneity of variance across multiple wells.

The box and whiskers plot for boron in monitoring well MW-806R was compared to the concentration of boron in ash impoundment pore water (sample ASD-1). The concentration of boron in sample ASD-1 plotted alongside the box and whiskers plot for boron in monitoring well MW-806R, shows the boron concentration in the ash impoundment pore water directly upgradient from MW-806R is less than the boron concentration in MW-806R. This demonstrates that a source other than the Fly Ash Impoundment (specifically ash impoundment pore water directly upgradient of MW-806R) caused the SSI over background levels for boron, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for boron are provided in **Appendix B**.

The box and whiskers plot for sulfate in monitoring well MW-806R was compared to the box and whiskers plot for sulfate from the river. The box and whiskers plots for sulfate from each location overlap significantly. This occurs even with a limited data set for sulfate from the river. Such an overlap demonstrates that a source other than the Fly Ash Impoundment could easily have caused the SSI over background levels for sulfate, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for sulfate are provided in **Appendix B**.

The box and whiskers plot for calcium in monitoring well MW-806R was compared to the box and whiskers plots for calcium from upgradient well MW-801, and from the river, and the calcium concentration from ash impoundment pore water (sample ASD-1). The box and whiskers plots for calcium from MW-806R significantly overlap the plots for upgradient well MW-801 and the river. Additionally, the calcium concentration of the ash impoundment pore water directly upgradient of MW-806R is less than the calcium concentrations of both monitoring wells and the river. Such an overlap demonstrates that a source other than the Fly Ash Impoundment could easily have caused the SSI over background levels for calcium, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for calcium are provided in **Appendix B**.

The box and whiskers plot for TDS in monitoring well MW-806R was compared to the box and whiskers plots for TDS from upgradient well MW-801, and from water from the ash impoundment (sample FLYASHPOND). The box and whiskers plot for TDS from MW-806R overlaps the plot for upgradient well MW-801 and the water from the ash impoundment has TDS levels typically below that of water from MW-806R. Such an overlap demonstrates that a source other than the Fly Ash Impoundment could easily have caused the SSI over background levels for TDS, or that the SSI resulted from error in



sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for TDS are provided in **Appendix B**.

3.3 PIPER DIAGRAM PLOTS

Piper diagrams are a form of tri-linear diagram, and a widely accepted method to provide a visual representation of the ion concentration of groundwater. Piper diagrams portray water compositions and facilitate the interpretation and presentation of chemical analyses. They may be used to visually compare the chemical composition of water quality across wells, and aid in determining whether the waters are similar or dis-similar, and can over time indicate whether the waters are mixing.

A piper diagram has two triangular plots on the right and left side of a 4-sided center field. The three major cations are plotted in the left triangle and anions in the right. Each of the three cation/anion variables, in milliequivalents, is divided by the sum of the three values, to produce a percent of total cation/anions. These percentages determine the location of the associated symbol. The data points in the center field are located by extending the points in the lower triangles to the point of intersection. In order for a piper diagram to be produced, the selected data file must contain the following constituents: Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulfate (SO4), Carbonate (CO3), and Bicarbonate (HCO3).

A piper diagram with plots for MW-801, MW-802, MW-804, and MW-806R was compared to piper diagram plots for three ash pore water samples (ASD-1, ASD-2, and ASD-3) collected in the Fly Ash Impoundment with a Geoprobe® screen-point 15 groundwater sampler. Sample locations are shown on **Figure 1** in **Appendix A**. Samples were collected on the same day for the ash pore water and wells MW-804 and MW-806R. The analytical reports are provided in **Appendix C** along with the piper diagram. The piper diagram plots indicate the groundwater from wells does not exhibit the same geochemical characteristics as the ash pore water. The groundwater and the ash pore water plot in different hydrochemical facies indicating there are two types of water (groundwater and ash pore water). This helps demonstrate that a source other than the Fly Ash Impoundment caused the SSIs over background levels for boron, calcium, TDS, and sulfate or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.5 BORON STABLE ISOTOPE RATIO EVALUATION

The boron stable isotope ratio in coal and coal ash generally vary significantly from the boron stable isotope ratio found in naturally occurring groundwater. The National Bureau of Standards standard reference material 951 (NBS SRM-951), which is a boric acid, is used as the isotopic standard for boron. Boron has two stable isotopes, ^{10}B and ^{11}B . Isotopic ratios of samples are reported as per mil (‰) differences from NBS SRM-951. The delta value for $^{11}\text{B}/^{10}\text{B}$ is expressed as $\delta^{11}\text{B}$, ‰. Previous studies have found $\delta^{11}\text{B}$ values for coal ash and coal ash leachate samples between -40 ‰ and +6.6 ‰ and most natural groundwaters have $\delta^{11}\text{B}$ values between +10 ‰ and +30 ‰ (Refs. 1, 2, and 3).

A groundwater sample was collected from MW-804 for boron and for δ^{11} B analysis on November 8, 2018. Additionally, ash pore water samples (ASD-1, ASD-2, and ASD-3) were collected with a Geoprobe® screen-point 15 groundwater sampler on the same day and for the same analysis. Sample locations are shown on **Figure 1** in **Appendix A**. The laboratory reports for the analysis are provided in **Appendix D**.

Boron concentration plotted against $\delta^{11}B$, ‰ for each of the samples are provided in **Appendix D.** The boron concentrations in ASD-1 (3.3 mg/L) and ASD-2 (3.56 mg/L) were less than the boron concentration in MW-804 (8.37 mg/L). The ash pore water from ASD-3 had the highest boron



concentration at 18.8 mg/L. Although groundwater from MW-804 had a boron concentration less than one of the ash pore water samples, the δ^{11} B for the boron from MW-804 was +12.9 ‰ and significantly greater than the δ^{11} B for the ash pore water which ranged from -6.18 ‰ to -10.11 ‰. The significantly higher and positive δ^{11} B for groundwater from MW-804 demonstrates an alternative source of boron at the site other than the Fly Ash Impoundment.

Below the boron vs δ^{11} B plot in **Appendix D**, is a figure (Ref. 4) showing δ^{11} B ranges for natural waters from various natural materials and waters impacted by anthropogenic sources. The figure further demonstrates based on δ^{11} B values for MW-804 that there is an alternative source of boron other than the Fly Ash Impoundment.

4 CONCLUSION

Our opinion is that a sufficient body of evidence is available and presented above to demonstrate that a source other than the Fly Ash Impoundment caused the SSIs over background levels, or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Based on the successful ASDs, the owner or operator of the Fly Ash Impoundment may continue with the detection monitoring program under § 257.94.

5 REFERENCES

- 1. Buska, Paul M., Fitzpatrick, John and Watson, Lee R. and Kay, Robert T. Evaluation of Ground-Water and Boron Sources by Use of Boron Stable-Isotope Ratios, Tritium, and Selected Water Chemistry Constituents near Beverly Shores, Northwestern Indiana, 2004. U.S. Geological Survey Scientific Investigations Report 2007-5166. 2007).
- A Twenty-Month Geochemical and Isotopic Investigation into Environmental Impacts of the 2008 TVA Coal Ash Spill, May. Ruhl, Laura S. and Vengosh, Avner and Dwyer, Gary S. and Hsu-Kim, Heileen and Deonarine, Amrika. Denver, CO, USA: s.n., 2011. 2011 World of Coal Ash (WOCA) Conference May 9-12, 2011.
- 3. Boron and Strontium Isotopic Characterization of Coal Combustion Residuals: Validation of Novel Environmental Tracers, Paper No. 30616-208920. Ruhl, Laura. Charlotte, NC: s.n., 2012. 2012 Geological Society of America Annual Meeting and Exposition, 4-7 November.
- 4. **Ruhl, Laura.** Geochemical and Isotopic Characterization of Coal Combustion Residuals: Implications for Potential Environmental Impacts. Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Earth and Ocean Sciences in the Graduate School of Duke University, 2012.

6 GENERAL COMMENTS

This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client's directives. It is intended for the exclusive

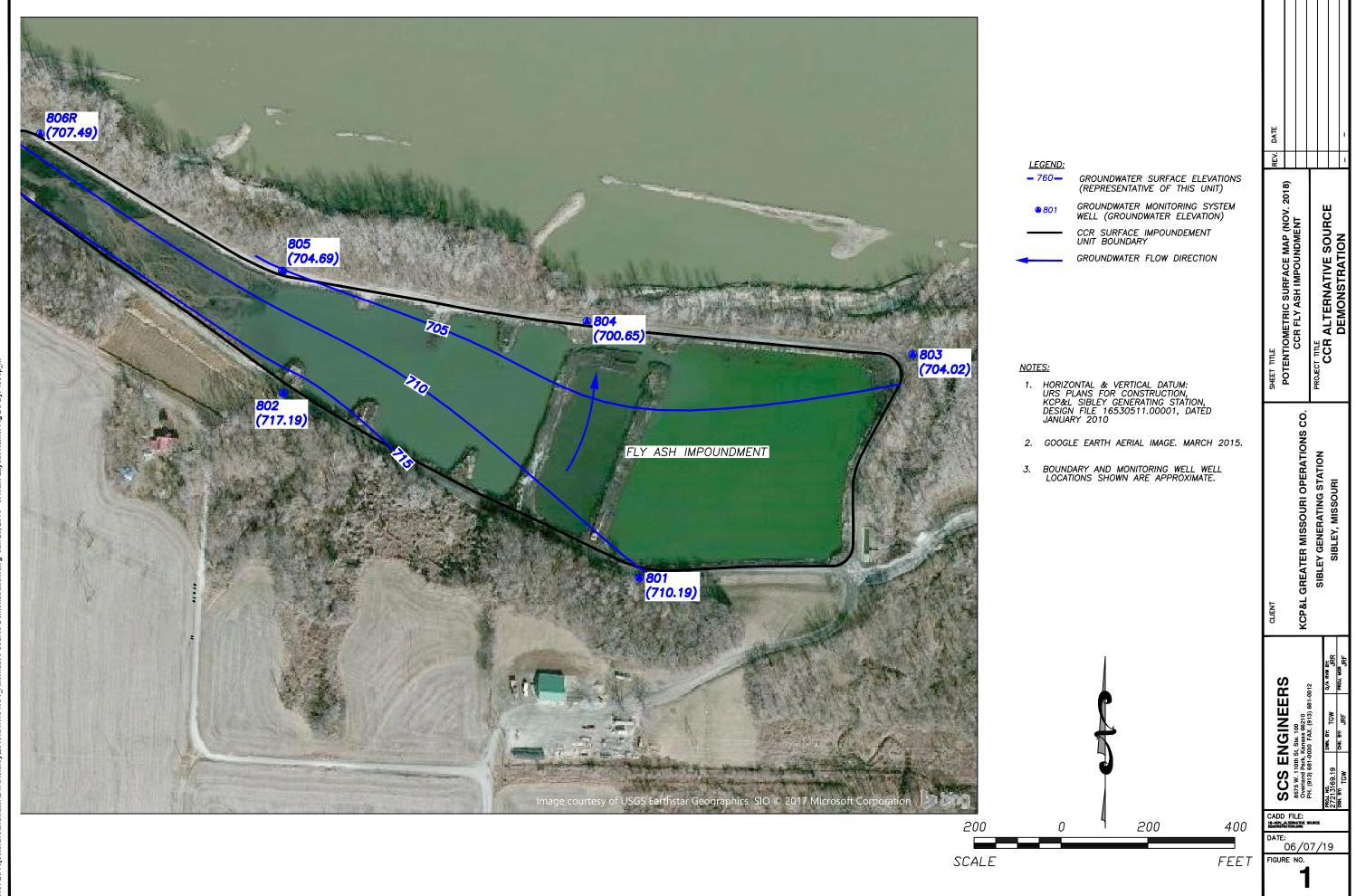


use of KCP&L Greater Missouri Operations Company for specific application to the Sibley Generating Station. No warranties, express or implied, are intended or made.

The signatures of the certifying registered geologist and professional engineer on this document represents that to the best of their knowledge, information, and belief in the exercise of their professional judgement in accordance with the standard of practice, it is their professional opinion that the aforementioned information is accurate as of the date of such signature. Any opinion or decisions by them are made on the basis of their experience, qualifications, and professional judgement and are not to be construed as warranties or guaranties. In addition, opinions relating to regulatory, environmental, geologic, geochemical and geotechnical conditions interpretations or other estimates are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

Appendix A

Figure 1

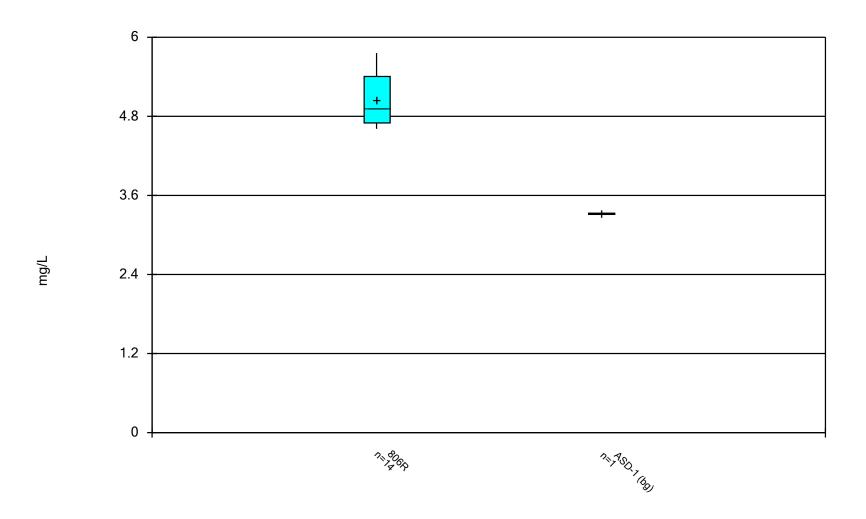


undwater/DWG/Sibley/2018/GW/18-NOV_Alternative Source Demonstration.dwg Jun 26, 2019 - 8:49am Layout Name: Fig 2C By: 4336p_r

Appendix B

Box and Whiskers Plots

Box & Whiskers Plot



Constituent: Boron Analysis Run 5/23/2019 1:15 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

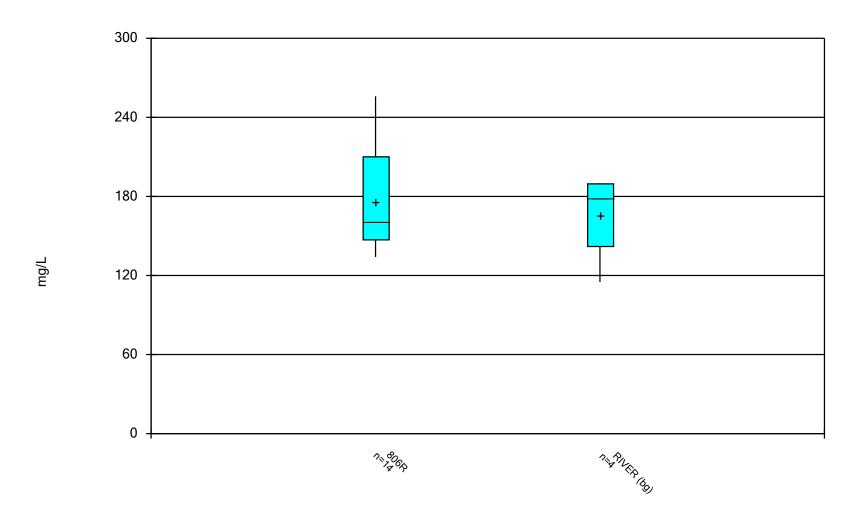
Constituent: Boron (mg/L) Analysis Run 5/23/2019 1:17 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

	806R	ASD-1 (bg)
6/2/2016	5.1	
7/19/2016	4.81	
8/23/2016	5.25	
11/11/2016	4.77	
2/9/2017	4.64	
3/22/2017	5.02	
5/3/2017	4.76	
8/1/2017	4.61	
10/4/2017	4.77	
5/16/2018	4.64	
11/8/2018	5.19	3.33
11/15/2018	5.56	
1/11/2019	5.76	
3/12/2019	5.75	
Median	4.915	3.33
LowerQ.	4.7	3.33
UpperQ.	5.405	3.33
Min	4.61	3.33
Max	5.76	3.33
Mean	5.045	3.33

Box & Whiskers Plot

	Sibley	Client: SC	S Engineers	Data: Sibley Printe	ed 5/23/2019, 1:17	PM			
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	%NDs
Boron (mg/L)	806R	14	5.045	0.4062	0.1086	4.915	4.61	5.76	0
Boron (mg/L)	ASD-1 (bg)	1	3.33	0	0	3.33	3.33	3.33	0

Box & Whiskers Plot



Constituent: Sulfate Analysis Run 5/23/2019 1:04 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

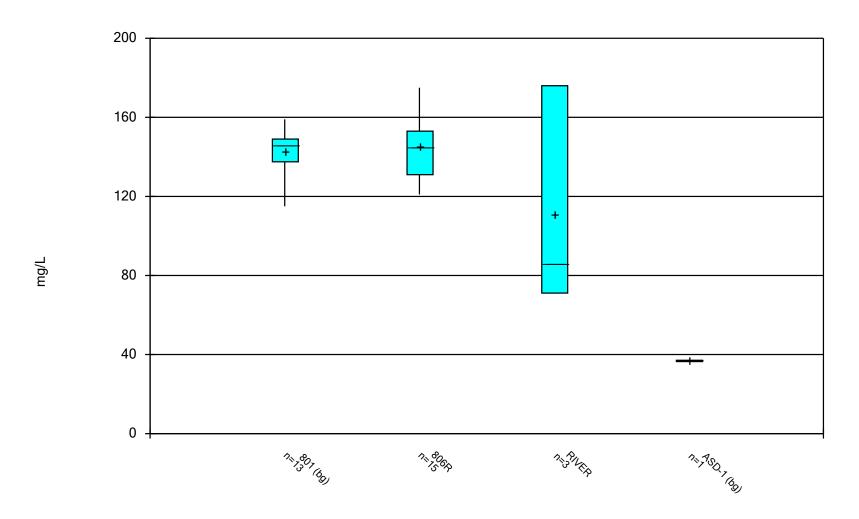
Constituent: Sulfate (mg/L) Analysis Run 5/23/2019 1:05 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

	806R	RIVER (bg)
5/26/2016		115
6/2/2016	182	
7/19/2016	139	169
8/23/2016	146	
11/10/2016		190
11/11/2016	134	
2/9/2017	165	189
3/22/2017	150	
5/3/2017	149	
8/1/2017	181	
10/4/2017	148	
5/16/2018	157	
11/8/2018	184	
11/15/2018	236	
1/11/2019	237	
3/12/2019	256	
Median	161	179
LowerQ.	147	142
UpperQ.	210	189.5
Min	134	115
Max	256	190
Mean	176	165.8

Box & Whiskers Plot

	Sibley	Client: SCS E	ngineers Data	: Sibley Printed 5	5/23/2019, 1:05 PM				
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	%NDs
Sulfate (mg/L)	806R	14	176	39.76	10.63	161	134	256	0
Sulfate (mg/L)	RIVER (bg)	4	165.8	35.19	17.59	179	115	190	0

Box & Whiskers Plot



Constituent: Calcium Analysis Run 5/23/2019 12:44 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

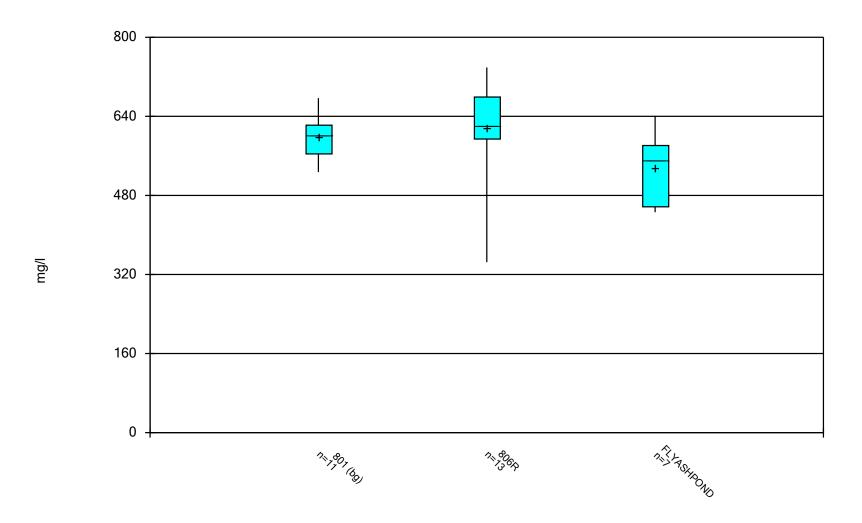
Constituent: Calcium (mg/L) Analysis Run 5/23/2019 12:46 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

	801 (bg)	806R	RIVER	ASD-1 (bg)
12/16/2015	159			
2/17/2016	150			
5/26/2016	147		85.7	
6/2/2016		135		
7/19/2016		131		
8/23/2016	137	141		
11/10/2016	143		176	
11/11/2016		137		
2/9/2017	115	123	71.1	
3/22/2017		126		
5/3/2017	127	121		
8/1/2017	138	149		
10/4/2017	148	148		
11/16/2017	156			
11/17/2017		151		
5/16/2018	146	145		
11/8/2018	-	153		37.1
11/15/2018	143	168		
1/11/2019	146	175		
3/12/2019		173		
Median	146	145	85.7	37.1
LowerQ.	137.5	131	71.1	37.1
UpperQ.	149	153	176	37.1
Min	115	121	71.1	37.1
Max	159	175	176	37.1
Mean	142.7	145.1	110.9	37.1
Mean	144.7	145.1	110.5	37.1

Box & Whiskers Plot

	Sibley C	lient: SCS En	gineers Data:	Sibley Printed 5/	23/2019, 12:46 PM				
Constituent	Well	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	%NDs
Calcium (mg/L)	801 (bg)	13	142.7	11.66	3.235	146	115	159	0
Calcium (mg/L)	806R	15	145.1	17.19	4.437	145	121	175	0
Calcium (mg/L)	RIVER	3	110.9	56.82	32.81	85.7	71.1	176	0
Calcium (mg/L)	ASD-1 (bg)	1	37.1	0	0	37.1	37.1	37.1	0

Box & Whiskers Plot



Constituent: Dissolved Solids Analysis Run 5/23/2019 12:59 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Constituent: Dissolved Solids (mg/l) Analysis Run 5/23/2019 1:00 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

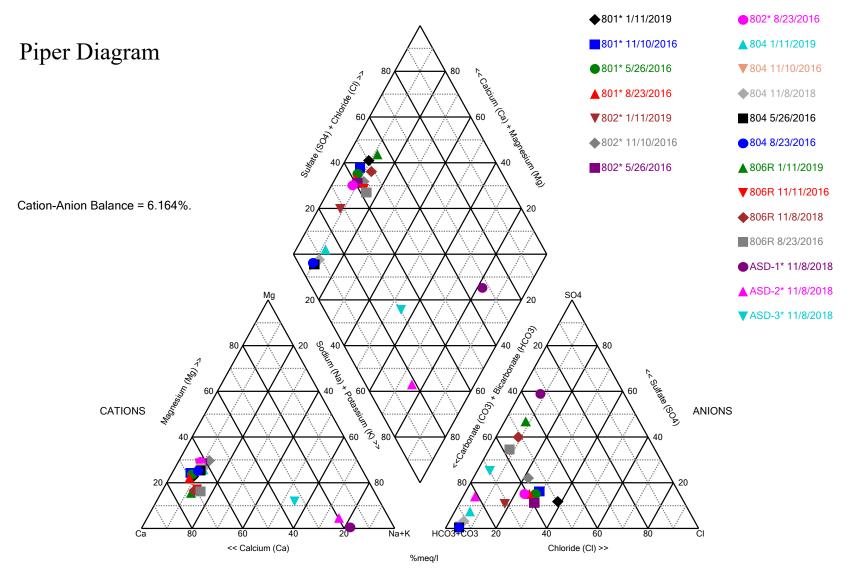
	801 (bg)	806R	FLYASHPOND
12/16/2015	601		
2/17/2016	589		
5/26/2016	669		457
6/2/2016		677	
7/19/2016		624	
8/23/2016	544	605	641
11/10/2016	602		552
11/11/2016		589	
2/9/2017	564	633	581
3/22/2017		568	
5/3/2017	622	620	
5/4/2017			446
8/1/2017	527	599	559
10/4/2017	677	621	521
5/16/2018	609	345	
11/15/2018	586	699	
1/11/2019		739	
3/12/2019		681	
Median	601	621	552
LowerQ.	564	594	457
UpperQ.	622	679	581
Min	527	345	446
Max	677	739	641
Mean	599.1	615.4	536.7

Box & Whiskers Plot

	Sibley C	lient: SCS Er	ngineers Data:	Sibley Printed 5	/23/2019, 1:00 PM				
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	%NDs
Dissolved Solids (mg/l)	801 (bg)	11	599.1	46.18	13.92	601	527	677	0
Dissolved Solids (mg/l)	806R	13	615.4	94.53	26.22	621	345	739	0
Dissolved Solids (mg/l)	FLYASHPOND	7	536.7	68.8	26	552	446	641	0

Appendix C

Piper Diagram and Laboratory Results



Analysis Run 4/2/2019 3:54 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Piper Diagram

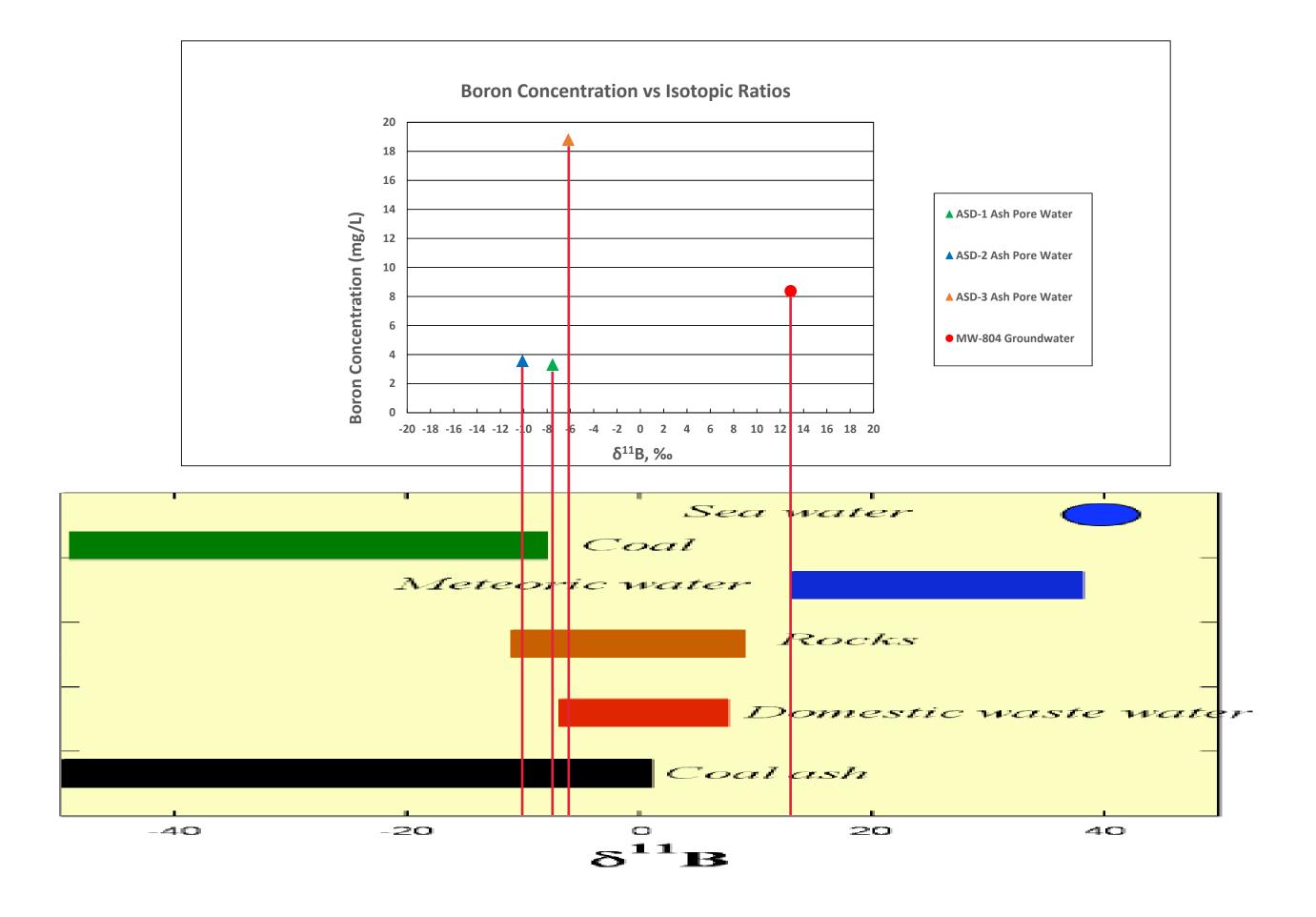
Analysis Run 4/2/2019 3:55 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mq	Cl	S04	нсо3	CO3
801* 5/26/2016		1.43	147	31	88.2	65.2	304	10
	19.1							
801* 8/23/2016	16.9	1.15	137	25.8	73.8	58.6	288	10
801* 11/10/2016	17	1.21	143	30	88.2	66.5	282	10
801* 1/11/2019	21.9	1.28	146	29	124	52.3	271	10
802* 5/26/2016	10.6	2.43	68.9	19.3	50.5	26.1	161	10
802* 8/23/2016	11.5	2.67	82.2	23.2	46.3	41.2	199	10
802* 11/10/2016	9.98	2.56	49.6	15.1	26.6	38	106	10
802* 1/11/2019	15.3	3.3	111	30.1	44.2	37.1	304	10
804 5/26/2016	27.8	5.99	167	39.8	15.5	2.5	596	10
804 8/23/2016	24.9	4.62	157	37	14.4	2.5	551	10
804 11/10/2016	26.2	4.71	155	39	14.2	2.5	525	10
804 11/8/2018	30.1	5.76	158	39.8	18.3	14.1	561	10
804 1/11/2019	26.8	5.58	145	35.7	17.6	31.8	479	10
806R 8/23/2016	34.5	3.75	141	19.7	22.9	146	298	10
806R 11/11/2016	29.1	3.49	137	20.2	22.9	134	277	10
806R 11/8/2018	29	3.46	153	21.4	27.2	184	287	10
806R 1/11/2019	30.1	3.69	175	22.8	28.4	237	274	10
ASD-1* 11/8/2018	178	38.6	37.1	0.5	29.3	303	10	104
ASD-2* 11/8/2018	497	82.4	124	17	43.8	211	10	795
ASD-3* 11/8/2018	365	42.2	208	43.8	41.5	336	10	592



Appendix D

Boron and Stable Isotope Plots and Laboratory Results



Report L1836000

Page 1 (2)

17HVXQ17MHY



Date received 2018-11-22 Issued 2018-12-07

SCS Engineers
Jason R. Franks

8575 West 110 Street Suit 100 Overland Park, Kansas 66210 United States

Project **913-749-0716**

Analysis: IR

Your ID MW-804

Sampler Jason R. Franks
Sampled 2018-11-08

LabID U11535495

AnalysisResultsUnitMethodIssuerSignReport in Excel*yes1IIR

ALS Scandinavia AB Aurorum 10 977 75 Luleå Sweden Web: www.alsglobal.se Email: info.lu@alsglobal.com Tel: + 46 920 28 9900 Fax: + 46 920 28 9940 The document is approved and digitally signed by

Report L1836000

Page 2 (2)

17HVXQ17MHY



	Method specification
1	Analysed according to see separate report in excel.

	Approver
IR	Ilia Rodioushkine

	Issuer ¹
I	Man.Inm.

^{*} indicates unaccredited analysis.

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results apply only to the material that has been identified, received, and tested. Regarding the laboratory's liability in relation to assignment, please refer to our latest product catalogue or website http://www.alsglobal.se

The digitally signed PDF file represents the original report. Any printouts are to be considered as copies.

Fax: + 46 920 28 9940

¹ The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.

REPORT OF ANALYSIS



issued by:

ALS Scandinavia AB, Aurorum 10, S-977 75 Luleå, Sweden

Client:

SCS Engineers

Date of receipt:

2018-11-22

Date of analysis:

2018-12-03

Order number (or

Order number (our): L1836000

Your reference:
Our reference:

Jason R. Franks Ilia Rodushkin

Sample ID

Lab ID

δ¹¹B, ‰

2 SD

MW-804 MW-804, r.2

U11535495 U11535495 12.89

13.26

0.74 0.82

Comments

The analysis is carried out by MC-ICP-MS (MEPTUNE PLUS, ThermoScientific) and MC-ICP-MS (NEPTUNE PLUS) using internal standartization and external calibration with bracketing isotope SRMs

Analysis is carried out after ion exchange separation

Delta 11B values calculated to NIST SRM 951

SD calculated from two independent consequintive measurements

Signature

Tha Rodinel

Ilia Rodushkin Associate Professor LABORATORY MANAGER

ALS Scandinavia AB

Report L1833729

Page 1 (2)

17HW78DG7V0



Date received 2018-11-22 SCS Engineers Issued 2018-12-07 Jason R. Franks

8575 West 110 Street Suit 100 Overland Park, Kansas 66210 United States

United State

Project **913-749-0716**

This report replaces any previous report with the same number.

Analysis: IR

Your ID	ASD-1					
Sampler Sampled	Jason R. Frai 2018-11-08	nks				
LabID	U11535491					
Analysis		Results	Unit	Method	Issuer	Sign
Report in Excel*		yes		1	I	IR

Your ID	ASD-2					
Sampler Sampled	Jason R. Frai 2018-11-08	nks				
LabID	U11535492					
Analysis		Results	Unit	Method	Issuer	Sign
Report in Excel*		yes		1	ĺ	IR

Report in Excel*		yes		1	I	IR
Analysis		Results	Unit	Method	Issuer	Sign
LabID	U11535493					
Sampler Sampled	Jason R. Fran 2018-11-08	ks				
Your ID	ASD-3					

ALS Scandinavia AB Aurorum 10 977 75 Luleå Sweden Web: www.alsglobal.se Email: info.lu@alsglobal.com Tel: + 46 920 28 9900 Fax: + 46 920 28 9940 The document is approved and digitally signed by

Report L1833729

Page 2 (2)

17HW78DG7V0



	Method specification
1	Analysed according to see separate report in excel.

	Approver
IR	Ilia Rodioushkine

	Issuer ¹
I	Man.Inm.

^{*} indicates unaccredited analysis.

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results apply only to the material that has been identified, received, and tested. Regarding the laboratory's liability in relation to assignment, please refer to our latest product catalogue or website http://www.alsglobal.se

The digitally signed PDF file represents the original report. Any printouts are to be considered as copies.

Fax: + 46 920 28 9940

¹ The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.

REPORT OF ANALYSIS



Issued by: ALS Scandinavia AB, Aurorum 10, S-977 75 Luleå, Sweden

Client: SCS Engineers
Date of receipt: 2018-11-22
Date of analysis: 2018-12-03
Order number (our): L1833729
Your reference: Jason R. Franks
Our reference: Ilia Rodushkin

Sample ID Lab ID

		δ ¹¹ B, ‰	
		2	SD
ASD-1	U11535491	-7.53	0.89
ASD-1, r.2	U11535491	-7.08	0.77
ASD-2	U11535492	-10.11	0.90
ASD-3	U11535493	-6.18	0.81

Comments

The analysis is carried out by MC-ICP-MS (MEPTUNE PLUS, ThermoScientific) and MC-ICP-MS (NEPTUNE PLUS) using internal standartization and external calibration with bracketing isotope SRMs

Analysis is carried out after ion exchange separation

Delta 11B values calculated to NIST SRM 951

SD calculated from two independent consequintive measurements

Signature Ila Rodenkl

Ilia Rodushkin Associate Professor LABORATORY MANAGER ALS Scandinavia AB



ANALYTICAL REPORT

November 15, 2018

SCS Engineers - KS

Sample Delivery Group:

L1042982

Samples Received:

11/09/2018

Project Number:

27213169.18

Description:

KCP&L Sibley Generating Station

Wubb law

Report To:

Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-804 L1042982-01	5
Qc: Quality Control Summary	6
Metals (ICP) by Method 6010B	6
GI: Glossary of Terms	7
Al: Accreditations & Locations	8
Sc: Sample Chain of Custody	9























MW-804 L1042982-01 GW			Collected by Jason Franks	Collected date/time 11/08/18 15:35	Received date/time 11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 13:32	ST





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

















Jeff Carr Project Manager

Tubb lan

MW-804

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

L1042982

Collected date/time: 11/08/18 15:35
Metals (ICP) by Method 6010B

	Result	Qualifier RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l	ug/l		date / time	
Boron	8370	200	1	11/14/2018 13:32	WG1194483



















QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1042982-01

Method Blank (MB)

Boron

(MB) R3359958-1 11/14/18 12:59

MB Result MB Qualifier MB MDL MB RDL

Analyte ug/l ug/l ug/l





12.6

200

(LCS) R3359958-2 11/14/18 13:01 • (LCSD) R3359958-3 11/14/18 13:03

Spike Amount LCS Result LCSD Result LCS Rec.

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1030	1040	103	104	80.0-120			0.658	20



RPD Limits



L1043056-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1043056-10 11/14/18 13:06 • (MS) R3359958-5 11/14/18 13:11 • (MSD) R3359958-6 11/14/18 13:13

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	221	1240	1250	102	103	1	75 0-125			0.753	20





GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.





















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey–NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

8 of 9

			Billing In	formation:		1	-		7 7 7	M-					
SCS Engineers - KS 8575 W. 110th Street Overland Park, KS 662	10					Pre Chk			Analysis	/ Container / Preservativ	e	Chain of Custo	e Analytical*		
Report to: Jason Franks			Email To:	@scsengineer	S.com			1000				12065 Lebanon A			
Project Description: KCP&L Sibley Ger	erating Sta	tion		City/State	Facey	11						Mount Juliet, TN Phone: 615-758-5 Phone: 800-767-5	858 859		
Phone: 913-681-0030 Fax: 913-681-0012	31-0030 Cheft Project # Lab Project #		They,	ne	HNO3					L# L104 2982					
Tason Frank	Site/Facility	ID#		P.O. #			-					C184			
Collected by (signature):	Rush?	No. of London, Name of Street,	Day	Quote #			250ml HDPE					Acctnum: AQ Template:	UAOPKS		
Immediately Packed on Ice N Y	Next D	ay10 D	y (Rad Only) lay (Rad Only)	ad Only) Date Results Needed No.		lad Only)								Prelogin: TSR:	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Boron					Shipped Via:			
MW-804	GRAG	GW	-	11/8/18	1535	1	X					Remarks	Sample # (lab only)		
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		EAST SE	Party.	1 1								Same !	-01		
	7	19.00	1	1000								Care and San			
- 100 PM	-	10407	1.5.40												
	100			A 100 TO			***								
			A 200									3 - 30			
	65.3														
THE PROPERTY				200	THE YELL										
					-00000	51						1-1-18			
Matrix: S - Soil AIR - Air F - Filter W - Groundwater B - Bioassay	Remarks:			P	AD SCREE	N: <0.	5 mP/1	nr	рН	Temp	San COC Seal	Dole Receipt Che	okliset		
VW - WasteWater W - Drinking Water IT - Other	Samples ceterr	ned via: dEx Couri	er	Track	one # 11.5	1		1/6	Flow	Other	Bottles as	Present/Intact: 2/Accurate: Trive intact: ttles used: volume sent:	ZNP Y N		
elinquished by : (Signature)		Date:	/10 Tin	Contract Con	ived by: (Signati	(O)		66	The state of the s	5 0 7 eceived: Yes/No	VOA Zero H Preservati	If Applicable			
emquished by : (Signature)	医疗疗情	Date:	Tin	(/ / / / / / / / / / / / / / / / / / /	d by: (Signatu	re)			Tama	HCL / MeoH TBR *C Bottles Received:					
Relinquished by : (Signature)		Date:	Tim		vedfortabley: (e)		7. 14.2.C	182		in required by Login	: Date/Time		
					1		>		1119/12	848	Hold:		Condition: NCF / OR		



ANALYTICAL REPORT

November 15, 2018

SCS Engineers - KS

Sample Delivery Group: L1042995

Samples Received: 11/09/2018

Project Number: 27213169.18

Description: KCP&L Sibley Generating Station

Report To: Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Wubb law

Entire Report Reviewed By:

Jeff Carr Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
ASD-1 L1042995-01	5
ASD-2 L1042995-02	6
ASD-3 L1042995-03	7
Qc: Quality Control Summary	8
Metals (ICP) by Method 6010B	8
GI: Glossary of Terms	10
Al: Accreditations & Locations	11
Sc: Sample Chain of Custody	12























			Collected by	Collected date/time	Received date/time
ASD-1 L1042995-01 GW			Jason Franks	11/08/18 11:20	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 13:53	ST
Metals (ICP) by Method 6010B	WG1194495	1	11/10/18 10:52	11/10/18 15:56	WBD
			Collected by	Collected date/time	Received date/time
ASD-2 L1042995-02 GW			Jason Franks	11/08/18 12:20	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 14:00	ST
Metals (ICP) by Method 6010B	WG1194495	1	11/10/18 10:52	11/10/18 15:59	WBD
			Collected by	Collected date/time	Received date/time
ASD-3 L1042995-03 GW			Jason Franks	11/08/18 13:20	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 14:03	ST
Metals (ICP) by Method 6010B	WG1194495	1	11/10/18 10:52	11/10/18 16:02	WBD



















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.















PAGE:

4 of 12



Jeff Carr

Tubb lan

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 11/08/18 11:20

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l		date / time		
Boron	3330		200	1	11/14/2018 13:53	WG1194483	
Boron Dissolved	3160		200	1	11/10/2018 15:56	WG1194495	



















SAMPLE RESULTS - 02 L1042995

ONE LAB. NATIONWIDE.

Collected date/time: 11/08/18 12:20 Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l	1	ug/l		date / time		
Boron	3560	:	200	1	11/14/2018 14:00	WG1194483	
Boron, Dissolved	2750		200	1	11/10/2018 15:59	WG1194495	



















SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

*

Collected date/time: 11/08/18 13:20

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	18800		200	1	11/14/2018 14:03	WG1194483
Boron, Dissolved	17600		200	1	11/10/2018 16:02	WG1194495



















QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1042995-01,02,03

Method Blank (MB)

Analyte Boron

(MB) R3359958-1 11/14/18 12:59 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l U Boron 12.6 200









(LCS) R3359958-2 11/14/18 13:01 • (LCSD) R3359958-3 11/14/18 13:03

 ()				
Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.
ug/l	ug/l	ug/l	%	%
1000	1030	1040	103	104











(OS) I 1043056-10 11/14/18 13:06 • (MS) R3359958-5 11/14/18 13:11 • (MSD) R3359958-6 11/14/18 13:13

Spike Amount Original Result MS Result MS Result MS Rec. MSD Rec. Dilution Rec. Limits MS Qualifier RPD RPD Limits												RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	221	1240	1250	102	103	1	75.0-125			0.753	20

Rec. Limits

80.0-120

%

LCS Qualifier

LCSD Qualifier

0.658

20



GI





QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

DATE/TIME:

11/15/18 08:55

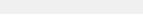
Metals (ICP) by Method 6010B

L1042995-01,02,03

Method Blank (MB)

(MB) R3358//0-1	11/10/18 14:50
	MB Result

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron Dissolved	U		12.6	200





Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3358770-2 11/10/18 14:53 • (LCSD) R3358770-3 11/10/18 14:55										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron, Dissolved	1000	1000	989	100	98.9	80.0-120			1.14	20





L1042719-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1042719-01 11/10/18 14:58 • (MS) R3358770-5 11/10/18 15:03 • (MSD) R3358770-6 11/10/18 15:06

(03) 1042713 01 11/1	0/10 14.50 - (1415) 135	330770 3 11/10	// 10 13.03 · (IV	130) 113330770	0 11/10/10 15.0							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron Dissolved	1000	ND	1130	1180	95.7	101	1	75 0-125			4 35	20







PAGE:

9 of 12

GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

Appleviations and	a Definitions
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















SCS Engineers - KS 8575W. 110th Street Overland Park, KS 66210		Billing Information:						Amphiele		,				
		Pres Chk						Analysis /	Container /	Preservative		Chain of Cus	tody Page of Ce Analytical* Total Center for Tenting & Accounts	
Report to: JasonFranks			Email To: Jfranks@scsengineers.com										12065 Lebano	n Rd 1852 F
Project Description: KCP&L Sibley Generating Station				City/State Collected: Sept Ch M			5	- HNO3					Mount Juliet, Phone: 615-75 Phone: 800-76 Fax: 615-758-5	8-5858 7-5859
Phone: 913-681-0030 Fax: 913-681-0012	Client Project #			Lab Project #			HN03	PE-H					042995	
Collected by (print): Frank	int): Site/Facility ID #			P.O. #	P.O. #		1	250ml HDPE						188
Collected by (signature):	Rush?	(Lab MUST Be Day Five	Day	Quote #			250ml HDPE						Template:	QUAOPKS
mimediately Next Day 5 Day Two Day 10 Day 10 Day Three Day		y (Rad Only) ay (Rad Only)					Boron					Prelogin: TSR: PB:		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cners	Boron	Diss					Shipped Via	
ASD-1	Gess	GW	-	11/8/18	1170	2	X	X					Remarks	Sample # (lab only
ASD-2	1	GW	-	11/2/10	1220	2	X	X						-61
ASD-3	V	GW		V	1320	2	X	X						02
						1		118						
						+								
													-	
* Matrix: Remarks: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay				RAD SCREE	li ch			рН	Temp		COC Sea	Sample Receipt (hecklist.	
WW - WasteWater DW - Drinking Water OT - Other	ned via: dExCouri	er	Deficiency	cking # 15-6	FlowOther					COC Seal Present/Intact: MP Y N COC Signed/Accurate: N Bottles arrive intact: N Correct bottles used: N Sufficient volume ment: N				
Relinquished by : (Signature)	1	n (8)	Tin		eived by: (Signatu	re)		166		eceived: Ye	(No HCL / MeoH	VOA Yer	If Applica o Headspace: ation Correct/C	ble
Refinquished by : (Signature)	PACKUSS SS COMMONWEAU (184.00)				eved by: (Signatu		Temp: °C Bottles Received:			If preservation required by Login: Date/Time				
Refinquished by : (Signature) Date:		Tim	ne: Rec	eived for tab by 15	ignatu	re)		2.14.2.0 GBR			Hold: Condition NCF / OK			

C.2	Groundwater Monitoring Alternative Source Demonstration Report May 2019 Groundwater Monitoring Event, Fly Ash Impoundment, Sibley Generating Station (December 2019)

CCR GROUNDWATER MONITORING ALTERNATIVE SOURCE DEMONSTRATION REPORT MAY 2019 GROUNDWATER MONITORING EVENT

FLY ASH IMPOUNDMENT SIBLEY GENERATING STATION SIBLEY, MISSOURI

Presented To:

Evergy Missouri West, Inc.

Presented By:

SCS ENGINEERS

8575 West 110th Street, Suite 100 Overland Park, Kansas 66210

December 2019

File No. 27213169.19

CERTIFICATIONS

I, John R. Rockhold, being a qualified groundwater scientist and Registered Geologist in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted hydrogeological practices and the local standard of care.



John R. Rockhold, R.G. SCS Engineers

I, Douglas L. Doerr, being a qualified licensed Professional Engineer in the State of Missouri, do hereby certify the accuracy of the information in the CCR Groundwater Monitoring Alternative Source Demonstration Report for the Fly Ash Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted engineering practices and the local standard of care.

i



Douglas L. Doerr, P.E. SCS Engineers

Table of Contents

Sect	ion		Page
CERT	IFICAT	TIONS	i
1	Regu	ılatory Framework	1
2	Stati	stical Results	1
3	Alter	rnative Source Demonstration	2
	3.1	Upgradient Well Location	2
	3.2	Box and Whiskers Plots	2
	3.3	Piper Diagram Plots	3
	3.4	Boron Stable Isotope Ratio Evaluation	4
4	Conc	clusion	4
5	Refe	rences	5
6	Gene	eral Comments	5
Аp	pen	dices	
Appe	endix	A Figure 1	
Appe	endix	B Box and Whiskers Plots	
Appe	endix	C Piper Diagram and Laboratory Results	
Appe	endix	D Boron and Stable Isotope Plots and Laboratory Results	

1 REGULATORY FRAMEWORK

Certain owners or operators of Coal Combustion Residuals (CCR) units are required to complete groundwater monitoring activities to evaluate whether a release from the unit has occurred. Included in the activities is the completion of a statistical analysis of the groundwater quality data as prescribed in § 257.93(h) of the CCR Final Rule. If the initial analysis indicates a statistically significant increase (SSI) over background levels, the owner or operator may perform an alternative source demonstration (ASD). In accordance with § 257.94(e)(2), the owner or operator of the CCR unit may demonstrate that a source other than the CCR unit caused the SSI over background levels for a constituent, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a SSI over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report. If a successful demonstration is completed within the 90-day period, the owner or operator of the CCR unit may continue with a detection monitoring program under § 257.94. If a successful demonstration is not completed within the 90-day period, the owner or operator of the CCR unit must initiate an assessment monitoring program as required under § 257.95. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

2 STATISTICAL RESULTS

Statistical analysis of monitoring data from the groundwater monitoring system for the Fly Ash Impoundment at the Sibley Generating Station has been completed in substantial compliance with the "Statistical Method Certification by A Qualified Professional Engineer" dated October 12, 2017. Detection monitoring groundwater samples were collected on May 22, 2019. Review and validation of the results from the May 2019 Detection Monitoring Event was completed on July 3, 2019, which constitutes completion and finalization of detection monitoring laboratory analyses. A statistical analysis was then conducted to determine whether there was a statistically significant increase (SSI) over background values for each constituent listed in Appendix III to Part 257-Constituents for Detection Monitoring. Two rounds of verification sampling were conducted for certain constituents on July 16, 2019 and August 21, 2019.

The completed statistical evaluation identified four Appendix III constituents above their respective prediction limit (background value) in monitoring wells MW-801, MW-804, and MW-806R.

Constituent/Manitoring Mall	*UPL	Observation	1st Verification	2nd Verification		
Constituent/Monitoring Well	OPL	May 22, 2019	July 16, 2019	August 21, 2019		
Boron						
804	5.133	7.64	7.59	8.14		
806R	5.323	5.58	5.64	5.66		
Calcium						
806R	151.8	171	172	170		
Chloride						

1

Constituent/Monitoring Well	*UPL	Observation May 22, 2019	1st Verification July 16, 2019	2nd Verification August 21, 2019
801	104.1	154	127	124
Sulfate				
806R	191.9	238	244	241

^{*}UPL – Upper Prediction Limit

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The statistical evaluation confirmed five SSIs above the background prediction limits. These include boron in downgradient monitoring wells MW-804 and MW-806R; calcium in monitoring well MW-806R; chloride in upgradient monitoring well MW-801; and, sulfate in monitoring well MW-806R.

3 ALTERNATIVE SOURCE DEMONSTRATION

An Alternative Source Demonstration is a means to provide supporting lines of evidence that something other than a release from a regulated CCR unit caused an SSI. For the above-identified SSIs for the Fly Ash Impoundment at the Sibley Generating Station, there are multiple lines of supporting evidence to indicate the above SSIs were not caused by a release from the Fly Ash Impoundment. Select multiple lines of supporting evidence are described as follows.

3.1 UPGRADIENT WELL LOCATION

Figure 1 in **Appendix A** shows a potentiometric surface contour map indicating the direction of groundwater flow at and near the Fly Ash Impoundment at the time of sampling. As seen on the map, monitoring well MW-801 is located upgradient from the Fly Ash Impoundment indicating the SSI for chloride in MW-801 was not caused by a release from the Fly Ash Impoundment. This demonstrates that a source other than the Fly Ash Impoundment caused the SSI over background levels for chloride in this well or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.2 BOX AND WHISKERS PLOTS

A commonly accepted method to demonstrate and visualize the distribution of data in a given data set is to construct box and whiskers plots. The basic box plotted graphically locates the median, 25th and 75th percentiles of the data set; the "whiskers" extend to the minimum and maximum values of the data set. The range between the ends of a box plot represents the Interquartile Range, which can be used as an estimate of spread or variability. The mean is denoted by a "+".

When comparing multiple wells or well groups, box plots for each well can be lined up on the same axis to roughly compare the variability in each well. This may be used as an exploratory screening for the test of homogeneity of variance across multiple wells.

The box and whiskers plot for boron in monitoring well MW-806R was compared to the concentration of boron in Ash Impoundment pore water (sample ASD-1). The concentration of boron in sample ASD-1 plotted alongside the box and whiskers plot for boron in monitoring well MW-806R, shows the boron

concentration in the ash impoundment pore water directly upgradient from MW-806R is less than the boron concentration in MW-806R. This demonstrates that a source other than the Fly Ash Impoundment (specifically Ash Impoundment pore water directly upgradient of MW-806R) caused the SSI over background levels for boron, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for boron are provided in **Appendix B**.

The box and whiskers plot for sulfate in monitoring well MW-806R was compared to the box and whiskers plot for sulfate from the river. The box and whiskers plots for sulfate from each location overlap significantly. This occurs even with a limited data set for sulfate from the river. Such an overlap demonstrates that a source other than the Fly Ash Impoundment could easily have caused the SSI over background levels for sulfate, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for sulfate are provided in **Appendix B**.

The box and whiskers plot for calcium in monitoring well MW-806R was compared to the box and whiskers plots for calcium from upgradient well MW-801, and from the river, and the calcium concentration from ash impoundment pore water (sample ASD-1). The box and whiskers plots for calcium from MW-806R significantly overlap the plots for upgradient well MW-801 and the river. Additionally, the calcium concentration of the ash impoundment pore water directly upgradient of MW-806R is less than the calcium concentrations of both monitoring wells and the river. Such an overlap demonstrates that a source other than the Fly Ash Impoundment could easily have caused the SSI over background levels for calcium, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for calcium are provided in **Appendix B**.

3.3 PIPER DIAGRAM PLOTS

Piper diagrams are a form of tri-linear diagram, and a widely accepted method to provide a visual representation of the ion concentration of groundwater. Piper diagrams portray water compositions and facilitate the interpretation and presentation of chemical analyses. They may be used to visually compare the chemical composition of water quality across wells, and aid in determining whether the waters are similar or dis-similar, and can over time indicate whether the waters are mixing.

A piper diagram has two triangular plots on the right and left side of a 4-sided center field. The three major cations are plotted in the left triangle and anions in the right. Each of the three cation/anion variables, in milliequivalents, is divided by the sum of the three values, to produce a percent of total cation/anions. These percentages determine the location of the associated symbol. The data points in the center field are located by extending the points in the lower triangles to the point of intersection. In order for a piper diagram to be produced, the selected data file must contain the following constituents: Sodium (Na), Potassium (K), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulfate (SO4), Carbonate (CO3), and Bicarbonate (HCO3).

A piper diagram with plots for MW-801, MW-802, MW-804, and MW-806R was compared to piper diagram plots for three ash pore water samples (ASD-1, ASD-2, and ASD-3) collected in the Fly Ash Impoundment with a Geoprobe® screen-point 15 groundwater sampler. Sample locations are shown on **Figure 1** in **Appendix A**. Samples were collected on the same day for the ash pore water and wells MW-804 and MW-806R. The analytical reports are provided in **Appendix C** along with the piper diagram.

The piper diagram plots indicate the groundwater from the wells does not exhibit the same geochemical characteristics as the ash pore water. The groundwater and the ash pore water plot in different hydrochemical facies indicating there are two types of water (groundwater and ash pore water) and that the waters are not mixing. This helps demonstrate that a source other than the Fly Ash Impoundment caused the SSIs over background levels for boron, calcium, chloride, and sulfate or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.4 BORON STABLE ISOTOPE RATIO EVALUATION

The boron stable isotope ratio in coal and coal ash generally vary significantly from the boron stable isotope ratio found in naturally occurring groundwater. The National Bureau of Standards standard reference material 951 (NBS SRM-951), which is a boric acid, is used as the isotopic standard for boron. Boron has two stable isotopes, 10 B and 11 B. Isotopic ratios of samples are reported as per mil (‰) differences from NBS SRM-951. The delta value for 11 B/ 10 B is expressed as δ^{11} B, ‰. Previous studies have found δ^{11} B values for coal ash and coal ash leachate samples between -40 ‰ and +6.6 ‰ and most natural groundwaters have δ^{11} B values between +10 ‰ and +30 ‰ (Refs. 1, 2, and 3).

A groundwater sample was collected from MW-804 and MW-806R for boron and for δ^{11} B analysis on November 8, 2018. Additionally, ash pore water samples (ASD-1, ASD-2, and ASD-3) were collected with a Geoprobe® Screen-Point 15 groundwater sampler on the same day and for the same analysis. Sample locations are shown on **Figure 1** in **Appendix A**. The laboratory reports for the analysis are provided in **Appendix D**.

Boron concentration plotted against $\delta^{11}B$, ‰ for each of the samples are provided in **Appendix D.** The boron concentrations in ASD-1 (3.3 mg/L) and ASD-2 (3.56 mg/L) were less than the boron concentrations in both MW-804 (8.37 mg/L) and MW-806R (5.19). The ash pore water from ASD-3 had the highest boron concentration at 18.8 mg/L. Although groundwater from MW-804 and MW-806R had boron concentrations less than one of the ash pore water samples, the $\delta^{11}B$ for the boron from MW-804 and MW-806R were +12.9 ‰ and -2.08 ‰, respectively. These values were significantly greater than the $\delta^{11}B$ for the ash pore water which ranged from -6.18 ‰ to -10.11 ‰. The significantly higher $\delta^{11}B$ for groundwater from MW-804 demonstrates an alternative source of boron at the site other than the Fly Ash Impoundment.

Below the boron vs δ^{11} B plot in **Appendix D**, is a figure (Ref. 4) showing δ^{11} B ranges for natural waters from various natural materials and waters impacted by anthropogenic sources. The figure further demonstrates based on δ^{11} B values for MW-804 and MW-806R that there is an alternative source of boron other than the Fly Ash Impoundment.

4 CONCLUSION

Our opinion is that a sufficient body of evidence is available and presented above to demonstrate that a source other than the Fly Ash Impoundment caused the SSIs over background levels, or that the SSIs resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Based on the successful ASDs, the owner or operator of the Fly Ash Impoundment may continue with the detection monitoring program under § 257.94.

5 REFERENCES

- 1. Buska, Paul M., Fitzpatrick, John and Watson, Lee R. and Kay, Robert T. Evaluation of Ground-Water and Boron Sources by Use of Boron Stable-Isotope Ratios, Tritium, and Selected Water Chemistry Constituents near Beverly Shores, Northwestern Indiana, 2004. U.S. Geological Survey Scientific Investigations Report 2007-5166. 2007).
- 2. Ruhl, Laura S. and Vengosh, Avner and Dwyer, Gary S. and Hsu-Kim, Heileen and Deonarine, Amrika. A Twenty-Month Geochemical and Isotopic Investigation into Environmental Impacts of the 2008 TVA Coal Ash Spill, May. Denver, CO, USA: s.n., 2011. 2011 World of Coal Ash (WOCA) Conference May 9-12, 2011.
- 3. **Ruhl, Laura.** *Boron and Strontium Isotopic Characterization of Coal Combustion Residuals: Validation of Novel Environmental Tracers,* Paper No. 30616-208920. Charlotte, NC: s.n., 2012. 2012 Geological Society of America Annual Meeting and Exposition, 4-7 November.
- 4. **Ruhl, Laura.** Geochemical and Isotopic Characterization of Coal Combustion Residuals: Implications for Potential Environmental Impacts. Dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Earth and Ocean Sciences in the Graduate School of Duke University, 2012.

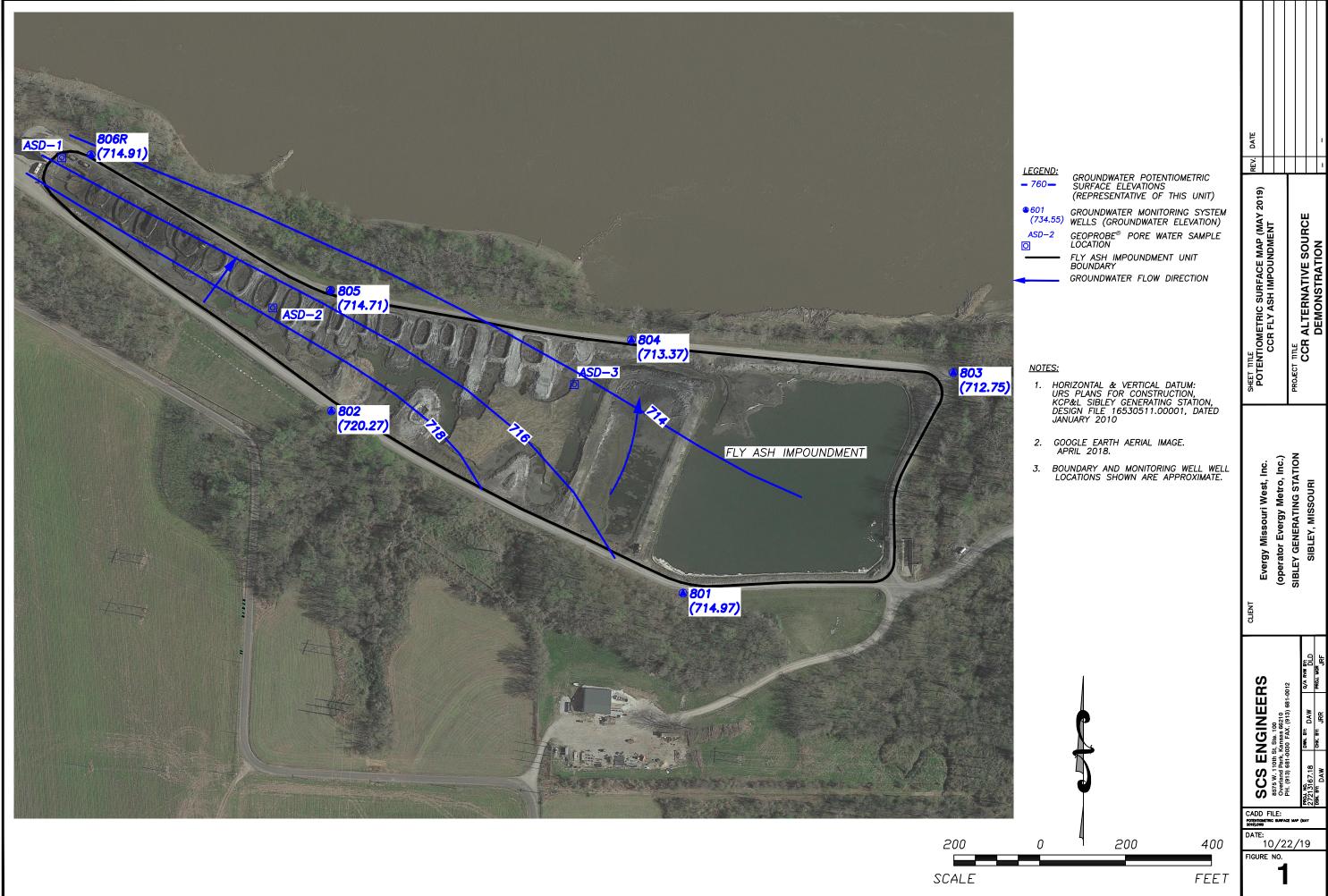
6 GENERAL COMMENTS

This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. This report is prepared in accordance with generally accepted environmental engineering and geological practices, within the constraints of the client's directives. It is intended for the exclusive use of Evergy Missouri West, Inc. for specific application to the Sibley Generating Station. No warranties, express or implied, are intended or made.

The signatures of the certifying registered geologist and professional engineer on this document represent that to the best of their knowledge, information, and belief in the exercise of their professional judgement in accordance with the standard of practice, it is their professional opinion that the aforementioned information is accurate as of the date of such signature. Any opinion or decisions by them are made on the basis of their experience, qualifications, and professional judgement and are not to be construed as warranties or guaranties. In addition, opinions relating to regulatory, environmental, geologic, geochemical and geotechnical conditions interpretations or other estimates are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

Appendix A

Figure 1

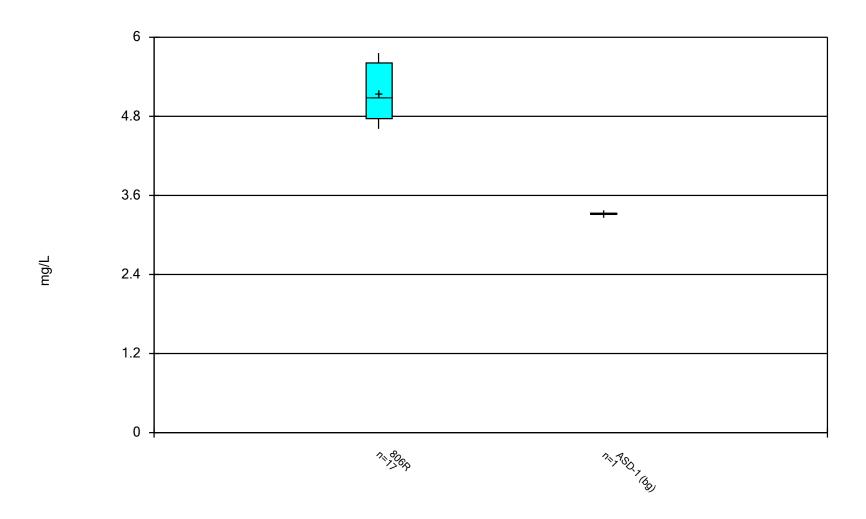


irounawater,Dwa,Sibiey/zoto/gwyPotentiometric Surface map (may 2019).awg OCLZZ, 2019 - 5.49pm Layout name: 1 by: 4470daw

Appendix B

Box and Whiskers Plots

Box & Whiskers Plot



Constituent: Boron Analysis Run 10/22/2019 2:17 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

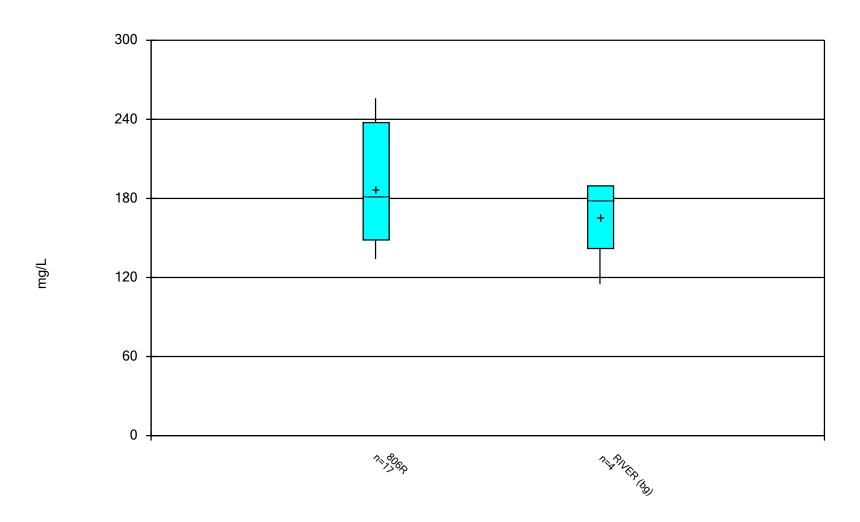
Constituent: Boron (mg/L) Analysis Run 10/22/2019 2:18 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

	806R	ASD-1 (bg)		
6/2/2016	5.1			
7/19/2016	4.81			
8/23/2016	5.25			
11/11/2016	4.77			
2/9/2017	4.64			
3/22/2017	5.02			
5/3/2017	4.76			
8/1/2017	4.61			
10/4/2017	4.77			
5/16/2018	4.64			
11/8/2018	5.19	3.33		
11/15/2018	5.56			
1/11/2019	5.76			
3/12/2019	5.75			
5/22/2019	5.58			
7/16/2019	5.64			
8/21/2019	5.66			
Median	5.1	3.33		
LowerQ.	4.765	3.33		
UpperQ.	5.61	3.33		
Min	4.61	3.33		
Max	5.76	3.33		
Mean	5.148	3.33		

Box & Whiskers Plot

	Sibley Cl	lient: SCS Er	igineers Data:	Sibley Printed 10	0/22/2019, 2:18 PM				
Constituent	Well	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	%NDs
Boron (mg/L)	806R	17	5.148	0.4319	0.1047	5.1	4.61	5.76	0
Boron (mg/L)	ASD-1 (bg)	1	3.33	0	0	3.33	3.33	3.33	0

Box & Whiskers Plot



Constituent: Sulfate Analysis Run 10/22/2019 2:23 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

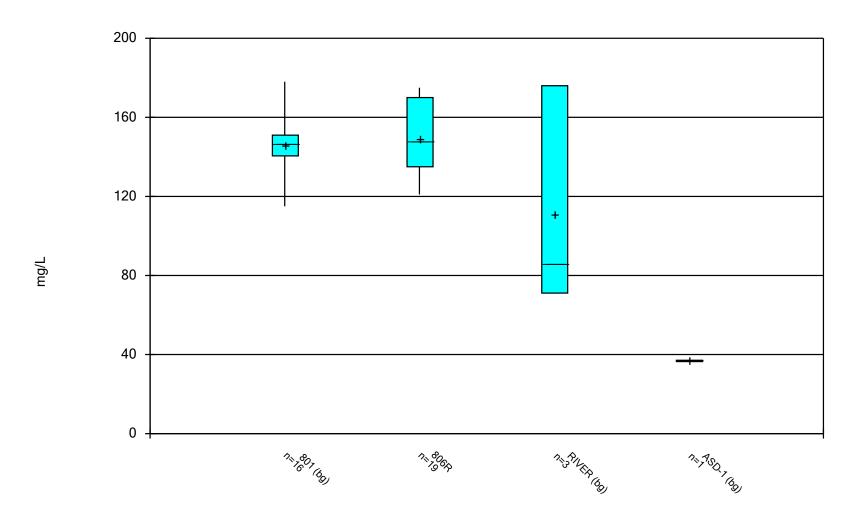
Constituent: Sulfate (mg/L) Analysis Run 10/22/2019 2:23 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

	806R	RIVER (bg)
5/26/2016		115
6/2/2016	182	
7/19/2016	139	169
8/23/2016	146	
11/10/2016		190
11/11/2016	134	
2/9/2017	165	189
3/22/2017	150	
5/3/2017	149	
8/1/2017	181	
10/4/2017	148	
5/16/2018	157	
11/8/2018	184	
11/15/2018	236	
1/11/2019	237	
3/12/2019	256	
5/22/2019	238	
7/16/2019	244	
8/21/2019	241	
Median	181	179
LowerQ.	148.5	142
UpperQ.	237.5	189.5
Min	134	115
Max	256	190
Mean	187.5	165.8

Box & Whiskers Plot

	Sibley	Client: SCS E	ingineers Da	ata: Sibley Printed 1	0/22/2019, 2:23 PM	Л			
Constituent	<u>Well</u>	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	%NDs
Sulfate (mg/L)	806R	17	187.5	44.02	10.68	181	134	256	0
Sulfate (mg/L)	RIVER (bg)	4	165.8	35.19	17.59	179	115	190	0

Box & Whiskers Plot



Constituent: Calcium Analysis Run 10/22/2019 2:27 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Constituent: Calcium (mg/L) Analysis Run 10/22/2019 2:31 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

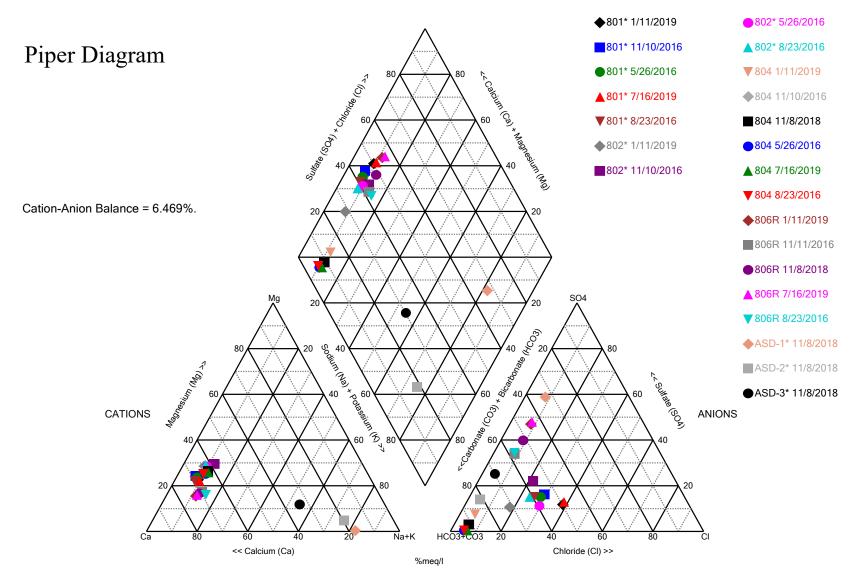
	801 (bg)	806R	RIVER (bg)	ASD-1 (bg)
12/16/2015	159			
2/17/2016	150			
5/26/2016	147		85.7	
6/2/2016		135		
7/19/2016		131		
8/23/2016	137	141		
11/10/2016	143		176	
11/11/2016		137		
2/9/2017	115	123	71.1	
3/22/2017		126		
5/3/2017	127	121		
8/1/2017	138	149		
10/4/2017	148	148		
10/5/2017	148	142		
11/16/2017	156			
11/17/2017		151		
5/16/2018	146	145		
11/8/2018		153		37.1
11/15/2018	143	168		
1/11/2019	146	175		
3/12/2019		173		
5/22/2019	178	171		
7/16/2019	152	172		
8/21/2019		170		
Median	146.5	148	85.7	37.1
LowerQ.	140.5	135	71.1	37.1
UpperQ.	151	170	176	37.1
Min	115	121	71.1	37.1
Max	178	175	176	37.1
Mean	145.8	149	110.9	37.1

Box & Whiskers Plot

	Sibley Cli	ent: SCS En	gineers Data: \$	Sibley Printed 10)/22/2019, 2:31 PM				
Constituent	Well	<u>N</u>	<u>Mean</u>	Std. Dev.	Std. Err.	<u>Median</u>	Min.	Max.	<u>%NDs</u>
Calcium (mg/L)	801 (bg)	16	145.8	13.76	3.439	146.5	115	178	0
Calcium (mg/L)	806R	19	149	18.06	4.143	148	121	175	0
Calcium (mg/L)	RIVER (bg)	3	110.9	56.82	32.81	85.7	71.1	176	0
Calcium (mg/L)	ASD-1 (bg)	1	37.1	0	0	37.1	37.1	37.1	0

Appendix C

Piper Diagram and Laboratory Results



Analysis Run 10/22/2019 2:39 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

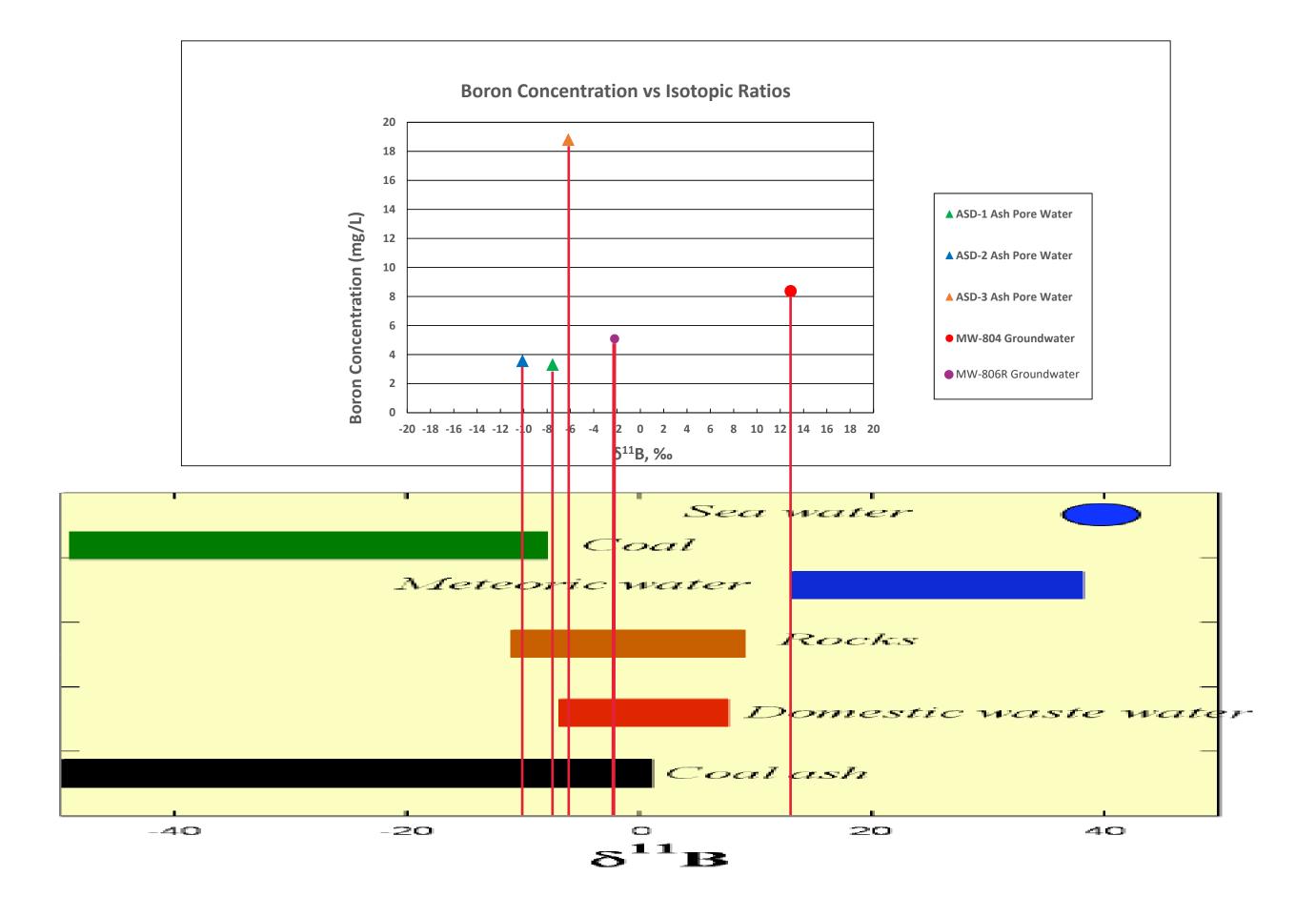
Piper Diagram

Analysis Run 10/22/2019 2:42 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3	CO3
801* 5/26/2016	19.1	1.43	147	31	88.2	65.2	304	10
801* 8/23/2016	16.9	1.15	137	25.8	73.8	58.6	288	10
801* 11/10/2016	17	1.21	143	30	88.2	66.5	282	10
801* 1/11/2019	21.9	1.28	146	29	124	52.3	271	10
801* 7/16/2019	24.4	1.28	152	29.3	127	56.6	266	10
802* 5/26/2016	10.6	2.43	68.9	19.3	50.5	26.1	161	10
802* 8/23/2016	11.5	2.67	82.2	23.2	46.3	41.2	199	10
802* 11/10/2016	9.98	2.56	49.6	15.1	26.6	38	106	10
802* 1/11/2019	15.3	3.3	111	30.1	44.2	37.1	304	10
804 5/26/2016	27.8	5.99	167	39.8	15.5	2.5	596	10
804 8/23/2016	24.9	4.62	157	37	14.4	2.5	551	10
804 11/10/2016	26.2	4.71	155	39	14.2	2.5	525	10
804 11/8/2018	30.1	5.76	158	39.8	18.3	14.1	561	10
804 1/11/2019	26.8	5.58	145	35.7	17.6	31.8	479	10
804 7/16/2019	28.6	6.68	158	39.3	18.6	2.5	545	10
806R 8/23/2016	34.5	3.75	141	19.7	22.9	146	298	10
806R 11/11/2016	29.1	3.49	137	20.2	22.9	134	277	10
806R 11/8/2018	29	3.46	153	21.4	27.2	184	287	10
806R 1/11/2019	30.1	3.69	175	22.8	28.4	237	274	10
806R 7/16/2019	30.9	3.89	172	23.3	29.2	244	268	10
ASD-1* 11/8/2018	178	38.6	37.1	0.5	29.3	303	10	104
ASD-2* 11/8/2018	497	82.4	124	17	43.8	211	10	795
ASD-3* 11/8/2018	365	42.2	208	43.8	41.5	336	10	592

Appendix D

Boron and Stable Isotope Plots and Laboratory Results



Report L1836000

Page 1 (2)

17HVXQ17MHY



Date received 2018-11-22 Issued 2018-12-07

SCS Engineers
Jason R. Franks

8575 West 110 Street Suit 100 Overland Park, Kansas 66210 United States

Project **913-749-0716**

Analysis: IR

Your ID MW-804

Sampler Jason R. Franks
Sampled 2018-11-08

LabID U11535495

AnalysisResultsUnitMethodIssuerSignReport in Excel*yes1IIR

ALS Scandinavia AB Aurorum 10 977 75 Luleå Sweden Web: www.alsglobal.se Email: info.lu@alsglobal.com Tel: + 46 920 28 9900 Fax: + 46 920 28 9940 The document is approved and digitally signed by

Report L1836000

Page 2 (2)

17HVXQ17MHY



	Method specification
1	Analysed according to see separate report in excel.

	Approver
IR	Ilia Rodioushkine

	Issuer ¹
I	Man.Inm.

^{*} indicates unaccredited analysis.

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results apply only to the material that has been identified, received, and tested. Regarding the laboratory's liability in relation to assignment, please refer to our latest product catalogue or website http://www.alsglobal.se

The digitally signed PDF file represents the original report. Any printouts are to be considered as copies.

Fax: + 46 920 28 9940

¹ The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.

REPORT OF ANALYSIS



issued by:

ALS Scandinavia AB, Aurorum 10, S-977 75 Luleå, Sweden

Client:

SCS Engineers

Date of receipt:

2018-11-22

Date of analysis:

2018-12-03

Order number (or

Order number (our): L1836000

Your reference:
Our reference:

Jason R. Franks Ilia Rodushkin

Sample ID

Lab ID

δ¹¹B, ‰

2 SD

MW-804 MW-804, r.2

U11535495 U11535495 12.89

13.26

0.74 0.82

Comments

The analysis is carried out by MC-ICP-MS (MEPTUNE PLUS, ThermoScientific) and MC-ICP-MS (NEPTUNE PLUS) using internal standartization and external calibration with bracketing isotope SRMs

Analysis is carried out after ion exchange separation

Delta 11B values calculated to NIST SRM 951

SD calculated from two independent consequintive measurements

Signature

Tha Rodinel

Ilia Rodushkin Associate Professor LABORATORY MANAGER

ALS Scandinavia AB

Report L1835999

Page 1 (2)

17HW1HNB94B



Date received 2018-11-22 **SCS Engineers** Issued 2018-12-07 Jason R. Franks

> 8575 West 110 Street Suit 100 Overland Park, Kansas 66210

United States

Project 913-749-0716

Analysis: IR

Your ID MW-806R

Sampler Jason R. Franks Sampled 2018-11-08

LabID U11535494

Analysis	Results	Unit	Method	Issuer	Sign
Report in Excel*	ves		1	1	IR

ALS Scandinavia AB Aurorum 10 977 75 Luleå Sweden

Web: www.alsglobal.se Email: info.lu@alsglobal.com Tel: + 46 920 28 9900 Fax: + 46 920 28 9940

The document is approved and digitally signed by

Report L1835999

Page 2 (2)

17HW1HNB94B



	Method specification
1	Analysed according to see separate report in excel.

	Approver
IR	Ilia Rodioushkine

	Issuer ¹
I	Man.lnm.

^{*} indicates unaccredited analysis.

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results apply only to the material that has been identified, received, and tested. Regarding the laboratory's liability in relation to assignment, please refer to our latest product catalogue or website http://www.alsglobal.se

The digitally signed PDF file represents the original report. Any printouts are to be considered as copies.

¹ The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.

REPORT OF ANALYSIS



Issued by:

ALS Scandinavia AB, Aurorum 10, S-977 75 Luleå, Sweden

Client:

SCS Engineers

Date of receipt:

2018-11-22

Date of analysis:

2018-12-03

Your reference:

Order number (our): L1835999

Our reference:

Jason R. Franks Ilia Rodushkin

Sample ID

Lab ID

 $\delta^{11}B$, ‰

2 SD

MW-806R

U11535494

-2.08 *0.79*

Comments

The analysis is carried out by MC-ICP-MS (MEPTUNE PLUS, ThermoScientific) and MC-ICP-MS (NEPTUNE PLUS) using internal standartization and external calibration with bracketing isotope SRMs

Analysis is carried out after ion exchange separation

Delta 11B values calculated to NIST SRM 951

SD calculated from two independent consequintive measurements

Signature

Ila Rodemes

Ilia Rodushkin **Associate Professor** LABORATORY MANAGER

ALS Scandinavia AB

Report L1833729

Page 1 (2)

17HW78DG7V0



Date received 2018-11-22 SCS Engineers Issued 2018-12-07 Jason R. Franks

8575 West 110 Street Suit 100 Overland Park, Kansas 66210 United States

United State

Project **913-749-0716**

This report replaces any previous report with the same number.

Analysis: IR

Your ID	ASD-1					
Sampler Sampled	Jason R. Frai 2018-11-08	nks				
LabID	U11535491					
Analysis		Results	Unit	Method	Issuer	Sign
Report in Excel*		yes		1	I	IR

Your ID	ASD-2					
Sampler Sampled	Jason R. Frai 2018-11-08	nks				
LabID	U11535492					
Analysis		Results	Unit	Method	Issuer	Sign
Report in Excel*		yes		1	l	IR

Report in Excel*		yes		1	I	IR
Analysis		Results	Unit	Method	Issuer	Sign
LabID	U11535493					
Sampler Sampled	Jason R. Fran 2018-11-08	ks				
Your ID	ASD-3					

ALS Scandinavia AB Aurorum 10 977 75 Luleå Sweden Web: www.alsglobal.se Email: info.lu@alsglobal.com Tel: + 46 920 28 9900 Fax: + 46 920 28 9940 The document is approved and digitally signed by

Report L1833729

Page 2 (2)

17HW78DG7V0



	Method specification
1	Analysed according to see separate report in excel.

	Approver
IR	Ilia Rodioushkine

	Issuer ¹
I	Man.Inm.

^{*} indicates unaccredited analysis.

This report may not be reproduced other than in full, except with the prior written approval of the issuing laboratory. The results apply only to the material that has been identified, received, and tested. Regarding the laboratory's liability in relation to assignment, please refer to our latest product catalogue or website http://www.alsglobal.se

The digitally signed PDF file represents the original report. Any printouts are to be considered as copies.

Fax: + 46 920 28 9940

¹ The technical unit within ALS Scandinavia where the analysis was carried out, alternatively the subcontractor for the analysis.

REPORT OF ANALYSIS



Issued by: ALS Scandinavia AB, Aurorum 10, S-977 75 Luleå, Sweden

Client: SCS Engineers
Date of receipt: 2018-11-22
Date of analysis: 2018-12-03
Order number (our): L1833729
Your reference: Jason R. Franks
Our reference: Ilia Rodushkin

Sample ID Lab ID

	δ ¹¹ B, ‰		
ASD-1		2 SD	
	U11535491	-7.53	0.89
ASD-1, r.2	U11535491	-7.08	0.77
ASD-2	U11535492	-10.11	0.90
ASD-3	U11535493	-6.18	0.81

Comments

The analysis is carried out by MC-ICP-MS (MEPTUNE PLUS, ThermoScientific) and MC-ICP-MS (NEPTUNE PLUS) using internal standartization and external calibration with bracketing isotope SRMs

Analysis is carried out after ion exchange separation

Delta 11B values calculated to NIST SRM 951

SD calculated from two independent consequintive measurements

Signature Ila Rodenkl

Ilia Rodushkin Associate Professor LABORATORY MANAGER ALS Scandinavia AB



ANALYTICAL REPORT

November 15, 2018

SCS Engineers - KS

Sample Delivery Group:

L1042982

Samples Received:

11/09/2018

Project Number:

27213169.18

Description:

KCP&L Sibley Generating Station

Wubb law

Report To:

Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-804 L1042982-01	5
Qc: Quality Control Summary	6
Metals (ICP) by Method 6010B	6
GI: Glossary of Terms	7
Al: Accreditations & Locations	8
Sc: Sample Chain of Custody	9





















MW-804 L1042982-01 GW			Collected by Jason Franks	Collected date/time 11/08/18 15:35	Received date/time 11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 13:32	ST





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср







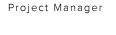












Jeff Carr

Tubb lan

MW-804

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

L1042982

Collected date/time: 11/08/18 15:35
Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	8370		200	1	11/14/2018 13:32	WG1194483



















QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1042982-01

Method Blank (MB)

(MB) R3359958-1 11/14/18 12:59 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Boron 12.6 200







(LCS) R3359958-2	11/14/18 13:01 • (LCSD)	R3359958-3	11/14/18 13:03	
	Spike Amount	LCS Result	LCSD Result	LC

	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1030	1040	103	104	80.0-120			0.658	20







(OS) L1043056-10 11/14/18 13:06 • (MS) R3359958-5 11/14/18 13:11 • (MSD) R3359958-6 11/14/18 13:13

(,		Original Result	·	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Boron	1000	221	1240	1250	102	103	1	75.0-125			0.753	20	







GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.















PAGE:

7 of 9

ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina 1	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

8 of 9

			Billing In	formation:		1	-		7 7 7	M-			
SCS Engineers - KS 8575 W. 110th Street Overland Park, KS 662	Pres Chk						Analysis	/ Container / Preservativ	e	Chain of Custo	e Analytical*		
Report to: Jason Franks		Email To: Jfranks@scsengineers.com				1000				12065 Lebanon A			
Project Description: KCP&L Sibley Ger	erating Sta	tion		City/State	Facey	11						Mount Juliet, TN Phone: 615-758-5 Phone: 800-767-5	858 859
Phone: 913-681-0030 Fax: 913-681-0012	2721316		0	Lab Project #	They,	ne	HNO3					L# L]	04 2982
Tason Frank	Site/Facility	ID#		P.O. #			-					C1	84
Collected by (signature):	Rush?	No. of London, Name of Street,	Day	Day			250ml HDPE					Acctnum: AQ Template:	UAOPKS
nmediately Two Day		Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Three Day		(Rad Only)		No.						Prelogin: TSR:	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cntrs	Boron					Shipped Via:	
MW-804	GRAG	GW	-	11/8/18	1535	1	X	- 10				Remarks	Sample # (lab only)
1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2		EAST SE	Party.	1 1								Same !	-01
	7	19.00	1	1000								Care and San	
- 100 PM	-	10407	1.5.40										
	100			A 100 TO			***						
			A 200									S - 300	
	65.3												
THE PROPERTY				200	THE YELL								
	-				-00000	51						1-1-18	
Matrix: S - Soil AIR - Air F - Filter W - Groundwater B - Bioassay	Remarks:			P	AD SCREE	N: <0.	5 mP/1	nr	рН	Temp	San COC Seal	Dole Receipt Che	okliset
VW - WasteWater W - Drinking Water IT - Other	Samples ceterr	ned via: dEx Couri	er	Track	one # 11.5	1		1/6	Flow	Other	Bottles as	Present/Intact: 2/Accurate: Trive intact: ttles used: volume sent:	ZNP Y N
elinquished by : (Signature)		Date:	/10 Tin	Contract Con	ived by: (Signati	(O)		66	The state of the s	5 0 7 eceived: Yes/No	VOA Zero H Preservati	If Applicable	
emquished by : (Signature)	医疗疗情	Date:	Tin	(/ / / / / / / / / / / / / / / / / / /	d by: (Signatu	re)			Tama	HCL / MeoH TBR *C Bottles Received:			
Relinquished by : (Signature)		Date:	Tim		vedfortabley: (e)		7. 14.2.C	182		in required by Login	: Date/Time
					1		>		1119/12	848	Hold:		Condition: NCF / OR



ANALYTICAL REPORT

November 15, 2018

SCS Engineers - KS

Sample Delivery Group:

L1042981

Samples Received:

11/09/2018

Project Number:

27213169.18

Description:

KCP&L Sibley Generating Station

Wubb law

Report To:

Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	4
Sr: Sample Results	5
MW-806R L1042981-01	5
Qc: Quality Control Summary	6
Metals (ICP) by Method 6010B	6
GI: Glossary of Terms	7
Al: Accreditations & Locations	8
Sc: Sample Chain of Custody	9























			Collected by	Collected date/time	Received date/time
MW-806R L1042981-01 GW			Jason Franks	11/08/18 14:10	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 13:29	ST





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Ср

















Jeff Carr Project Manager

Wubb law

MW-806R

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

*

Metals (ICP) by Method 6010B

Collected date/time: 11/08/18 14:10

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l		date / time		
Boron	5190		200	1	11/14/2018 13:29	WG1194483	



















QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

Method Blank (MB)

Boron

(MB) R3359958-1 11/14/18 12:59 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Boron 12.6 200









(LCS) R3359958-2 11/14/18 13:01 • (LCSD) R3359958-3 11/14/18 13:03 Analyte

 (====)									
Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
ug/l	ug/l	ug/l	%	%	%			%	%
1000	1030	1040	103	104	80.0-120			0.658	20









(OS) L1043056-10 11/14/18 13:06 • (MS) R3359958-5 11/14/18 13:11 • (MSD) R3359958-6 11/14/18 13:13

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	221	1240	1250	102	103	1	75 0-125			0.753	20







GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.





















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

DATE/TIME:

11/15/18 08:36

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

		18	illing Infor	mation:						Anal	ysis / Contai	ner / Prese	rvative			Chain of Custody	Page of
gineers - KS V. 110th Street and Park, KS 66210							Pres Chk	v				-				Pace A	nalytical*
			Email To:	scsen	aineers	.com										17065 Lebanon Rd Mount Juliet, TN 3717 Phone: 615-758-5858 Phone: 800-767-5859	4 Table 1
			Training C	City/St	ate			1						1000		Fax: 615-758-5859	EN 1833
KCP&L Sibley General	rating Statio	on		Collect Lab Pro		BLEY	ner	33						166		L# US	18924
913-681-0030	27213169.			Lab Pri	oject #			- HNO3								C18	15
913-681-0012 (ason RANK	Site/Facility ID)#		P.O. #				IDPE								Acctnum: AQU Template:	JAOPKS
acted by (signature)	Rush? (L	ab MUST Be N		Quot				250ml HDPE								Prelogin: TSR:	
mediately y	Next Da Two Day Three D	y10 Day	(Rad Only) y (Rad Only)		Date Resi	ilts Needed	No. of	on 25								PB: Shipped Via:	
Sample ID	Comp/Grab	Matrix *	Depth		Date	Time	Cnti	Rore							Ren	Remarks	Sample # (lab only)
W-806R	GRAS	GW	-	10	18/18	1410	1	>	(1900						
E WE DE				,		17					Carlo Roja				-		
20 Aug 1	-		31	-										7	457	SELF A	
			1	-		-	-	+									
The state of the state of	150	1600-18	P.P.	1		100	-					1				177	
	la arri	1 1				-	- 10	-								1000	
Was a series	1000		0-102					-								1	
		- 25	P.C.	1		POTT		-									1
F 99-4	4010e	1 10.4	100						7.0		2	-		2.2		A 198	
T-811-810-3440-114-3	a Page 1	5-45	1 4	1		The same	8	4		100	23				Sar	mple Receipt	Checklist
* Matrix: Remarks: SS - Soll AIR - Air F - Filter GW - Groundwater B - Bioassay						BAD SCRE	EN: <	0.51	nfVhr		pH	Ten	np	Bot	Seal Signe tles a rect b	Present/Intac d/Accurate: rrive intact: ottles used:	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
www-WasteWater sw- Drinking Water Samples returned via:			Mars			Tracking #	4		1	66	17	1 7507		1 1000		it volume sent If Application Headspace:	able
or-Other	_UPS _L		uner	Time:	200	Received by: (S	-	SHIP			Trip Blank F		Yes / No HCL / Me		servat	ion Correct/C	Checked: Z_{λ}^{A}
Relinguished by : (Signature)	lu	Date:	8/18	Times	47	Received by: (S	-				Temp:	°C B	TBR ottles Receive	ed: If p	reservat	tion required by	Login: Date/Time
prinquished by : (Signature)		Date:		milies	+	Maria Balantia Mari	AUTO-MAIN				2.14.2	٥	1 63	P			Condition
Reinquished by : (Signature)	N. E. D. S.	Date:	No. 1	Time:	100	Received for la	b by 48	Senatu	(e)	7 3	Date:	A T	745	Ho	ld:		NCF / 6



ANALYTICAL REPORT

November 15, 2018

SCS Engineers - KS

Sample Delivery Group:

L1042995

Samples Received:

11/09/2018

Project Number:

27213169.18

Description:

KCP&L Sibley Generating Station

Wubb law

Report To:

Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.



Cp: Cover Page	1							
Tc: Table of Contents								
Ss: Sample Summary								
Cn: Case Narrative	4							
Sr: Sample Results	5							
ASD-1 L1042995-01	5							
ASD-2 L1042995-02	6							
ASD-3 L1042995-03	7							
Qc: Quality Control Summary	8							
Metals (ICP) by Method 6010B	8							
GI: Glossary of Terms	10							
Al: Accreditations & Locations	11							
Sc: Sample Chain of Custody	12							























			Collected by	Collected date/time	Received date/time
ASD-1 L1042995-01 GW			Jason Franks	11/08/18 11:20	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 13:53	ST
Metals (ICP) by Method 6010B	WG1194495	1	11/10/18 10:52	11/10/18 15:56	WBD
			Collected by	Collected date/time	Received date/time
ASD-2 L1042995-02 GW			Jason Franks	11/08/18 12:20	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 14:00	ST
Metals (ICP) by Method 6010B	WG1194495	1	11/10/18 10:52	11/10/18 15:59	WBD
			Collected by	Collected date/time	Received date/time
ASD-3 L1042995-03 GW			Jason Franks	11/08/18 13:20	11/09/18 08:45
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Metals (ICP) by Method 6010B	WG1194483	1	11/13/18 13:25	11/14/18 14:03	ST
Metals (ICP) by Method 6010B	WG1194495	1	11/10/18 10:52	11/10/18 16:02	WBD



















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

²T₀

















Jeff Carr Project Manager

Tubb lan

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 11/08/18 11:20

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	3330		200	1	11/14/2018 13:53	WG1194483
Boron, Dissolved	3160		200	1	11/10/2018 15:56	WG1194495



















SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 11/08/18 12:20

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	3560		200	1	11/14/2018 14:00	WG1194483
Boron Dissolved	2750		200	1	11/10/2018 15:59	WG1194495



















SAMPLE RESULTS - 03 L1042995

ONE LAB. NATIONWIDE.

Collected date/time: 11/08/18 13:20

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	18800		200	1	11/14/2018 14:03	WG1194483
Boron, Dissolved	17600		200	1	11/10/2018 16:02	WG1194495



















QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1042995-01,02,03

Method Blank (MB)

(MB) R3359958-1 11/14/18 12:59 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Boron 12.6 200









(LCS) R3359958-2 11/14/18 13:01 • (LCSD) R3359958-3 11/14/18 13:03

, ,	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1030	1040	103	104	80.0-120			0.658	20







(OS) L1043056-10 11/14/18 13:06 • (MS) R3359958-5 11/14/18 13:11 • (MSD) R3359958-6 11/14/18 13:13

•	,	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
1	Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Ī	Boron	1000	221	1240	1250	102	103	1	75 0-125			0.753	20







PAGE:

8 of 12

QUALITY CONTROL SUMMARY

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1042995-01,02,03

Method Blank (MB)

Analyte

Analyte

Boron, Dissolved

Boron, Dissolved

(MB) R3358770-1 11/10/18 14:50 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Boron, Dissolved U 12.6 200





[†]Cn



(LCS) R3358770-2 11/10/18 14:53 • (LCSD) R3358770-3 11/10/18 14:55

1000

1000

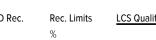
//0-2	11/10/10 14.55 • (LCSD)	K3330770=3	11/10/10 14.55	
	Spike Amount	LCS Result	LCSD Result	
	ug/l	ug/l	ug/l	

1000

LCSD Result	LCS Rec.	LCSD
ug/l	%	%
989	100	98.9

1180

95.7



80.0-120

<u>fier</u>	LCSD Qualifi



1.14













/OSUL1042719 01 11/10/18 14:58 - (MS) D3358770 5 11/10/18 15:03 - (MSD) D3358770 6 11/10/18 15:06

(03) 11042/13-01	11/10/16 14.56 • (IVIS) RS3			` '		ر
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	

ND

/19-01	11/10/18 14:58 • (IVIS) R33	358//0-5 11/10/	18 15:03 • ((MSD) R3358770-6	11/10/18 15:06	
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	Ν

11/10/10 1	4.30 • (IVIS) NSS	556770-5 11/10/	10 13.03 • (1013)	D) K3336770-0	11/10/16 15.00	
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	M
	ug/l	ug/l	ug/l	ug/l	%	%

1130

<u>.</u> .	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	%		%			%	%
	101	1	75.0-125			4.35	20







GLOSSARY OF TERMS

ONE LAB. NATIONWIDE.

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

Abbic viations and	
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

11 of 12

SCS Engineers - KS 8575W. 110th Street Overland Park, KS 66210		Billing Information:				T	Analysis / Container / Preservative					/				
		Pres Chk					Analysis /	Container / I	reservative		Chain of Custo	ody Page of Pe Analytical* Person for legting & soco				
Report to: Jason Franks			Email To: Jfranks@scsengineers.com									12065 Lebanon	m 18526			
Project Description: KCP&L Sibley Ger				City/State Collected: Server N			-	- HNO3					Phone: 615-758- Phone: 800-767-	Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859		
Phone: 913-681-0030 Fax: 913-681-0012	Client Project	ct#		Lab Project #			HN03	PE-H					L# L104299			
Collected by (print): FRANK	Site/Facility	ID#	P.O. #			1	1	250ml HDPE					C188			
Collected by (signature):	Rush?	(Lab MUST Be Day Five	Day	Quote #	e #		250ml HDPE						Acctnum: AQUAOPI Template:			
mmediately Packed on Ice N Y	Next D	10 D	y (Rad Only) ay (Rad Only)	Date Res	sults Needed	No.		Boron					Prelogin: TSR: PB:			
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	Cners	Boron	Diss					Shipped Via:			
ASD-1	Gess	GW	-	11/8/18	1170	2	X	X					Remarks	Sample # (lab only		
ASD-2	1	GW	-	11/2/10	1220	2	X	X						-01		
ASD-3	V	GW	-	V	1320	2	X	X						02		
						1										
						H										
													1			
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay			RAD SCREE	VM	-		pH	Temp		coc sea	Sample Receipt Ch	ecklist				
WW - WasteWater DW - Drinking Water OT - Other	Samples returned via: UPS VedEx _ Courier Tracking # 15-G1X							Flow Other Correct by					l Present/Intact ned/Accurate: arrive intact: bottles used: ant volume sent:	A12 - N		
Rejinquished by : (Signature)	1	n (8)	Tin		eived by: (Signatu	re)	,	166		eceived: Ye	(No)	VOR Year	If Applicab Headspace: stion Correct/Che	400		
Refinquished by : (Signature) Date:			Time: Recover by: (Signature)				Temp: °C Bottles Received: If p			If preserva	If preservation required by Login: Date/Time					
Relinquished by : (Signature)		Date:	Tim	ne: Rec	eived for lab by (5	ignatu	re)		2.14.2. Date:	D Lime	BR	Hold:		Condition: NCF / OK		

Addendum 1

2019 Annual Groundwater Monitoring and Corrective Action Report Addendum 1

SCS ENGINEERS

December 20, 2022 File No. 27213167.19

To: Evergy Metro, Inc.

Jared Morrison - Director, Water and Waste Programs

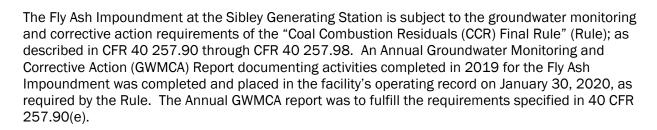
From: SCS Engineers

Douglas L. Doerr, P.E. John R. Rockhold, P.G.

Subject: 2019 Annual Groundwater Monitoring and Corrective Action Report Addendum 1

Evergy Missouri West, Inc. Fly Ash Impoundment

Sibley Generating Station - Sibley, Missouri



This Addendum has been prepared to supplement the operating record in recognition of comments received by Evergy from the U.S. Environmental Protection Agency (USEPA) on January 11, 2022. In addition to the information listed in 40 CFR 257.90(e), the USEPA indicated in their comments that the GWMCA Report contain the following:

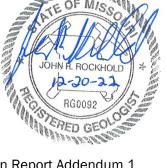
- Results of laboratory analysis of groundwater or other environmental media samples for 40 CFR 257 Appendix III and Appendix IV constituents or other constituents, such as those supporting characterization of site conditions that may ultimately affect a remedy'
- Required statistical analysis performed on laboratory analysis results; and
- Calculated groundwater flow rate and direction.

This information is not specifically referred to in 40 CFR 257.90(e) for inclusion in the GWMCA Reports; however, it is routinely collected, determined and maintained in Evergy's files and is being provided in the attachments to this addendum.

The attachments to this addendum are as follows:

• Attachment 1 – Laboratory Analytical Reports:

Includes laboratory data packages with supporting information such as case narrative, sample and method summary, analytical results, quality control, and chain-of-custody documentation. The laboratory data packages for the following sampling events are provided:



- January 2019 First verification sampling for the Fall 2018 detection monitoring sampling event.
- March 2019 Second verification sampling for the Fall 2018 detection monitoring sampling event.
- May 2019 Spring 2019 semiannual detection monitoring sampling event.
- July 2019 First verification sampling for the Spring 2019 detection monitoring sampling event.
- August 2019 Second verification sampling for the Spring 2019 detection monitoring sampling event.
- o November 2019 Fall 2019 semiannual detection monitoring sampling event.

• Attachment 2 - Statistical Analyses:

Includes summary of statistical results, prediction limit plots, prediction limit background data, detection sample results, first and second verification re-sample results (when applicable), extra sample results for pH (collected as part of the approved sampling procedures), input parameters, and a Prediction Limit summary table. Statistical analyses completed in 2019 included the following:

- Fall 2018 semiannual detection monitoring statistical analyses.
- Spring 2019 semiannual detection monitoring statistical analyses.

• Attachment 3 - Groundwater Potentiometric Surface Maps:

Includes groundwater potentiometric surface maps with the measured groundwater elevations at each well and the generalized groundwater flow direction and the calculated groundwater flow rate. Maps for the following sampling events are provided:

- o May 2019 Spring 2019 semiannual detection monitoring sampling event.
- o November 2019 Fall 2019 semiannual detection monitoring sampling event.

ATTACHMENT 1 Laboratory Analytical Reports

ATTACHMENT 1-1 January 2019 Sampling Event Laboratory Report



ANALYTICAL REPORT

January 21, 2019

SCS Engineers - KS

Sample Delivery Group:

L1060639

Samples Received:

01/12/2019

Project Number:

27213168.19

Description:

Sibley Generating Station

Report To:

Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Wubb law

Entire Report Reviewed By:

Jeff Carr Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

26



Cp: Cover Page	1				
Tc: Table of Contents	2				
Ss: Sample Summary	3				
Cn: Case Narrative	5				
Sr: Sample Results	6				
MW-504 L1060639-01	6				
MW-505 L1060639-02	7				
MW-506 L1060639-03	8				
MW-512 L1060639-04	9				
DUPLICATE 1 L1060639-05	10				
MW-801 L1060639-06	11				
MW-802 L1060639-07	12				
MW-803 L1060639-08	13				
MW-804 L1060639-09	14				
MW-806R L1060639-10	15				
DUPLICATE 2 L1060639-11	16				
Qc: Quality Control Summary	17				
Gravimetric Analysis by Method 2540 C-2011	17				
Wet Chemistry by Method 9056A	18				
Metals (ICP) by Method 6010B	22				
GI: Glossary of Terms					
Al: Accreditations & Locations	25				

Sc: Sample Chain of Custody





















SAMPLE SUMMARY

ONE	$I \land D$	NIAT	IONW	
OINE	LAD.	INAI		IUL

MW-504 L1060639-01 GW			Collected by G. Penaflor	Collected date/time 01/11/19 10:20	Received date/time 01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9056A	WG1224997	1	01/18/19 17:28	01/18/19 17:28	ELN
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 16:15	TRB
			Collected by	Collected date/time	Received date/time
MW-505 L1060639-02 GW			G. Penaflor	01/11/19 09:45	01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 16:18	TRB
			Collected by	Collected date/time	Received date/time
MW-506 L1060639-03 GW			G. Penaflor	01/11/19 11:10	01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9056A	WG1224997	1	01/18/19 17:43	01/18/19 17:43	ELN
			Collected by	Collected date/time	Received date/time
MW-512 L1060639-04 GW			G. Penaflor	01/11/19 11:45	01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9056A	WG1224700	1	01/18/19 17:25	01/18/19 17:25	ELN
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 15:40	TRB
			Collected by	Collected date/time	Received date/time
DUPLICATE 1 L1060639-05 GW			G. Penaflor	01/11/19 11:50	01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9056A	WG1224700	1	01/18/19 18:20	01/18/19 18:20	ELN
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 16:21	TRB
			Collected by	Collected date/time	Received date/time
MW-801 L1060639-06 GW			G. Penaflor	01/11/19 09:30	01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Wet Chemistry by Method 9056A	WG1224700	5	01/18/19 18:41	01/18/19 18:41	ELN
			Collected by	Collected date/time	Received date/time
MW-802 L1060639-07 GW			G. Penaflor	01/11/19 10:10	01/12/19 08:30
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 16:24	TRB
			Collected by	Collected date/time	Received date/time
MW-803 L1060639-08 GW			G. Penaflor	01/11/19 10:55	01/12/19 08:30



















Method

Wet Chemistry by Method 9056A

Batch

WG1224700

Preparation

01/18/19 18:52

date/time

Dilution

1

Analysis

date/time

01/18/19 18:52

Analyst

ELN



			Collected by G. Penaflor	Collected date/time 01/11/19 11:35	Received date/time 01/12/19 08:30
MW-804 L1060639-09 GW			O. I Chanol	01/11/19 11.55	01/12/19 08.30
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Wet Chemistry by Method 9056A	WG1224700	1	01/18/19 19:03	01/18/19 19:03	ELN
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 16:26	TRB
			Collected by	Collected date/time	Received date/time
MW-806R L1060639-10 GW			G. Penaflor	01/11/19 12:20	01/12/19 08:30
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1224054	1	01/16/19 15:53	01/16/19 16:19	AJS
Wet Chemistry by Method 9056A	WG1224997	5	01/19/19 10:54	01/19/19 10:54	ELN
Metals (ICP) by Method 6010B	WG1223747	1	01/16/19 09:51	01/16/19 12:51	TRB
			Collected by	Collected date/time	Received date/time
DUPLICATE 2 L1060639-11 GW			G. Penaflor	01/11/19 12:20	01/12/19 08:30
Method	Batch	Dilution	Preparation	Analysis	Analyst
			date/time	date/time	
Gravimetric Analysis by Method 2540 C-2011	WG1224054	1	01/16/19 15:53	01/16/19 16:19	AJS
Wet Chemistry by Method 9056A	WG1224700	5	01/19/19 10:43	01/19/19 10:43	ELN
Metals (ICP) by Method 6010B	WG1223402	1	01/15/19 08:53	01/15/19 16:29	TRB



















1 0-

²Tc















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jeff Carr Project Manager

Tubb lan

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 10:20

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Fluoride	179		100	1	01/18/2019 17:28	WG1224997
Sulfate	33200		5000	1	01/18/2019 17:28	WG1224997









	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Calcium	39300		1000	1	01/15/2019 16:15	WG1223402













SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 09:45

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Calcium	29500		1000	1	01/15/2019 16:18	WG1223402



















SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

果

Wet Chemistry by Method 9056A

Collected date/time: 01/11/19 11:10

	<u>* </u>				
	Result	Qualifier RDL	Dilution	Analysis	Batch
Analyte	ug/l	ug/l		date / time	
Chloride	6390	1000	1	01/18/2019 17:43	WG1224997



















ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 11:45

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	3850		1000	1	01/18/2019 17:25	WG1224700
Sulfate	43300		5000	1	01/18/2019 17:25	WG1224700









	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Calcium	110000	01	1000	1	01/15/2019 15:40	WG1223402













SAMPLE RESULTS - 05 L1060639

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

Collected date/time: 01/11/19 11:50

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	3810		1000	1	01/18/2019 18:20	WG1224700
Sulfate	42200		5000	1	01/18/2019 18:20	WG1224700









	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Calcium	110000		1000	1	01/15/2019 16:21	WG1223402













SAMPLE RESULTS - 06 L1060639

ONE LAB. NATIONWIDE.



	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Chloride	124000		5000	5	01/18/2019 18:41	WG1224700



















SAMPLE RESULTS - 07

ONE LAB. NATIONWIDE.

*

Collected date/time: 01/11/19 10:10

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l		date / time		
Calcium	111000		1000	1	01/15/2019 16:24	WG1223402	



















SAMPLE RESULTS - 08

ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 10:55

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	16000		1000	1	01/18/2019 18:52	WG1224700



















ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 11:35

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Fluoride	234		100	1	01/18/2019 19:03	WG1224700
Sulfate	31800		5000	1	01/18/2019 19:03	WG1224700









	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	8710		200	1	01/15/2019 16:26	WG1223402













ONE LAB. NATIONWIDE.

Collected date/time: 01/11/19 12:20

L1060639

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	739000		13300	1	01/16/2019 16:19	WG1224054

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	237000		25000	5	01/19/2019 10:54	<u>WG1224997</u>



Ss

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	5760		200	1	01/16/2019 12:51	WG1223747
Calcium	175000	\vee	1000	1	01/16/2019 12:51	WG1223747



Cn









15 of 28

ONE LAB. NATIONWIDE.

L1060639

Collected date/time: 01/11/19 12:20

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	723000		13300	1	01/16/2019 16:19	WG1224054



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	239000		25000	5	01/19/2019 10:43	WG1224700



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	5920		200	1	01/15/2019 16:29	WG1223402
Calcium	178000		1000	1	01/15/2019 16:29	WG1223402



Cn







16 of 28

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1060639-10,11

Method Blank (MB)

(MB) R3376679-1 01/16/1	9 16:19			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000







[†]Cn



(OS) L1060411-05 01/16/19 16:19 • (DUP) R3376679-3 01/16/19 16:19

	Original Resul	t DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	400000	384000	1	4.08		5









(LCS) R3376679-2 01/16/19 16:19

,	Spike Amount	int LO	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug	ug/l	%	%	
Dissolved Solids	8800000		8820000	100	85.0-115	





ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1060639-04,05,06,08,09,11

Method Blank (MB)

(MB) R3377160-1 01/18/19 15:30

	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000









(OS) L1060639-05 01/18/19 18:20 • (DUP) R3377160-7 01/18/19 18:31

,	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	3810	3810	1	0.0288		15
Fluoride	239	242	1	1.46		15
Sulfate	42200	42400	1	0.437		15











(OS) L1060642-08 01/18/19 20:52 • (DUP) R3377160-8 01/18/19 21:03

(03) 11000042 00 01/10/	15 20.52 - (DOI	11133771000	01/10/13 2	1.00		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	17600	17600	1	0.327		15
Fluoride	192	288	1	39.9	<u>P1</u>	15
Sulfate	31900	32000	1	0.396		15

Sc

PAGE:

18 of 28

Laboratory Control Sample (LCS)

ACCOUNT:

LCS) R3377160-2	01/18/19 15:41	
	Spike	,

\ /					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	37700	94.4	80.0-120	
Fluoride	8000	7770	97.1	80.0-120	
Sulfate	40000	38200	95.6	80.0-120	

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1060639-04,05,06,08,09,11

L1060634-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1060634-08 01/18/19 16:31 • (MS) R3377160-3 01/18/19 16:42 • (MSD) R3377160-4 01/18/19 16:53

\ /	` '		,	,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	17200	64400	64900	94.3	95.4	1	80.0-120			0.836	15
Fluoride	5000	133	4720	4760	91.8	92.6	1	80.0-120			0.892	15
Sulfate	50000	878000	900000	911000	43.6	65.4	1	80.0-120	EV	EV	1.20	15







L1060639-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1060639-04 01/18/19 17:25 (MS) P3377160-5 01/18/19 17:36 (MSD) P3377160-6 01/18/19 18:09

(O3) L1000039-04 01/16/1	(03) [1000033-04 01/10/13 17.25 • (1113) 1357/100-5 01/10/13 17.30 • (1113) 17.30											
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	3850	51800	51600	95.8	95.4	1	80.0-120			0.364	15
Fluoride	5000	243	5120	5110	97.5	97.4	1	80.0-120			0.0938	15
Sulfate	50000	43300	88100	88000	89.5	89.3	1	80 0-120			0.103	15















PAGE:

19 of 28

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1060639-01,03,10

Method Blank (MB)

(MB) R3377122-1 01/18/19 16:42 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Chloride U 51.9 1000 100 Fluoride 9.90 Sulfate U 77.4 5000









(OS) L1060639-03 01/18/19 17:43 • (DUP) R3377122-3 01/18/19 17:59

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	6390	6420	1	0.442		15
Fluoride	300	300	1	0.0667		15
Sulfate	72800	73100	1	0.368		15





L1061236-05 Original Sample (OS) • Duplicate (DUP)

(OS) | 1061236-05 01/18/19 21:50 • (DLIP) R3377122-6 01/18/19 22:05

(03) 11001230 03 01/10/	13 21.30 - (DOI)	113377122 0 1	01/10/13 22	.00		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	4840	4840	1	0.134		15
Fluoride	102	101	1	1.19		15
Sulfate	911	928	1	1.85	J	15

Sc

Laboratory Control Sample (LCS)

(LCS) R3377122-2	01/18/19 16:57	
	Spike	,

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	38800	96.9	80.0-120	
Fluoride	8000	7960	99.6	80.0-120	
Sulfate	40000	39200	97.9	80.0-120	

01/21/19 12:26

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1060639-01,03,10

L1060639-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1060639-10 01/18/19 18:14 • (MS) R3377122-4 01/18/19 18:29 • (MSD) R3377122-5 01/18/19 18:45

(03) 1000039-10 01/10/1	(OS) LIDOUOSS-10 01/16/15 16.14 • (NIS) KSS7/122-4 01/16/15 16.25 • (NIS) KSS7/122-5 01/16/15 16.45											
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	28300	77600	77700	98.5	98.9	1	80.0-120			0.257	15
Fluoride	5000	205	5030	4990	96.4	95.7	1	80.0-120			0.741	15
Sulfate	50000	244000	286000	286000	83.0	82.9	1	80.0-120	Е	E	0.00953	15







L1061236-05 Original Sample (OS) • Matrix Spike (MS)

(OS) L1061236-05 01/18/19 21:50 • (MS) R3377122-7 01/18/19 22:51

(00) 21001200 00 01/10/13	(30) 21001200 00 0110/10 21.00 (1110) 110017122 7 01110/10 22.01								
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier		
Analyte	ug/l	ug/l	ug/l	%		%			
Chloride	50000	4840	54700	99.7	1	80.0-120			
Fluoride	5000	102	4950	97.1	1	80.0-120			
Sulfate	50000	911	50000	98.2	1	80.0-120			













ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1060639-01,02,04,05,07,09,11

Method Blank (MB)

(MB) R3376059-1 01/15/1	9 15:32			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R33/6059-2 01/15/	19 15:35 • (LCSE	D) R33/6059-3	3 01/15/19 15:37	<i>(</i>						
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1040	1010	104	101	80.0-120			2.89	20
Calcium	10000	10200	10200	102	102	80.0-120			0.416	20



[†]Cn







L1060639-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1060639-04 01/15/1	9 15:40 • (MS) R	3376059-5 0°	1/15/19 15:45 •	(MSD) R33760	59-6 01/15/19	15:48						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1160	1160	104	104	1	75.0-125			0.251	20
Calcium	10000	110000	118000	118000	83.0	85.8	1	75.0-125			0.234	20





ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1060639-10

Method Blank (MB)

(MB) R3376257-1 01/16/19 12:43							
	MB Result	MB Qualifier	MB MDL	MB RDL			
Analyte	ug/l		ug/l	ug/l			
Boron	U		12.6	200			
Calcium	U		46.3	1000			







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R33/625/-2 01/16/1	9 12:46 • (LCSE)) R33/625/-3	01/16/19 12:49							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1000	979	100	97.9	80.0-120			2.19	20
Calcium	10000	10100	9860	101	98.6	80 0-120			2 04	20



[†]Cn

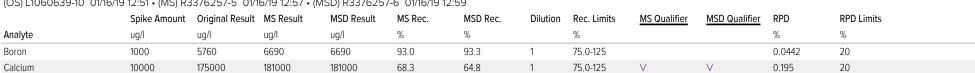






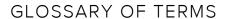
L1060639-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1060639-10	01/16/19 12:51	• (MS) R3376257-5	01/16/19 12:57	• (MSD) R3376257-6	01/16/19 12:59









Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

Abbreviations and	a Definitions
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
01	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.









Ss











ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LA000356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T 104704245-17-14
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















A PART OF THE PART			Billing Inform	mation:			16			1	Ana	lysis / C	ontaine	r / Pres	ervative				ain of Custody	- Application	of
CS Engineers - KS			Accounts 8575 W.	Payabl	e treet		Pres Chk			43	-								L'Am		(A)
75 W. 110th Street verland Park, KS 66210			Overland			X-1							55						2065 Lebanon Rd		
port to: son Franks			Email To: jf	@kcpl.co	m;	rs.com;		1				sa	125mlHDPE-NoPres					9	Nount Juliet, TN 3 hone: 615-758-58 hone: 800-767-58 ax: 615-758-5859	58	
oject escription: KCP&L Sibley Gene			City/State Collected:		SWI .		0.3	5 5		HNOS	-NoPr	-IDPE-			-		1	-	0606	39	
hone: 913-681-0030 ax: 913-681-0012	27213168.1				Lab Project # AQUAOPKS-SIBLEY			LINE LINE	E-HN		4DPE-	HDPE	25mll	oPres	13.3				1	50	1
collected by (print): (a. Penaflor	Site/Facility IC	H	P.O.#		P.O. #			a division	010 250miHDPE-HNO3	ariiii a	250mIHDPE-HNUS	9056 125mlHDPE-NoPres	90561	N-3dC	250mlHDPE-NoPres				Acctnum: AC Template: T1		
Collected by (signature)		ab MUST Be							0.250	10.250	60102	9026	504-9	Smiri	HDPE				Prelogin: P6 TSR: 206 - Je		
Stafff Chi mmediately packed on ice N Y _X	Next Da Two Da Three D	y5 Da	y (Rad Only) ay (Rad Only)		S 74	ults Needed	No of	- 9F 60		oride -	oride -	Fluoride,	Sulfate 125mlHDPE-NoPres	S 250m			3.29	PB: Shipped Via:			
Sample ID	Comp/Grab	Matrix *	Depth	1	Date	Time	Cnt	75	B, C.	Boron	Calc	Chic	-	Sul	TDS	1000			Remarks	Sam	- of
MW-504	COMP	GW		1/1	1/19	1000	0 2	2			X		X			-					02
MW-505	Colon	GW	Con Street		,	094	5 1	1		-	X	1/		-						7	03
MW-506	7 6	GW				1110	1	1				X							1		04
MW-512		GW				1145		2	8		X	-	X	-	-	-					69
DUPLICATE 1		GW	-		12.5	1150		2			X	-	X	9							04
5/2 MS/MSD		GW				1155		2			X	-	X	-		-					06
MW-801		GW				093	0	1			U.S	X		-							07
MW-802		GW				1010	_	1			X	-		-		+		DAD	SCREEN	<0.51	68
MW-803		GW				105.		1				X	-	-		-		MAD	90,1		64
MW-804	V	GW			V	11135	5	2		X			X			-		Sar	ple Receir	t Chec	klist NP Y
Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay	Remarks:												н ow	-	emp_ Other_		Bott	Signe tles a	Present/In d/Accurate rrive inta ottles use t volume s	ct: d: ent:	经
ww - WasteWater DW - Drinking Water OT - Other	Samples ret	FedExC	courier	Ter					558	899	5	Trip	Blank R	eceived	i: Yes	(NS)	VOA	Water 1	If Appl Headspace: ion Correc	leable	Y
Religioushed by (signature)	u	Date:	1/19	Time: Received by: (Signat				A	ul	1		Tem	p:	°C	TBI	Received:		reserva	tion required	by Login	: Date/Time
Relinquished by : (Signature) Relinquished by : (Signature)		Date:		Time:		Received for I	ab by: (S	Signa	iture)			Date	1=1-6	A)	Time:	30	Hol	ld:			Condition:

			Billing Inform	nation:		1	1.0		Ar	alysis /	Contain	er / Presi	rvative				n of Custody Pag	eof			
CS Engineers - KS			Accounts 8575 W. 1			Pres Chk	12									1	Maria .	Most"			
575 W. 110th Street verland Park, KS 66210	KS 66210			mail To: jfranks@scsengineers.com;				5			es					Mo	n65 Lebanon Rd unt Juliet, TN 37122				
eport to: ason Franks	ROSUS		jay.martine	City/State			jay.martin@kcpl.com;		4			-	sa	-NoPr					Pho		
Project Collected: Collected:			Collected:			03	103	HNO	-NoP	HDPE	Shirt				L	" L1060	639				
hone: 913-681-0030	27213168.15			AQUAOPKS-S	QUAOPKS-SIBLEY			6010 250mlHDPE-HN03	250mHDPE-HN03	HDPE	125mlHDPE-NoPres	oPres	res			120	able#	DVC			
Conector		ite/Facility ID #		P,O,#			250mlHDPE-HNO3	IIIIHD	50ml	[25m]	9056 1	DPE-N	NoP			- 1	emplate:T12978	9			
Collected by (signature):	Same Day Five Day Next Day 5 Day (Rad Only) Two Day 10 Day (Rad Only) Two Day 10 Day (Rad Only)		Quote#					60102	9056 125mlHDPE-NoPres	504-9	SmIH	250mlHDPE-NoPres			7	Prelogin: P68927 TSR: 206 - Jeff Carr	14				
Immediately			Next Day Two Day		Date Results Needed		y (Rad Only) Date Resu		No of		1 1	1 8	1	Fluoride, 5	Sulfate 125mlHDPE-NoPres	S 250m			- 9	P8: Shipped Via:	ample II (lab only)
Packed on Ice N Y X	Comp/Grab	Matrix *	Depth	Date	Time	Cn	trs C	5	Calc	8	Fluc	-	2			- 3	Remarks 5	ample if (lab only)			
MW-86R	comp	GW		1/11/19	122	CONTRACTOR NO.	3 2					X	X				100	11			
DUPLICATE 2		GW			1220	-		(0		X	X					10			
BOLLE MS/ MSD	4	GW		4	1225	2	3	X									7				
		-								-	-										
					1-7.											-					
			SE.													BAT	SCREEN: <	1.5 11 11			
		128		-	199											10000	and the second				
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay	ss - Soil AIR - Air F - Filter						1				pH _ Flow _		remp Other_		Bott	Sample Receipt Checkyist COC Seal Present/Intact: VNP Y N COC Signed/Accurate: XY N Bottles arrive intact: XY N Correct bottles used: XY N Sufficient volume sent: XY N If Applicable VOA Zero Headspace: Y N Preservation Correct/Checked: XY N					
WW - WasteWater DW - Drinking Water OT - Other UPS FedEx Courier UPS Time:			Courler		Tracking#			_		170	in Blank	Receive	f: Yes	10							
			1250	Received by: (5	-	1	in	ell	4	1197	°C	TBI	L/ Meon	if pr	eservat	tion required by Lo	gin: Date/Time				
Relinquished by : (Signature)		Date:	, ,	Time:	Received by: (,		1	7-, 1-1	300	a4		Hole	d:		Condition			
Relinquished by : (Signature)		Date:	1	Time:	Received for la	ab by:	(Signat	ure)		100	liz/	q		30			l Karon	NCF / 6			

Jeff Carr

Franks, Jason < JFranks@scsengineers.com> From:

Monday, January 14, 2019 11:35 AM

Jeff Carr

Sent: To: Re: Pace Analytical National Login for 27213168.19 Sibley Generating Station £1060639. **Subject:**

512 ms mad duplicate should be analyzed for chloride not fluoride.

Sent from my Verizon, Samsung Galaxy smartphone

----- Original message -----

From: Jeff Carr < jcarr@pacenational.com>

Date: 1/12/19 4:51 PM (GMT-06:00)

To: "Franks, Jason"
- Stranks @scsengineers.com
- bob.beck@kcpl.com
jay.martin@kcpl.com
"Rockhold

John" <JRockhold@scsengineers.com>

Subject: Pace Analytical National Login for 27213168.19 Sibley Generating Station L1060639

Thank you for choosing Pace National! Please find enclosed PDF files containing your laboratory login confirmation and chain of custody.

Manager to learn how to create historical Excel tables or access data in real time using powerful and intuitive software Pace National is leading the laboratory industry with our On-line Data Management tools. Please contact your Project that is only available at https://www.pacenational.com.

Visit Pace National's secure data management web site - myData - for all your reporting and data management needs at https://www.pacenational.com/login

Pace National ... "Your Lab of Choice"

Jeff Carr Technical Service Representative 615-773-9667

Pace Analytical National 12065 Lebanon Rd. Mt. Juliet, TN 37122 Notice: This communication and any attached files may contain privileged or other confidential information. If you have received this in error, please contact the sender immediately via reply email and immediately delete the message and any attachments without copying or disclosing the contents. Thank you.

ATTACHMENT 1-2 March 2019 Sampling Event Laboratory Report



ANALYTICAL REPORT March 20, 2019

SCS Engineers - KS

Sample Delivery Group:

L1078397

Samples Received:

03/13/2019

Project Number:

27213168.18

Description:

Sibley Generating Station

Report To:

Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Wubb law

Entire Report Reviewed By:

Jeff Carr Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace National is performed per guidance provided in laboratory standard operating procedures: 060302, 060303, and 060304.

21



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
MW-504 L1078397-01	6
MW-505 L1078397-02	7
MW-512 L1078397-03	8
DUPLICATE 1 L1078397-04	9
MW-801 L1078397-05	10
MW-802 L1078397-06	11
MW-804 L1078397-07	12
MW-806R L1078397-08	13
DUPLICATE 2 L1078397-09	14
Qc: Quality Control Summary	15
Gravimetric Analysis by Method 2540 C-2011	15
Wet Chemistry by Method 9056A	16
Metals (ICP) by Method 6010B	18
GI: Glossary of Terms	19
Al: Accreditations & Locations	20

Sc: Sample Chain of Custody





















Cn

Sr

[°]Qc

Gl

Sc

MW-504 L1078397-01 GW			Collected by Whit Martin	Collected date/time 03/12/19 09:55	Received dat 03/13/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1251927	1	03/19/19 22:06	03/19/19 22:06	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 17:53	CCE	Mt. Juliet, TN
MW-505 L1078397-02 GW			Collected by Whit Martin	Collected date/time 03/12/19 10:40	Received dat 03/13/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 17:56	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
MW-512 L1078397-03 GW			Whit Martin	03/12/19 11:25	03/13/19 08:4	5
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1251927	1	03/19/19 18:56	03/19/19 18:56	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 16:56	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
DUPLICATE 1 L1078397-04 GW			Whit Martin	03/12/19 11:25	03/13/19 08:4	5
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1251927	1	03/19/19 22:22	03/19/19 22:22	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 17:59	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	e/time
MW-801 L1078397-05 GW			Whit Martin	03/12/19 12:10	03/13/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1251927	5	03/19/19 22:38	03/19/19 22:38	ELN	Mt. Juliet, TN
MW-802 L1078397-06 GW			Collected by Whit Martin	Collected date/time 03/12/19 12:45	Received dat 03/13/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 18:01	CCE	Mt. Juliet, TN
MW-804 L1078397-07 GW			Collected by Whit Martin	Collected date/time 03/12/19 14:05	Received dat 03/13/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1251927	1	03/19/19 22:54	03/19/19 22:54	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 18:04	CCE	Mt. Juliet, TN
MW-806R L1078397-08 GW			Collected by Whit Martin	Collected date/time 03/12/19 13:20	Received dat 03/13/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1251060	1	03/18/19 10:51	03/18/19 13:36	AEC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251927	5	03/20/19 04:12	03/20/19 04:12	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 17:06	CCE	Mt. Juliet, TN



DUPLICATE 2 L1078397-09 GW			Collected by Whit Martin	Collected date/time 03/12/19 13:20	Received dat 03/13/19 08:4	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1251060	1	03/18/19 10:51	03/18/19 13:36	AEC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1251927	5	03/19/19 23:58	03/19/19 23:58	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1249633	1	03/16/19 08:36	03/19/19 18:07	CCE	Mt. Juliet, TN



















1

















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Jeff Carr Project Manager

Wubb law

Analyte

Calcium

SAMPLE RESULTS - 01 L1078397

ONE LAB. NATIONWIDE.

Collected date/time: 03/12/19 09:55

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Result

35400

ug/l

Qualifier

RDL

ug/l

1000

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	35100		5000	1	03/19/2019 22:06	WG1251927

Dilution

Analysis

date / time

03/19/2019 17:53

Batch

WG1249633





















SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 03/12/19 10:40 L1078397

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Calcium	24900		1000	1	03/19/2019 17:56	WG1249633



















SAMPLE RESULTS - 03 L1078397

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

Collected date/time: 03/12/19 11:25

	Result	Qualifier RDL	Dilution	Analysis	<u>Batch</u>	
Analyte	ug/l	ug/l		date / time		
Chloride	4380	1000	1	03/19/2019 18:56	WG1251927	
Sulfate	44200	5000	1	03/19/2019 18:56	WG1251927	





Ss



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Calcium	108000		1000	1	03/19/2019 16:56	WG1249633













SAMPLE RESULTS - 04 L1078397

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

Collected date/time: 03/12/19 11:25

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	4360		1000	1	03/19/2019 22:22	WG1251927
Sulfate	44400		5000	1	03/19/2019 22:22	WG1251927







Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Calcium	109000		1000	1	03/19/2019 17:59	WG1249633













MW-801

SAMPLE RESULTS - 05 L1078397

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

Collected date/time: 03/12/19 12:10

	Result	Qualifier	RDL	Dilution	Analysis	Batch	
Analyte	ug/l		ug/l		date / time		
Chloride	144000		5000	5	03/19/2019 22:38	WG1251927	



















MW-802

SAMPLE RESULTS - 06

ONE LAB. NATIONWIDE.

Collected date/time: 03/12/19 12:45

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Calcium	107000		1000	1	03/19/2019 18:01	WG1249633



















Analyte

Boron

SAMPLE RESULTS - 07 L1078397

ONE LAB. NATIONWIDE.

Collected date/time: 03/12/19 14:05 Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Result

ug/l

5710

Qualifier

RDL

ug/l

200

	Result	Qualifier RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l	ug/l		date / time	
Sulfate	ND	5000	1	03/19/2019 22:54	WG1251927

Dilution

1

Analysis

date / time

03/19/2019 18:04

Batch

WG1249633



















ONE LAB. NATIONWIDE.

Collected date/time: 03/12/19 13:20

L1078397

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	681000		13300	1	03/18/2019 13:36	WG1251060



	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Sulfate	256000		25000	5	03/20/2019 04:12	WG1251927



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	5750		200	1	03/19/2019 17:06	WG1249633
Calcium	173000	V	1000	1	03/19/2019 17:06	WG1249633



Cn





ΆΙ





ONE LAB. NATIONWIDE.

Collected date/time: 03/12/19 13:20

L1078397

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	717000		13300	1	03/18/2019 13:36	WG1251060



Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Sulfate	256000		25000	5	03/19/2019 23:58	WG1251927



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	5670		200	1	03/19/2019 18:07	WG1249633
Calcium	171000		1000	1	03/19/2019 18:07	WG1249633



Cn







PAGE: 14 of 22

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1078397-08,09

Method Blank (MB)

$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	ИВ) R3393128-1 (
Analyte ug/l ug/l ug	
	nalyte
Dissolved Solids U 2820 100	issolved Solids





[†]Cn

L1079558-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1079558-03 03/18/19 13:36 • (DUP) R3393128-3 03/18/19 13:36

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	301000	295000	1	2.01		5







(LCS) R3393128-2 03/18/19 13:36

(===,,	Spike Amount		LCS Result	LCS Rec.	Rec. Limits
Analyte	ug/l		ug/l	%	%
Dissolved Solids	8800000	00	8480000	96.4	85.0-115





PAGE:

15 of 22

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1078397-01,03,04,05,07,08,09

Method Blank (MB)

(MB) R3393205-1 03/19/19 18:05												
		MB Result	MB Qualifier	MB MDL	MB RDL							
Analyte	•	ug/l		ug/l	ug/l							
Chlorid	е	U		51.9	1000							
Sulfate		U		77.4	5000							









(OS) L1078397-03 03/19/19 18:56 • (DUP) R3393205-3 03/	19/19 19:11
--	-------------

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	4380	4380	1	0.0206		15
Sulfate	44200	44300	1	0.134		15

0.195



[†]Cn





L1078452-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1078452-04 03/20/19 02:37 • (DUP) R3393205-10 03/20/19 02:53

52100

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier
Analyte	ug/l	ug/l		%	
Chloride	4740	4710	1	0.722	

52000







// CS/ D3393205-2 03/19/19 18:21

Sulfate

(LCS) R3393205-2 03/19	(LCS) R3383205-2 03/19/19 18:21								
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier				
Analyte	ug/l	ug/l	%	%					
Chloride	40000	40700	102	80.0-120					
Sulfate	40000	41100	103	80.0-120					

DUP RPD

Limits

% 15

15

L1078397-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1078397-03 03/19/	19 18:56 • (MS) F	R3393205-4 0	3/19/19 19:27 •	(MSD) R33932	05-5 03/19/19	19:43						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	4380	55100	55700	101	103	1	80.0-120			1.19	15
Sulfate	50000	44200	93500	94100	98.6	99.8	1	80.0-120			0.615	15

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1078397-01,03,04,05,07,08,09

L1078397-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1078397-08 03/19/19 23:10 • (MS) R3393205-6 03/19/19 23:26 • (MSD) R3393205-7 03/19/19 23:42

(00) 2:0:000: 00 00:10:	30/2107 0007 00 00110710 20110 (IIIO) 110000200 0 00110710 20120 (IIIO) 110000200 7 00710710 20112												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%	
Chloride	50000	29300	79400	79000	100	99.4	1	80.0-120			0.470	15	
Sulfate	50000	257000	288000	288000	62.2	62.4	1	80.0-120	ΕV	ΕV	0.0316	15	





L1078452-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1078452-01 03/20/19 01:33 • (MS) R3393205-8 03/20/19 01:49 • (MSD) R3393205-9 03/20/19 02:05

(03) 11070432 01 03/20	/15 01.55 - (1415) 1	10000020000	5/20/15 01.45	· (IVISD) 1(5555	200 0 00/20	713 02.03						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	15700	66200	66200	101	101	1	80.0-120			0.00423	15
Sulfate	50000	1420000	1360000	1360000	0.000	0.000	1	80.0-120	ΕV	ΕV	0.0425	15













PAGE:

17 of 22

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1078397-01,02,03,04,06,07,08,09

Method Blank (MB)

(MB) R3393175-1 03/19/1	19 16:48				
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	ug/l		ug/l	ug/l	
Boron	U		12.6	200	
Calcium	U		46.3	1000	







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R33931/5-2 03/19/1	9 16:51 • (LCSD)	R33931/5-3	03/19/19 16:53							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	975	987	97.5	98.7	80.0-120			1.16	20
Calcium	10000	9790	9750	97 9	97.5	80 O-120			0.431	20







L1078397-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1078397-03	03/19/19 16:56 • (MS) R3393175-5	03/19/19 17:01 •	· (MSD) R3393175-6	3 03/19/19 17:04

(03) 110/039/-03 03/19/	19 10.30 • (IVIS) I	(33931/3-3 03	17.01 • (ווכפככא (חכומו	3-0 03/19/19 1	7.04						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1070	1070	97.1	97.8	1	75.0-125			0.681	20
Calcium	10000	108000	118000	117000	93.2	86.7	1	75.0-125			0.554	20





L1078397-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1078397-08 03/19/19 17:06 • (MS) R3393175-7 03/19/19 17:09 • (MSD) R3393175-8 03/19/19 17:11

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	5750	6630	6610	88.0	85.8	1	75.0-125			0.334	20
Calcium	10000	173000	179000	182000	60.0	88.1	1	75.0-125	V		1.56	20



OLOSSANT OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qua	lifier	Description
Qua	iller	Description

E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
\/	The sample concentration is too high to evaluate accurate spike recoveries

¹Cp





Ss













ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

20 of 22

			Billing Information:				Analysis / Container / Preservative									Chain of Custody Page of			
SCS Engineers - KS 8575 W. 110th Street Overland Park, KS 66210			8575 W	ts Payable . 110th Sti d Park, KS	eet	10	Pres Chk											National C	enter for Testing & Innovation
Report to: Jason Franks				franks@scsen@kcpl.com;						2		Pres				12065 Lebanon Rd Mount Juliet, TN 37122			7122
Project Description: KCP&L Sibley Gene	erating Statio	n	Jan alsh ald	City/State Collected:		L-L LI.@l		20	367	V	Pres	E-No	res				Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859		
Phone: 913-681-0030 Fax: 913-681-0012	Client Project # 27213168.18			Lab Project # AQUAOPKS-SIBLEY			250mHDPE-HN03	250mlHDPE-HNO3	- 6010 250mlHDPE-HNO3	9056 125mlHDPE-NoPres	9056 125mlHDPE-NoPres	125mlHDPE-NoPres					1023		
Collected by (print): Whit Martin	Site/Facility II	e/Facility ID #			P.O. #			HDP	MIHDE	OmIHC	5mlH	56 12	MIHD	VoPres			Acctnum: AQUAOPKS		UAOPKS
Collected by (signature):	Rush? (I	Lab MUST Be		Quote #				250m		10 25	56 1.	1	6 125	DPE-I				Template:T12	
Immediately Packed on Ice N Y X	Next Da Two Da Three D	y 5 Day y 10 Da	(Rad Only) y (Rad Only)		Date Results Needed Std		I No		- 6010		1	0,	e - 9056	250mlHDPE-NoPres				Prelogin: P698295 TSR: 206 - Jeff Carr PB:	
Sample ID	Comp/Grab	Matrix *	Depth	Date		Time	Cntrs	100000000000000000000000000000000000000	Boron	Calcium	Chloride	Chloride,	Sulfate	TDS 2				Shipped Via:	
MW-504	Grab	GW		3/12/	119	0955	2	8	8	X	U	0	X	F				Remarks	Sample # (lab only)
MW-505	Grab	GW		3/12	19	1040	1			X									-07
MW-512	Grab	GW		3/12/	19	1125	2			X	1/2	X					1		- 03
DUPLICATE 1	Grab	GW		3/12/	19	1125	2			X		X							- 04
MW-512 MS/MSD	Grab	GW		3/12/	19	1130	2			х		X							
MW-801	Grab	GW		3/12/	19	1210	1				Х						And Andrew		-05
MW-802	Grab	GW	Service Services	3/12/	19	1245	1			X			7.00		Eurian Jeg			- 49	-96
MW-804	Grab	GW		3/12/	19	1405	2		х		M.		Х						-67
MW-806R	Grab	GW		3/12/	19	1320	3	X					Х	Х					.08
DUPLICATE 2	Grab	GW		3/12/	19	1320	3	X					X	Х					:09
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water	Remarks: Samples returned via:									pH Flov	v	Tem			COC Si Bottle Correc	eal Prigned, es arr	ple Receipt Coresent/Intact /Accurate: rive intact: ttles used: volume sent:	: NP _Y _N _Y _N _Y _N	
OT - Other	UPSFedExCourier					racking #										VOA Ze	ero He	If Applicabeadspace:	ole y N
Relinquished by : (Signature)	Date: 1 3/12/19			1555		eceived by: (Signa				3.77	Trip Bla	nk Rece	ived: \	es / No HCL / N TBR	1eoH	Preser	vatio	on Correct/Ch	
Relinquished by : (Signature)		Date:		lime:	Re	Received by: (Signature)					Temp: °C Bottles Received: 2.3+.1=2.4 2 2					If preser	rvatio	n required by Lo	gin: Date/Time
Relinquished by : (Signature)		Date:	1	Time:	Re	eceived for lab by		ture)			Date:	3	Tin	16: C	45	Hold:			Condition: NCF / OK

	Billing Information:								1	Analysis	/ Contai	iner / Pr	eservati	ive			Chain of Custody	Page of
SCS Engineers - KS 8575 W. 110th Street Overland Park, KS 66210			8575 W.	Accounts Payable 8575 W. 110th Street Overland Park, KS 66210			5										National C	enter for Testing & Innovatio
Report to: Jason Franks	1일 마이스 사고 TOTAL COLOR 12 전 전 12 전 20 THE THE TREE SERVICE TO A NOT A NOT HELD THE TOTAL OF THE TREE TO A NOT THE TREE T			Email To: jfranks@scsengineers.com; jay.martin@kcpl.com;							Pres						12065 Lebanon Rd Mount Juliet, TN 37 Phone: 615-758-58	
Project Description: KCP&L Sibley Gene	rating Station	1		City/State Collected:			12/2	3	103	Pres	PE-No	res					Phone: 800-767-58 Fax: 615-758-5859	
Phone: 913-681-0030 Fax: 913-681-0012	Client Project 27213168.1			Lab Project # AQUAOPKS-SIBLEY			250mlHDPE-HNO3	250mlHDPE-HNO	250mlHDPE-HN03	9056 125mlHDPE-NoPres	125mlHDPE-NoPres	5mIHDPE-NoPres	S				L#	-1078397
Collected by (print): Whit Martin	Site/Facility ID #			P.O.#			MIHDP	MIHDE	50mlH	Z5mlH	9056 12	SmIHD	NoPre				Acctnum: AQ	
Collected by (signature): Marka Immediately	Rush? (LSame DaNext DaTwo Day	y 5 Day		Quote #	Results Needed	No.	6010 250	6010 250	- 6010	1	504 -	9056 12	250mlHDPE-NoPres				Template: T129789 Prelogin: P698295 TSR: 206 - Jeff Carr	
Packed on Ice N Y_X_	Three Da	SEPTIME VALUE OF SEPTIMES AND SEPTIMES			Std	of	- 6	1	Calcium	Chloride	Chloride,	Sulfate -					PB: Shipped Via:	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Tim	e Cntr	B, C	Boron	Calc	CH	Chic	Sulf	TDS				Remarks	Sample # (lab only)
MWBOGR MS/ MSD	Grah	GW		3/12/1	9 132	5 3	X					X	X					
		, and a second	A.A.															
					2.469.											Z 16		
	Section 1		es propried to the second			menti, and in the second				V 76 4				La rection de			attender of any statement	
	28 5.00	Port of the second	5+4+5 · · ·		The second secon	Lattin or First	1					25.70 H						
A Comment of the Comm	25 (A)													2				
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater	Remarks:					pH		Ten			COC Si Bottle	eal Pr igned/ es arr	Accurate:	- YAD - YA - N - YAD - YA - N - YAD - YAD				
DW - Drinking Water OT - Other	Samples returned via:UPSFedExCourier				Tracking #					Flow Other					Correct bottles used: Sufficient volume sent: If Applicable			
Relinquished by: (Signature) Date: 3/12/19		119	Time: 1555	Received by:	(Signature)				Trip Bla	nk Rece	eived:	HCL/I	МеоН	VOA Zero Headspace: Y N Preservation Correct/Checked: Y N				
Relinquished by : (Signature)		Date:		Time:	Received by:	(Signature)				Temp: 2.3+		°C 80	ttles Rec	eived:	If prese	ervation	n required by Lo	gin: Date/Time
Relinquished by : (Signature) Date:				Time:	Received for	lab by: (Sign				Date: 3//	3		ne: 3:4	3	Hold:			Condition: NCF / OR

ATTACHMENT 1-3 May 2019 Sampling Event Laboratory Report



ANALYTICAL REPORT

June 04, 2019

SCS Engineers - KS

Sample Delivery Group: L1102423

Samples Received: 05/24/2019

Project Number: 27213169.18

Description: KCP&L Sibley Generating Station

Report To: Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Wubb law

Entire Report Reviewed By:

Jeff Carr

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory, Where applicable, sampling conducted by Pace National is performed per guidence provided in laboratory standard operating procedures: 060302, 060303, and 060304.

²Tc















24



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
MW-701 L1102423-01	6
MW-702 L1102423-02	7
MW-703 L1102423-03	8
MW-704 L1102423-04	9
MW-801 L1102423-05	10
MW-802 L1102423-06	11
MW-803 L1102423-07	12
MW-804 L1102423-08	13
MW-805 L1102423-09	14
MW-806R L1102423-10	15
DUPLICATE 2 L1102423-11	16
Qc: Quality Control Summary	17
Gravimetric Analysis by Method 2540 C-2011	17
Wet Chemistry by Method 9056A	19
Metals (ICP) by Method 6010B	21
GI: Glossary of Terms	22
Al: Accreditations & Locations	23

Sc: Sample Chain of Custody



















SAMPLE SUMMARY

ONE	IΔR	NATI	ONI	WILL DI

MW-701 L1102423-01 GW			Collected by Jason R. Franks	Collected date/time 05/22/19 14:20	Received da 05/24/19 08:	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1287420	1	05/29/19 14:17	05/29/19 15:02	AEC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 16:35	06/03/19 16:35	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 20:54	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-702 L1102423-02 GW			Jason R. Franks	05/22/19 12:40	05/24/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1287420	1	05/29/19 14:17	05/29/19 15:02	AEC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 17:32	06/03/19 17:32	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 20:56	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-703 L1102423-03 GW			Jason R. Franks	05/22/19 13:15	05/24/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1287420	1	05/29/19 14:17	05/29/19 15:02	AEC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 17:47	06/03/19 17:47	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 21:04	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-704 L1102423-04 GW			Jason R. Franks	05/22/19 13:45	05/24/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1287420	1	05/29/19 14:17	05/29/19 15:02	AEC	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 18:03	06/03/19 18:03	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 21:07	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-801 L1102423-05 GW			Jason R. Franks	05/22/19 16:05	05/24/19 08:	00
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		

WG1287421

WG1290091

WG1290091

WG1286570

Batch

WG1287421

WG1290091

WG1286570

1

1

5

1

Dilution

1

1

05/29/19 12:36

06/03/19 18:19

06/03/19 19:07

05/26/19 18:31

Collected by

Preparation

05/29/19 12:36

06/03/19 19:23

05/26/19 18:31

date/time

Jason R. Franks

05/29/19 13:33

06/03/19 18:19

06/03/19 19:07

05/28/19 21:09

05/22/19 15:20

05/29/19 13:33

06/03/19 19:23

05/28/19 21:12

Analysis

date/time

MMF

ELN

ELN

CCE

05/24/19 08:00

Analyst

MMF

ELN

CCE

Collected date/time Received date/time

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

Location

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN



















Gravimetric Analysis by Method 2540 C-2011

MW-802 L1102423-06 GW

Gravimetric Analysis by Method 2540 C-2011

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Wet Chemistry by Method 9056A

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Method

MW-803 L1102423-07 GW			Collected by Jason R. Franks	Collected date/time 05/22/19 16:50	Received da 05/24/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1287421	1	05/29/19 12:36	05/29/19 13:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 19:39	06/03/19 19:39	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	5	06/04/19 10:10	06/04/19 10:10	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 21:14	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-804 L1102423-08 GW			Jason R. Franks	05/22/19 17:25	05/24/19 08:	:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1287421	1	05/29/19 12:36	05/29/19 13:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 19:55	06/03/19 19:55	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 21:17	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-805 L1102423-09 GW			Jason R. Franks	05/22/19 17:15	05/24/19 08:00	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1287421	1	05/29/19 12:36	05/29/19 13:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 20:10	06/03/19 20:10	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 21:19	CCE	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-806R L1102423-10 GW			Jason R. Franks	05/22/19 16:35	05/24/19 08:	:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1287421	1	05/29/19 12:36	05/29/19 13:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 20:26	06/03/19 20:26	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	5	06/03/19 21:14	06/03/19 21:14	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1286570	1	05/26/19 18:31	05/28/19 20:20	RDS	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
DUPLICATE 2 L1102423-11 GW			Jason R. Franks	05/22/19 16:35	05/24/19 08:	:00
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1287421	1	05/29/19 12:36	05/29/19 13:33	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1290091	1	06/03/19 21:30	06/03/19 21:30	ELN	Mt. Juliet, TN
W - 01 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	11101000001	_				

SAMPLE SUMMARY





















Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

WG1290091

WG1286570

5

06/04/19 10:26

05/26/19 18:31

06/04/19 10:26

05/28/19 21:22

ELN

CCE

Mt. Juliet, TN

Mt. Juliet, TN



All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

















Jeff Carr Project Manager

Wubb law

ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 14:20

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	312000		10000	1	05/29/2019 15:02	WG1287420

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	8360		1000	1	06/03/2019 16:35	WG1290091
Fluoride	144		100	1	06/03/2019 16:35	WG1290091
Sulfate	13400		5000	1	06/03/2019 16:35	WG1290091



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	05/28/2019 20:54	WG1286570
Calcium	86900		1000	1	05/28/2019 20:54	WG1286570



Cn









ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 12:40

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	301000		10000	1	05/29/2019 15:02	WG1287420

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	8090		1000	1	06/03/2019 17:32	WG1290091
Fluoride	142		100	1	06/03/2019 17:32	WG1290091
Sulfate	17000		5000	1	06/03/2019 17:32	WG1290091



Ss

Cn



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	05/28/2019 20:56	WG1286570
Calcium	88400		1000	1	05/28/2019 20:56	WG1286570









ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 13:15

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	381000		10000	1	05/29/2019 15:02	WG1287420

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	15000		1000	1	06/03/2019 17:47	WG1290091
Fluoride	251		100	1	06/03/2019 17:47	WG1290091
Sulfate	17800		5000	1	06/03/2019 17:47	WG1290091



	Result	Qualifier RDL	Dilution	Analysis	Batch
Analyte	ug/l	ug/l		date / time	
Boron	535	200	1	05/28/2019 21:04	WG1286570
Calcium	89900	1000	1	05/28/2019 21:04	WG1286570









ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 13:45

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	376000		10000	1	05/29/2019 15:02	WG1287420

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Chloride	18100		1000	1	06/03/2019 18:03	WG1290091
Fluoride	177		100	1	06/03/2019 18:03	WG1290091
Sulfate	37600		5000	1	06/03/2019 18:03	WG1290091



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	05/28/2019 21:07	WG1286570
Calcium	101000		1000	1	05/28/2019 21:07	WG1286570



Cn









ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 16:05

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	817000		13300	1	05/29/2019 13:33	WG1287421



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	154000		5000	5	06/03/2019 19:07	WG1290091
Fluoride	151		100	1	06/03/2019 18:19	WG1290091
Sulfate	88300		5000	1	06/03/2019 18:19	WG1290091





Ss

СQс

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	549		200	1	05/28/2019 21:09	WG1286570
Calcium	178000		1000	1	05/28/2019 21:09	WG1286570







ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 15:20

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	383000		10000	1	05/29/2019 13:33	WG1287421

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	62000		1000	1	06/03/2019 19:23	WG1290091
Fluoride	227		100	1	06/03/2019 19:23	WG1290091
Sulfate	35400		5000	1	06/03/2019 19:23	WG1290091



Ss

Cn

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	05/28/2019 21:12	WG1286570
Calcium	85500		1000	1	05/28/2019 21:12	WG1286570











ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 16:50

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	535000		10000	1	05/29/2019 13:33	WG1287421

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	15900		1000	1	06/03/2019 19:39	WG1290091
Fluoride	272		100	1	06/03/2019 19:39	WG1290091
Sulfate	120000		25000	5	06/04/2019 10:10	WG1290091



Cn

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	2770		200	1	05/28/2019 21:14	WG1286570
Calcium	119000		1000	1	05/28/2019 21:14	WG1286570



СQс







ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 17:25

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	719000		13300	1	05/29/2019 13:33	WG1287421

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	17700		1000	1	06/03/2019 19:55	WG1290091
Fluoride	233		100	1	06/03/2019 19:55	WG1290091
Sulfate	ND		5000	1	06/03/2019 19:55	WG1290091



³Ss

Cn

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	7640		200	1	05/28/2019 21:17	WG1286570
Calcium	169000		1000	1	05/28/2019 21:17	WG1286570











ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 17:15

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	357000		10000	1	05/29/2019 13:33	WG1287421

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	8650		1000	1	06/03/2019 20:10	WG1290091
Fluoride	201		100	1	06/03/2019 20:10	WG1290091
Sulfate	51100		5000	1	06/03/2019 20:10	WG1290091



Cn

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	05/28/2019 21:19	WG1286570
Calcium	98700		1000	1	05/28/2019 21:19	WG1286570



СQс







ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 16:35

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	731000		13300	1	05/29/2019 13:33	WG1287421

²Tc



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	28700		1000	1	06/03/2019 20:26	WG1290091
Fluoride	215		100	1	06/03/2019 20:26	WG1290091
Sulfate	238000		25000	5	06/03/2019 21:14	WG1290091



Cn

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	5580		200	1	05/28/2019 20:20	WG1286570
Calcium	171000	\vee	1000	1	05/28/2019 20:20	WG1286570









ONE LAB. NATIONWIDE.

Collected date/time: 05/22/19 16:35

L1102423

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	726000		10000	1	05/29/2019 13:33	WG1287421

²Tc



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	28700		1000	1	06/03/2019 21:30	WG1290091
Fluoride	214		100	1	06/03/2019 21:30	WG1290091
Sulfate	231000		25000	5	06/04/2019 10:26	WG1290091



Cn

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	5630		200	1	05/28/2019 21:22	WG1286570
Calcium	171000		1000	1	05/28/2019 21:22	WG1286570











ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1102423-01,02,03,04

Method Blank (MB)

(MB) R3416932-1 05/29/19 15:02									
	MB Result	MB Qualifier	MB MDL	MB RDL					
Analyte	ug/l		ug/l	ug/l					
Dissolved Solids	U		2820	10000					







(00) 11102252 00	05/20/10 15:02	(DLID) D244C022 2	05/20/10 15:02
(OS) L1102352-08	05/29/19 15:02 •	(DUP) R3416932-3	05/29/19 15:02

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	1940000	1920000	1	1.30		5







(LCS) R3416932-2 05/29/19 15:02

(LCS) NS+10332-2 03/23	7/13 13.02				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifi
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8700000	98.9	85.0-115	





ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1102423-05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3416805-1 05/29/19 13:33											
	MB Result	MB Qualifier	MB MDL	MB RDL							
Analyte	ug/l		ug/l	ug/l							
Dissolved Solids	U		2820	10000							





Ss

L1102435-02 Original Sample (OS) • Duplicate (DUP)

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	168000	168000	1	0.000		5





Laboratory Control Sample (LCS)

(I CS) P3416805-2 05/29/19 13:33





ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1102423-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3417535-1 06/03/19 14:52							
	MB Result	MB Qualifier	MB MDL	MB RDL			
Analyte	ug/l		ug/l	ug/l			
Chloride	U		51.9	1000			
Fluoride	U		9.90	100			
Sulfate	U		77.4	5000			



L1102430-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1102430-03 06/03/19 22:50 • (DUP) R3417535-7 06/03/19 23:05

(00) 202 .00 00 00/00/	.0 22.00 (20.	,	00,00,10	20.00		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	8620	8620	1	0.0395		15
Fluoride	ND	58.0	1	0.000		15
Sulfate	105000	105000	1	0.0563	Е	15





Laboratory Control Sample (LCS)

(LCS) R3417535-2 06/03/19 15:07

(LC3) K341/333-2 00/03/	19 15.07				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	40500	101	80.0-120	
Fluoride	8000	8490	106	80.0-120	
Sulfate	40000	40200	100	80.0-120	

Sc

L1102400-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1102400-09 06/03/19 15:48 • (MS) R3417535-4 06/03/19 16:19

(O3) E1102400-03 00/03/13 13.46 • (M3) K341/333-4 00/03/13 10.13										
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier			
Analyte	ug/l	ug/l	ug/l	%		%				
Chloride	50000	ND	51200	102	1	80.0-120				
Fluoride	5000	ND	5190	104	1	80.0-120				
Sulfate	50000	ND	50900	102	1	80.0-120				

L1102423-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102423-10 06/03/19 20:26 - (MS) R3417535-5 06/03/19 20:42 - (MSD) R3417535-6 06/03/19 20:58

	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	28700	80000	80300	103	103	1	80.0-120			0.379	15
Fluoride	5000	215	5410	5440	104	105	1	80.0-120			0.612	15

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1102423-01,02,03,04,05,06,07,08,09,10,11

L1102423-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102423-10 06/03/19 20:26 • (MS) R3417535-5 06/03/19 20:42 • (MSD) R3417535-6 06/03/19 20:58

,	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Sulfate	50000	250000	293000	293000	84.4	84.8	1	80.0-120	E	Е	0.0739	15



















ONE LAB. NATIONWIDE.

L1102423-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3415615-1 05/28/19 20:02

Metals (ICP) by Method 6010B

()				
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000







Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3415615-2 05/28/19 20:04 • (LCSD) R3415615-3 05/28/19 20:07

(,		,								
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	1010	979	101	97.9	80.0-120			2.94	20
Calcium	10000	9880	9680	98.8	96.8	80.0-120			2.10	20





L1102021-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102021-01 05/28/19 20:09 • (MS) R3415615-5 05/28/19 20:15 • (MSD) R3415615-6 05/28/19 20:17

(00) 21102021 01 00/20	713 20.03 (1110)	101100100	720/10 20:10	(14102) 110 1100	10 0 00/20/1	3 20.17						
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	ND	1010	1030	95.9	97.2	1	75.0-125			1.23	20
Calcium	10000	5970	15200	15300	92.7	93.7	1	75.0-125			0.656	20





L1102423-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1102423-10 05/28/19 20:20 • (MS) R3415615-7 05/28/19 20:22 • (MSD) R3415615-8 05/28/19 20:24

, ,	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	5580	6480	6500	90.4	92.1	1	75.0-125			0.258	20
Calcium	10000	171000	178000	178000	75.9	71.3	1	75.0-125		\vee	0.256	20

GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Des	cr	ip	tio	Ol	n
---------------	----	----	-----	----	---

Е	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
V	The sample concentration is too high to evaluate accurate spike recoveries.





Ss





[°]Qc









ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















			Billing Info	rmation:	At a				A	nalysis / C	ontaine	/ Presen	vative			Chain of Custody	Page of
SCS Engineers - KS 3575 W. 110th Street Overland Park, KS 66210			8575 W.	s Payable 110th Stre d Park, KS (Pres Chk		3							X.	National Cents	er for Testing & Innovatio	
Report to: Jason Franks		Email To: jfranks@scsengineers.com; jay.martin@kcpl.com;					Pres									12065 Lebanon Rd Mount Juliet, TN 3712 Phone: 615-758-5858	
Project Description: KCP&L Sibley Gene	erating Statio	n		City/State Collected: SIBLEY, MA			PE-No	3								Phone: 800-767-5859 Fax: 615-758-5859	2473
Phone: 913-681-0030 Fax: 913-681-0012	27213169.		Lab Project # AQUAOPKS-SIBLEY				125mlHDPE-NoPr	250mIHDPE-HNO3	es							1214	
Collected by (print): JASON R. FRANK	Site/Facility II	D#		P.O. #		504) 12	MIHDP	NoPre							Acctnum: AQUATemplate: T136		
Collected by (signature): Collected by (signature): C	Same D Next Da Two Da			Date Results Needed		No.	(Cld, F,	5010	250mlHDPE-NoPr							Prelogin: P709155 TSR: 206 - Jeff Carr PB:	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time Cntrs		Anions	B, Ca	TDS							Shipped Via:	Sample # (lab only)
MW-701	GRAS	GW	-	5/22	10 1420	3	X	X	X						Ž		-01
MW-702	1	GW	-	1 3/00	1240	3	X	Х	X				RAD				02
MW-703		GW	-		1315	3	X	Х	X				SC		- (A) , 9		03
MW-704		GW	-		1345	3	X	X	X				品				or
MW-801		GW	-		1605	3	X	X	X				K				05
MW-802		GW	-		1520	3	X	X	X				0.5				06
MW-803		GW	-		1650	3	X	X	X				mR/hr				07
MW-804		GW	50.00	4	1725	3	X	X	X			1.20) Ir			152	08
MW-805	1	GW	•		1715	3	X	X	X								59
MW-806R	N	GW	1	\ \V	1635	3	X	X	X	1 2 /2							10
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater DW - Drinking Water OT - Other	Remarks: Samples retu UPS F	12								pH _ Flow _		Temp_ Other_		COC Si Bottle Correct Suffice	igned es ar et bo cient	resent/Intact: /Accurate: rive intact: ttles used: volume sent: If Applicabl	
Relinguished by : (Signature) Relinguished by : (Signature)	le	Date: 5/23		Time: 1220 Time: 120	Received by: (Signal Received by: (Signal S W)	Won	5	-23.	-19	Trip Blank Temp:	°C	HC TBI	L7 MeoH	Preser	rvati	eadspace: on Correct/Che	
Relinquished by : (Signature)		Date:	715	1700 Time:	Received for lab by	(Signa	iture)			Date: 5/2	()19	Time:	100	Hold:			Condition: NCF / OK

			Billing Info	rmation:				14 de 1	Α	Analysis / Co	ntainer / Pre	servative			Chain of Custody	Page of	
SCS Engineers - KS 3575 W. 110th Street Overland Park, KS 66210			Accounts Payable 8575 W. 110th Street Overland Park, KS 66210			Pres Chk									Netional Cer	nter for Testing & Innova	
Report to:	· · · · · · · · · · · · · · · · · · ·		jay.martin	ail To: jfranks@scsengineers.com; .martin@kcpl.com;			res								12065 Lebanon Rd Mount Juliet, TN 371 Phone: 615-758-585		
Project Description: KCP&L Sibley General	ating Station		L-13/	City/State Collected: SIBLEY M		no	E-NoP								Phone: 800-767-585 Fax: 615-758-5859		
Phone: 913-681-0030 Fax: 913-681-0012	Client Project : 27213169.1			Lab Project #			125mlHDPE-NoPr	250mIHDPE-HN03	9						L#	52423	
Collected by (print): Jason R. Franks Collected by (signature):	Site/Facility ID	#	2.0	P.O.#	P.O.#		504) 125	NIHDPE	NoPre						Acctnum: AQL	Acctnum: AQUAOPKS	
Game R. A.	Same Day Five Day S Day (Rad Only) 10 Day (Rad Only)		Quote # Date Re	Quote # Date Results Needed No.		nions (Cld, F, SC	6010 250n	250mIHDPE-NoPres	25					Template:T13 Prelogin: P70 TSR: 206 - Jeff (9155		
Packed on Ice N Y	Three Da			1	16.2	of Cntrs	ons	Ca -	\$ 25						Shipped Via:		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time		Ani	B, (TDS						Remarks	Sample # (lab o	
806R MS/MSD	GRAS	GW	-	5/22/1	9 1635	3	X	X	X							- 1	
DUPLICATE ⊭2	1	GW	-	1	1635	3	X	Х	X			77				1	
										1 7	id.	D					
												- 53					
		a 0' ou		4.5													
												\ \alpha					
	-											Ü					
				1	7							3	,				
	- ig still			1279042				1 7						J. #			
															20	/	
Matrix: SS - Soil AIR - Air F - Filter SW - Groundwater B - Bioassay NW - WasteWater	Remarks:									pH _	Tem	1.7-	Bot	Seal Signed	mple Receipt Cl Present/Intact d/Accurate: rrive intact:	· CNP Y	
DW - Drinking Water DT - Other		pples returned via: JPSFedExCourier Tracking #									Flow Other				Correct bottles used: Sufficient volume sent: If Applicable VOA Zero Headspace: Y		
Relinquisted by : (Signature)	he	Date: 5/23	/19	120	Cla he	le_		1220		Trip Blank		HCL / MeoH TBR	Pre	servat	ion Correct/Ch		
Reimquished by : (Signature)		Date: 5 23	3/19	1700	Received by: (Signa			ede .		Temp:	1-1-17/2	tles Received:			on required by Lo		
Relinquished by : (Signature)		Date:		Time:	Received for lab by	(Signat	ture)	٠ س		Date:	1/19	1e: 8100	Hol	a:		NCF /	

ATTACHMENT 1-4 July 2019 Sampling Event Laboratory Report



ANALYTICAL REPORT

July 29, 2019

SCS Engineers - KS

Sample Delivery Group: L1119586

Samples Received: 07/17/2019

27213168.18 Project Number:

Description: Sibley Generating Station

Report To: Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Tubb law

Ss











Entire Report Reviewed By:

Jeff Carr

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

23



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
MW-504 L1119586-01	6
MW-506 L1119586-02	7
MW-512 L1119586-03	8
MW-703 L1119586-04	9
MW-704 L1119586-05	10
DUPLICATE 1 L1119586-06	11
MW-801 L1119586-07	12
DUPLICATE 2 L1119586-08	13
MW-804 L1119586-09	14
MW-806R L1119586-10	15
Qc: Quality Control Summary	16
Gravimetric Analysis by Method 2540 C-2011	16
Wet Chemistry by Method 9056A	17
Metals (ICP) by Method 6010B	20
GI: Glossary of Terms	21
Al: Accreditations & Locations	22

Sc: Sample Chain of Custody





















³Ss

Cn

Sr

[°]Qc

Gl

Sc

MW-504 L1119586-01 GW			Collected by Whit Martin	Collected date/time 07/16/19 10:55	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1314866	1	07/22/19 20:43	07/22/19 20:43	LDC	Mt. Juliet, TN
MW-506 L1119586-02 GW			Collected by Whit Martin	Collected date/time 07/16/19 11:47	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1314866	1	07/22/19 20:57	07/22/19 20:57	LDC	Mt. Juliet, TN
MW-512 L1119586-03 GW			Collected by Whit Martin	Collected date/time 07/16/19 12:30	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1314866	1	07/22/19 21:27	07/22/19 21:27	LDC	Mt. Juliet, TN
MW-703 L1119586-04 GW			Collected by Whit Martin	Collected date/time 07/16/19 12:40	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1314866	1	07/22/19 21:42	07/22/19 21:42	LDC	Mt. Juliet, TN
MW-704 L1119586-05 GW			Collected by Whit Martin	Collected date/time 07/16/19 13:15	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1314866	1	07/22/19 21:57	07/22/19 21:57	LDC	Mt. Juliet, TN
DUPLICATE 1 L1119586-06 GW			Collected by Whit Martin	Collected date/time 07/16/19 13:15	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1314866	1	07/22/19 23:11	07/22/19 23:11	LDC	Mt. Juliet, TN
MW-801 L1119586-07 GW			Collected by Whit Martin	Collected date/time 07/16/19 13:55	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011 Wet Chemistry by Method 9056A Wet Chemistry by Method 9056A Metals (ICP) by Method 6010B	WG1313293 WG1314866 WG1314866 WG1313404	1 1 5 1	07/19/19 07:21 07/22/19 23:26 07/23/19 00:11 07/18/19 17:12	07/19/19 07:42 07/22/19 23:26 07/23/19 00:11 07/19/19 18:36	TH LDC LDC EL	Mt. Juliet, TN Mt. Juliet, TN Mt. Juliet, TN Mt. Juliet, TN
DUPLICATE 2 L1119586-08 GW			Collected by Whit Martin	Collected date/time 07/16/19 13:55	Received da 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011 Wet Chemistry by Method 9056A Wet Chemistry by Method 9056A	WG1313293 WG1314866 WG1314866	1 1 5	07/19/19 07:21 07/23/19 00:26 07/23/19 00:41	07/19/19 07:42 07/23/19 00:26 07/23/19 00:41	TH LDC LDC	Mt. Juliet, TN Mt. Juliet, TN Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1313404	1	07/18/19 17:12	07/19/19 18:48	EL	Mt. Juliet, TN



MW-804 L1119586-09 GW			Collected by Whit Martin	Collected date/time 07/16/19 13:20	Received da: 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1313293	1	07/19/19 07:21	07/19/19 07:42	TH	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1313404	1	07/18/19 17:12	07/19/19 18:51	EL	Mt. Juliet, TN
MW-806R L1119586-10 GW			Collected by Whit Martin	Collected date/time 07/16/19 14:05	Received da: 07/17/19 08:4	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1313293	1	07/19/19 07:21	07/19/19 07:42	TH	Mt. Juliet, TN
ordvinietiic Analysis by Method 25 to C 2011						
Wet Chemistry by Method 9056A	WG1317958	5	07/26/19 17:29	07/26/19 17:29	LDC	Mt. Juliet, TN





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.





















Jeff Carr Project Manager

up lan

This report has been revised. Sample L1119586-10 was re-analyzed for Sulfate and the results of the second run are presented within this report.

MW-504

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

L1119586

Wet Chemistry by Method 9056A

Collected date/time: 07/16/19 10:55

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	36300		5000	1	07/22/2019 20:43	WG1314866



















MW-506

SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 11:47

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	7330		1000	1	07/22/2019 20:57	WG1314866



















SAMPLE RESULTS - 03

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 12:30

L1119586

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	4350		1000	1	07/22/2019 21:27	WG1314866
Sulfate	42100		5000	1	07/22/2019 21:27	WG1314866



















MW-703

SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 12:40

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	11100		5000	1	07/22/2019 21:42	WG1314866



















SAMPLE RESULTS - 05

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 13:15

L1119586

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	19500		1000	1	07/22/2019 21:57	WG1314866
Fluoride	157		100	1	07/22/2019 21:57	WG1314866



















DUPLICATE 1

SAMPLE RESULTS - 06

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 13:15 Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Chloride	19500		1000	1	07/22/2019 23:11	WG1314866
Fluoride	160		100	1	07/22/2019 23:11	WG1314866



















SAMPLE RESULTS - 07

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 13:55

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	613000		13300	1	07/19/2019 07:42	WG1313293

Ss

Cn

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	127000		5000	5	07/23/2019 00:11	WG1314866
Sulfate	56600		5000	1	07/22/2019 23:26	WG1314866



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	326		200	1	07/19/2019 18:36	WG1313404
Calcium	152000	V	1000	1	07/19/2019 18:36	WG1313404



СQс





PAGE:

SAMPLE RESULTS - 08

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 13:55

L1119586

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	612000		13300	1	07/19/2019 07:42	WG1313293

²Tc



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	128000		5000	5	07/23/2019 00:41	WG1314866
Sulfate	56700		5000	1	07/23/2019 00:26	WG1314866



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	321		200	1	07/19/2019 18:48	WG1313404
Calcium	152000		1000	1	07/19/2019 18:48	WG1313404



Cn







Analyte

Boron

SAMPLE RESULTS - 09

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 13:20

Metals (ICP) by Method 6010B

Gravimetric Analysis by Method 2540 C-2011

Result

ug/l

7590

Qualifier

RDL

ug/l

200

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	585000		13300	1	07/19/2019 07:42	WG1313293

Dilution

1

Analysis

date / time

07/19/2019 18:51

Batch

WG1313404



















SCS Engineers - KS

SAMPLE RESULTS - 10

ONE LAB. NATIONWIDE.

Collected date/time: 07/16/19 14:05

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	671000		13300	1	07/19/2019 07:42	WG1313293



Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	244000		25000	5	07/26/2019 17:29	WG1317958



Ss

Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	5640		200	1	07/19/2019 18:59	WG1313404
Calcium	172000		1000	1	07/19/2019 18:59	WG1313404



Cn





Αl





ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1119586-07,08,09,10

Method Blank (MB)

(MB) R3432683-1 07/19/19 07:42										
	MB Result	MB Qualifier	MB MDL	MB RDL						
Analyte	ug/l		ug/l	ug/l						
Dissolved Solids	U		2820	10000						





Ss

L1119481-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1119481-01 07/19/19 07:42 • (DUP) R3432683-3 07/19/19 07:42

	Original Resu	lt DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	93000	97000	1	4 21		5





Laboratory Control Sample (LCS)

(LCS) R3432683-2 07/19/19 07:42

, ,	Spike Amount L	LCS Result LCS F	Rec. Rec. Limits
Analyte	ug/l ι	ug/l %	%
Dissolved Solids	olids 8800000 8	8470000 96.3	85.0-115





PAGE:

16 of 24

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1119586-01,02,03,04,05,06,07,08

Method Blank (MB)

(MB) R3433129-1 07/22	/19 19:56					
	MB Result	MB Qualifier	MB MDL	MB RDL		
Analyte	ug/l		ug/l	ug/l		
Chloride	U		51.9	1000		
Fluoride	U		9.90	100		
Sulfate	U		77.4	5000		







L1119586-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1119586-02 07/22/19 20:57 • (DUP) R3433129-3 07/22/19 21:12

	Original Result		Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	7330	7360	1	0.475		15
Fluoride	325	325	1	0.0924		15
Sulfate	75900	75800	1	0.120		15









L1119894-04 Original Sample (OS) • Duplicate (DUP)

(OS) | 1119894-04 07/23/19 04:10 • (DLIP) R3433129-8 07/23/19 04:25

(03) 1113034 04 07/23/	15 04.10 - (DOI)	113433123 0	07/23/13 0	7.20		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	4090	4170	1	1.98		15
Fluoride	ND	0.000	1	0.000		15
Sulfate	ND	0.000	1	0.000		15

Sc

Laboratory Control Sample (LCS)

(LCS) R3433129-2 07/22/	19 20:10				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	39800	99.4	80.0-120	
Fluoride	8000	8090	101	80.0-120	
Sulfate	40000	41000	102	80.0-120	

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1119586-01,02,03,04,05,06,07,08

L1119586-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1119586-05 07/22/19 21:57 • (MS) R3433129-4 07/22/19 22:12 • (MSD) R3433129-5 07/22/19 22:27

` '	, ,		,	,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	19500	70100	70200	101	101	1	80.0-120			0.177	15
Fluoride	5000	157	5270	5300	102	103	1	80.0-120			0.594	15
Sulfate	50000	43000	91600	91900	97.1	97.7	1	80.0-120			0.359	15









(OS) | 1119586.07 07/22/19 23:26 (MS) P3/33129.6 07/22/19 23:41 (MSD) P3/33129.7 07/22/19 23:56

(O3) E1119300-07 07/22/19 23.20 • (M3) R3433129-0 07/22/19 23.41 • (M3D) R3433129-7 07/22/19 23.30												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Fluoride	5000	170	5170	5280	100	102	1	80.0-120			2.01	15
Sulfate	50000	56600	104000	104000	94.0	95.4	1	80.0-120	E	E	0.660	15















ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1119586-10

Method Blank (MB)

(MB) R3434874-1 07/26/19 09:08										
	MB Result	MB Qualifier	MB MDL	MB RDL						
Analyte	ug/l		ug/l	ug/l						
Sulfate	11		77 4	5000						









(OS) L1122561-11 07/26/19 14:11 • (DUP) R3434874-6 07/26/19 14:29

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Sulfate	62000	61800	1	0.310		15



Cn





(OS) L1121946-01 07/26/19 17:48 • (DUP) R3434874-8 07/26/19 18:06

,	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Sulfate	20900	20800	1	0.554		15







(LCS) R3434874-2 07/26/19 09:25

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Sulfate	40000	40200	100	80.0-120	

L1122561-11 Original Sample (OS) • Matrix Spike (MS)

(OS) L1122561-11 07/26/19 14:11 • (MS) R3434874-7 07/26/19 14:46

, ,	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Sulfate	50000	62000	109000	94.1	1	80.0-120	<u>E</u>

L1121946-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) I 1121946-01 07/26/19 17:48 • (MS) R3434874-9 07/26/19 18:23 • (MSD) R3434874-10 07/26/19 18:41

(03) 21121340 01 07/20/13		Original Result	•	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Sulfate	50000	20900	70800	70600	99.8	99.3	1	80.0-120			0.326	15

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1119586-07,08,09,10

Method Blank (MB)

(MB) R3432671-1 07/19/19 18:29 MB RDL MB Result MB Qualifier MB MDL Analyte ug/l ug/l ug/l Boron U 12.6 200 U 46.3 1000 Calcium









(LCS) R3432671-2 07/19/19 18:31 • (LCSD) R3432671-3 07/19/19 18:33

(200) 10 1020712 07710713	10.01 (2002)	101020710 0	7713713 10.00							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	963	995	96.3	99.5	80.0-120			3.26	20
Calcium	10000	9800	9910	98.0	99.1	80.0-120			1.17	20



[†]Cn







⁷Gl



(OS) L1119586-07 07/19/19 18:36 • (MS) R3432671-5 07/19/19 18:41 • (MSD) R3432671-6 07/19/19 18:43

(00) 21110000 07 07710711	(40) 2 m 600 67 67 167 6 16.60 (m6) No 16207 6 67 167 6 16207 6 67 167 16 16207 6 67 167 167 167 167 167 167 167 167 1											
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	326	1280	1300	95.5	97.8	1	75.0-125			1.79	20
Calcium	10000	152000	158000	158000	60.2	60.3	1	75.0-125	V	V	0.00424	20





GLOSSARY OF TERMS



The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

Abbic viations and	
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
V	The sample concentration is too high to evaluate accurate spike recoveries.



















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina ¹	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	
A2LA - ISO 17025 5	1461.02	
Canada	1461.01	
EPA-Crypto	TN00003	

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

22 of 24

		Billing Information:					Α	nalysis /	Contai	ner / Pre	eservati	ve			Chain of Custody	Page of							
SCS Engineers - KS 8575 W. 110th Street Overland Park, KS 66210	eet 66210		Accounts Payable 8575 W. 110th Street Overland Park, KS 66210			Pres Chk	73	27									National De	nter for Testing & Innovation					
Report to: Jason Franks			1 - 1						Email To: j		m;						s	oPres			red .		
Project Description: Sibley Generating S	tation]	City/St	ate		-1	3		opres	NoPre	PE-No	res			Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859							
Phone: 913-681-0030 Fax: 913-681-0012	Client Project # 27213168.18			Lab Project # AQUAOPKS-SIBLEY			250mlHDPE-HNO	250mHDPE-HNO3	SmIHDPE-NoPres	125mlHDPE-NoPres	125mlHDPE-N	125mlHDPE-NoPres	S				J222						
Collected by (print): Whit Martin	Site/Facility IC)#	P.O.#		P.O. #			MIHDF	MIHDP	N	3 125m	9056 12	SmIHD	NoPre				Acctnum: AQL					
Collected by (signature): White Market Immediately Packed on Ice N Y X	Rush? (L Same Da Next Da Two Da Three D	y 5 Day		Quote	Date Resu	ilts Needed	No.	- 6010	- 6010	e - 9056 1	ide, F - 9056	e, SO4 -	504	250mIHDPE-NoPres				Template: T129789 Prelogin: P719408 TSR: 206 - Jeff Carr PB:					
Sample ID	Comp/Grab	Matrix *	Depth	0	ate	Time	Cntrs	Boron	Ca, B	Chlorid	Chloride,	Chlor		TDS				Shipped Via:	Sample # (lab only				
MW-504	Grah	GW	The second secon	7/1	6/19	1055	1		-		J	0	X						-01				
MW-506	Grab	GW	2.13	7/1	6/19	1147	1	1:		X							E-w		02				
MW-512	Grab	GW	12 1 -25	7/1	6/19	1230	1					X							03				
MW-703	Grab	GW		7/1	6/19	1240	1	1					х				-		04				
NW-704	Grab	GW		7/1	6/19	1315	1			7.7	Х			16					05				
MW-704 MS/MSD	Grab	GW		7/1	6/19	1315	1	1			Х							200	05				
OUPLICATE 1	Grab	GW		7/1	119	1315	1		4. 4.		X								06				
MW-801	Grab	GW	4.5	7//	119	1355	3		Х			X		X	1				07				
MW-801 MS/MSD	Grab	GW		7/10	119	1355	3		Х			X		X					07				
OUPLICATE 2	Grab	GW		7/1	6/19	1355	3		X			X		X			1		08				
Matrix: S - Soil AIR - Air F - Filter W - Groundwater B - Bioassay W - WasteWater W - Drinking Water T - Other				RAD SCREEN: <				5 mR	/hr		pH		Ten		_	COC S	Seal P Signed les ar	ple Receipt Cl resent/Intact /Accurate: rive intact:	: +NP _Y _				
			rier					901	94 8839 Z426						Correct bottles used: Sufficient volume sent: If Applicable VOA Zero Headspace: Y								
elinquished by : (Signature)		7/16	/19	1515	5 Re	ceived by: (Sign	ature)	1	nl	2	Trip Bla	nk Rece	eived:	Yes No HCL /I TBR	4 4 1000 - 100			on Correct/Ch	ecked: ZY				
elinquished by: (Signature)	ell	7/16	/19	180	0	Ceived by: (Sign	ature)	1	,		Temp:	.1=1.8		ttles Rec	eived:	If pre	servatio	on required by Lo	gin: Date/Time				
elinquished by : (Signature)		Date:		Time:	Re	ceived for lab by	y: (Signa	ture) د			Date:	110	Tir	me:	45	Hold:			Condition:				

				ormation:					- A	nalysis /	Contain	ner / Pre	eservati	ve			Chain of Custody	Page 1 of 2				
CS Engineers - KS W. 110th Street ver and Park, KS 66210			8575 W	counts Payable 75 W. 110th Street erland Park, KS 66210													National Cent	er for Testing & Innovation				
eport to: ason Franks				ail To: jfranks@scsengineers.com; .martin@kcpl.com; City/State Collected:			Email To: jfranks@scsengineers.com;							res						12065 Lebanon Rd Mount Juliet, TN 3712		
roject lescription: Sibley Generating S	enerating Station						_		Pres	VoPres	E-NoPr	sez					Phone: 615-758-5858 Phone: 800-767-5859 Fax: 615-758-5859	世界特殊				
hone: 913-681-0030 ax: 913-681-0012	Client Project 27213169.			Lab Project # AQUAOPKS	S-SIBLEY		E-HNO	-HNO3	SmIHDPE-NoPres	9056 125mlHDPE-NoPres	125mlHDPE-N	PE-NoP		V.			L# L I	19586				
collected by (print): Whit Martin	Site/Facility II)#		P.O. #			250mlHDPE-HNO3	250mIHDPE-HNO3	25mlHI	6 125m	9056 12	SmIHD	NoPres				Acctnum: AQUAOPKS Template:T129789					
Collected by (signature): White Mark Immediately	Same D	ab MUST Be Five I y 5 Day	Day (Rad Only)	Quote #	esults Needed		6010 250	6010 250	- 9056 1	1	504-9	Sulfate - 9056 125mIHDPE-NoPres	50mlHDPE-NoPres		gal.		Prelogin: P719 TSR: 206 - Jeff C	408				
Packed on Ice N Y X	Two Day Three D		y (Rad Only)		5td	No. of Cntrs	Boron - 6	œ.	Chloride	Chloride,	Chloride,	fate -	S 250n				PB: Shipped Via:	v-7				
	+	IVIALITY	Depth	Date	Time		Boı	°S	<u>F</u>	ਓ	5	Sul	TD				Remarks	Sample # (lab only)				
MW-804	Grab	GW		7/16/19	1320	2	X						X			1	- 1000	-09				
MW-806R	Grah	GW	5 50	7/16/19	1 1405	3		X				X	X					10				
															9'							
																		A Secretary				
							-															
							71/ 	-							4.5	1.0						
				The second second									-	4								
				- America									2.4									
						19			-	12												
		- 4											7 1	1000								
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater Remarks: RAD SC					RAD SCREEN: <0.5 mR/hr				pH Temp						Sample Receipt Checklist COC Seal Present/Intact: NP Y N COC Signed/Accurate: NP N Bottles arrive intact: NP N							
DW - Drinking Water					mples returned via: UPSFedExCourier Tracking #					79	Ч	85	839 21			Other		Correct bott Sufficient v		ottles used: volume sent:	volume sent: Y N If Applicable	
Relinquished by : (Signature)				7/16/19 Time: Received by: (Signat				ature)	A	w	-	Trip Bla			HCL/	МеоН			ion Correct/Ch			
Relinquished by: (Signature) Date: 7-/6-			1500	Received by: (Signa	ature)				Temp:	1=1.87	°C Bot	tles Rec	eived:		, e	on required by Lo						
Residuished by : (Signature)	· v	Date:	Т	ime:	Received for lab by	: (Signat	ture)			Date:	7/10	Tir	ne: Y	(0	Hold:			Condition: NCF / OK				

ATTACHMENT 1-5 August 2019 Sampling Event Laboratory Report



ANALYTICAL REPORT

August 30, 2019

SCS Engineers - KS

Sample Delivery Group: L1132073

Samples Received: 08/23/2019

27213168.18 Project Number:

Description: Sibley Generating Station

Report To: Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

СQс

Gl

Ss

Cn

'Sr

ΆΙ



Entire Report Reviewed By:

Jason Romer

Project Manager Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

23



Cp: Cover Page	1
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
MW-504 L1132073-01	6
MW-506 L1132073-02	7
MW-512 L1132073-03	8
MW-703 L1132073-04	9
MW-704 L1132073-05	10
MW-801 L1132073-06	11
MW-804 L1132073-07	12
MW-806R L1132073-08	13
DUPLICATE 1 L1132073-09	14
DUPLICATE 2 L1132073-10	15
Qc: Quality Control Summary	16
Wet Chemistry by Method 9056A	16
Metals (ICP) by Method 6010B	20
GI: Glossary of Terms	21
Al: Accreditations & Locations	22

Sc: Sample Chain of Custody





















			0 11	0.11		
MW-504 L1132073-01 GW			Collected by Whit Martin	Collected date/time 08/21/19 16:20	08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1333739	1	08/23/19 22:09	08/23/19 22:09	LDC	Mt. Juliet, TN
MW-506 L1132073-02 GW			Collected by Whit Martin	Collected date/time 08/21/19 13:10	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1333739	1	08/23/19 22:24	08/23/19 22:24	LDC	Mt. Juliet, TN
MW-512 L1132073-03 GW			Collected by Whit Martin	Collected date/time 08/21/19 13:50	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1333739	1	08/23/19 22:39	08/23/19 22:39	LDC	Mt. Juliet, TN
MW-703 L1132073-04 GW			Collected by Whit Martin	Collected date/time 08/21/19 11:50	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1334249	1	08/24/19 12:29	08/24/19 12:29	ST	Mt. Juliet, TN
MW-704 L1132073-05 GW			Collected by Whit Martin	Collected date/time 08/21/19 12:20	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1334249	1	08/24/19 13:02	08/24/19 13:02	ST	Mt. Juliet, TN
MW-801 L1132073-06 GW			Collected by Whit Martin	Collected date/time 08/21/19 14:20	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1334249	5	08/24/19 14:07	08/24/19 14:07	ST	Mt. Juliet, TN
MW-804 L1132073-07 GW			Collected by Whit Martin	Collected date/time 08/21/19 15:00	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Metals (ICP) by Method 6010B	WG1334216	1	08/24/19 11:18	08/25/19 08:57	EL	Mt. Juliet, TN
MW-806R L1132073-08 GW			Collected by Whit Martin	Collected date/time 08/21/19 15:30	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1334249	5	08/25/19 14:32	08/25/19 14:32	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1334216	1	08/24/19 11:18	08/25/19 08:17	EL	Mt. Juliet, TN





















DUPLICATE 1 L1132073-09 GW			Collected by Whit Martin	Collected date/time 08/21/19 12:20	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1334249	1	08/24/19 15:46	08/24/19 15:46	ST	Mt. Juliet, TN
DUPLICATE 2 L1132073-10 GW			Collected by Whit Martin	Collected date/time 08/21/19 15:30	Received da 08/23/19 08:	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A Metals (ICP) by Method 6010B	WG1334249 WG1334216	5 1	08/24/19 16:19 08/24/19 11:18	08/24/19 16:19 08/25/19 09:00	ST EL	Mt. Juliet, TN Mt. Juliet, TN





















All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been

knowingly withheld that would affect the quality of the data.



















MW-504

SAMPLE RESULTS - 01

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 16:20

L1132073

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	35600		5000	1	08/23/2019 22:09	WG1333739



















MW-506

SAMPLE RESULTS - 02

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 13:10

L1132073

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	7170		1000	1	08/23/2019 22:24	WG1333739



















ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 13:50

L1132073

	Result	Qualifier RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l	ug/l		date / time	
Chloride	4910	1000	1	08/23/2019 22:39	WG1333739
Sulfate	41000	5000	1	08/23/2019 22:39	WG1333739



















SAMPLE RESULTS - 04

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 11:50

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	5730		5000	1	08/24/2019 12:29	WG1334249



















SAMPLE RESULTS - 05

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 12:20

L1132073

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	15200		1000	1	08/24/2019 13:02	WG1334249



















SAMPLE RESULTS - 06

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 14:20

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Chloride	124000		5000	5	08/24/2019 14:07	WG1334249



















SAMPLE RESULTS - 07

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 15:00

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	8140		200	1	08/25/2019 08:57	WG1334216



















Analyte

Calcium

Boron

SAMPLE RESULTS - 08

ONE LAB. NATIONWIDE.

Collected date/time: 08/21/19 15:30

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Result

ug/l

5660

170000

Qualifier

RDL

ug/l

200

1000

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	241000		25000	5	08/25/2019 14:32	WG1334249

Dilution

1

Analysis

date / time

08/25/2019 08:17

08/25/2019 08:17

Batch

WG1334216

WG1334216



















DUPLICATE 1

SAMPLE RESULTS - 09

ONE LAB. NATIONWIDE.

L1132073

Wet Chemistry by Method 9056A

Collected date/time: 08/21/19 12:20

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Chloride	16500		1000	1	08/24/2019 15:46	WG1334249



















SAMPLE RESULTS - 10 L1132073

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

Collected date/time: 08/21/19 15:30

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Sulfate	243000		25000	5	08/24/2019 16:19	WG1334249

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	5720		200	1	08/25/2019 09:00	WG1334216
Calcium	172000		1000	1	08/25/2019 09:00	WG1334216















ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1132073-01,02,03

Method Blank (MB)

(MB) R3443601-1 08/23/	19 08:00			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Sulfate	U		77.4	5000



L1131956-01 Original Sample (OS) • Duplicate (DUP)

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	271000	271000	1	0.0581	<u>E</u>	15
Sulfate	161000	160000	1	0.0640	<u>E</u>	15







L1131956-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1131956-01 08/23/19 14:12 • (DUP) R3443601-4 08/23/19 14:27

(03) 1131330 01 00/23/13	14.12 - (DOI) 10	54450014 00	/23/13 17.	_ /		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	271000	318000	5	15.7	<u>J3</u>	15
Sulfate	160000	161000	5	0.579		15

Sc

L1131992-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1131992-01 08/23/19 19:10 • (DUP) R3443601-7 08/23/19 19:25

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	JP RPD nits	
Analyte	ug/l	ug/l		%			
Chloride	4190	4140	1	1.20			
Sulfate	ND	2500	1	0.000			

Laboratory Control Sample (LCS)

(1	(CS) F	23443601-	2 08/	23/19	∩2·15

(LC3) K3443001-2 00/23	/19 06.15				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	39200	98.0	80.0-120	
Sulfate	40000	40200	101	80.0-120	

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1132073-01,02,03

L1131956-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1131956-02 08/23/19 15:11 • (MS) R3443601-5 08/23/19 15:26 • (MSD) R3443601-6 08/23/19 15:41

(00) 2.101000 02 00/20/11	0 .0 (0)		20/10/10/20 (. 0 00/20/10 10							
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	267000	303000	304000	71.9	73.2	1	80.0-120	EV	EV	0.206	15
Sulfate	50000	151000	193000	193000	83.8	83.2	1	80 0-120	F	F	0.153	15



L1132011-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1132011-01 08/23/19 19:40 • (MS) R3-	443601-8 08/2	23/19 19:55				
Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS

	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	54100	102000	95.6	1	80.0-120	<u>E</u>
Sulfate	50000	276000	309000	66.8	1	80.0-120	EV











ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1132073-04,05,06,08,09,10

Method Blank (MB)

(MB) R3443951-1 08/24/19	9 09:56			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Sulfate	H		77 <i>4</i>	5000









(OS) L1132073-05 08/24/19 13:02 • (DUP) R3443951-4 08/24/19 13:18

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	
Analyte	ug/l	ug/l		%		%	
Chloride	15200	15100	1	0.528		15	
Sulfate	26000	26000	1	0.219		15	







L1132269-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1132269-02 08/24/19 20:08 • (DUP) R3443951-9 08/24/19 20:25

(,	Original Result	•			DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	185000	184000	20	0.549		15
Sulfate	11400	11300	20	1.53	<u>J</u>	15

9



Laboratory Control Sample (LCS)

(LCS) R3443951-3 08/24/19 10:45

(LCS) NS443331-3 00/24	/19 10.45				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	38400	96.1	80.0-120	
Sulfate	40000	38400	96.1	80.0-120	

L1132073-05 Original Sample (OS) • Matrix Spike (MS)

(OS) | 1132073-05 08/24/19 13:02 • (MS) R3443951-5 08/24/19 13:35

(O3) L1132073-03 00/24/	13 13.02 (1013) 1	(3443331-3 00	727/13 13.33			
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits
Analyte	ug/l	ug/l	ug/l	%		%
Chloride	50000	15200	65200	100	1	80.0-120
Sulfate	50000	26000	76200	100	1	80.0-120

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1132073-04,05,06,08,09,10

L1132073-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1132073-08 08/24/19 14:57 • (MS) R3443951-7 08/24/19 15:13 • (MSD) R3443951-8 08/24/19 15:29

	, ,		*	,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	28500	79100	79000	101	101	1	80.0-120			0.0506	15
Sulfate	50000	254000	297000	297000	86.6	85.7	1	80.0-120	Е	Е	0.149	15

















PAGE:

19 of 24

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

L1132073-07,08,10

Method Blank (MB)

(MB) R3443985-1 08/25/19 08:10							
	MB Result	MB Qualifier	MB MDL	MB RDL			
Analyte	ug/l		ug/l	ug/l			
Boron	U		12.6	200			
Calcium	U		46.3	1000			







[†]Cn

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3443985-2	08/25/19 08:12	· (LCSD) R3443985-3	08/25/19 08:15

(200) 110 1 10000 2 00/20/	/.o oo (200	2)	0 00,20,10 00							
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%
Boron	1000	955	954	95.5	95.4	80.0-120			0.149	20
Calcium	10000	9720	9920	97.2	99.2	80.0-120			2.08	20







L1132073-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(O5) L1132073-08 08/25/19 08:17 • (M5) R3443985-5 08/25/19 08:22 • (M5D) R3443985-6 08/25/19 08:25												
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Boron	1000	5660	6550	6640	89.2	98.5	1	75.0-125			1.41	20
Calcium	10000	170000	179000	181000	83.7	106	1	75 0-125			122	20







GLOSSARY OF TERMS



The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

, 10.0.10 V.10.1.10 G.1.10	
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
V	The sample concentration is too high to evaluate accurate spike recoveries.













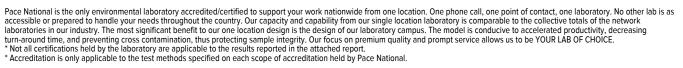






ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
lowa	364
Kansas	E-10277
Kentucky 16	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

	Nebraska	NE-OS-15-05
	Nevada	TN-03-2002-34
	New Hampshire	2975
	New Jersey-NELAP	TN002
	New Mexico ¹	n/a
	New York	11742
	North Carolina	Env375
	North Carolina ¹	DW21704
	North Carolina ³	41
	North Dakota	R-140
	Ohio-VAP	CL0069
	Oklahoma	9915
	Oregon	TN200002
	Pennsylvania	68-02979
	Rhode Island	LAO00356
	South Carolina	84004
	South Dakota	n/a
	Tennessee 1 4	2006
	Texas	T104704245-18-15
	Texas ⁵	LAB0152
	Utah	TN00003
	Vermont	VT2006
	Virginia	460132
	Washington	C847
	West Virginia	233
	Wisconsin	9980939910
	Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA – ISO 17025 ⁵	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

22 of 24

		-	Billing Info	rmation:		A Page				A	nalvsis /	Contair	er / Pre	servati	ve			Chain of Custody	Page of						
SCS Engineers - KS			Account 8575 W.	110th S	treet		Pres Chk	2,2	22									National C	onter for Testing & Innovatio						
Overland Park, KS 66210	2		Overlan	d Park, i	S 6621	.0						1													
Report to: lason Franks			Email To: j		100 miles 100 miles 177 (188	hat be document				10	oPres							12065 Lebanon Rd Mount Juliet, TN 37 Phone: 615-758-58	58						
Project Description: Sibley Generating S		City/State Collected:	Sibley				ET ET	93	m	loPre	DPE-N	Pres						Phone: 800-767-58 Fax: 615-758-5859							
Phone: 913-681-0030 Fax: 913-681-0012	Client Project 27213168.1	하는 사람들은 사람들이 되었다. 그는 사람들은 사람들은 사람들이 살아보고 있다면 하는 사람들이 되었다. 그는 사람들은 사람들은 사람들은 사람들은 사람들은 사람들이 되었다. 사람들은 사람들은 사람들은		AQUAOPKS-SIBLEY		IBLEY		-SIBLEY		S-SIBLEY		Lab Project # AQUAOPKS-SIBLEY		PE-HN	E-HNO	SmiHDPE-NoPres	- 9056 125mlHDPE-NoPres	5mlHDPE-NoPres						SDG # //	32073 A050
Collected by (print): Whit Martin	Site/Facility ID	#		inly) Date Results Needed No.			- 6010 250mlHDPE-HNO3	MHDP	125mlh	056 12	SmIHE						Acctnum: AQUAOPKS Template:T129789								
Collected by (signature): Immediately	Rush? (LSame DaNext DayTwo Day Three Da	5 Da						- 6010 2	- 6010 2	-60102	6010 250mIHDPE-HNO3	010 250n	- 9056	504	- 9056 12						Prelogin: P72 PM: 206 - Jeff PB:	4464			
Packed on Ice N Y X	-	·	T	Т		1	of Cntrs	B - (brid		prid	ate						Shipped Via:							
Sample ID	Comp/Grab	Matrix *	Depth	Da	ite	Time		Boron	l g	Chloride	Chloride,	Sulfate						Remarks	Sample # (lab only)						
MW-504	Grab	GW	T	8/2	1/19	1620	1		1-01			X		5			1		5/						
MW-506	Grah	GW		8/2	119	1310	1			X								197 - 1980	-2						
MW-512	Grah	GW		8/2	1/19	1350	1				X			差。	1 19				-3						
MW-703	Grab	GW		8/21	119	1150	1		7.2			X							1-4						
MW-704	Grab	GW		8/2	/19	1220	1			X									1-5						
MW-801	Grab	GW		8/2	1/19	1420	1			X				J. C.					- 6						
MW-804	Grab	GW		8/2	/19	1500	1	Х						20		14-			-7						
MW-806R	Grab	GW		8/2	1/19	1530	2		X		9	Х	Carana .						- 8						
DUPLICATE 1	Grab	GW	and the second	8/2	/19	1220	1			X									- 9						
704 MS/MSD	Grab	GW		8/21	/19	1220	1			X		4.4.7		1											
Matrix: SS - Soil AIR - Air F - Filter SGW - Groundwater B - Bioassay WW - WasteWater	Remarks:										pH Flow		_ Tem			COC : Bott: Corre	Seal E Signed les ar ect bo	ple Receipt (Present/Intact d/Accurate: crive intact: bttles used:	NP Y 1						
DW - Drinking Water OT - Other	Samples retur UPS Fe	ned via:	urier	THE RESIDENCE OF THE PARTY OF T								tanti.		2 % 2 %). -	VOA	Zero F	volume sent If Applica Headspace:	ble						
Relinquished by : (Signature)		B/22	19	Time: Received by: (Signature)							nk Rece		HCL/I TBR	МеоН	RAD	OA Zero Headspace: reservation Correct/Checked: AD Screen <0.5 mR/hr:									
Relinquished by : (Signature)		Date: 8/2	419	Time:	and the same of th							430F £0=2	ĭ	tles Rec	eived.			on required by Lo							
Relinquished by : (Signature)				ture) Date: Time: Hold:							Condition:														

ics Engineers - KS			Accour	nts Payable	A STATE OF THE STA	D.	ANT	10	767	Anaivs	is / Conta	iner / Pr	er / Preservative			Chain of (Fuctory Dage	Control Spiriture of Spiriture Spiri
575 VV. 110th Street			8575 W	W. 110th Stree	et	Pre: Chk		1						100.00			Chain of Custody Page of	
iverla nd Park, KS 66210			Overlar	ind Park, KS 66	5210											1/2	1	
epoit to: ason Franks			Email To:	: jfranks@scsengir in@kcpl.com;	ineers.com;					35	8.2						National Carolin for Busines & &	
oject esciption: Sibley Generating		City/State	1					A		OPre				193	122	12065 Lebar	anon Ad et, TN 37122	ZIII
esciption: Sibley Generating	g Station Client Project	Collected:	Sibley	The state of the s	PT MT/	CT ET	-	4	bres	N-W	SSI					Phone: 615-	5-758-5858 0-767-5859	5
ax: 913-681-0012	27213168.	8.18	/	Lab Project # AQUAOPKS	AQUAOPKS-SIBLEY			(NO3	E-NoF	9056 125miHDPE-NoPres	NoPre				Fax: 615-758	Phone: 800-767-5859 Fax: 615-758-5859		
ollected by (print): Whit Martin	Site/Facility II	D#		P.O. #				HDPE-H	nIHDP		HDPE.					T2 13	A048	
ollected by (signature): What Marks	Same D:	(Lab MUST Be I	Day	Quote#			250ml+DPE-HNO3	250mIHDPE-HNO3	6 125r	- 9056	125mlHDPE-Nopres					Acctnum: Template:1	Auths. 401	3
mmediately packed on Ice N Y X	Next Da Two Day Three Di	Day 5 Day (ay 10 Day Day	(Rad Only) y (Rad Only)		sults Needed	No.	6010	60102			9026					Prelogin: P	P724464	
Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	of Cntrs	-	8	Chloride -	Chloride, 9	Sulfate - !					PB: Shipped Via		
OUPLICATE 2	Grab	GW		0/11/10	1620		80	e e	5	5	Sul					Remarks		11
MW-806R MS/MSD	Grab	GW		8/21/19	1530	2	A CONTRACTOR	X			X						1	nlv1 - 7
	1				1000			^			X						1-0	1-,
																	- 3	
	The state of the s	P No.																
													000					
Matrix: is - Soil AIR - Air F - Filter	Remarks:																	
GW - Groundwater B - Bioassay										pH				+	Samp)	e Receipt C	The second	
ow - Drinking Water	Samples returnedUPSFedEx	id via:				12 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				Flow		Temp Other		COC Sic	igned/Ac	asent/Intact Accurate: ve intact: les used:	L: VNP Y N	
Relinguished by: (Signature)	and the second second second second	Date:	Time:	e: Recei	king #	ire)	# T 15 1		Trip					VOA Zer	To Head	olume sent: If Applicab	ble -	
Refiguished by : (Signature)	0	Date:	1 09 Time:	Receiv	eived by: (Signatur	re)			10000		Received:	HCL71	МеоН	. If Loserv	TOT THE	Correct/Che	ecked: Vy _N	
relinquished by : (Signature)	D	Q 22/10 Pate:	19 140 Time:	The same of the sa	lved for Jab by: (Si	Signature)			Z. Date:	750=	- The second second	ALCO STATE	eived:	If preserv	ation re	quired by Log	gin: Date/Time	
					A STATE OF THE PARTY OF THE PAR							ime:						

ATTACHMENT 1-6 November 2019 Sampling Event Laboratory Report



ANALYTICAL REPORT

November 18, 2019

SCS Engineers - KS

Sample Delivery Group: L1158873

Samples Received: 11/08/2019

Project Number: 27213169.19

Description: Evergy - Sibley Generating Station

Report To: Jason Franks

8575 W. 110th Street

Overland Park, KS 66210

Tubb law

Gl

ΆΙ

Sc

Entire Report Reviewed By:

Jeff Carr Project Manager Ss

Cn

Sr



26



Cp: Cover Page	
Tc: Table of Contents	2
Ss: Sample Summary	3
Cn: Case Narrative	5
Sr: Sample Results	6
MW-701 L1158873-01	6
MW-702 L1158873-02	7
MW-703 L1158873-03	8
MW-704 L1158873-04	9
MW-801 L1158873-05	10
MW-802 L1158873-06	1′
MW-803 L1158873-07	12
MW-804 L1158873-08	13
MW-805 L1158873-09	14
MW-806R L1158873-10	15
DUPLICATE 2 L1158873-11	16
Qc: Quality Control Summary	17
Gravimetric Analysis by Method 2540 C-2011	17
Wet Chemistry by Method 9056A	19
Metals (ICP) by Method 6010B	23
GI: Glossary of Terms	24
Al: Accreditations & Locations	25

Sc: Sample Chain of Custody



















SAMPLE SUMMARY

ONE	Λ 🗅	NIAT	LANI	A/ID
ONE	LAB.	INAI	IUIN	vviD

MW-701 L1158873-01 GW			Collected by Jason R. Franks	Collected date/time 11/06/19 10:08	Received date 11/08/19 08:3	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1378166	1	11/11/19 06:34	11/11/19 08:05	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378892	1	11/12/19 18:37	11/12/19 18:37	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:02	TRB	Mt. Juliet, TN
			Collected by	Collected date/time		
MW-702 L1158873-02 GW			Jason R. Franks	11/06/19 10:50	11/08/19 08:3	0
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1378166	1	11/11/19 06:34	11/11/19 08:05	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378892	1	11/12/19 18:53	11/12/19 18:53	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:04	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received dat	:e/time
MW-703 L1158873-03 GW			Jason R. Franks	11/06/19 11:30	11/08/19 08:3	0
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1378166	1	11/11/19 06:34	11/11/19 08:05	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378892	1	11/12/19 19:09	11/12/19 19:09	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:07	TRB	Mt. Juliet, TN
MW-704 L1158873-04 GW			Collected by Jason R. Franks	Collected date/time 11/06/19 12:10	Received data	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1378166	1	11/11/19 06:34	11/11/19 08:05	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 14:38	11/12/19 14:38	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:10	TRB	Mt. Juliet, TN
MW-801 L1158873-05 GW			Collected by Jason R. Franks	Collected date/time 11/06/19 13:20	Received dat 11/08/19 08:3	
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location



















MW-802 L1158873-06 GW

Gravimetric Analysis by Method 2540 C-2011

Wet Chemistry by Method 9056A

Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1378167	1	11/13/19 00:33	11/13/19 01:52	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 16:04	11/12/19 16:04	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:19	TRB	Mt. Juliet, TN

WG1378166

WG1378924

WG1378924

WG1379882

1

1

5

1

11/11/19 06:34

11/12/19 15:06

11/12/19 15:50

11/14/19 09:03

Collected by

Jason R. Franks

11/11/19 08:05

11/12/19 15:06

11/12/19 15:50

11/15/19 05:20

11/06/19 14:10

ΤH

ST

ST

TRB

11/08/19 08:30

Collected date/time Received date/time

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN

Mt. Juliet, TN



MW-803 L1158873-07 GW			Collected by Jason R. Franks	Collected date/time 11/06/19 14:25	Received da 11/08/19 08:3	
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time	•	
Gravimetric Analysis by Method 2540 C-2011	WG1378167	1	11/13/19 00:33	11/13/19 01:52	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 16:18	11/12/19 16:18	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	5	11/13/19 00:10	11/13/19 00:10	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:21	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-804 L1158873-08 GW			Jason R. Franks	11/06/19 14:55	11/08/19 08:3	30
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1378167	1	11/13/19 00:33	11/13/19 01:52	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 17:02	11/12/19 17:02	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:24	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-805 L1158873-09 GW			Jason R. Franks	11/06/19 15:10	11/08/19 08:3	30
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1378167	1	11/13/19 00:33	11/13/19 01:52	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 17:16	11/12/19 17:16	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:27	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
MW-806R L1158873-10 GW			Jason R. Franks	11/06/19 15:40	11/08/19 08:3	30
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
			date/time	date/time		
Gravimetric Analysis by Method 2540 C-2011	WG1378167	1	11/13/19 00:33	11/13/19 01:52	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 17:31	11/12/19 17:31	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	5	11/12/19 17:45	11/12/19 17:45	ST	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1379882	1	11/14/19 09:03	11/15/19 06:30	TRB	Mt. Juliet, TN
			Collected by	Collected date/time	Received da	te/time
DUPLICATE 2 L1158873-11 GW			Jason R. Franks	11/06/19 13:20	11/08/19 08:3	30
Method	Batch	Dilution	Preparation	Analysis	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1378167	1	date/time 11/13/19 00:33	date/time 11/13/19 01:52	MMF	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1378924	1	11/12/19 17:59	11/12/19 17:59	ST	Mt. Juliet, TN
Wet Chemistry by Method 9000A	WOIJ/0324	-	11/12/13 17.33	11/12/13 17.33	J1	ivit. Juliet, IIV

SAMPLE SUMMARY



















Wet Chemistry by Method 9056A

Metals (ICP) by Method 6010B

WG1378924

WG1379882

5

11/12/19 18:14

11/14/19 09:03

11/12/19 18:14

11/15/19 06:33

ST

TRB

Mt. Juliet, TN

Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

















Jeff Carr Project Manager

Wubb law

ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 10:08

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	275000		10000	1	11/11/2019 08:05	<u>WG1378166</u>

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	7910		1000	1	11/12/2019 18:37	WG1378892
Fluoride	145		100	1	11/12/2019 18:37	WG1378892
Sulfate	12600		5000	1	11/12/2019 18:37	WG1378892



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	11/15/2019 06:02	WG1379882
Calcium	82800		1000	1	11/15/2019 06:02	WG1379882









ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 10:50

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	266000		10000	1	11/11/2019 08:05	WG1378166

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	8300		1000	1	11/12/2019 18:53	WG1378892
Fluoride	131		100	1	11/12/2019 18:53	WG1378892
Sulfate	17000		5000	1	11/12/2019 18:53	WG1378892



	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	11/15/2019 06:04	WG1379882
Calcium	82800		1000	1	11/15/2019 06:04	WG1379882











ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 11:30

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	512000		10000	1	11/11/2019 08:05	WG1378166

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	22200		1000	1	11/12/2019 19:09	WG1378892
Fluoride	353		100	1	11/12/2019 19:09	WG1378892
Sulfate	ND		5000	1	11/12/2019 19:09	WG1378892



Ss

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	476		200	1	11/15/2019 06:07	WG1379882
Calcium	129000		1000	1	11/15/2019 06:07	WG1379882











ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 12:10

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	303000		10000	1	11/11/2019 08:05	WG1378166

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	13700		1000	1	11/12/2019 14:38	WG1378924
Fluoride	172		100	1	11/12/2019 14:38	WG1378924
Sulfate	20100		5000	1	11/12/2019 14:38	WG1378924



Cn

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	11/15/2019 06:10	WG1379882
Calcium	88500		1000	1	11/15/2019 06:10	WG1379882











ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 13:20

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	567000		10000	1	11/11/2019 08:05	WG1378166



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	109000		5000	5	11/12/2019 15:50	WG1378924
Fluoride	172		100	1	11/12/2019 15:06	WG1378924
Sulfate	59000		5000	1	11/12/2019 15:06	WG1378924



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	278		200	1	11/15/2019 05:20	WG1379882
Calcium	144000		1000	1	11/15/2019 05:20	WG1379882





СQс





PAGE: 10 of 27

ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 14:10

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	285000		10000	1	11/13/2019 01:52	WG1378167

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	32000		1000	1	11/12/2019 16:04	WG1378924
Fluoride	157		100	1	11/12/2019 16:04	WG1378924
Sulfate	49900		5000	1	11/12/2019 16:04	WG1378924



Ss



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	11/15/2019 06:19	WG1379882
Calcium	52200		1000	1	11/15/2019 06:19	WG1379882









11 of 27

ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 14:25

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	495000		10000	1	11/13/2019 01:52	<u>WG1378167</u>

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	17700		1000	1	11/12/2019 16:18	WG1378924
Fluoride	300		100	1	11/12/2019 16:18	WG1378924
Sulfate	107000		25000	5	11/13/2019 00:10	WG1378924



Cn

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	2740		200	1	11/15/2019 06:21	WG1379882
Calcium	112000		1000	1	11/15/2019 06:21	WG1379882









ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 14:55

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	615000		10000	1	11/13/2019 01:52	WG1378167

²Tc

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	19200		1000	1	11/12/2019 17:02	WG1378924
Fluoride	269		100	1	11/12/2019 17:02	WG1378924
Sulfate	ND		5000	1	11/12/2019 17:02	WG1378924



	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	8310		200	1	11/15/2019 06:24	WG1379882
Calcium	151000		1000	1	11/15/2019 06:24	WG1379882









ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 15:10

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	302000		10000	1	11/13/2019 01:52	<u>WG1378167</u>

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	8650		1000	1	11/12/2019 17:16	WG1378924
Fluoride	197		100	1	11/12/2019 17:16	WG1378924
Sulfate	50500		5000	1	11/12/2019 17:16	WG1378924



Ss



Metals (ICP) by Method 6010B

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	ND		200	1	11/15/2019 06:27	WG1379882
Calcium	94000		1000	1	11/15/2019 06:27	WG1379882





Gl



ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 15:40

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	691000		10000	1	11/13/2019 01:52	<u>WG1378167</u>

Wet Chemistry by Method 9056A

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	28200		1000	1	11/12/2019 17:31	WG1378924
Fluoride	213		100	1	11/12/2019 17:31	WG1378924
Sulfate	249000		25000	5	11/12/2019 17:45	WG1378924



Ss

	Result	Qualifier	RDL	Dilution	Analysis	<u>Batch</u>
Analyte	ug/l		ug/l		date / time	
Boron	5620		200	1	11/15/2019 06:30	WG1379882
Calcium	164000		1000	1	11/15/2019 06:30	WG1379882











ONE LAB. NATIONWIDE.

Collected date/time: 11/06/19 13:20

L1158873

Gravimetric Analysis by Method 2540 C-2011

	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Dissolved Solids	603000		10000	1	11/13/2019 01:52	WG1378167



	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Chloride	110000		5000	5	11/12/2019 18:14	WG1378924
Fluoride	215		100	1	11/12/2019 17:59	WG1378924
Sulfate	59800		5000	1	11/12/2019 17:59	WG1378924





	Result	Qualifier	RDL	Dilution	Analysis	Batch
Analyte	ug/l		ug/l		date / time	
Boron	272		200	1	11/15/2019 06:33	WG1379882
Calcium	143000		1000	1	11/15/2019 06:33	WG1379882









ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1158873-01,02,03,04,05

Method Blank (MB)

 (MB) R3470987-1
 11/11/19 08:05

 MB Result
 MB Qualifier
 MB MDL
 MB RDL

 Analyte
 ug/l
 ug/l
 ug/l

 Dissolved Solids
 3000
 J
 2820
 10000









(OS) L1158861-04 11/11/19 08:05 • (DUP) R3470987-3 11/11/19 08:05

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	197000	198000	1	0.506		5









(OS) L1158873-05 11/11/19 08:05 • (DUP) R3470987-4 11/11/19 08:05

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits	
Analyte	ug/l	ug/l		%		%	
Dissolved Solids	567000	585000	1	3.13		5	





Laboratory Control Sample (LCS)

(LCS) R3470987-2 11/11/19 08:05

, ,	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8270000	94.0	85.0-115	

ONE LAB. NATIONWIDE.

Gravimetric Analysis by Method 2540 C-2011

L1158873-06,07,08,09,10,11

Method Blank (MB)

Dissolved Solids

(MB) R3472048-1 11/13/19 01:52

MB Result MB Qualifier MB MDL

Analyte ug/l ug/l

U





L1158914-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1158914-01 11/13/19 01:52 • (DUP) R3472048-3 11/13/19 01:52

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	300000	303000	1	0.995		5

2820

MB RDL

ug/l

10000



⁶Qc

L1158930-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1158930-01 11/13/19 01:52 • (DUP) R3472048-4 11/13/19 01:52

(00) 21100000 01 11/10/10	Original Result			DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Dissolved Solids	259000	293000	1	12.3	<u>J3</u>	5



⁹Sc

Sample Narrative:

OS: Choosing to report in hold data as 1st result confirmed.

Laboratory Control Sample (LCS)

(LCS) R3472048-2 11/13/19 01:52

(200) 110 17 20 10 2 11/10/1	.0 002				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Dissolved Solids	9800000	8730000	00.2	QE 0 115	

11/18/19 09:48

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1158873-01,02,03

Method Blank (MB)

(MB) R3471242-1 11/1	2/19 09:25			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Chloride	U		51.9	1000
Fluoride	U		9.90	100
Sulfate	U		77.4	5000







L1158858-01 Original Sample (OS) • Duplicate (DUP)

(OS) I 1158858-01 11/12/19 11:27 • (DLIP) P3/1712/12-3 11/12/19 11://3

(05) 11158858-01 11/12/19	11.27 • (DUP) R3	4/1242-3 11/12	2/19 11:43			
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	19900	19900	1	0.177		15
Fluoride	309	312	1	0.838		15







L1158865-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1158865-03 11/12/19 15:42 • (DUP) R3471242-6 11/12/19 15:58

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	6660	6640	1	0.329		15
Fluoride	309	310	1	0.259		15
Sulfate	76800	76700	1	0.163		15





L1158858-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1158858-01 11/12/19 19:25 • (DUP) R3471242-8 11/12/19 20:12

Laboratory Control Sample (LCS)

(LCS) R3471242-2 11/12/19	LCS) R3471242-2 11/12/19 09:40									
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier					
Analyte	ug/l	ug/l	%	%						
Chloride	40000	38400	96.1	80.0-120						
Fluoride	8000	8040	101	80.0-120						
Sulfate	40000	38900	97.2	80 O-120						

Analyte

Chloride

Fluoride

Sulfate

QUALITY CONTROL SUMMARY

80.0-120

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1158873-01,02,03

%

98.8

99.4

98.4

L1158861-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

50900

5040

88100

ug/l

51100

5160

88100

%

98.4

97.0

98.4

(OS) L1158861-01 11/12/19 12:31 • (MS) R3471242-4 11/12/19 12:47 • (MSD) R3471242-5 11/12/19 13:03 Spike Amount Original Result MS Result MSD Result MS Rec. MSD Rec.

1720

193

38900

С.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
		%			%	%
	1	80.0-120			0.420	15
	1	80.0-120			2.36	15

0.0267

15









L1158865-04 Original Sample (OS) • Matrix Spike (MS)

(OS) | 1158865-04 | 11/12/19 16:14 • (MS) P3/1712/12-7 | 11/12/19 17:01

ug/l

50000

5000

50000

(US) L1158865-U4 11/12/19	OS) L1158865-04 11/12/19 16.14 • (MS) R34/1242-7 11/12/19 17.01												
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier						
Analyte	ug/l	ug/l	ug/l	%		%							
Chloride	50000	3080	52000	97.9	1	80.0-120							
Fluoride	5000	298	5210	98.1	1	80.0-120							
Sulfate	50000	14600	63800	98.5	1	80.0-120							











ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1158873-04,05,06,07,08,09,10,11

Method Blank (MB)

(MB) R3471252-1 11/12	2/19 12:10				
	MB Result	MB Qualifier	MB MDL	MB RDL	
Analyte	ug/l		ug/l	ug/l	
Chloride	U		51.9	1000	
Fluoride	U		9.90	100	
Sulfate	U		77.4	5000	







L1158873-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1158873-04 11/12/19 14:38 • (DUP) R3471252-3 11/12/19 14:52

	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	13700	13700	1	0.0466		15
Fluoride	172	166	1	3.37		15
Sulfate	20100	20100	1	0.132		15







8





(OS) L1159002-02 11/12/19 20:38 • (DUP) R3471252-6 11/12/19 20:52

(03) [1133002 02 11/12/11	3 20.30 - (DOI) 1	113471232 0	11/12/13 20.	.52		
	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Analyte	ug/l	ug/l		%		%
Chloride	1350	1340	1	0.268		15
Fluoride	157	176	1	11.4		15
Sulfate	117000	119000	1	1.82	Е	15

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3471252-2 11/12/19 12:25

(LCS) R34/1252-2 11/12/	19 12:25				
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Analyte	ug/l	ug/l	%	%	
Chloride	40000	38900	97.3	80.0-120	
Fluoride	8000	7980	99.8	80.0-120	
Sulfate	40000	40400	101	80.0-120	

ONE LAB. NATIONWIDE.

Wet Chemistry by Method 9056A

L1158873-04,05,06,07,08,09,10,11

L1158873-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1158873-05 11/12/19 15:06 • (MS) R3471252-4 11/12/19 15:21 • (MSD) R3471252-5 11/12/19 15:35

· /	` '		,	,								
	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Analyte	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Chloride	50000	111000	154000	154000	86.9	87.8	1	80.0-120	<u>E</u>	<u>E</u>	0.273	15
Fluoride	5000	172	4990	5150	96.4	99.6	1	80.0-120			3.13	15
Sulfato	50000	59000	107000	107000	95.6	95.4	1	80 0 ₋ 120	F	F	0.0755	15

Ср







L1159002-03 Original Sample (OS) • Matrix Spike (MS)

(OS) L1159002-03 11/12/19 21:07 • (MS) R3471252-7 11/12/19 21:21

(00) 11103002 00 11/12/13	21.07 (1110) 110	7171202 7 11712	/10 21.21				
	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Analyte	ug/l	ug/l	ug/l	%		%	
Chloride	50000	1450	51100	99.3	1	80.0-120	
Fluoride	5000	174	5340	103	1	80.0-120	
Sulfate	50000	124000	162000	76.2	1	80.0-120	<u>E J6</u>











PAGE:

22 of 27

ONE LAB. NATIONWIDE.

Metals (ICP) by Method 6010B

10000

10000

L1158873-01,02,03,04,05,06,07,08,09,10,11

Method Blank (MB)

Calcium

Calcium

(MB) R3472373-1 11/15/19	05:12			
	MB Result	MB Qualifier	MB MDL	MB RDL
Analyte	ug/l		ug/l	ug/l
Boron	U		12.6	200
Calcium	U		46.3	1000





Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3472373-2 11/15/19	CS) R3472373-2 11/15/19 05:14 • (LCSD) R3472373-3 11/15/19 05:17										
	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits	
Analyte	ug/l	ug/l	ug/l	%	%	%			%	%	
Boron	1000	947	919	94.7	91.9	80.0-120			2.98	20	

1.84

20

0.552

20

80.0-120

93.9

85.9



[†]Cn





GI

L1158873-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

152000

9390

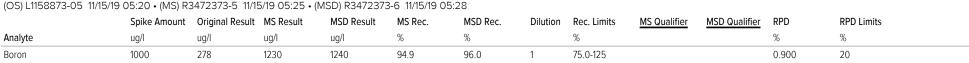
95.6

151000

(OS) L1158873-05 11/15/19 05:20 • (MS) R3472373-5 11/15/19 05:25 • (MSD) R3472373-6 11/15/19 05:28

9560

144000



75.0-125

77.5







GLOSSARY OF TERMS



The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

Appreviations and	d Definitions
MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.



















ACCREDITATIONS & LOCATIONS





State Accreditations

Alabama	40660
Alaska	17-026
Arizona	AZ0612
Arkansas	88-0469
California	2932
Colorado	TN00003
Connecticut	PH-0197
Florida	E87487
Georgia	NELAP
Georgia ¹	923
Idaho	TN00003
Illinois	200008
Indiana	C-TN-01
Iowa	364
Kansas	E-10277
Kentucky ^{1 6}	90010
Kentucky ²	16
Louisiana	Al30792
Louisiana ¹	LA180010
Maine	TN0002
Maryland	324
Massachusetts	M-TN003
Michigan	9958
Minnesota	047-999-395
Mississippi	TN00003
Missouri	340
Montana	CERT0086

Nebraska	NE-OS-15-05
Nevada	TN-03-2002-34
New Hampshire	2975
New Jersey-NELAP	TN002
New Mexico ¹	n/a
New York	11742
North Carolina	Env375
North Carolina 1	DW21704
North Carolina ³	41
North Dakota	R-140
Ohio-VAP	CL0069
Oklahoma	9915
Oregon	TN200002
Pennsylvania	68-02979
Rhode Island	LAO00356
South Carolina	84004
South Dakota	n/a
Tennessee 1 4	2006
Texas	T104704245-18-15
Texas ⁵	LAB0152
Utah	TN00003
Vermont	VT2006
Virginia	460132
Washington	C847
West Virginia	233
Wisconsin	9980939910
Wyoming	A2LA

Third Party Federal Accreditations

A2LA – ISO 17025	1461.01
A2LA - ISO 17025 5	1461.02
Canada	1461.01
EPA-Crypto	TN00003

AIHA-LAP,LLC EMLAP	100789
DOD	1461.01
USDA	P330-15-00234

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



















PAGE:

25 of 27

	Billing Information:								Analysis / Container / Preservative Chain of Custody										
SCS Engineers - KS 3575 W. 110th Street Overland Park, KS 66210		Accounts Payable 8575 W. 110th Street Overland Park, KS 66210					Pres Chk									National Center for Testing & Innov			
Report to: Jason Franks		City/State		franks@scser @kcpl.com;	gineers.com;	e Circle		oPres	8							12065 Lebanon Ro Mount Juliet, TN 3 Phone: 615-758-5 Phone: 800-767-5	77122 858 859		
Project EVERGY Description: KCP&L Sibley General	ating Statio	City/State Collected:	STBL	a1, N		T CT		E-N	0							Fax: 615-758-5859			
Phone: 913-681-0030 Fax: 913-681-0012	Client Project 27213169.	TE STATE OF THE ST		AQUAOP	# PKS-SIBLEY			125mlHDPE-NoPres	250mIHDPE-HNO3	Se						SDG# / [185		
Collected by (print)	Site/Facility 10)#		P.O. #					HDP	VoPre						Acctnum: AC			
Collected by (signature): Immediately Packed on Ice N Y	Rush? (U Same Do Next Da Two Da Three D	y5 Day		Quote #	Quote # Date Results Needed N			15 (Cld, F, SO4)	-6010	50mIHDPE-NoPres						Prelogin: P73 PM: 206 - Jeff PB: Shipped Via:	36940		
Sample ID	Comp/Grab	Matrix *	Depth	Date	Tim	e	Cntrs	E	Ca	TDS 2						Remarks	Sample # (lab only)		
	1/200	GW		11/6/	19 100	0	3	X	X	X				44			-0/		
MW-701	GRAG	GW	-	11/4/	1		3	X	X	X							-0)		
MW-702		GW	1-		105		3	X	X	X							-03		
MW-703		GW	-		113	10	3	X	Х	X							-01		
WW-704		GW	+-	+		20	3	X	X	Х		9.44					-00		
MW-801		GW	1	-30	14		3	X	X	X						and the second second	-ok		
MW-802		GW	-		14	-	3	X	X	X							-07		
MW-803		GW				55	3	X	X	X							-06		
MW-804 MW-805		GW	1=	9600	10	10	3	X	X	X							-09		
MW-806R	11/	GW	1 2	1 1	17	40	3	Х	X	X							-16		
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater	atrix: Soil AIR - Air F - Filter - Groundwater B - Bioassay										pH _ Flow _		Temp Other		Sample Receipt Checklist COC Seal Present/Intact: NP Y N COC Signed/Accurate: Y N Bottles arrive intact: NP N Correct bottles used: Y N				
DW - Drinking Water OT - Other	Samples retu	irned via: edExCo	urier		Tracking #											Sufficient volume sent: If Applicable VOA Zero Headspace: Preservation Correct/Checked:			
Relinquished by : (Signature)	Date: 11/9/19 1485				Received by	kel	2001	0"	1453	4			TBR	МеоН	RAD Sci	reen <0.5 mR/hr	Y		
Reinquished by : (Signature))	Date: 11/1/19 Time: 1800				: (Signat			i		0.1t.	350,	4	Ceived:		vation required by			
Relinquished by : (Signature)	geria. Para sa	Date: /		Time:	Received for	lab by:	(Signa	ature)			Date:	8	Time:	50	Hold:		Condition: NCF / OK		

			Billing Info	rmation:					T	A	nalvsis /	Containe	er / Pre:	servative	1	1	Chain of Custody	Page of							
CS Engineers - KS				s Payal	Street		Pres Chk							162.0			0	Center for Testing & Innovat							
575 V. 110th Street Overland Park, KS Overland Park, KS																National C	onor to Justing & Imball								
Franks		City/State	Email To: j		scsenginee om;	Please Circl	• le:	Johnes	E-NoPres								12065 Lebanon Rd Mount Juliet, TN 37122 Phone: 615-758-5858 Phone: 800-767-5859								
ription: KCP&L Sibley Gener	Client Project	SIBU	Lab Project #		D PT MT CT E		DPE-N	03								Fax: 615-758-5859									
913-681-0030 913-681-0012	27213169.1	18/			AOPKS-S	IBLEY		SmIHDP	E-HN	es	1,000						Table #	00.7							
ected by (print): (Asop R. Franks	Site/Facility ID)#		P.O.#				12	250mIHDPE-HNO	VoPre					Acctnum: AQUAOPKS										
lected by (signature)	Rush? (L	ab MUST Be	Be Notified) Quote #					F, SO4)) 250n	IDPE-NoPr					Template: T136014 Prelogin: P736940										
mediately cked on Ice N Y	Next Day Two Day Three Da	10 Da	(Rad Only) ay (Rad Only)				nly)			lly) N			No.	s (Cld,	1 1 1 1	250mlH						PM: 206 - Jeff PB:		Carr	
Sample ID	Comp/Grab	Matrix *	x* Depth Date			Time		Anions	B, Ca	TDS 2							Shipped Via: Remarks Sample # (la								
801 MS/MSD	GRAS	GW	-	11/	6/18	1325	3	X	X	X															
OUPLICATE 2	Brass	GW		11/1	10/19	1320	3	Х	Х	X			(20)		1994 30			-12							
		Box 12 Months																							
											gown						2 per 19 - 19 per 19 pe								
			Sept.		Carponyon des	See) in philipping desired on the Control of the C							Pad Konger Legs												
			A SECULAR SECU	A PARTY													Service devices								
								ω																	
								-			2														
	Remarks:		1 2 2	100						<u> </u>	1: 4	1				-	1-2-1-1	711-7:							
* Matrix: SS - Soil AIR - Air F - Filter GW - Groundwater B - Bioassay WW - WasteWater										pH Temp				COC	Sample Receipt Checklist COC Seal Present/Intact: NP Y COC Signed/Accurate: Bottles arrive intact:										
pW - Drinking Water or - Other	Samples returned via: Tracking #							ъбет.	1-							Correct bottles used: Sufficient volume sent: If Applicable VOA Zero Headspace: Y N									
Reliaduished by : (Signature) Date:				Time:	5 Re	ceived by: (Signa	ture)	11-	7-1		Trip Blan	k Receiv		es / No HCL / MeoH TBR		Preservation Correct/Checked: Y N RAD Screen <0.5 mR/hr: Y N									
Refinquished by (Signature) Date:			/19	Time:	Re	ceived by: (Signa	ture)	-			Temp:	/	AMERICAN CHARACTERS OF THE PARTY OF T	les Received:	If pre	eservatio	on required by Lo	ogin: Date/Time							
Relinquished by : (Signature)		Date:		Time:		ceived for lab by:	: (Signat	ture)	/_	Productive Confidence Contraction	Date:		Tim	e: 183	Hold			Condition: NCF // OK							

ATTACHMENT 2 Statistical Analyses

ATTACHMENT 2-1

Fall 2018 Semiannual Detection Monitoring Statistical Analyses

MEMORANDUM

March 29, 2019

To: Sibley Generating Station 33200 E Johnson Road Sibley, Missouri 64088

KCP&L Greater Missouri Operations Company

From: SCS Engineers



Fall 2018 Semiannual Detection Monitoring 40 CFR 257.94

Statistical analysis of monitoring data from the groundwater monitoring system for the Fly Ash Impoundment at the Sibley Generating Station has been completed in substantial compliance with the "Statistical Method Certification by A Qualified Professional Engineer" dated October 12, 2017. Detection monitoring groundwater samples were collected on November 15, 2018. Review and validation of the results from the November 2018 Detection Monitoring Event was completed on January 2, 2019, which constitutes completion and finalization of detection monitoring laboratory analyses. A statistical analysis was then conducted to determine whether there was a statistically significant increase (SSI) over background values for each constituent listed in Appendix III to Part 257-Constituents for Detection Monitoring. Two rounds of verification sampling were conducted for certain constituents on January 11, 2019 and March 12, 2019.

The completed statistical evaluation identified seven Appendix III constituents above their respective prediction limit in monitoring wells MW-801, MW-802, MW-804, and MW-806R.

The prediction limit for boron in monitoring well MW-804 is 5.133 mg/L. The detection monitoring sample was reported at 8.07 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 8.71 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 5.71 mg/L.

The prediction limit for boron in monitoring well MW-806R is 5.323 mg/L. The detection monitoring sample was reported at 5.56 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 5.76 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 5.75 mg/L.

The prediction limit for calcium in upgradient monitoring well MW-802 is 100.7 mg/L. The detection monitoring sample was reported at 101 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 111 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 107 mg/L.

The prediction limit for calcium in monitoring well MW-806R is 151.8 mg/L. The detection monitoring sample was reported at 168 mg/L. The first verification re-sample was collected on



Sibley Generating Station
Determination of Statistically Significant Increases
Fly Ash Impoundment
March 29, 2019
Page 2 of 2

January 11, 2019 with a result of 175 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 173 mg/L.

The prediction limit for chloride in upgradient monitoring well MW-801 is 104.1 mg/L. The detection monitoring sample was reported at 115 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 124 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 144 mg/L.

The prediction limit for sulfate in monitoring well MW-806R is 191.9 mg/L. The detection monitoring sample was reported at 236 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 237 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 256 mg/L.

The prediction limit for total dissolved solids (TDS) in monitoring well MW-806R is 679.2 mg/L. The detection monitoring sample was reported at 699 mg/L. The first verification re-sample was collected on January 11, 2019 with a result of 739 mg/L. The second verification re-sample was collected on March 12, 2019 with a result of 681 mg/L.

Therefore, in accordance with the Statistical Method Certification, the detection monitoring samples for boron from monitoring wells MW-804 and MW-806R, for calcium in monitoring wells MW-802 and MW-806R, for chloride in monitoring well MW-801, and for sulfate and TDS in monitoring well MW-806R exceeds their respective prediction limit and are confirmed statistically significant increase (SSI) over background.

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The statistical evaluation identified SSIs above the background prediction limits for chloride in upgradient monitoring well MW-801, for calcium in upgradient monitoring well MW-802, for boron in monitoring wells MW-804, and for boron, calcium, sulfate, and TDS in monitoring well MW-806R.

Attached to this memorandum are the following backup information:

Attachment 1: Sanitas[™] Output:

Statistical evaluation output from SanitasTM for the prediction limit analysis. This includes prediction limit plots, prediction limit background data, detection sample result, 1st verification re-sample result (when applicable), 2nd verification re-sample result (when applicable), extra sample results for pH because pH is collected as part of the sampling procedure, and a Prediction Limit summary table. Output documentation includes the analytical data used for the statistical analyses.

Attachment 2: Sanitas[™] Configuration Settings:

Screen shots of the applicable SanitasTM configuration settings for the statistical prediction limit analysis. This includes data configuration, output configuration, prediction limit configuration and other tests configuration.

Sibley Generating Station Determination of Statistically Significant Increases Fly Ash Impoundment March 29, 2019 Page 2 of 2

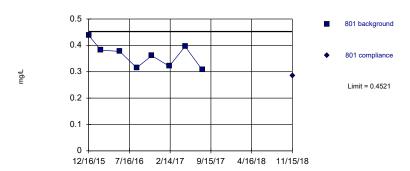
Revision Number	Revision Date	Attachment Revised	Summary of Revisions

Sibley Generating Station Determination of Statistically Significant Increases Fly Ash Impoundment March 29, 2019

ATTACHMENT 1

Sanitas™ Output

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.3621, Std. Dev.=0.04547, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9368, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Boron Analysis Run 3/28/2019 9:06 AM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

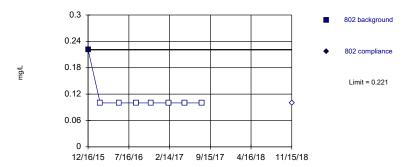
Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit Intrawell Parametric 803 background 803 compliance 2.4 803 compliance Limit = 3.009

Background Data Summary: Mean=2.804, Std. Dev.=0.1038, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9108, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG Hollow symbols indicate censored values

Within Limit Prediction Limit
Intrawell Non-parametric

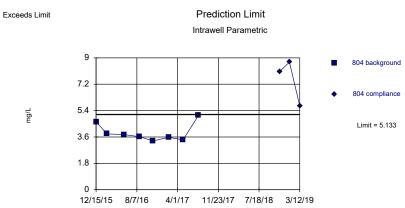


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.01179. Individual comparison alpha = 0.005912 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/28/2019 9:06 AM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=3.901, Std. Dev.=0.6221, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8265, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	801	801
12/16/2015	0.438	
2/17/2016	0.382	
5/26/2016	0.377	
8/23/2016	0.315	
11/10/2016	0.361	
2/9/2017	0.321	
5/3/2017	0.396	
8/1/2017	0.307	
11/15/2018		0.285

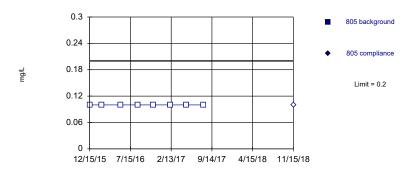
	802	8
12/16/2015	0.221	
2/17/2016	<0.2	
5/26/2016	<0.2	
8/23/2016	<0.2	
11/10/2016	<0.2	
2/9/2017	<0.2	
5/3/2017	<0.2	
8/1/2017	<0.2	
11/15/2018		<0.2

	803	803
12/15/2015	3.01	
2/17/2016	2.85	
5/26/2016	2.71	
8/23/2016	2.86	
11/10/2016	2.79	
2/9/2017	2.79	
5/3/2017	2.73	
8/1/2017	2.69	
11/15/2018		2.9

	804	804	
12/15/2015	4.63		
2/17/2016	3.81		
5/26/2016	3.76		
8/23/2016	3.62		
11/10/2016	3.33		
2/9/2017	3.58		
5/3/2017	3.4		
8/1/2017	5.08		
11/15/2018		8.07	
1/11/2019		8.71	1st verification re-sample
3/12/2019		5.71	2nd verification re-sample

Hollow symbols indicate censored values.

Prediction Limit Within Limit Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.01179. Individual comparison alpha = 0.005912 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

> Constituent: Boron Analysis Run 3/28/2019 9:06 AM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

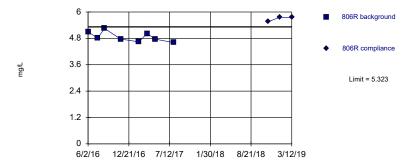
Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Prediction Limit Within Limit Intrawell Parametric 170 801 background 136 801 compliance 102 Limit = 166.7 68 34 12/16/15 7/16/16 2/14/17 9/15/17 4/16/18 11/15/18

Background Data Summary: Mean=139.5, Std. Dev.=13.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.975, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

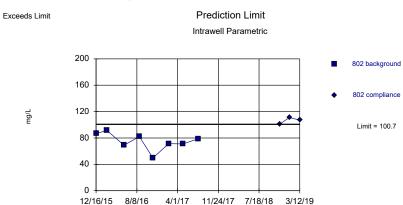




Background Data Summary: Mean=4.87, Std. Dev.=0.2287, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9205, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

> Constituent: Boron Analysis Run 3/28/2019 9:06 AM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=75, Std. Dev.=12.99, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9366, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	805	805
12/15/2015	<0.2	
2/17/2016	<0.2	
5/26/2016	<0.2	
8/23/2016	<0.2	
11/10/2016	<0.2	
2/9/2017	<0.2	
5/3/2017	<0.2	
8/1/2017	<0.2	
11/15/2018		<0.2

	806R	806R			
6/2/2016	5.1				
7/19/2016	4.81				
8/23/2016	5.25				
11/11/2016	4.77				
2/9/2017	4.64				
3/22/2017	5.02				
5/3/2017	4.76				
8/1/2017	4.61				
11/15/2018		5.56			
1/11/2019		5.76	1st verification re-sample		
3/12/2019		5.75	2nd verification re-sample		

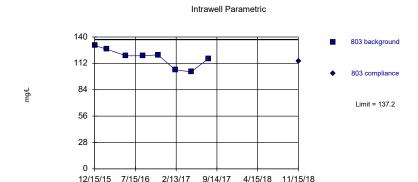
	801	801
12/16/2015	159	
2/17/2016	150	
5/26/2016	147	
8/23/2016	137	
11/10/2016	143	
2/9/2017	115	
5/3/2017	127	
8/1/2017	138	
11/15/2018		143

	802	802	
12/16/2015	86.6		
2/17/2016	91.4		
5/26/2016	68.9		
8/23/2016	82.2		
11/10/2016	49.6		
2/9/2017	71.4		
5/3/2017	71		
8/1/2017	78.9		
11/15/2018		101	
1/11/2019		111	1st verification re-sample
3/12/2019		107	2nd verification re-sample

Within Limit

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Within Limit

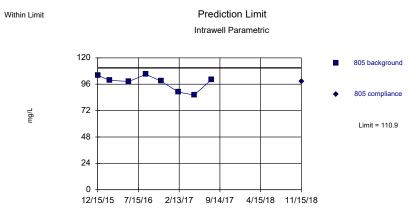


Prediction Limit

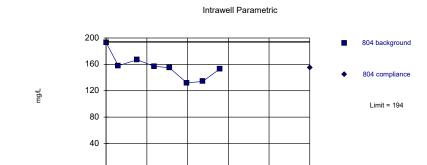
Background Data Summary: Mean=118, Std. Dev.=9.725, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9144, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 3/28/2019 9:06 AM View: Ash Pond III
Siblev Client: SCS Engineers Data: Siblev

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=97.61, Std. Dev.=6.708, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8624, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.



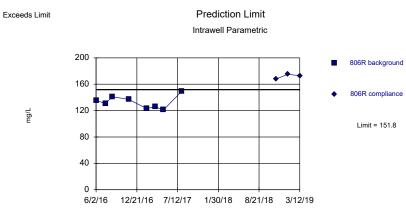
12/15/15 7/15/16 2/13/17 9/14/17 4/15/18 11/15/18

Prediction Limit

Background Data Summary: Mean=156.1, Std. Dev.=19.14, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9111, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 3/28/2019 9:06 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=132.9, Std. Dev.=9.538, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9644, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	803	803
12/15/2015	131	
2/17/2016	127	
5/26/2016	120	
8/23/2016	120	
11/10/2016	121	
2/9/2017	105	
5/3/2017	103	
8/1/2017	117	
11/15/2018		114

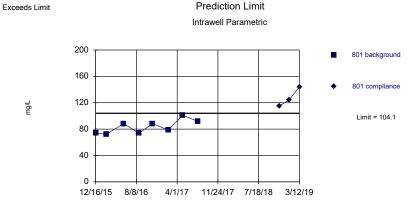
	804	804
12/15/2015	193	
2/17/2016	158	
5/26/2016	167	
8/23/2016	157	
11/10/2016	155	
2/9/2017	132	
5/3/2017	134	
8/1/2017	153	
	153	

	805	805
12/15/2015	104	
2/17/2016	99.5	
5/26/2016	98.5	
8/23/2016	105	
11/10/2016	98.9	
2/9/2017	88.8	
5/3/2017	86.2	
8/1/2017	100	
11/15/2018		98.5

	806R	806R	
6/2/2016	135		
7/19/2016	131		
8/23/2016	141		
11/11/2016	137		
2/9/2017	123		
3/22/2017	126		
5/3/2017	121		
8/1/2017	149		
11/15/2018		168	
1/11/2019		175	1st verification re-sample
3/12/2019		173	2nd verification re-sample

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

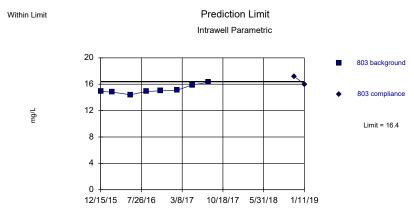
Within Limit



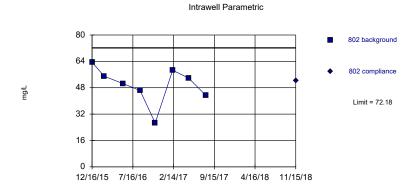
Background Data Summary: Mean=83.45, Std. Dev.=10.41, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.899, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=15.16, Std. Dev.=0.6232, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8705, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

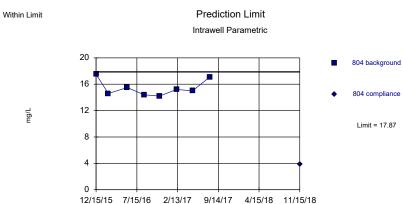


Prediction Limit

Background Data Summary: Mean=49.74, Std. Dev.=11.34, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9231, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=15.44, Std. Dev.=1.229, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8619, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	801	801	
12/16/2015	73.6		
2/17/2016	72.4		
5/26/2016	88.2		
8/23/2016	73.8		
11/10/2016	88.2		
2/9/2017	78.6		
5/3/2017	101		
8/1/2017	91.8		
11/15/2018		115	
1/11/2019		124	1st verification re-sample
3/12/2019		144	2nd verification re-sample

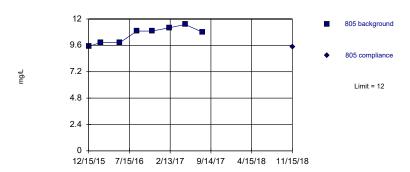
	802	802
12/16/2015	63.5	
2/17/2016	55	
5/26/2016	50.5	
8/23/2016	46.3	
11/10/2016	26.6	
2/9/2017	58.6	
5/3/2017	53.9	
8/1/2017	43.5	
11/15/2018		52.3

	803	803	
12/15/2015	14.9		
2/17/2016	14.8		
5/26/2016	14.4		
8/23/2016	14.9		
11/10/2016	15		
2/9/2017	15.1		
5/3/2017	15.9		
8/1/2017	16.3		
11/15/2018		17.2	
1/11/2019		16	1st verification re-sample

	804	804
12/15/2015	17.5	
2/17/2016	14.6	
5/26/2016	15.5	
8/23/2016	14.4	
11/10/2016	14.2	
2/9/2017	15.2	
5/3/2017	15	
8/1/2017	17.1	
11/15/2018		3.9

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

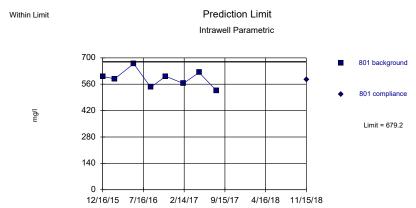
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=10.57, Std. Dev.=0.7249, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8989, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001524.

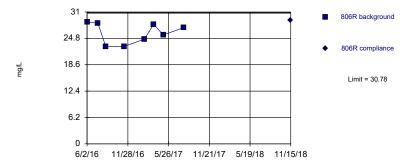
Constituent: Chloride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Siblev Client: SCS Engineers Data: Siblev

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=589.8, Std. Dev.=45.18, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.010, calculated = 0.9729, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

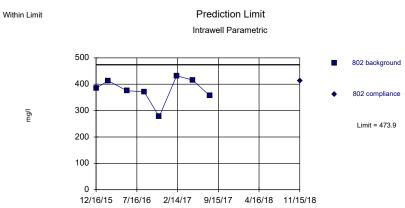
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=26.05, Std. Dev.=2.389, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8702, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Siblev Client: SCS Engineers Data: Siblev

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=378.4, Std. Dev.=48.28, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.885, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

805 12/15/2015 9.51 2/17/2016 9.86 5/26/2016 9.85 8/23/2016 10.9 11/10/2016 10.9	805
2/17/2016 9.86 5/26/2016 9.85 8/23/2016 10.9 11/10/2016 10.9	
5/26/2016 9.85 8/23/2016 10.9 11/10/2016 10.9	
8/23/2016 10.9 11/10/2016 10.9	
11/10/2016 10.9	
2/9/2017 11.2	
5/3/2017 11.5	
8/1/2017 10.8	
11/15/2018	9.45

	806R	806R
6/2/2016	28.6	
7/19/2016	28.4	
8/23/2016	22.9	
11/11/2016	22.9	
2/9/2017	24.6	
3/22/2017	28.1	
5/3/2017	25.6	
8/1/2017	27.3	
11/15/2018		29

	801	80
12/16/2015	601	
2/17/2016	589	
5/26/2016	669	
8/23/2016	544	
11/10/2016	602	
2/9/2017	564	
5/3/2017	622	
8/1/2017	527	
11/15/2018		586

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

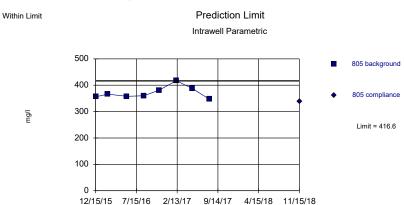




Background Data Summary: Mean=555.9, Std. Dev.=31.44, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.9486, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

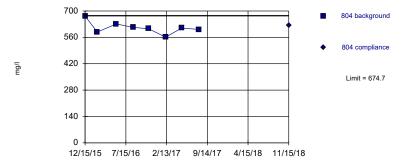
Constituent: Dissolved Solids Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=371.6, Std. Dev.=22.73, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8928, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

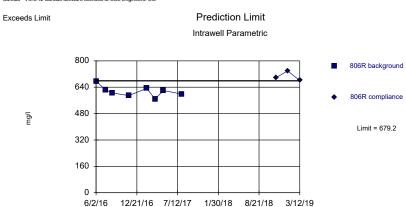




Background Data Summary: Mean=610.4, Std. Dev.=32.48, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9436, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 3/28/2019 9:07 AM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=614.4, Std. Dev.=32.76, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9638, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	803	8
12/15/2015	564	
2/17/2016	558	
5/26/2016	598	
8/23/2016	538	
11/10/2016	543	
2/9/2017	594	
5/3/2017	552	
8/1/2017	500	
11/15/2018		480

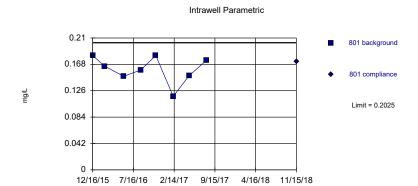
	804	804
12/15/2015	673	
2/17/2016	588	
5/26/2016	631	
8/23/2016	613	
11/10/2016	606	
2/9/2017	561	
5/3/2017	609	
8/1/2017	602	
11/15/2018		625
11/15/2016		020

	805	8
12/15/2015	356	
2/17/2016	366	
5/26/2016	358	
8/23/2016	360	
11/10/2016	381	
2/9/2017	417	
5/3/2017	388	
8/1/2017	347	
11/15/2018		339

		806R	806R	
6/2/20	16	677		
7/19/2	016	624		
8/23/2	016	605		
11/11/	2016	589		
2/9/20	17	633		
3/22/2	017	568		
5/3/20	17	620		
8/1/20	17	599		
11/15/	2018		699	
1/11/2	019		739	1st verification re-sample
3/12/2	019		681	2nd verification re-sample

Within Limit

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



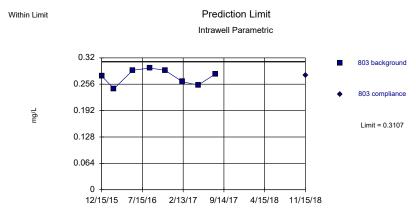
Prediction Limit

Background Data Summary: Mean=0.1598, Std. Dev.=0.02158, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9046, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III

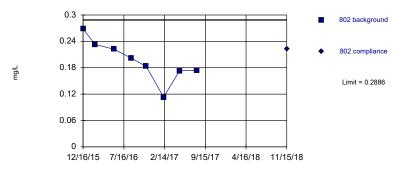
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=0.2741, Std. Dev=0.01848, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9165, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

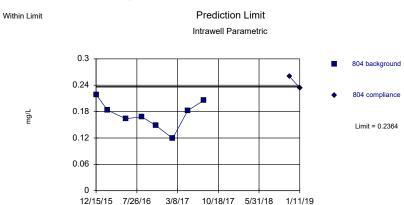
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.196, Std. Dev=0.04681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9741, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=0.1736, Std. Dev=0.03169, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9792, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	801	801
12/16/2015	0.182	
2/17/2016	0.165	
5/26/2016	0.149	
8/23/2016	0.159	
11/10/2016	0.182	
2/9/2017	0.117	
5/3/2017	0.15	
8/1/2017	0.174	
11/15/2018		0.172

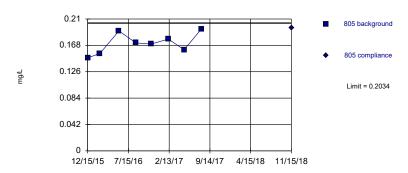
	802	802
12/16/2015	0.268	
2/17/2016	0.233	
5/26/2016	0.222	
8/23/2016	0.202	
11/10/2016	0.183	
2/9/2017	0.113	
5/3/2017	0.173	
8/1/2017	0.174	
11/15/2018		0.222

	803	803
12/15/2015	0.276	
2/17/2016	0.245	
5/26/2016	0.29	
8/23/2016	0.295	
11/10/2016	0.29	
2/9/2017	0.262	
5/3/2017	0.254	
8/1/2017	0.281	
11/15/2018		0.278

	804	804	
12/15/2015	0.219		
2/17/2016	0.183		
5/26/2016	0.164		
8/23/2016	0.168		
11/10/2016	0.148		
2/9/2017	0.119		
5/3/2017	0.182		
8/1/2017	0.206		
11/15/2018		0.26	
1/11/2019		0.234	1st verification re-sample
			·

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.1711, Std. Dev.=0.01632, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9597, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

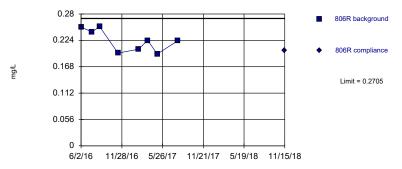
Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Prediction Limit
Intrawell Parametric

801 background
801 compliance
Limit = 8.151
Limit = 5.956

Background Data Summary: Mean=7.054, Std. Dev.=0.5545, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9128, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001524.

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.2239, Std. Dev.=0.02355, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8972, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Within Limits

Prediction Limit
Intrawell Parametric

802 background
802 compliance
Limit = 8.233
Limit = 5.569

Background Data Summary: Mean=6.901, Std. Dev.=0.6729, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8827, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001554.

	805	805
12/15/2015	0.148	
2/17/2016	0.155	
5/26/2016	0.191	
8/23/2016	0.172	
11/10/2016	0.17	
2/9/2017	0.178	
5/3/2017	0.161	
8/1/2017	0.194	
11/15/2018		0.196

	806R	806R
6/2/2016	0.252	
7/19/2016	0.242	
8/23/2016	0.253	
11/11/2016	0.197	
2/9/2017	0.205	
3/22/2017	0.224	
5/3/2017	0.195	
8/1/2017	0.223	
11/15/2018		0.202

Constituent: pH (S.U.) Analysis Run 3/28/2019 9:17 AM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

	801	801	
12/16/2015	7.39		
2/17/2016	6.7		
5/26/2016	8.06		
8/23/2016	7.37		
11/10/2016	6.56		
2/9/2017	6.7		
5/3/2017	6.42		
8/1/2017	7.23		
11/15/2018		6.78	
1/11/2019		6.58	extra sample
3/12/2019			

	802	802	
12/16/2015	7.53		
2/17/2016	6.58		
5/26/2016	8.16		
8/23/2016	7.2		
11/10/2016	6.39		
2/9/2017	6.25		
5/3/2017	6.37		
8/1/2017	6.73		
11/15/2018		6.68	
1/11/2019		6.66	extra sample
3/12/2019		6.91	extra sample

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Prediction Limit Within Limits

Intrawell Parametric



Background Data Summary: Mean=7.18, Std. Dev.=0.1884, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9447, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

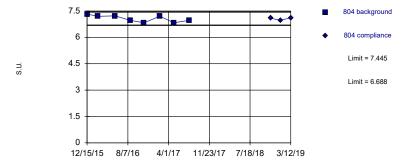
> Constituent: pH Analysis Run 3/28/2019 9:07 AM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

Prediction Limit Within Limits Intrawell Parametric 805 background 805 compliance Limit = 7.989 4.8 Limit = 6.796 3.2 1.6 12/15/15 7/15/16 2/13/17 9/14/17 4/15/18 11/15/18

Background Data Summary: Mean=7.393, Std. Dev.=0.3012, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.915, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

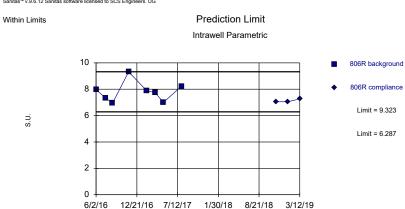
Prediction Limit Within Limits Intrawell Parametric



Background Data Summary: Mean=7.066, Std. Dev.=0.1912, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8802, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

> Constituent: pH Analysis Run 3/28/2019 9:07 AM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=7.805, Std. Dev.=0.7672, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9174, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH (S.U.) Analysis Run 3/28/2019 9:17 AM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

	803	803	
12/15/2015	7.36		
2/17/2016	7.03		
5/26/2016	7.51		
8/23/2016	7.2		
11/10/2016	6.96		
2/9/2017	7.23		
5/3/2017	7		
8/1/2017	7.15		
11/15/2018		7.26	
1/11/2019		7.14	extra sample

	804	804	
12/15/2015	7.32		
2/17/2016	7.2		
5/26/2016	7.22		
8/23/2016	6.96		
11/10/2016	6.83		
2/9/2017	7.2		
5/3/2017	6.83		
8/1/2017	6.97		
11/15/2018		7.09	
1/11/2019		6.97	extra sample
3/12/2019		7.11	extra sample

Constituent: pH (S.U.) Analysis Run 3/28/2019 9:17 AM View: Ash Pond III

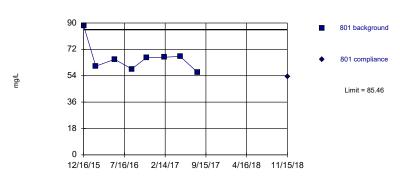
Sibley Client: SCS Engineers Data: Sibley

	805	805
12/15/2015	7.74	
2/17/2016	7.46	
5/26/2016	7.62	
8/23/2016	7.14	
11/10/2016	7.15	
2/9/2017	7.79	
5/3/2017	7	
8/1/2017	7.24	
11/15/2018		7.18

	806R	806R	
6/2/2016	7.98		
7/19/2016	7.33		
8/23/2016	6.95		
11/11/2016	9.32		
2/9/2017	7.88		
3/22/2017	7.75		
5/3/2017	7		
8/1/2017	8.23		
11/15/2018		7.05	
1/11/2019		7.05	extra sample
3/12/2019		7.27	extra sample

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG

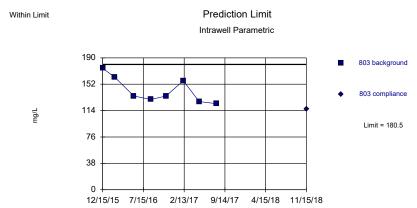
Within Limit Prediction Limit Intrawell Parametric



Background Data Summary: Mean=66.15, Std. Dev.=9.755, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7928, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=143.1, Std. Dev.=18.88, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8721, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Within Limit Prediction Limit
Intrawell Parametric

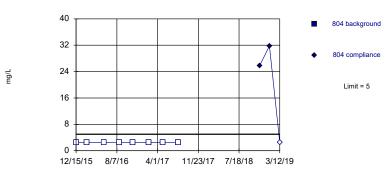


Background Data Summary: Mean=44.05, Std. Dev.=19.82, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.7634, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG Hollow symbols indicate censored values.

Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.01179. Individual comparison alpha = 0.005912 (1 of 3). Insufficient data to test for seasonalize data were not deseasonalized.

	801	801
12/16/2015	88.1	
2/17/2016	60.5	
5/26/2016	65.2	
8/23/2016	58.6	
11/10/2016	66.5	
2/9/2017	66.6	
5/3/2017	67.2	
8/1/2017	56.5	
11/15/2018		53.4

	802	802
12/16/2015	33.3	
2/17/2016	35.5	
5/26/2016	26.1	
8/23/2016	41.2	
11/10/2016	38	
2/9/2017	88.9	
5/3/2017	35.2	
8/1/2017	54.2	
11/15/2018		34

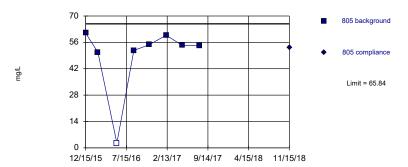
	803	803
12/15/2015	175	
2/17/2016	162	
5/26/2016	135	
8/23/2016	130	
11/10/2016	135	
2/9/2017	157	
5/3/2017	127	
8/1/2017	124	
11/15/2018		116

	804	804	
12/15/2015	<5		
2/17/2016	<5		
5/26/2016	<5		
8/23/2016	<5		
11/10/2016	<5		
2/9/2017	<5		
5/3/2017	<5		
8/1/2017	<5		
11/15/2018		25.8	
1/11/2019		31.8	1st verification re-sample
3/12/2019		<5	2nd verification re-sample

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG Hollow symbols indicate censored values.

Within Limit

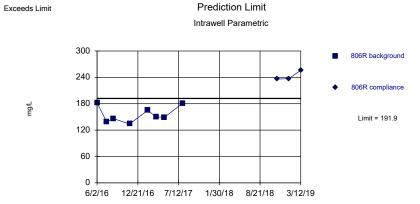
Prediction Limit
Intrawell Parametric



Background Data Summary (based on cube transformation): Mean=149015, Std. Dev.=68909, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8456, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 3/28/2019 9:07 AM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.12 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=155.8, Std. Dev.=18.28, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.893, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	805	805
12/15/2015	60.9	
2/17/2016	50.7	
5/26/2016	<5	
8/23/2016	51.7	
11/10/2016	54.7	
2/9/2017	59.8	
5/3/2017	54.4	
8/1/2017	54.2	
11/15/2018		53.2

	806R	806R	
6/2/2016	182		
7/19/2016	139		
8/23/2016	146		
11/11/2016	134		
2/9/2017	165		
3/22/2017	150		
5/3/2017	149		
8/1/2017	181		
11/15/2018		236	
1/11/2019		237	1st verification re-sample
3/12/2019		256	2nd verification re-sample

			Sibley	Client: SCS Engineers	Data: Sibley	Printed	3/28/201	9, 9:17 AM			
<u>Constituent</u>	Well	Upper Lim.	Lower Lim.	<u>Date</u>	Observ.	Sig	Bg N	%NDs	<u>Transform</u>	<u>Alpha</u>	Method
Boron (mg/L)	801	0.4521	n/a	11/15/2018	0.285	No	8	0	No	0.001254	Param Intra 1 of 3
Boron (mg/L)	802	0.221	n/a	11/15/2018	0.1ND	No	8	87.5	n/a	0.005912	NP Intra (NDs) 1 of 3
Boron (mg/L)	803	3.009	n/a	11/15/2018	2.9	No	8	0	No	0.001254	Param Intra 1 of 3
Boron (mg/L)	804	5.133	n/a	3/12/2019	5.71	Yes	8 8	0	No	0.001254	Param Intra 1 of 3
Boron (mg/L)	805	0.2	n/a	11/15/2018	0.1ND	No	8	100	n/a	0.005912	NP Intra (NDs) 1 of 3
Boron (mg/L)	806R	5.323	n/a	3/12/2019	5.75	Yes	8 8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	801	166.7	n/a	11/15/2018	143	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	802	100.7	n/a	3/12/2019	107	Yes	8 8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	803	137.2	n/a	11/15/2018	114	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	804	194	n/a	11/15/2018	155	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	805	110.9	n/a	11/15/2018	98.5	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	806R	151.8	n/a	3/12/2019	173	Yes	8 8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	801	104.1	n/a	3/12/2019	144	Yes	8 8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	802	72.18	n/a	11/15/2018	52.3	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	803	16.4	n/a	1/11/2019	16	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	804	17.87	n/a	11/15/2018	3.9	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	805	12	n/a	11/15/2018	9.45	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	806R	30.78	n/a	11/15/2018	29	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	801	679.2	n/a	11/15/2018	586	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	802	473.9	n/a	11/15/2018	412	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	803	618.1	n/a	11/15/2018	480	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	804	674.7	n/a	11/15/2018	625	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	805	416.6	n/a	11/15/2018	339	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	806R	679.2	n/a	3/12/2019	681	Yes	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	801	0.2025	n/a	11/15/2018	0.172	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	802	0.2886	n/a	11/15/2018	0.222	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	803	0.3107	n/a	11/15/2018	0.278	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	804	0.2364	n/a	1/11/2019	0.234	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	805	0.2034	n/a	11/15/2018	0.196	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	806R	0.2705	n/a	11/15/2018	0.202	No	8	0	No	0.001254	Param Intra 1 of 3
pH (S.U.)	801	8.151	5.956	3/12/2019	6.84	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	802	8.233	5.569	3/12/2019	6.91	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	803	7.553	6.807	1/11/2019	7.14	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	804	7.445	6.688	3/12/2019	7.11	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	805	7.989	6.796	11/15/2018	7.18	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	806R	9.323	6.287	3/12/2019	7.27	No	8	0	No	0.000	Param Intra 1 of 3
Sulfate (mg/L)	801	85.46	n/a	11/15/2018	53.4	No	8	0	No	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	802	83.27	n/a	11/15/2018	34	No	8	0	No	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	803	180.5	n/a	11/15/2018	116	No	8	0	No	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	804	5	n/a	3/12/2019	2.5ND	No	8	100	n/a	0.005912	NP Intra (NDs) 1 of 3
Sulfate (mg/L)	805	65.84	n/a	11/15/2018	53.2	No	8	12.5	x^3	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	806R	191.9	n/a	3/12/2019	256	Yes	8	0	No	0.001254	Param Intra 1 of 3

Sibley Generating Station Determination of Statistically Significant Increases Fly Ash Impoundment March 29, 2019

ATTACHMENT 2

Sanitas[™] Configuration Settings

Data	Output	Trend Test	Control Cht	Prediction Lim	Tolerance Lim	Conf/Tol Int	ANOVA	Welchs	Other Tests
Exclud	le data flag	s: i							
Data	Reading O	otions							
● In	ndividual Ob	servations							
\bigcirc M	lean of Eac	:h:	O Month						
O M	ledian of Ea	ach:	Seasor	ı					
Non	Dotoot / Te	ace Handling.							
		_	•••						
Setup	Seasons								
Aut	omatically F	rocess Resar	mples						

Black and White Output	✓ Prompt to Overwrite/Append Summary Tables						
✓ Four Plots Per Page	Round Limits to 2 Sig. Digits (when not set in data file)						
Always Combine Data Pages	✓ User-Set Scale						
✓ Include Tick Marks on Data Page	✓ Indicate Background Data						
Use Constituent Name for Graph Title	Show Exact Dates						
☐ Draw Border Around Text Reports and Data Pages	☐ Thick Plot Lines						
☑ Enlarge/Reduce Fonts (Graphs): 100%	7						
☑ Enlarge/Reduce Fonts (Data/Text Reports): 100%	Zoom Factor: 200% V						
✓ Wide Margins (on reports without explicit setting)	Output Decimal Precision						
Use CAS# (Not Const. Name)	C Less Precision						
Truncate File Names to 20 Characters	Normal Precision						
	More Precision						
Include Limit Lines when found in Database							
Show Deselected Data on Time Series Lighter V							
✓ Show Deselected Data on all Data Pages Light ∨							
Setup Symbols and Colors							
Store Print Jobs in Multiple Constituent Mode Store All Print Jobs							
Printer: Adobe PDF	∨ Printers						

Data Output Trend Test Control Cht Prediction Lim Tolerance Lim Conf/Tol Int ANOVA Welchs Other Tests

Transformation Use Non-Parametric Test when Non-Detects Percent > 50 Use Non-Parametric Test when Non-Detects Percent > 50 Use Aitchison's Adjustment ∨ when Non-Detects Percent > 15 □ Optional Further Refinement: Use Aitchison's ∨ when NDs % > 50 □ Use Poisson Prediction Limit when Non-Detects Percent > 90 □ Use Best W Statistic □ Plot Transformed Values □ IntraWell Other □ Stop if Background Trend Detected at Alpha = 0.05 ∨ □ Plot Background Data □ Override Standard Deviation: □ Override Standard Deviation: □ Override Standard Deviation: □ Override Statistical Evaluations per Year: □ Automatically Remove Background Outliers □ 2-Tailed Test Mode □ Show Deselected Data □ Lighter ∨ Non-Parametric Limit = Highest Background Value ○ Non-Parametric Limit when 100% Non-Detects: □ Highest Background Value ○ Most Recent PQL if available, or MDL ○ MDL ○ MDL ○ MDL ○ M	☑ Test for Nomality using Shapiro-Wilk/Francia at Alpha = 0.01 ○ Use Ladder of Powers ☑ Use Non-Parametric Test when Non-Detects Percent > 50 ○ Natural Log or No Transformation ☑ Use Non-Parametric Test when Non-Detects Percent > 50 ○ Never Transform ☑ Use Specific Transformation: ○ Use Specific Transformation: ☑ Use Poisson Prediction Limit when Non-Detects Percent > 90 ☐ Use Best W Statistic ☐ Use Best W Statistic ☐ Plot Transformed Values ☐ Plot Transformed Values ☐ Plot Transformed Values ☐ IntraWell Other ☐ Stop if Background Trend Detected at Alpha = 0.05 ☐ Plot Background Data ○ Override Standard Deviation: ☐ Override Standard Deviation: ☐ Override Kappa: ☐ Always Use Non-Parametric ☐ Automatically Remove Background Outliers ☐ Statistical Evaluations per Year: ☐ Automatically Remove Background Outliers ☐ Statistical Evaluations (Compliance) ☐ Automatically Remove Background Value ☐ Show Deselected Data ☐ Lighter Non-Parametric Limit ☐ Highest Background Value ☐ Non-Parametric Limit ☐ Highest Background Value ☐ Non-Parametric Limit ☐ Automatically Remove Background Value ☐ Non-Parametric Limit ☐ Highest Backgrou	Data Output Trend Test Control Cht Prediction Lim To	olerance Lim (Conf/Tol Int	ANOVA	Welchs	Other Tests
Use Aitchison's Adjustment ∨ when Non-Detects Percent > 15 Optional Further Refinement: Use Aitchison's when NDs % > 50 Use Best W Statistic Use Poisson Prediction Limit when Non-Detects Percent > 90 Deseasonalize (Intra- and InterWell) IntraWell Other Stop if Background Trend Detected at Alpha = 0.05 ∨ Plot Background Data Override Standard Deviation: Always Use Non-Parametric Facility α Statistical Evaluations per Year: Constituents Analyzed: Downgradient (Compliance) Wells: Sampling Plan Comparing Individual Observations 1 of 1 1 of 2 1 of 3 1 of 4 Optional Further Refinement: Use Aitchison's when NDs % > 50 Use Best W Statistic IntraWell Other Stop if Background Trend Detected at Alpha = 0.05 ∨ Plot Background Data Override Standard Deviation: Override DF: Override Kappa: Automatically Remove Background Outliers 2-Tailed Test Mode Show Deselected Data Lighter ∨ Non-Parametric Limit = Highest Background Value Non-Parametric Limit when 100% Non-Detects: Highest/Second Highest Background Value Most Recent PQL if available, or MDL	Use Aitchison's Adjustment ∨ when Non-Detects Percent > 15 □ Optional Further Refinement: Use Aitchison's ∨ when NDs % > 50 □ Use Best W Statistic □ Use Poisson Prediction Limit when Non-Detects Percent > 90 □ IntraWell Other □ Stop if Background Trend Detected at Alpha = 0.05 ∨ Plot Background Data ○ Verride Standard Deviation: □ Override DF: □ Override Kappa: □ Automatically Remove Background Outliers □ Show Deselected Data □ Lighter ∨ Non-Parametric Limit = Highest Background Value ∨ Non-Parametric Limit when 100% Non-Detects: □ Highest/Second Highest Background Value ● Most Recent PQL if available, or MDL		Alpha = 0.01		Use Ladde Natural Log Never Tran	or No Tran sform	nsformation
 If Seasonality Is Detected If Seasonality Is Detected Or Insufficient to Test Always (When Sufficient Data) Never Always Use Non-Parametric Facility □ Statistical Evaluations per Year: Constituents Analyzed: Downgradient (Compliance) Wells: Sampling Plan Comparing Individual Observations 1 of 1 ○ 1 of 2 ● 1 of 3 ○ 1 of 4 O 1 of 4 ("Modified California") Stop if Background Trend Detected at Alpha = 0.05 ∨ Plot Background Data Override Standard Deviation: Override Standard Deviation: Override Standard Deviation: Override Example Standard Deviation: Override DF: Override Mackground Outliers □ 2-Tailed Test Mode ☑ Show Deselected Data Lighter ∨ Non-Parametric Limit = Highest Background Value Non-Parametric Limit when 100% Non-Detects: ☐ Highest/Second Highest Background Value Most Recent PQL if available, or MDL 	 If Seasonality Is Detected If Seasonality Is Detected Or Insufficient to Test Always (When Sufficient Data) Never Always Use Non-Parametric Facility □α Statistical Evaluations per Year: Constituents Analyzed: Downgradient (Compliance) Wells: Sampling Plan Comparing Individual Observations 1 of 1	Optional Further Refinement: Use Aitchison's when	n NDs % > 5(Use Best V	Natura V Statistic	al Log V
Facility — Statistical Evaluations per Year: Constituents Analyzed: Downgradient (Compliance) Wells: Sampling Plan Comparing Individual Observations 1 of 1 1 of 2 1 of 3 1 of 4 2	Facility — Automatically Remove Background Outliers Constituents Analyzed: 7 Downgradient (Compliance) Wells: 6 Sampling Plan Comparing Individual Observations	If Seasonality Is Detected If Seasonality Is Detected Or Insufficient to Test	Stop if Ba	ackground T kground Dat	ta	ed at Alph	a = 0.05 V
O Most Nocon Budgeting Value (subst. Method)		Facility □α Statistical Evaluations per Year: 2 Constituents Analyzed: 7 Downgradient (Compliance) Wells: 6 Sampling Plan Comparing Individual Observations ∨ □ 1 of 1 ○ 1 of 2 ● 1 of 3 ○ 1 of 4	☐ Automation☐ 2-Tailed ☐ Show De Non-Parametri Non-Parametri ☐ Highest / ⑥ Most Rec	cally Remov Test Mode eselected Da tric Limit = tric Limit whe 'Second Hig cent PQL if	e Backgroun ata Lighter Highest Bac en 100% Non hest Backgro	ad Outliers kground Value MDL	

Data	Output	Trend Test	Control Cht	Prediction Lim	Tolerance Lim	Conf/Tol Int	ANOVA	Welchs	Other Tests
_	Rank Von Neumann, Wilcoxon Rank Sum / Mann-Whitney Use Modified Alpha 2-Tailed Test Mode								
O E	r Tests :PA 1989 O)ixon's at α=	outlier Screening		of 0.05) Rosner's at α=	0.01 ∨ ☑ ∪	Jse EPA Scree	ning to esta	ablish Suspe	ected Outliers
O T	ukey's Outl	lier Screening,	with IQR Mul	tiplier = 3.0	Use Ladd	ler of Powers to	achieve B	Best W Stat	
_ () () () () () ()	 ✓ Test For Nomality using Shapiro-Wilk/Francia ✓ at Alpha = 0.1 ⑥ Stop if Non-Normal ○ Continue with Parametric Test if Non-Normal ○ Tukey's if Non-Normal, with IQR Multiplier = 3.0 ✓ Use Ladder of Powers to achieve Best W Stat ✓ No Outlier If Less Than 3.0 Times Median ☐ Apply Rules found in Ohio Guidance Document 0715 ☐ Combine Background Wells on the Outlier Report 								
	Stiff Diagra				~	Label Constitu	uents		
	☐ Combine Dates ☐ Label Axes								
_		Constituent Nuent Definition			✓	Note Cation-	Anion Balan	ice (Piper o	nly)

ATTACHMENT 2-2

Spring 2019 Semiannual Detection Monitoring Statistical Analyses

MEMORANDUM

September 27, 2019

To: Sibley Generating Station 33200 E Johnson Road Sibley, Missouri 64088

KCP&L Greater Missouri Operations Company

From: SCS Engineers

RE: Determination of Statistically Significant Increases - Fly Ash Impoundment

Spring 2019 Semiannual Detection Monitoring 40 CFR 257.94

Statistical analysis of monitoring data from the groundwater monitoring system for the Fly Ash Impoundment at the Sibley Generating Station has been completed in substantial compliance with the "Statistical Method Certification by A Qualified Professional Engineer" dated October 12, 2017. Detection monitoring groundwater samples were collected on May 22, 2019. Review and validation of the results from the May 2019 Detection Monitoring Event was completed on July 3, 2019, which constitutes completion and finalization of detection monitoring laboratory analyses. A statistical analysis was then conducted to determine whether there was a statistically significant increase (SSI) over background values for each constituent listed in Appendix III to Part 257-Constituents for Detection Monitoring. Two rounds of verification sampling were conducted for certain constituents on July 16, 2019 and August 21, 2019.

The completed statistical evaluation identified four Appendix III constituents above their respective prediction limit in monitoring wells MW-801, MW-804, and MW-806R.

Constituent/Monitoring Well	*UPL	Observation May 22, 2019	1st Verification July 16, 2019	2nd Verification August 21, 2019
Boron				
804	5.133	7.64	7.59	8.14
806R	5.323	5.58	5.64	5.66
Calcium				
806R	151.8	171	172	170
Chloride				
801	104.1	154	127	124
Sulfate				
806R	191.9	238	244	241

*UPL - Upper Prediction Limit

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The



Sibley Generating Station
Determination of Statistically Significant Increases
Fly Ash Impoundment
September 27, 2019
Page 2 of 2

statistical evaluation confirmed five SSIs above the background prediction limits. These include boron in downgradient monitoring wells MW-804 and MW-806R; calcium in monitoring well MW-806R; chloride in upgradient monitoring well MW-801; and, sulfate in monitoring well MW-806R.

Attached to this memorandum are the following backup information:

Attachment 1: Sanitas™ Output:

Statistical evaluation output from SanitasTM for the prediction limit analysis. This includes prediction limit plots, prediction limit background data, detection sample result, 1st verification re-sample result (when applicable), 2nd verification re-sample result (when applicable), extra sample results for pH because pH is collected as part of the sampling procedure, and a Prediction Limit summary table. Output documentation includes the analytical data used for the statistical analyses.

Attachment 2: Sanitas™ Configuration Settings:

Screen shots of the applicable Sanitas[™] configuration settings for the statistical prediction limit analysis. This includes data configuration, output configuration, prediction limit configuration and other tests configuration.

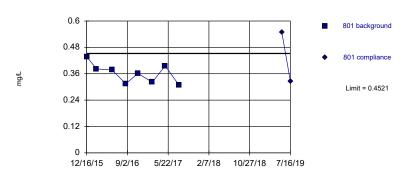
Revision Number	Revision Date	Attachment Revised	Summary of Revisions

Sibley Generating Station Determination of Statistically Significant Increases Fly Ash Impoundment September 27, 2019

ATTACHMENT 1

Sanitas[™] Output

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.3621, Std. Dev.=0.04547, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9368, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Boron Analysis Run 9/23/2019 1:45 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

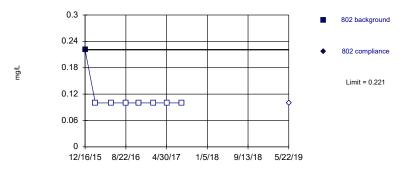
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit Intrawell Parametric 803 background 803 compliance Limit = 3.009

Background Data Summary: Mean=2.804, Std. Dev.=0.1038, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9108, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG Hollow symbols indicate censored values

Within Limit Prediction Limit
Intrawell Non-parametric

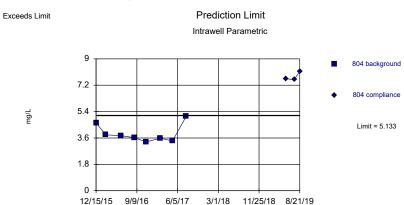


Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.01179. Individual comparison alpha = 0.005912 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 9/23/2019 1:45 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=3.901, Std. Dev.=0.6221, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8265, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	801	801	
12/16/2015	0.438		
2/17/2016	0.382		
5/26/2016	0.377		
8/23/2016	0.315		
11/10/2016	0.361		
2/9/2017	0.321		
5/3/2017	0.396		
8/1/2017	0.307		
5/22/2019		0.549	
7/16/2019		0.326	1st verification sample

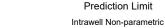
	802	802
12/16/2015	0.221	
2/17/2016	<0.2	
5/26/2016	<0.2	
8/23/2016	<0.2	
11/10/2016	<0.2	
2/9/2017	<0.2	
5/3/2017	<0.2	
8/1/2017	<0.2	
5/22/2019		<0.2

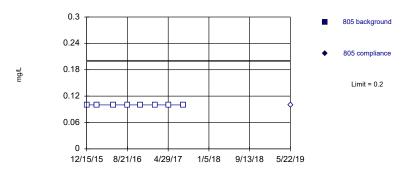
	803	803
12/15/2015	3.01	
2/17/2016	2.85	
5/26/2016	2.71	
8/23/2016	2.86	
11/10/2016	2.79	
2/9/2017	2.79	
5/3/2017	2.73	
8/1/2017	2.69	
5/22/2019		2.77

	804	804	
12/15/2015	4.63		
2/17/2016	3.81		
5/26/2016	3.76		
8/23/2016	3.62		
11/10/2016	3.33		
2/9/2017	3.58		
5/3/2017	3.4		
8/1/2017	5.08		
5/22/2019		7.64	
7/16/2019		7.59	1st verification sample
8/21/2019		8.14	2nd verification sample

Hollow symbols indicate censored values.

Within Limit

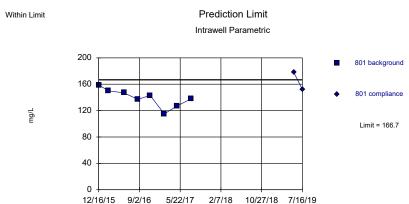




Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.01179. Individual comparison alpha = 0.005912 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

> Constituent: Boron Analysis Run 9/23/2019 1:45 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

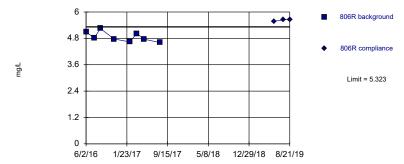
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=139.5, Std. Dev.=13.75, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.975, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

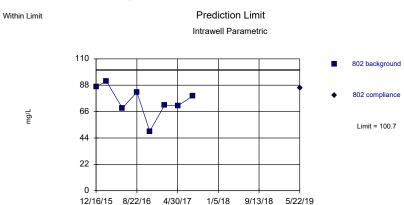




Background Data Summary: Mean=4.87, Std. Dev.=0.2287, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9205, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

> Constituent: Boron Analysis Run 9/23/2019 1:45 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=75, Std. Dev.=12.99, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9366, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	805	805
12/15/2015	<0.2	000
2/17/2016	<0.2	
5/26/2016	<0.2	
8/23/2016	<0.2	
11/10/2016	<0.2	
2/9/2017	<0.2	
5/3/2017	<0.2	
8/1/2017	<0.2	
5/22/2019		<0.2

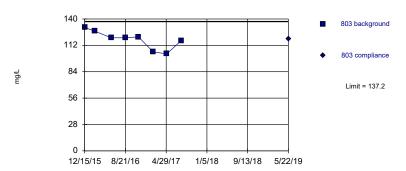
	806R	806R	
6/2/2016	5.1		
7/19/2016	4.81		
8/23/2016	5.25		
11/11/2016	4.77		
2/9/2017	4.64		
3/22/2017	5.02		
5/3/2017	4.76		
8/1/2017	4.61		
5/22/2019		5.58	
7/16/2019		5.64	1st verification sample
8/21/2019		5.66	2nd verification sample

	801	801	
12/16/2015	159		
2/17/2016	150		
5/26/2016	147		
8/23/2016	137		
11/10/2016	143		
2/9/2017	115		
5/3/2017	127		
8/1/2017	138		
5/22/2019		178	
7/16/2019		152	1st verification sample
			•

	802	802
12/16/2015	86.6	
2/17/2016	91.4	
5/26/2016	68.9	
8/23/2016	82.2	
11/10/2016	49.6	
2/9/2017	71.4	
5/3/2017	71	
8/1/2017	78.9	
5/22/2019		85.5

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=118, Std. Dev.=9.725, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9144, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit Intrawell Parametric

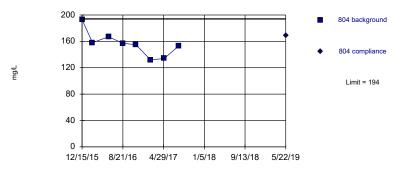
805 background
805 compliance

805 compliance

Limit = 110.9

Background Data Summary: Mean=97.61, Std. Dev.=6.708, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8624, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

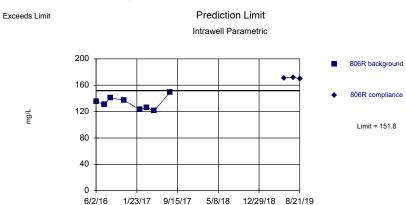
Within Limit Prediction Limit Intrawell Parametric



Background Data Summary: Mean=156.1, Std. Dev.=19.14, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9111, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Calcium Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=132.9, Std. Dev.=9.538, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9644, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	803	803
12/15/2015	131	
2/17/2016	127	
5/26/2016	120	
8/23/2016	120	
11/10/2016	121	
2/9/2017	105	
5/3/2017	103	
8/1/2017	117	
5/22/2019		119

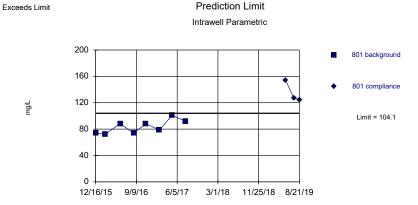
	804	804
12/15/2015	193	
2/17/2016	158	
5/26/2016	167	
8/23/2016	157	
11/10/2016	155	
2/9/2017	132	
5/3/2017	134	
8/1/2017	153	
5/22/2019		169

	805	805
12/15/2015	104	
2/17/2016	99.5	
5/26/2016	98.5	
8/23/2016	105	
11/10/2016	98.9	
2/9/2017	88.8	
5/3/2017	86.2	
8/1/2017	100	
5/22/2019		98.7

	806R	806R	
6/2/2016	135		
7/19/2016	131		
8/23/2016	141		
11/11/2016	137		
2/9/2017	123		
3/22/2017	126		
5/3/2017	121		
8/1/2017	149		
5/22/2019		171	
7/16/2019		172	1st verification sample
8/21/2019		170	2nd verification sample

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

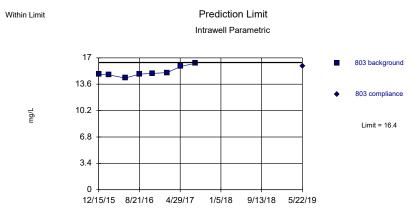
Within Limit



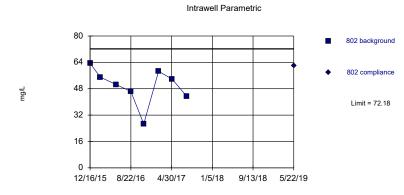
Background Data Summary: Mean=83.45, Std. Dev.=10.41, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.899, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=15.16, Std. Dev.=0.6232, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8705, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

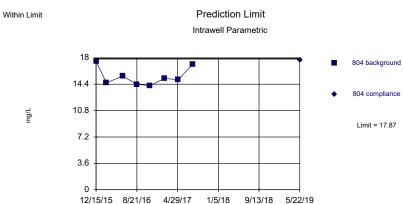


Prediction Limit

Background Data Summary: Mean=49.74, Std. Dev.=11.34, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9231, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=15.44, Std. Dev.=1.229, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8619, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	801	801	
12/16/2015	73.6		
2/17/2016	72.4		
5/26/2016	88.2		
8/23/2016	73.8		
11/10/2016	88.2		
2/9/2017	78.6		
5/3/2017	101		
8/1/2017	91.8		
5/22/2019		154	
7/16/2019		127	1st verification sample
8/21/2019		124	2nd verification sample

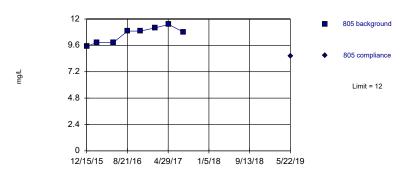
	802	802
12/16/2015	63.5	
2/17/2016	55	
5/26/2016	50.5	
8/23/2016	46.3	
11/10/2016	26.6	
2/9/2017	58.6	
5/3/2017	53.9	
8/1/2017	43.5	
5/22/2019		62

	803	803
12/15/2015	14.9	
2/17/2016	14.8	
5/26/2016	14.4	
8/23/2016	14.9	
11/10/2016	15	
2/9/2017	15.1	
5/3/2017	15.9	
8/1/2017	16.3	
5/22/2019		15.9

	804	804
12/15/2015	17.5	
2/17/2016	14.6	
5/26/2016	15.5	
8/23/2016	14.4	
11/10/2016	14.2	
2/9/2017	15.2	
5/3/2017	15	
8/1/2017	17.1	
5/22/2019		17.7

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

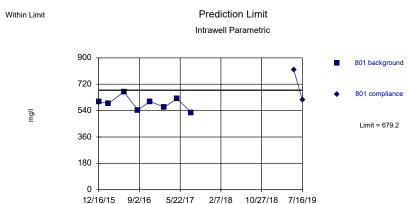
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=10.57, Std. Dev.=0.7249, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8989, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001524.

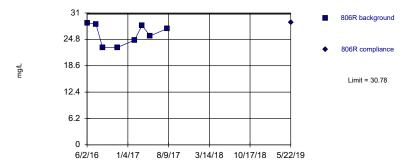
Constituent: Chloride Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Siblev Client: SCS Engineers Data: Siblev

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=589.8, Std. Dev.=45.18, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.010, calculated = 0.9729, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

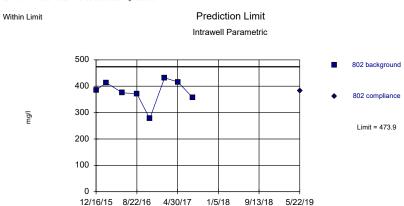
Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=26.05, Std. Dev.=2.389, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8702, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Chloride Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=378.4, Std. Dev.=48.28, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.885, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	805	805
12/15/2015	9.51	
2/17/2016	9.86	
5/26/2016	9.85	
8/23/2016	10.9	
11/10/2016	10.9	
2/9/2017	11.2	
5/3/2017	11.5	
8/1/2017	10.8	
5/22/2019		8.65

	806R	806R
6/2/2016	28.6	
7/19/2016	28.4	
8/23/2016	22.9	
11/11/2016	22.9	
2/9/2017	24.6	
3/22/2017	28.1	
5/3/2017	25.6	
8/1/2017	27.3	
5/22/2019		28.7

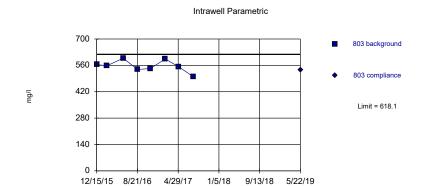
	801	801			
12/16/2015	601				
2/17/2016	589				
5/26/2016	669				
8/23/2016	544				
11/10/2016	602				
2/9/2017	564				
5/3/2017	622				
8/1/2017	527				
5/22/2019		817			
7/16/2019		613	1st verification sample		

	802	802
12/16/2015	385	
2/17/2016	413	
5/26/2016	375	
8/23/2016	372	
11/10/2016	277	
2/9/2017	432	
5/3/2017	416	
8/1/2017	357	
5/22/2019		383

Within Limit

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit

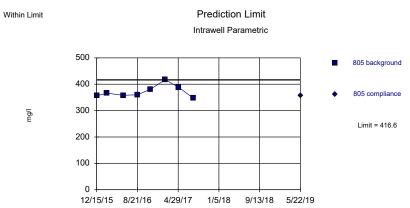


Prediction Limit

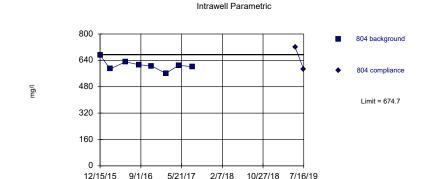
Background Data Summary: Mean=555.9, Std. Dev.=31.44, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.9486, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=371.6, Std. Dev.=22.73, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8928, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

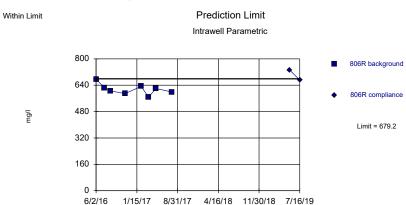


Prediction Limit

Background Data Summary: Mean=610.4, Std. Dev.=32.48, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9436, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Dissolved Solids Analysis Run 9/23/2019 1:45 PM View: Ash Pond III Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=614.4, Std. Dev.=32.76, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9638, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	803	803
12/15/2015	564	
2/17/2016	558	
5/26/2016	598	
8/23/2016	538	
11/10/2016	543	
2/9/2017	594	
5/3/2017	552	
8/1/2017	500	
5/22/2019		535

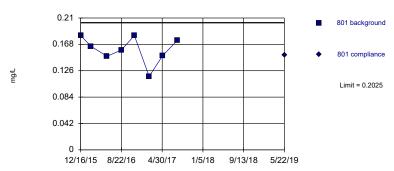
12/15/2015 673 2/17/2016 588 5/26/2016 631 8/23/2016 613 11/10/2016 606 2/9/2017 561
5/26/2016 631 8/23/2016 613 11/10/2016 606
8/23/2016 613 11/10/2016 606
11/10/2016 606
2/9/2017 561
5/3/2017 609
8/1/2017 602
5/22/2019 719
7/16/2019 585 1st verification san

	805	805
12/15/2015	356	
12/15/2015	330	
2/17/2016	366	
5/26/2016	358	
8/23/2016	360	
11/10/2016	381	
2/9/2017	417	
5/3/2017	388	
8/1/2017	347	
5/22/2019		357

	806R	806R	
6/2/2016	677		
7/19/2016	624		
8/23/2016	605		
11/11/2016	589		
2/9/2017	633		
3/22/2017	568		
5/3/2017	620		
8/1/2017	599		
5/22/2019		731	
7/16/2019		671	1st verification sample

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

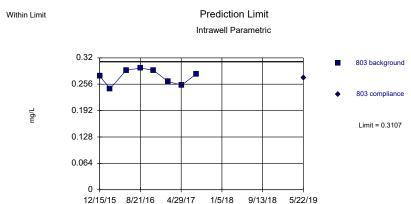




Background Data Summary: Mean=0.1598, Std. Dev.=0.02158, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9046, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

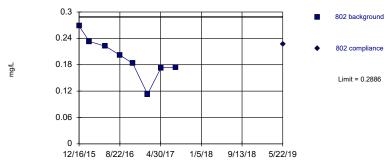
Constituent: Fluoride Analysis Run 9/23/2019 1:45 PM View: Ash Pond III
Siblev Client: SCS Engineers Data: Siblev

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=0.2741, Std. Dev=0.01848, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9165, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Within Limit Prediction Limit Intrawell Parametric

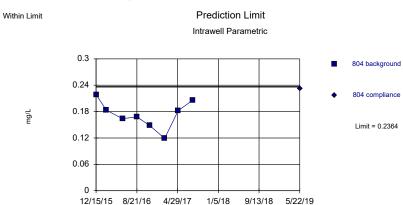


Background Data Summary: Mean=0.196, Std. Dev=0.04681, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9741, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 9/23/2019 1:45 PM View: Ash Pond III

Siblev Client: SCS Engineers Data: Siblev

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=0.1736, Std. Dev=0.03169, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9792, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	801	801
12/16/2015	0.182	
2/17/2016	0.165	
5/26/2016	0.149	
8/23/2016	0.159	
11/10/2016	0.182	
2/9/2017	0.117	
5/3/2017	0.15	
8/1/2017	0.174	
5/22/2019		0.151

	802	802
12/16/2015	0.268	
2/17/2016	0.233	
5/26/2016	0.222	
8/23/2016	0.202	
11/10/2016	0.183	
2/9/2017	0.113	
5/3/2017	0.173	
8/1/2017	0.174	
5/22/2019		0.227

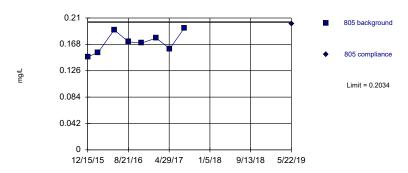
	803	803
12/15/2015	0.276	
2/17/2016	0.245	
5/26/2016	0.29	
8/23/2016	0.295	
11/10/2016	0.29	
2/9/2017	0.262	
5/3/2017	0.254	
8/1/2017	0.281	
5/22/2019		0.272

	804	804
12/15/2015	0.219	
2/17/2016	0.183	
5/26/2016	0.164	
8/23/2016	0.168	
11/10/2016	0.148	
2/9/2017	0.119	
5/3/2017	0.182	
8/1/2017	0.206	
5/22/2019		0.233

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit





Background Data Summary: Mean=0.1711, Std. Dev.=0.01632, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9597, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limits

Prediction Limit
Intrawell Parametric

801 background

801 compliance
Limit = 8.151

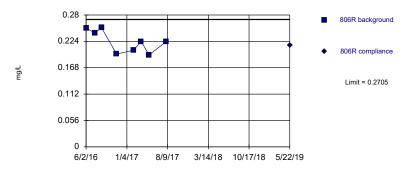
Limit = 5.956

1.8

0
12/16/15 9/9/16 6/5/17 3/1/18 11/25/18 8/21/19

Background Data Summary: Mean=7.054, Std. Dev.=0.5545, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9128, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001524.

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=0.2239, Std. Dev=0.02355, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8972, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Fluoride Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limits

Prediction Limit
Intrawell Parametric

802 background
802 compliance
Limit = 8.233
Limit = 5.569

12/16/15 8/22/16 4/30/17 1/5/18 9/13/18 5/22/19

Background Data Summary: Mean=6.901, Std. Dev.=0.6729, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.8827, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	805	805
12/15/2015	0.148	
2/17/2016	0.155	
5/26/2016	0.191	
8/23/2016	0.172	
11/10/2016	0.17	
2/9/2017	0.178	
5/3/2017	0.161	
8/1/2017	0.194	
5/22/2019		0.201

	806R	806R
6/2/2016	0.252	
7/19/2016	0.242	
8/23/2016	0.253	
11/11/2016	0.197	
2/9/2017	0.205	
3/22/2017	0.224	
5/3/2017	0.195	
8/1/2017	0.223	
5/22/2019		0.215

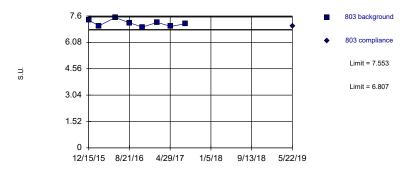
	801	801		
12/16/2015	7.39			
2/17/2016	6.7			
5/26/2016	8.06			
8/23/2016	7.37			
11/10/2016	6.56			
2/9/2017	6.7			
5/3/2017	6.42			
8/1/2017	7.23			
5/22/2019		6.87		
7/16/2019		6.71	extra sample	
8/21/2019		6.65	extra sample	

	802	802
12/16/2015	7.53	
2/17/2016	6.58	
5/26/2016	8.16	
8/23/2016	7.2	
11/10/2016	6.39	
2/9/2017	6.25	
5/3/2017	6.37	
8/1/2017	6.73	
5/22/2019		6.77

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limits Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7,18, Std. Dev.=0.1884, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9447, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

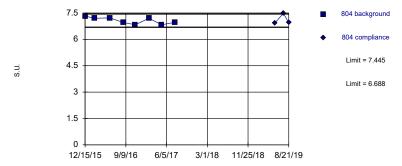
Within Limits

Prediction Limit
Intrawell Parametric

805 background
805 compliance
Limit = 7.989
Limit = 6.796

Background Data Summary: Mean=7.393, Std. Dev.=0.3012, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.915, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Within Limits Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=7.066, Std. Dev.=0.1912, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8802, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: pH Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

6/2/16

Within Limits

Prediction Limit
Intrawell Parametric

806R background

806R compliance
Limit = 9.323
Limit = 6.287

Background Data Summary: Mean=7.805, Std. Dev.=0.7672, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.9174, critical = 0.749. Kappa = 1.979 (e=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

1/23/17 9/15/17 5/8/18 12/29/18 8/21/19

Constituent: pH (S.U.) Analysis Run 9/23/2019 1:47 PM View: Ash Pond III

Sibley Client: SCS Engineers Data: Sibley

	803	803
12/15/2015	7.36	
2/17/2016	7.03	
5/26/2016	7.51	
8/23/2016	7.2	
11/10/2016	6.96	
2/9/2017	7.23	
5/3/2017	7	
8/1/2017	7.15	
5/22/2019		7.01

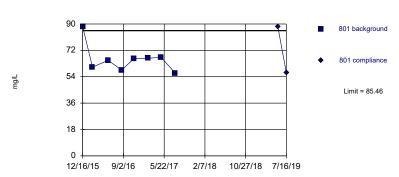
	804	804	
12/15/2015	7.32		
2/17/2016	7.2		
5/26/2016	7.22		
8/23/2016	6.96		
11/10/2016	6.83		
2/9/2017	7.2		
5/3/2017	6.83		
8/1/2017	6.97		
5/22/2019		6.93	
7/16/2019		7.48	extra sample
8/21/2019		6.95	extra sample

	805	805
12/15/2015	7.74	
2/17/2016	7.46	
5/26/2016	7.62	
8/23/2016	7.14	
11/10/2016	7.15	
2/9/2017	7.79	
5/3/2017	7	
8/1/2017	7.24	
5/22/2019		7.03

	806R	806R	
6/2/2016	7.98		
7/19/2016	7.33		
8/23/2016	6.95		
11/11/2016	9.32		
2/9/2017	7.88		
3/22/2017	7.75		
5/3/2017	7		
8/1/2017	8.23		
5/22/2019		6.99	
7/16/2019		7.37	extra sample
8/21/2019		7.08	extra sample

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit
Intrawell Parametric



Background Data Summary: Mean=66.15, Std. Dev.=9.755, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.7928, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

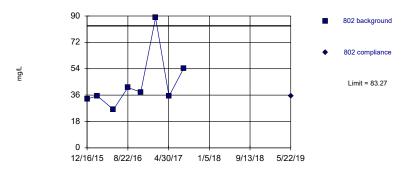
Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG

Within Limit Prediction Limit Intrawell Parametric

190
152
803 background
803 compliance
Limit = 180.5

Background Data Summary: Mean=143.1, Std. Dev.=18.88, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8721, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Within Limit Prediction Limit
Intrawell Parametric

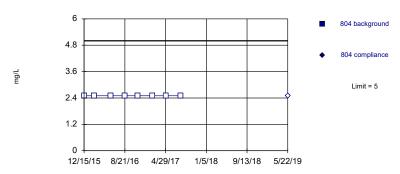


Background Data Summary: Mean=44.05, Std. Dev.=19.82, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.011, calculated = 0.7634, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas $^{\text{\tiny{TM}}}$ v.9.6.23 Sanitas software licensed to SCS Engineers. UG Hollow symbols indicate censored values.

Within Limit Prediction Limit
Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.01179. Individual comparison alpha = 0.005912 (1 of 3). Insufficient data to test for seasonalize data were not deseasonalized.

		801	801	
12/16	6/2015	88.1		
2/17/	/2016	60.5		
5/26/	/2016	65.2		
8/23/	/2016	58.6		
11/10	0/2016	66.5		
2/9/2	2017	66.6		
5/3/2	2017	67.2		
8/1/2	2017	56.5		
5/22/	/2019		88.3	
7/16/	/2019		56.6	1st verification sample

	802	802
12/16/2015	33.3	
2/17/2016	35.5	
5/26/2016	26.1	
8/23/2016	41.2	
11/10/2016	38	
2/9/2017	88.9	
5/3/2017	35.2	
8/1/2017	54.2	
5/22/2019		35.4

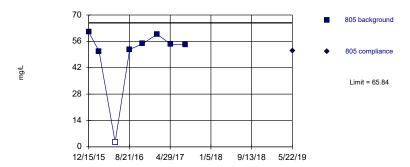
	803	803
12/15/2015	175	
2/17/2016	162	
5/26/2016	135	
8/23/2016	130	
11/10/2016	135	
2/9/2017	157	
5/3/2017	127	
8/1/2017	124	
5/22/2019		120

		804	804
	12/15/2015	<5	
;	2/17/2016	<5	
!	5/26/2016	<5	
8	8/23/2016	<5	
	11/10/2016	<5	
2	2/9/2017	<5	
į	5/3/2017	<5	
8	8/1/2017	<5	
	5/22/2019		<5

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG Hollow symbols indicate censored values.

Within Limit

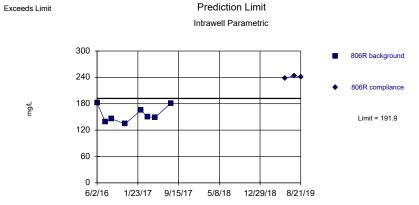
Prediction Limit
Intrawell Parametric



Background Data Summary (based on cube transformation): Mean=149015, Std. Dev.=68909, n=8, 12.5% NDs. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8456, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

Constituent: Sulfate Analysis Run 9/23/2019 1:46 PM View: Ash Pond III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.23 Sanitas software licensed to SCS Engineers. UG



Background Data Summary: Mean=155.8, Std. Dev.=18.28, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.893, critical = 0.749. Kappa = 1.979 (c=7, w=6, 1 of 3, event alpha = 0.05132). Report alpha = 0.001254.

	805	805
12/15/2015	60.9	
2/17/2016	50.7	
5/26/2016	<5	
8/23/2016	51.7	
11/10/2016	54.7	
2/9/2017	59.8	
5/3/2017	54.4	
8/1/2017	54.2	
5/22/2019		51.1

	806R	806R	
6/2/2016	182		
7/19/2016	139		
8/23/2016	146		
11/11/2016	134		
2/9/2017	165		
3/22/2017	150		
5/3/2017	149		
8/1/2017	181		
5/22/2019		238	
7/16/2019		244	1st verification sample
8/21/2019		241	2nd verification sample

			Sibley	Client: SCS Engineers	Data: Sibley	Printed	9/23/201	9, 1:47 PM			
<u>Constituent</u>	Well	Upper Lim.	Lower Lim.	<u>Date</u>	Observ.	Sig	. Bg N	%NDs	<u>Transform</u>	<u>Alpha</u>	Method
Boron (mg/L)	801	0.4521	n/a	7/16/2019	0.326	No	8	0	No	0.001254	Param Intra 1 of 3
Boron (mg/L)	802	0.221	n/a	5/22/2019	0.1ND	No	8	87.5	n/a	0.005912	NP Intra (NDs) 1 of 3
Boron (mg/L)	803	3.009	n/a	5/22/2019	2.77	No	8	0	No	0.001254	Param Intra 1 of 3
Boron (mg/L)	804	5.133	n/a	8/21/2019	8.14	Ye	s 8	0	No	0.001254	Param Intra 1 of 3
Boron (mg/L)	805	0.2	n/a	5/22/2019	0.1ND	No	8	100	n/a	0.005912	NP Intra (NDs) 1 of 3
Boron (mg/L)	806R	5.323	n/a	8/21/2019	5.66	Ye	s 8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	801	166.7	n/a	7/16/2019	152	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	802	100.7	n/a	5/22/2019	85.5	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	803	137.2	n/a	5/22/2019	119	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	804	194	n/a	5/22/2019	169	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	805	110.9	n/a	5/22/2019	98.7	No	8	0	No	0.001254	Param Intra 1 of 3
Calcium (mg/L)	806R	151.8	n/a	8/21/2019	170	Ye	s 8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	801	104.1	n/a	8/21/2019	124	Ye	s 8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	802	72.18	n/a	5/22/2019	62	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	803	16.4	n/a	5/22/2019	15.9	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	804	17.87	n/a	5/22/2019	17.7	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	805	12	n/a	5/22/2019	8.65	No	8	0	No	0.001254	Param Intra 1 of 3
Chloride (mg/L)	806R	30.78	n/a	5/22/2019	28.7	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	801	679.2	n/a	7/16/2019	613	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	802	473.9	n/a	5/22/2019	383	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	803	618.1	n/a	5/22/2019	535	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	804	674.7	n/a	7/16/2019	585	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	805	416.6	n/a	5/22/2019	357	No	8	0	No	0.001254	Param Intra 1 of 3
Dissolved Solids (mg/l)	806R	679.2	n/a	7/16/2019	671	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	801	0.2025	n/a	5/22/2019	0.151	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	802	0.2886	n/a	5/22/2019	0.227	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	803	0.3107	n/a	5/22/2019	0.272	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	804	0.2364	n/a	5/22/2019	0.233	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	805	0.2034	n/a	5/22/2019	0.201	No	8	0	No	0.001254	Param Intra 1 of 3
Fluoride (mg/L)	806R	0.2705	n/a	5/22/2019	0.215	No	8	0	No	0.001254	Param Intra 1 of 3
pH (S.U.)	801	8.151	5.956	8/21/2019	6.65	No		0	No	0.000	Param Intra 1 of 3
pH (S.U.)	802	8.233	5.569	5/22/2019	6.77	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	803	7.553	6.807	5/22/2019	7.01	No	8	0	No	0.000	Param Intra 1 of 3
pH (S.U.)	804	7.445	6.688	8/21/2019	6.95	No		0	No	0.000	Param Intra 1 of 3
pH (S.U.)	805	7.989	6.796	5/22/2019	7.03	No		0	No	0.000	Param Intra 1 of 3
pH (S.U.)	806R	9.323	6.287	8/21/2019	7.08	No		0	No	0.000	Param Intra 1 of 3
Sulfate (mg/L)	801	85.46	n/a	7/16/2019	56.6	No		0	No	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	802	83.27	n/a	5/22/2019	35.4	No		0	No	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	803	180.5	n/a	5/22/2019	120	No		0	No	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	804	5	n/a	5/22/2019	2.5ND	No		100	n/a	0.005912	NP Intra (NDs) 1 of 3
Sulfate (mg/L)	805	65.84	n/a	5/22/2019	51.1	No		12.5	x^3	0.001254	Param Intra 1 of 3
Sulfate (mg/L)	806R	191.9	n/a	8/21/2019	241	Ye	s 8	0	No	0.001254	Param Intra 1 of 3

Sibley Generating Station Determination of Statistically Significant Increases Fly Ash Impoundment September 27, 2019

ATTACHMENT 2

Sanitas[™] Configuration Settings

Data	Output	Trend Test	Control Cht	Prediction Lim	Tolerance Lim	Conf/Tol Int	ANOVA	Welchs	Other Tests
Exclud	le data flag	s: i							
Data	Reading O	ptions							
● In	idividual Ob	servations							
\bigcirc M	lean of Eac	:h:	O Month						
O M	ledian of Ea	ach:	Seasor	1					
Non	Datast / Te	ace Handling.							
		_	•••						
Setup	Seasons								
Aut	omatically F	Process Resar	mples						

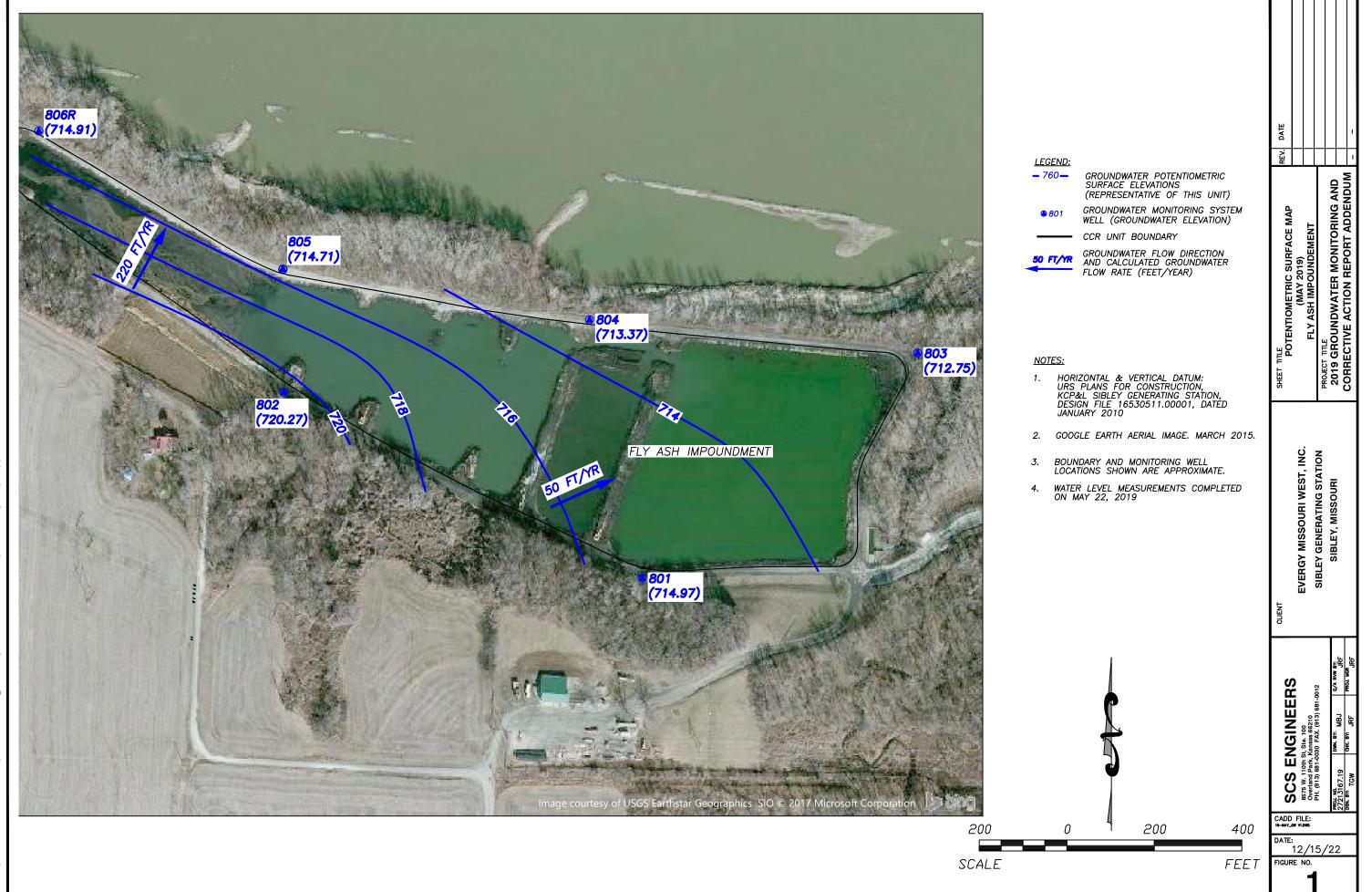
Black and White Output	✓ Prompt to Overwrite/Append Summary Tables
✓ Four Plots Per Page	Round Limits to 2 Sig. Digits (when not set in data file)
Always Combine Data Pages	✓ User-Set Scale
✓ Include Tick Marks on Data Page	✓ Indicate Background Data
Use Constituent Name for Graph Title	Show Exact Dates
☐ Draw Border Around Text Reports and Data Pages	☐ Thick Plot Lines
✓ Enlarge/Reduce Fonts (Graphs): 100%	7
☑ Enlarge/Reduce Fonts (Data/Text Reports): 100%	Zoom Factor: 200% V
✓ Wide Margins (on reports without explicit setting)	Output Decimal Precision
Use CAS# (Not Const. Name)	C Less Precision
Truncate File Names to 20 Characters	Normal Precision
	More Precision
Include Limit Lines when found in Database	
Show Deselected Data on Time Series Lighter V	
✓ Show Deselected Data on all Data Pages Light ∨	
Setup Symbols and Colors	
✓ Store Pri	int Jobs in Multiple Constituent Mode Store All Print Jobs
Printer: Adobe PDF	∨ Printers

Data Output Trend Test Control Cht Prediction Lim Tolerance Lim Conf/Tol Int ANOVA Welchs Other Tests

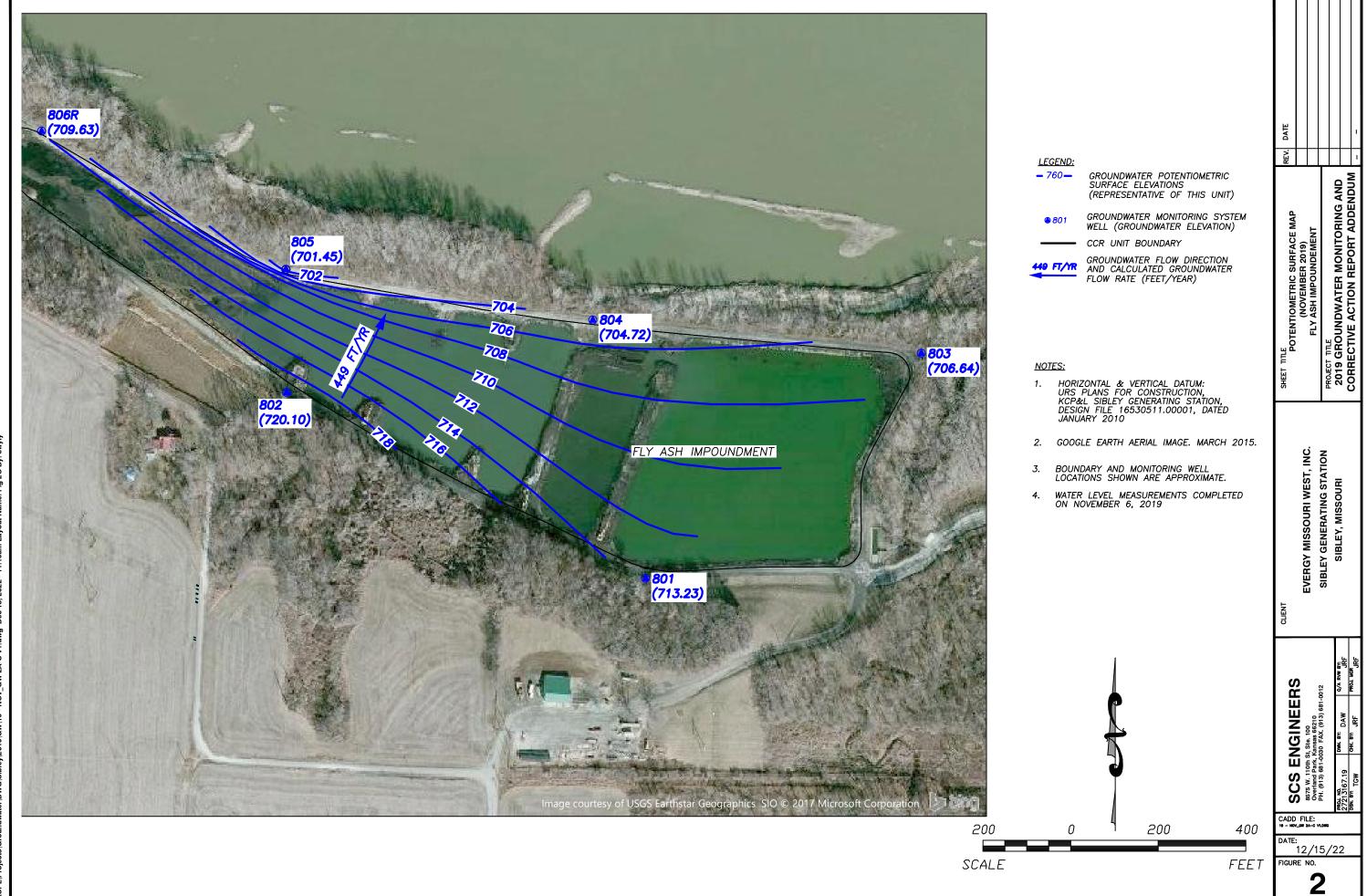
Data Output Trend Test Control Cht Prediction Lim T	olerance Lim	Conf/Tol Int	ANOVA	Welchs	Other Tests				
			sformation Use Ladder	of Powers					
✓ Test for Normality using Shapiro-Wilk/Francia ✓ a	t Alpha = 0.01	O	Natural Log	or No Tran	sformation				
✓ Use Non-Parametric Test when Non-Detects Percent > 50		_	Never Tran						
Use Aitchison's Adjustment ∨ when Non-Detects Percent > 1	15	0	Use Specifi	c Transfom Natura					
Optional Further Refinement: Use Aitchison's whe	en NDs % >	50	Use Best W	/ Statistic					
Use Poisson Prediction Limit when Non-Detects Percent >	90		Plot Transfo	med Value	es				
Deseasonalize (Intra- and InterWell) If Seasonality Is Detected If Seasonality Is Detected Or Insufficient to Test Always (When Sufficient Data) Never	IntraWell Other Stop if Background Trend Detected at Alpha = 0.05 Plot Background Data Override Standard Deviation:								
Always Use Non-Parametric	Ovemide Di	F: (Override Ka	рра:					
Facility									
Sampling Plan Comparing Individual Observations 1 of 1									

Data	Output	Trend Test	Control Cht	Prediction Lim	Tolerance Lim	Conf/Tol Int	ANOVA	Welchs	Other Tests	
_	Rank Von Neumann, Wilcoxon Rank Sum / Mann-Whitney Use Modified Alpha 2-Tailed Test Mode									
O E	Outlier Tests Outlier Tests EPA 1989 Outlier Screening (fixed alpha of 0.05) Dixon's at $\alpha = 0.05 \lor \text{or if n} > 22 \lor \text{Rosner's at } \alpha = 0.01 \lor \text{Use EPA Screening to establish Suspected Outliers}$									
O T	ukey's Outl	lier Screening,	with IQR Mul	tiplier = 3.0	Use Ladd	ler of Powers to	achieve B	est W Stat		
_ () () () () () ()	✓ Test For Normality using Shapiro-Wilk/Francia ✓ at Alpha = 0.1 ✓ ⑤ Stop if Non-Normal ○ Continue with Parametric Test if Non-Normal ○ Tukey's if Non-Normal, with IQR Multiplier = 3.0 Use Ladder of Powers to achieve Best W Stat ✓ No Outlier If Less Than 3.0 Times Median ○ Apply Rules found in Ohio Guidance Document 0715 ○ Combine Background Wells on the Outlier Report									
	Stiff Diagra				~	Label Constitu	uents			
	☐ Combine Dates ☐ Label Axes									
_		Constituent Nuent Definition			~	Note Cation-	Anion Balan	ice (Piper o	nly)	

ATTACHMENT 3 Groundwater Potentiometric Surface Maps



is\Groundwater\DWG\Sibley\2019\GW\19-MAY_GW v1.dwg Dec 15, 2022 - 11:19am Layout Name: Fig 2C By: swyly



s∖Groundwater\DWG\Sibley\2019\GW\19 - NOV_GW 2A-C V1.dwg Dec 15, 2022 - 11:19am Layout Name: Fig 2C By: swyly