2021 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

CCR LANDFILL
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

Presented To:
Evergy Missouri West, Inc.

SCS ENGINEERS

27213169.21 | January 2022, Revised December 16, 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 2021 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill 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 2021 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill 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

Revision Number	Revision Date	Revision Sections	Summary of Revisions
0	January 2022	NA	Original
1	December 16, 2022	Addendum 1	Added Addendum 1

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Appendices

1 INTRODUCTION

This 2021 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), and subsequent revisions. Specifically, this report was prepared for Evergy Missouri West, Inc. (Evergy) 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 2021 Annual Groundwater Monitoring and Corrective Action Report for the CCR Landfill at the Sibley Generating Station.

1.1 § 257.90(e)(6) SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit. At a minimum, the summary must specify all of the following:

1.1.1 § 257.90(e)(6)(i) Initial Monitoring Program

At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the start of the current annual reporting period, (January 1, 2021), the CCR Landfill was operating under a detection monitoring program in compliance with § 257.94.

1.1.2 § 257.90(e)(6)(ii) Final Monitoring Program

At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in § 257.94 or the assessment monitoring program in § 257.95;

At the end of the current annual reporting period, (December 31, 2021), the CCR Landfill was operating under a detection monitoring program in compliance with § 257.94.

1.1.3 § 257.90(e)(6)(iii) Statistically Significant Increases

If it was determined that there was a statistically significant increase over background for one or more constituents listed in Appendix III to this part pursuant to § 257.94(e):

(A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and

Monitoring Event	Monitoring Well	Constituent	ASD
Fall 2020	MW-506	Sulfate	Successful
Fall 2020	MW-512	Calcium	Successful
Fall 2020	MW-512	Chloride	Successful
Fall 2020	MW-512	Sulfate	Successful
Fall 2020	MW-512	Total Dissolved Solids	Successful

Monitoring Event	Monitoring Well	Constituent	ASD
Spring 2021	MW-505	Calcium	Successful
Spring 2021	MW-505	Total Dissolved Solids	Successful
Spring 2021	MW-506	Chloride	Successful
Spring 2021	MW-506	Sulfate	Successful
Spring 2021	MW-512	Calcium	Successful
Spring 2021	MW-512	Chloride	Successful
Spring 2021	MW-512	Sulfate	Successful
Spring 2021	MW-512	Total Dissolved Solids	Successful

(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.

Not applicable because an assessment monitoring program was not initiated.

1.1.4 § 257.90(e)(6)(iv) Statistically Significant Levels

If it was determined that there was a statistically significant level above the groundwater protection standard for one or more constituents listed in Appendix IV to this part pursuant to § 257.95(g) include all of the following:

(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;

Not applicable because there was no assessment monitoring conducted.

(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;

Not applicable because there was no assessment of corrective measures initiated for the CCR Unit.

(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit*; and*

Not applicable because there was no assessment of corrective measures initiated for the CCR Unit.

(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.

Not applicable because there was no assessment of corrective measures initiated for the CCR Unit.

1.1.5 § 257.90(e)(6)(v) Selection of Remedy

Whether a remedy was selected pursuant to § 257.97 during the current annual reporting period, and if so, the date of remedy selection; and

Not applicable because corrective measures are not required.

1.1.6 § 257.90(e)(6)(vi) Remedial Activities

Whether remedial activities were initiated or are ongoing pursuant to § 257.98 during the current annual reporting period.

Not applicable because corrective measures are not required.

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 CCR Landfill and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR Landfill 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 CCR Landfill in 2021.

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 required to be conducted during the reporting period (2021). Samples collected in 2021 were collected and analyzed for Appendix III detection monitoring

constituents. Results of the sampling events are provided in **Appendix B**, **Table 1** (Appendix III Detection Monitoring Results), and **Table 2** (Detection Monitoring Field Measurements). These tables include Fall 2020 semiannual detection monitoring event verification sample data collected and analyzed in 2021; Spring 2021 semiannual detection monitoring data, and verification sample data; and, the initial Fall 2021 semiannual detection monitoring data. The dates of sample collection and the monitoring program requiring the sample are also provided in these tables.

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 2021. Only detection monitoring was conducted in 2021.

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 2020 verification sampling and analyses per the certified statistical method,

b. completion of the statistical evaluation of the Fall 2020 semiannual detection monitoring sampling and analysis event per the certified statistical method,

c. completion of the 2020 Annual Groundwater Monitoring and Corrective Action Report,

d. completion of a successful alternative source demonstration for the Fall 2020 semiannual detection monitoring sampling and analysis event,

e. completion of the Spring 2021 semiannual detection monitoring sampling and analysis event with subsequent verification sampling per the certified statistical method,

f. completion of the statistical evaluation of the Spring 2021 semiannual detection monitoring sampling and analysis event per the certified statistical method,

g. completion of a successful alternative source demonstration for the Spring 2021 semiannual

detection monitoring sampling and analysis event, and

h. initiation of the Fall 2021 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 (2022).

Completion of verification sampling and data analysis, and the statistical evaluation of Fall 2021 detection monitoring sampling and analysis event, and, if required, alternative source demonstration(s). Semiannual Spring and Fall 2022 groundwater sampling and analysis. Completion of the statistical evaluation of the Spring 2022 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 in **Appendix C**:

C.1 CCR Groundwater Monitoring Alternative Source Demonstration Report November 2020 Groundwater Monitoring Event, CCR Landfill, Sibley Generating Station (May 2021).

C.2 CCR Groundwater Monitoring Alternative Source Demonstration Report May 2021 Groundwater Monitoring Event, CCR Landfill, Sibley Generating Station (January 2022).

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.

2.6 § 257.90(e)(6) OVERVIEW SUMMARY

A section at the beginning of the annual report that provides an overview of the current status of groundwater monitoring and corrective action programs for the CCR unit.

§ 257.90(e)(6) is addressed in Section 1.1 of this report.

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 CCR Landfill. No warranties, express or implied, are intended or made.

APPENDIX A

FIGURES

Figure 1: Site Map

Figure 2: Potentiometric Surface Map (May 2021)

Figure 3: Potentiometric Surface Map (November 2021)

LEGEND:

- 601 — GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- UTILITY WASTE LANDFILL UNIT BOUNDARY
- PERMITTED LANDFILL EXPANSION AREA

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. AERIAL IMAGE BY TUKUH TECHNOLOGIES ON DECEMBER 10, 2021.
3. BOUNDARY AND MONITORING WELL WELL LOCATIONS SHOWN ARE APPROXIMATE.

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SCALE FEET

REV.	DATE
-	-

SHEET TITLE: SITE MAP
CCR LANDFILL
CCR GROUNDWATER MONITORING SYSTEM

PROJECT TITLE: 2021 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

CLIENT: EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

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8575 W. 110th St. Ste. 100
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PROJ. NO.	DWN. BY:	Q/A RVW BY:
27213167.20	ALR	JRR
DSN. BY:	CHK. BY:	PROJ. MGR.
ALR	JRR	JRF

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DATE: 1/26/22

FIGURE NO. 1

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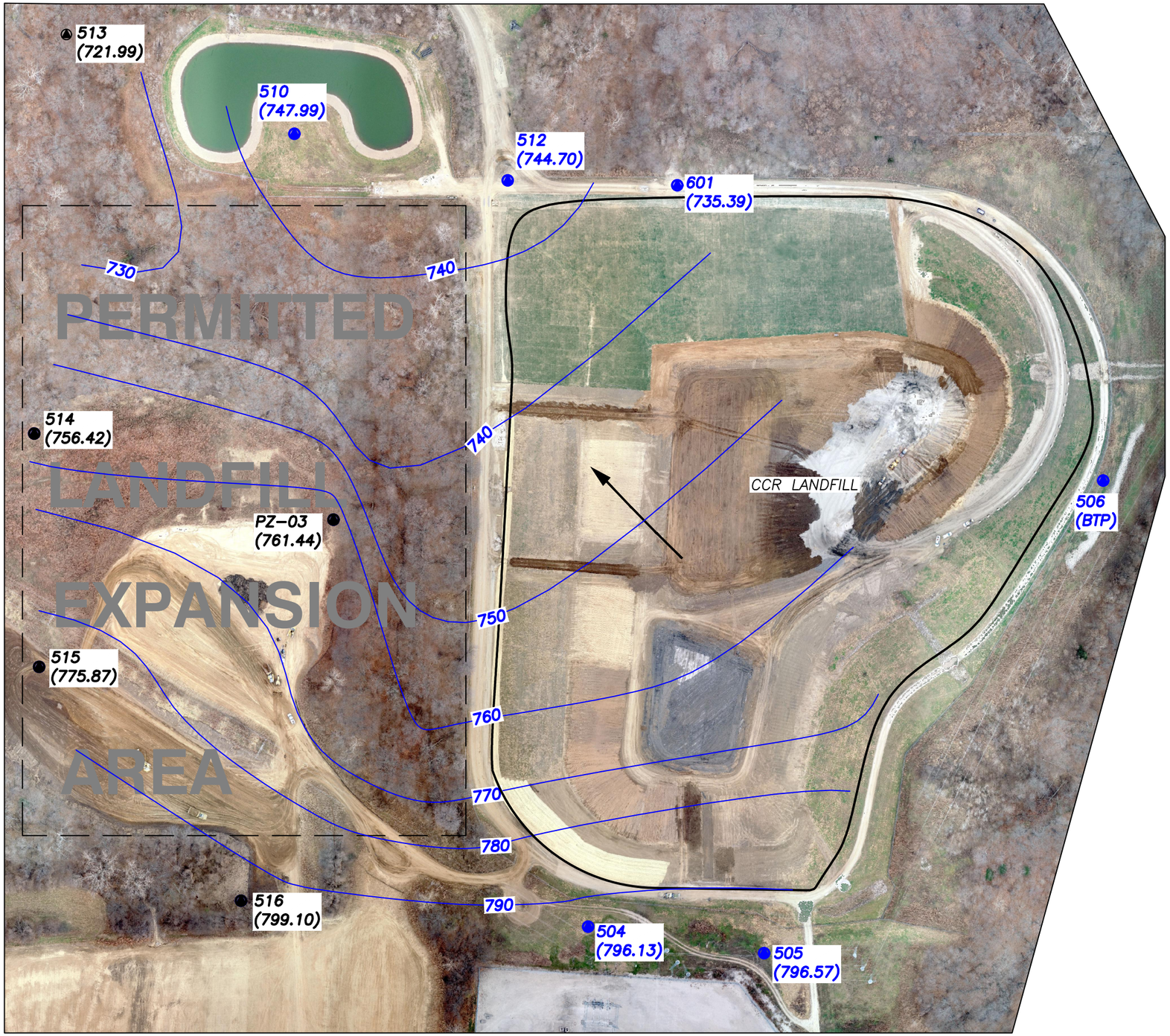

LEGEND:

– 760 –	GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
601 (738.07)	GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
514 (756.42)	LANDFILL EXPANSION WELLS
———	CCR LANDFILL UNIT BOUNDARY
←———	GROUNDWATER FLOW DIRECTION
BTP	BELOW TOP OF PUMP

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. AERIAL IMAGE BY TUKUH TECHNOLOGIES ON DECEMBER 10, 2021.
3. BOUNDARY AND MONITORING WELL LOCATIONS SHOWN ARE APPROXIMATE.

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SCALE FEET

REV. | DATE

SHEET TITLE
POTENTIOMETRIC SURFACE MAP (MAY 2021)

PROJECT TITLE
SIBLEY GROUNDWATER 2021

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

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PROJ. NO. 27213167.20
DSN. BY: ALR
DWN. BY: ALR
CHK. BY: JRR
QA REW BY: JRR
PROJ. MGR JRF

CADD FILE: FIG 2 - MAY 2021 V2.DWG

DATE: 1/27/22

FIGURE NO. 2

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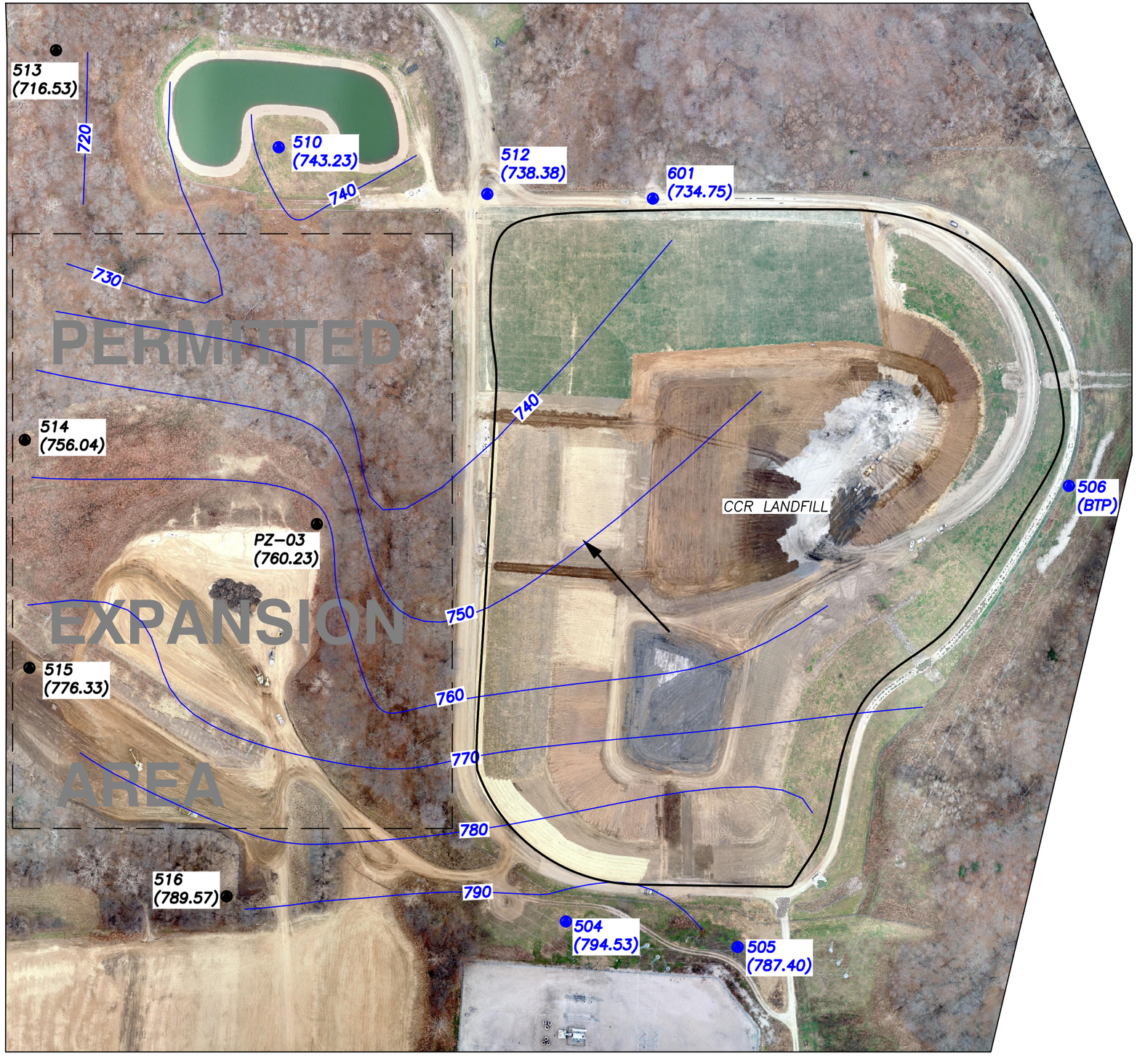

LEGEND:

- 760 — GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
- 601 (738.07) GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- 514 (756.04) LANDFILL EXPANSION WELLS
- CCR LANDFILL UNIT BOUNDARY
- GROUNDWATER FLOW DIRECTION
- BTP BELOW TOP OF PUMP

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. AERIAL IMAGE BY TUKUH TECHNOLOGIES ON DECEMBER 10, 2021.
3. BOUNDARY AND MONITORING WELL LOCATIONS SHOWN ARE APPROXIMATE.
4. WATER LEVEL MEASUREMENTS COLLECTED ON NOVEMBER 15, 2021.

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SCALE FEET

REV.	DATE
-	-

SHEET TITLE
POTENTIOMETRIC SURFACE MAP (NOVEMBER 2021)

PROJECT TITLE
SIBLEY GROUNDWATER 2021

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

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DWN. BY: ALR
CHK. BY: JRR
Q/A RVW BY: JRR
PRCL. MGR. JRF

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DATE: 1/27/22

FIGURE NO. 3

APPENDIX B

TABLES

Table 1: Appendix III Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements

Table 1
CCR Landfill
Appendix III Detection Monitoring Results
Evergy Sibley Generating Station

Well Number	Sample Date	Appendix III Constituents						
		Boron (mg/L)	Calcium (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	pH (S.U.)	Sulfate (mg/L)	Total Dissolved Solids (mg/L)
MW-504	5/24/2021	<0.200	34.1	<1.00	0.201	7.29	32.4	174
MW-504	11/15/2021	<0.200	35.3	<1.00	0.178 (B)	6.31	27.9	192
MW-505	5/24/2021	<0.200	34.4	1.11	0.180	5.91	32.6	181
MW-505	7/19/2021	---	*34.8	---	---	*6.65	*14.4	*184
MW-505	9/2/2021	---	*34.1	---	---	**6.97	---	*188
MW-505	11/15/2021	<0.200	27.7	1.13	0.181 (B)	6.37	20.4	181
MW-506	2/3/2021	---	---	---	---	**7.32	*87.3	---
MW-506	3/1/2021	---	---	---	---	**7.21	*88.9	---
MW-506	5/24/2021	<0.200	91.4	8.09	0.344	6.62	89.1	433
MW-506	7/19/2021	---	---	*8.01	---	*6.86	*89.1	---
MW-506	9/2/2021	---	---	*8.03	---	**6.98	*88.7	---
MW-506	11/15/2021	<0.200	98.8	7.78	0.275 (B)	6.65	89.8	466
MW-510	5/24/2021	<0.200	116	3.53	0.338	6.36	14.5	468
MW-510	7/19/2021	---	---	---	---	*7.36	---	---
MW-510	11/15/2021	<0.200	124	3.33	0.271 (B)	6.94	21.4	486
MW-512	2/3/2021	---	*117	*10.5	---	**7.34	*99.8	*487
MW-512	3/1/2021	---	*117	*10.4	---	**6.86	*99.9	*508
MW-512	5/24/2021	<0.200	114	10.6	0.318	7.17	110	505
MW-512	7/19/2021	---	*120	*10.2	---	**6.78	*104	*524
MW-512	9/2/2021	---	*114	*10.2	---	**7.13	*107	*555
MW-512	11/15/2021	<0.200	121	9.69	0.257 (B)	6.25	93.1	527
MW-601	5/24/2021	<0.200	97.4	3.40	0.278	6.31	9.71	381
MW-601	7/19/2021	---	---	---	---	*7.21	---	---
MW-601	11/15/2021	<0.200	95.6	3.44	0.234 (B)	6.71	9.32	399

* Verification Sample obtained per certified statistical method and Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, March 2009.
**Extra Sample for Quality Control Validation or per Standard Sampling Procedure
mg/L - miligrams per liter
pCi/L - picocuries per liter
S.U. - Standard Units
B - Same analyte is found in the associated laboratory blank
--- Not Sampled

Table 2
CCR Landfill
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-504	5/24/2021	7.29	325	16.00	0.0	141	2.54	20.19	796.13
MW-504	11/15/2021	6.31	289	15.46	0.0	-33	2.80	21.79	794.53
MW-505	5/24/2021	5.91	303	17.38	0.0	199	3.21	18.40	796.57
MW-505	7/19/2021	*6.65	264	17.79	0.0	162	9.59	25.38	789.59
MW-505	9/2/2021	**6.97	282	18.28	0.0	162	5.56	27.55	787.42
MW-505	11/15/2021	6.37	282	15.21	0.0	125	4.93	27.57	787.40
MW-506	2/3/2021	**7.32	639	15.19	0.0	144	5.59	BTP	NA
MW-506	3/1/2021	**7.21	736	11.94	0.0	63	3.08	BTP	NA
MW-506	5/24/2021	6.62	707	20.53	0.0	158	4.99	BTP	NA
MW-506	7/19/2021	*6.86	679	21.12	0.0	161	3.13	BTP	NA
MW-506	9/2/2021	**6.98	720	21.43	0.7	127	6.33	BTP	NA
MW-506	11/15/2021	6.65	738	17.75	0.0	117	4.22	BTP	NA
MW-510	5/24/2021	6.36	765	21.23	0.0	111	1.25	37.80	747.99
MW-510	7/19/2021	*7.36	817	17.93	1.3	31	0.83	37.89	747.90
MW-510	11/15/2021	6.94	828	17.03	1.5	75	6.59	42.56	743.23
MW-512	2/3/2021	**7.34	770	13.36	0.0	146	8.98	29.98	740.15
MW-512	3/1/2021	**6.86	836	12.69	0.0	80	5.30	30.48	739.65
MW-512	5/24/2021	7.17	962	15.00	6.7	123	2.73	25.42	744.71
MW-512	7/19/2021	**6.78	778	19.13	0.0	163	3.32	27.11	743.02
MW-512	9/2/2021	**7.13	852	20.93	0.0	168	1.43	29.40	740.73
MW-512	11/15/2021	6.25	865	14.69	0.0	187	8.69	31.75	738.38
MW-601	5/24/2021	6.31	694	18.15	0.0	94	0.00	45.51	735.39
MW-601	7/19/2021	*7.21	702	18.29	0.0	92	0.11	45.73	735.17
MW-601	11/15/2021	6.71	702	15.39	0.0	75	0.00	46.15	734.75

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

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

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

BTP - Below Top of Pump

APPENDIX C

ALTERNATIVE SOURCE DEMONSTRATIONS

C.1 Groundwater Monitoring Alternative Source Demonstration Report November 2020 Groundwater Monitoring Event, CCR Landfill, Sibley Generating Station (May 2021)

C.2 Groundwater Monitoring Alternative Source Demonstration Report May 2021 Groundwater Monitoring Event, CCR Landfill, Sibley Generating Station (January 2022)

C.1 Groundwater Monitoring Alternative Source Demonstration Report November 2020 Groundwater Monitoring Event, CCR Landfill, Sibley Generating Station (May 2021)

CCR GROUNDWATER MONITORING
ALTERNATIVE SOURCE DEMONSTRATION REPORT
NOVEMBER 2020 GROUNDWATER MONITORING EVENT

CCR LANDFILL

Sibley Generating Station
Evergy Missouri West, Inc.
Sibley, Missouri

SCS ENGINEERS

May 2021
File No. 27213169.20

8575 W. 110th Suite 100
Overland Park, KS 66210
913-749-0700

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 CCR Landfill 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 CCR Landfill 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

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Appendices

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 CCR Landfill 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 11, 2020. Review and validation of the results from the November 2020 Detection Monitoring Event was completed on December 24, 2020, 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 February 3, 2021 and March 1, 2021.

The completed statistical evaluation identified one Appendix III constituent above the prediction limit established for monitoring well MW-506 and four Appendix III constituents above the prediction limits established for monitoring well MW-512.

Constituent/Monitoring Well	*UPL	Observation November 11, 2020	1st Verification February 3, 2021	2nd Verification March 1, 2021
Calcium				
MW-512	111.3	115	117	117
Chloride				
MW-512	5.094	9.75	10.5	10.4
Total Dissolved Solids				
MW-512	466.4	508	487	508

Constituent/Monitoring Well	*UPL	Observation November 11, 2020	1st Verification February 3, 2021	2nd Verification March 1, 2021
Sulfate				
MW-506	76.83	87	87.3	88.9
MW-512	44.8	92.6	99.8	99.9

*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 identified five SSIs above the background prediction limits. These include sulfate at monitoring well MW-506 and calcium, chloride, total dissolved solids, and sulfate at monitoring well MW-512.

3 ALTERNATIVE SOURCE DEMONSTRATION

An Alternative Source Demonstration (ASD) 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 CCR Landfill 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 CCR Landfill. Select multiple lines of supporting evidence are described as follows.

3.1 TIME SERIES PLOTS

Time series plots provide a graphical method to view changes in data at a particular well (monitoring point) or wells over time. Time series plots display the variability in concentration levels over time and can be used to indicate possible outliers or data errors (i.e. “spikes”). More than one well can be compared on the same plot to look for differences between wells. Non-detect data is plotted as censored data at one-half of the laboratory reporting limit. Time series plots can also be used to examine the data for trends.

The time series plot for chloride in monitoring well MW-512 was compared to time series plots for chloride in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Chloride comparisons indicate the concentrations in MW-512 are near concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill and the non-impacted groundwater can fluctuate naturally within a given non-impacted well such as MW-515 and PZ-03.

The time series plot for TDS in monitoring well MW-512 was compared to time series plots for TDS in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. TDS comparisons indicate the concentrations in MW-512 are within the range of concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill.

Time series plots for sulfate in monitoring wells MW-506 and MW-512 were compared to time series plots for sulfate in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Sulfate comparisons indicate the concentrations in MW-512 are within or very near the range of concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill; specifically MW-515. Additionally, there are increasing concentrations in upgradient well

MW-504 and large variations of concentrations in MW-515, both of which have not been impacted by the landfill.

Figure 1 in **Appendix A** shows these upgradient and non-CCR monitoring system wells and their relationships to groundwater flow near and beneath the CCR Landfill. Because the non-CCR monitoring system wells are located in a nearby area where they could not be impacted by the landfill due to their upgradient and side-gradient locations, and exhibit variability that includes concentrations within the range or similar to those seen in MW-506 and MW-512, the observed concentrations are within the range of expected natural spatial variation within and between wells. This demonstrates that a source other than the CCR Landfill could have caused the SSIs over the background levels, or that the SSIs could have resulted from natural variation in groundwater quality. Time series plots are provided in **Appendix B**.

3.2 TREND ANALYSIS

Trend analysis was performed to evaluate for statistically significant trends utilizing Sen's Slope/Mann-Kendall Statistical Analysis. Sen's Slope/Mann-Kendall statistical analysis is used to determine if the data exhibits an SSI or statistically significant decreasing (SSD) trend. A trend is the general increase or decrease in observed values of a variable over time. A trend analysis can be used to determine the significance of an apparent trend and to estimate the magnitude of that trend. The Mann-Kendall test is nonparametric, meaning that it does not depend on an assumption of a particular underlying distribution. The test uses only the relative magnitude of data rather than actual values. Therefore, missing values are allowed, and values that are recorded as non-detects by the laboratory can still be used in the statistical analysis by assigning values equal to half their detection limits. Sen's Slope is a simple nonparametric procedure developed to estimate the true slope. The advantage of this method over linear regression is that it is not greatly affected by gross data errors or outliers, and can be computed when data are missing.

The Sen's Slope/Mann-Kendall Statistical Analysis was performed at the 98 percent confidence level utilizing the statistical program Sanitas™. Calcium data from December 2015 through the most recent data for upgradient wells MW-504 and MW-505 and downgradient well MW-512 were used to preform trend analysis. The trend analysis for calcium indicates upgradient well MW-505 and downgradient well MW-512 both have increasing trends. Since an upgradient well has an increasing trend due to natural conditions not due to the unit, it is also likely the downgradient wells can increase due to natural conditions not due to the unit.

Sulfate data from December 2015 through the most recent data for upgradient wells MW-504 and MW-505 and downgradient wells MW-506 and MW-512 were used to preform trend analysis. The trend analysis for sulfate indicates upgradient well MW-504 and downgradient wells MW-506 and MW-512 have increasing trends. Since an upgradient well has an increasing trend due to natural conditions not due to the unit, it is also likely the downgradient wells can increase due to natural conditions not due to the unit.

These trend analyses demonstrate that a source other than the CCR Landfill could have caused the SSIs over the background level for calcium and sulfate or that the SSIs resulted from natural variation in groundwater quality. Trend analyses for calcium and sulfate are provided in **Appendix C**.

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 generated for upgradient wells 504 and MW-505, downgradient wells MW-506 and MW-512, and landfill leachate is provided in **Appendix D** along with analytical results. The piper diagram indicates the groundwater from these four wells have similar geochemical characteristics and do not exhibit the same geochemical characteristics as the leachate. The groundwater and the leachate plot in different hydrochemical facies indicating there is no mixing of the two types of water (groundwater and leachate) and that both upgradient and downgradient groundwater characteristics are different from the leachate. This helps demonstrate that a source other than the CCR Landfill caused the SSIs over the background levels, or that the SSIs resulted from natural variation in groundwater quality.

3.4 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 chloride in monitoring well MW-512 was compared to box and whisker plots for chloride in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Chloride comparisons indicate the concentrations in MW-512 are generally within expected concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill.

The box and whiskers plot for sulfate in monitoring well MW-512 was compared to box and whisker plots for sulfate in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Sulfate comparisons indicate the concentrations in MW-512

are generally within the range of concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill; specifically MW-515.

Figure 1 in **Appendix A** shows these upgradient and non-CCR monitoring system wells and their relationships to groundwater flow near and beneath the CCR Landfill. Because the non-CCR monitoring system wells are located in a nearby area where they could not be impacted by the landfill due to their upgradient and side-gradient locations, and exhibit variability that includes concentrations similar to those seen in MW-506 and MW-512, the observed concentrations are within the range of expected natural spatial variation within and between wells. This demonstrates that a source other than the CCR Landfill caused the SSIs over the background levels, or that the SSIs resulted from natural variation in groundwater quality. Box and whisker plots are provided in **Appendix E**.

3.5 BINARY PLOTS

Binary plots are another way to visualize data and allow evaluation of mixing of various waters. Binary plots for the monitoring wells and leachate were prepared for pairs of highly mobile constituents. These include chloride - sulfate, boron - sulfate, and boron - chloride. The chloride – sulfate plot identifies the mixing zone between the mean concentrations for upgradient groundwater (MW-504 and MW-505) and leachate. If leachate were mixing with upgradient groundwater, the data for the downgradient wells would fall within the mixing zone on the plot; however, the data for the downgradient wells falls below the mixing zone. The boron – sulfate and boron - chloride plots identify the mixing line between the mean concentrations for upgradient groundwater (MW-504 and MW-505) and leachate. If leachate were mixing with upgradient groundwater, the sulfate – boron and chloride – boron data for MW-506 and MW-512 would fall on the mixing line and the boron concentrations would range from 0.20 mg/L to 1.4 mg/L based on the sulfate mixing line and approximately 0.83 mg/L to 4.2 mg/L based on the chloride mixing line. However, the boron in downgradient wells was not detected at a concentration above the reporting limit of 0.2 mg/L. Therefore, because boron is present in the leachate but is not present in the downgradient wells, leachate is not mixing with groundwater.

These binary plots demonstrate that leachate is not mixing with upgradient groundwater and that a source other than the CCR Landfill caused the SSI over the background level for sulfate or that the SSI resulted from natural variation in groundwater quality. Binary plots are provided in **Appendix F**.

4 CONCLUSION

Our opinion is that a sufficient body of evidence is available and presented above to demonstrate that a source other than the CCR Landfill caused the SSI over the background level, or that the SSI resulted from natural variation in groundwater quality. Based on the successful ASD, the owner or operator of the CCR Landfill may continue with the detection monitoring program under § 257.94.

5 GENERAL COMMENTS

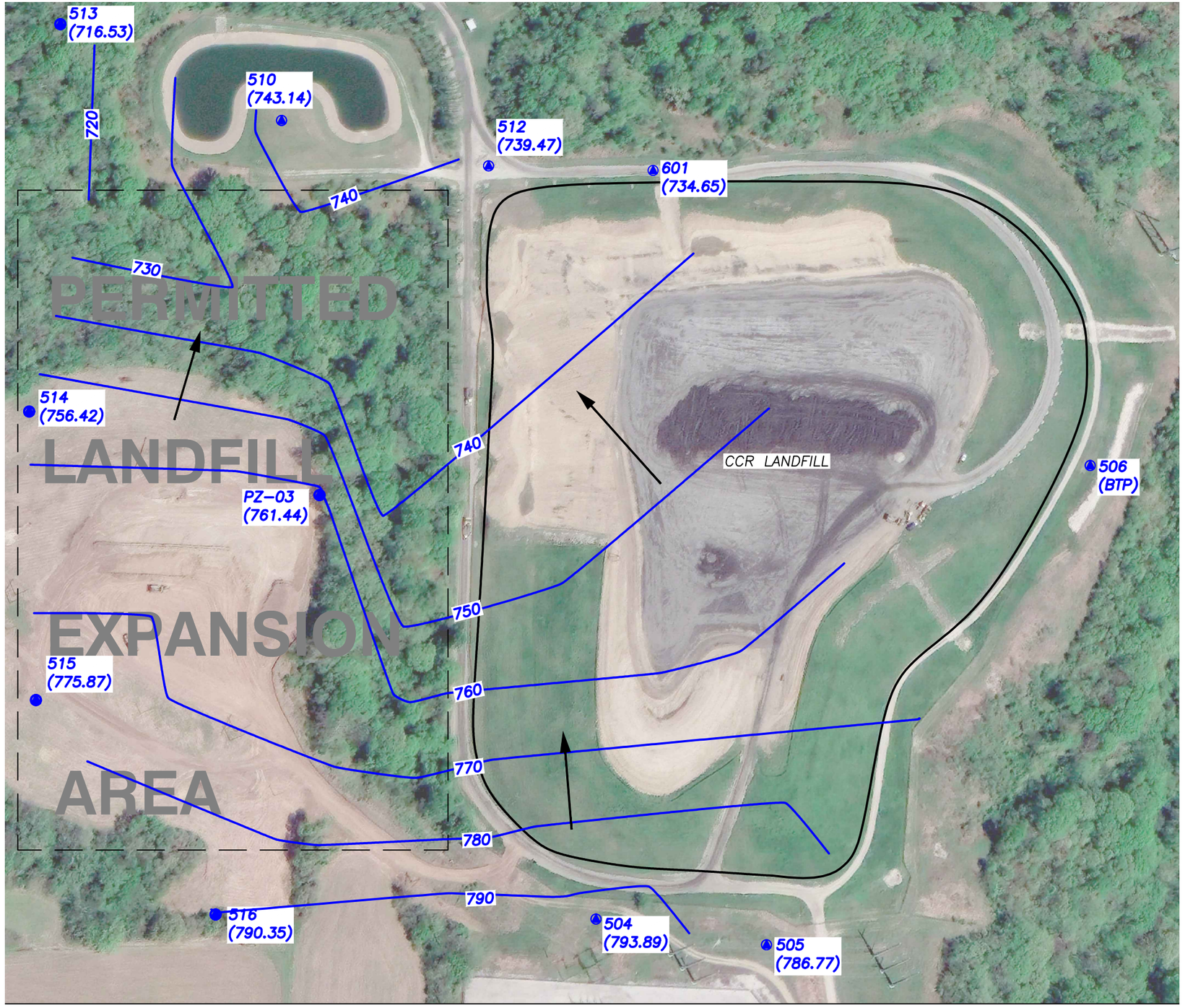
This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report. 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 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 opinions 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



LEGEND:

- *760* — GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
- *601 (738.07)* — GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- CCR LANDFILL UNIT BOUNDARY
- GROUNDWATER FLOW DIRECTION
- BTP — BELOW TOP OF PUMP

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. GOOGLE EARTH AERIAL IMAGE. APRIL 2020.
3. BOUNDARY AND MONITORING WELL WELL LOCATIONS SHOWN ARE APPROXIMATE.

200 0 200 400

SCALE FEET

REV.	DATE
-	-

SHEET TITLE
POTENTIOMETRIC SURFACE MAP (NOVEMBER 2020) CCR LANDFILL

PROJECT TITLE
ALTERNATIVE SOURCE DEMONSTRATION (NOVEMBER 2020)

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

SCS ENGINEERS
8575 W. 110th St, Ste. 100
Overland Park, Kansas 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO. 27213169.21
DSN. BY: ALR
DWN. BY: ALR
CHK. BY: JRR
QA RVW BY: JRR
PROJ. MGR: JRF

CADD FILE:
20 - NOVEMBER_GW V1 - ALTERNATIVE SOURCE DEMONSTRATION.DWG

DATE: 4/27/21

FIGURE NO. 1

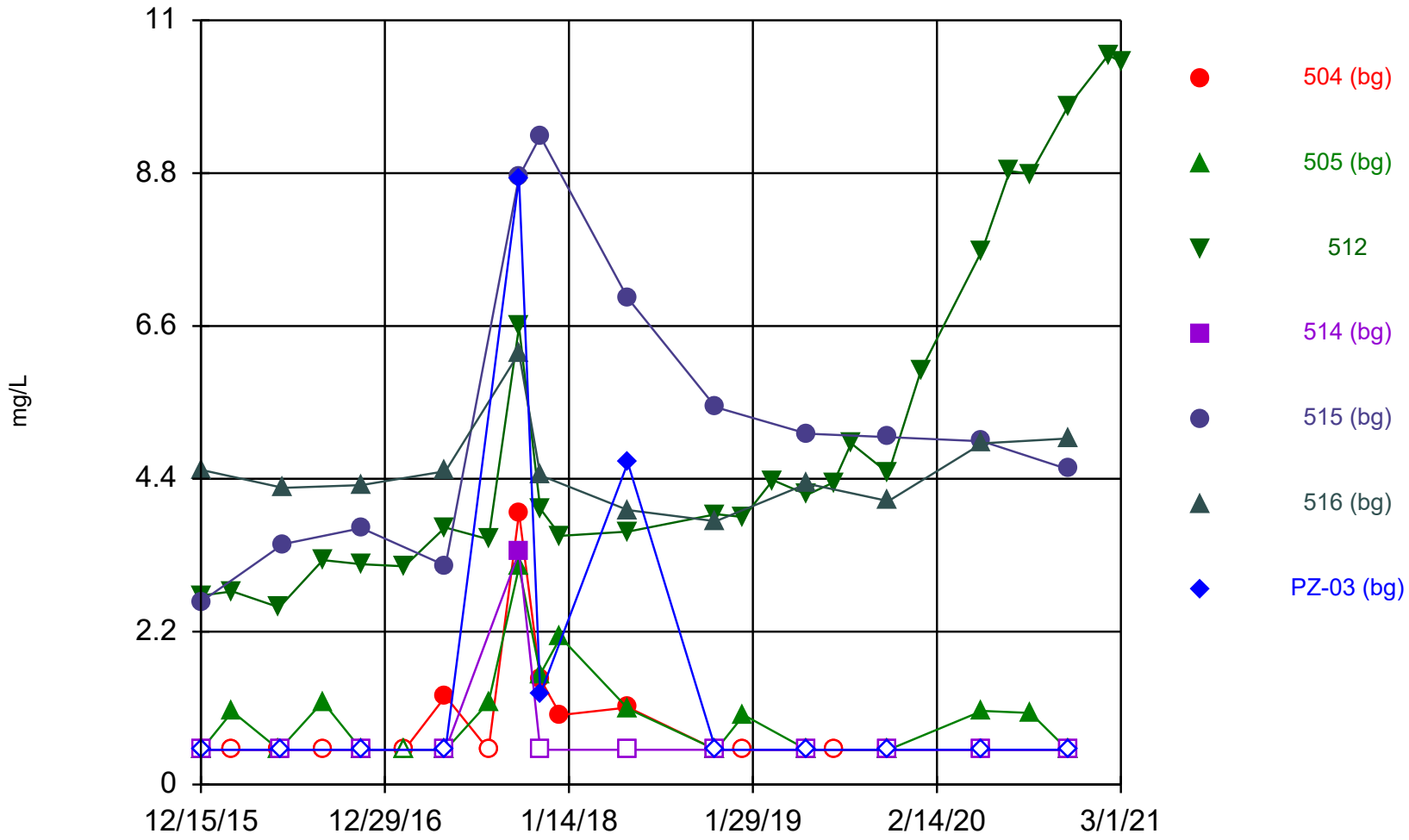
N:\KCPL\Projects\Groundwater\DWG\Sibley\2020\GW\NOVEMBER 2020\20 - NOVEMBER_GW v1 - Alternative Source Demonstration.dwg Apr 27, 2021 - 9:44am Layout Name: Fig 2 By: 4415alr

Appendix B

Time Series Plots

Hollow symbols indicate censored values.

Time Series



Constituent: Chloride Analysis Run 4/14/2021 11:35 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

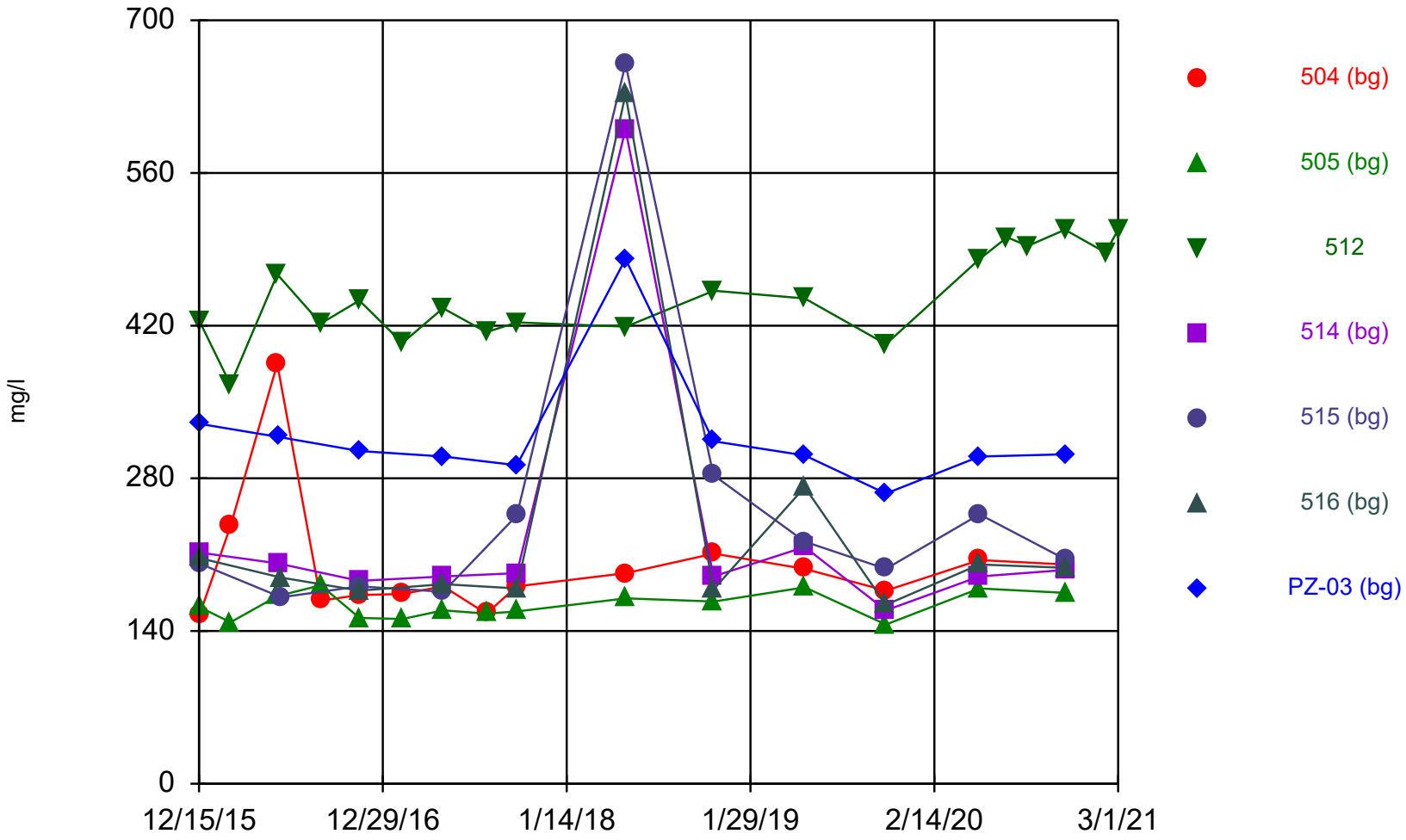
Time Series

Constituent: Chloride (mg/L) Analysis Run 4/14/2021 11:35 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	504 (bg)	505 (bg)	512	514 (bg)	515 (bg)	516 (bg)	PZ-03 (bg)
12/15/2015			2.72	<1	2.63	4.53	<1
12/16/2015	<1	<1					
2/18/2016	<1	1.05	2.78				
5/25/2016	<1	<1	2.55				
5/26/2016				<1			<1
6/2/2016					3.46	4.27	
8/23/2016	<1	1.19	3.23				
11/11/2016	<1	<1	3.17	<1	3.69	4.31	<1
2/8/2017	<1	<1	3.14				
5/3/2017			3.7				
5/4/2017	1.27	<1		<1	3.15	4.51	<1
8/1/2017	<1	1.18	3.53				
10/3/2017	3.91	3.13	6.59	3.34	8.75	6.21	8.73
11/16/2017	1.52	1.59	3.97	<1	9.33	4.45	1.3
12/28/2017	1	2.12	3.58				
5/16/2018				<1	7	3.95	4.63
5/17/2018	1.11	1.09	3.64				
11/14/2018				<1	5.43	3.79	<1
11/15/2018	<1	<1	3.89				
1/11/2019	<1	1	3.85				
3/12/2019			4.38				
5/22/2019	<1	<1	4.17	<1	5.05	4.33	<1
7/16/2019	<1		4.35				
8/21/2019			4.91				
11/6/2019	<1	<1	4.48	<1	5	4.08	<1
1/13/2020			5.97 (i)				
5/18/2020	<1	1.06	7.69	<1	4.94	4.91	<1
7/14/2020			8.83				
8/26/2020		1.03 (i)	8.79				
11/11/2020	<1	<1	9.75	<1	4.54	4.98	<1
2/3/2021			10.5				
3/1/2021			10.4				

Time Series



Constituent: Dissolved Solids Analysis Run 4/14/2021 11:33 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

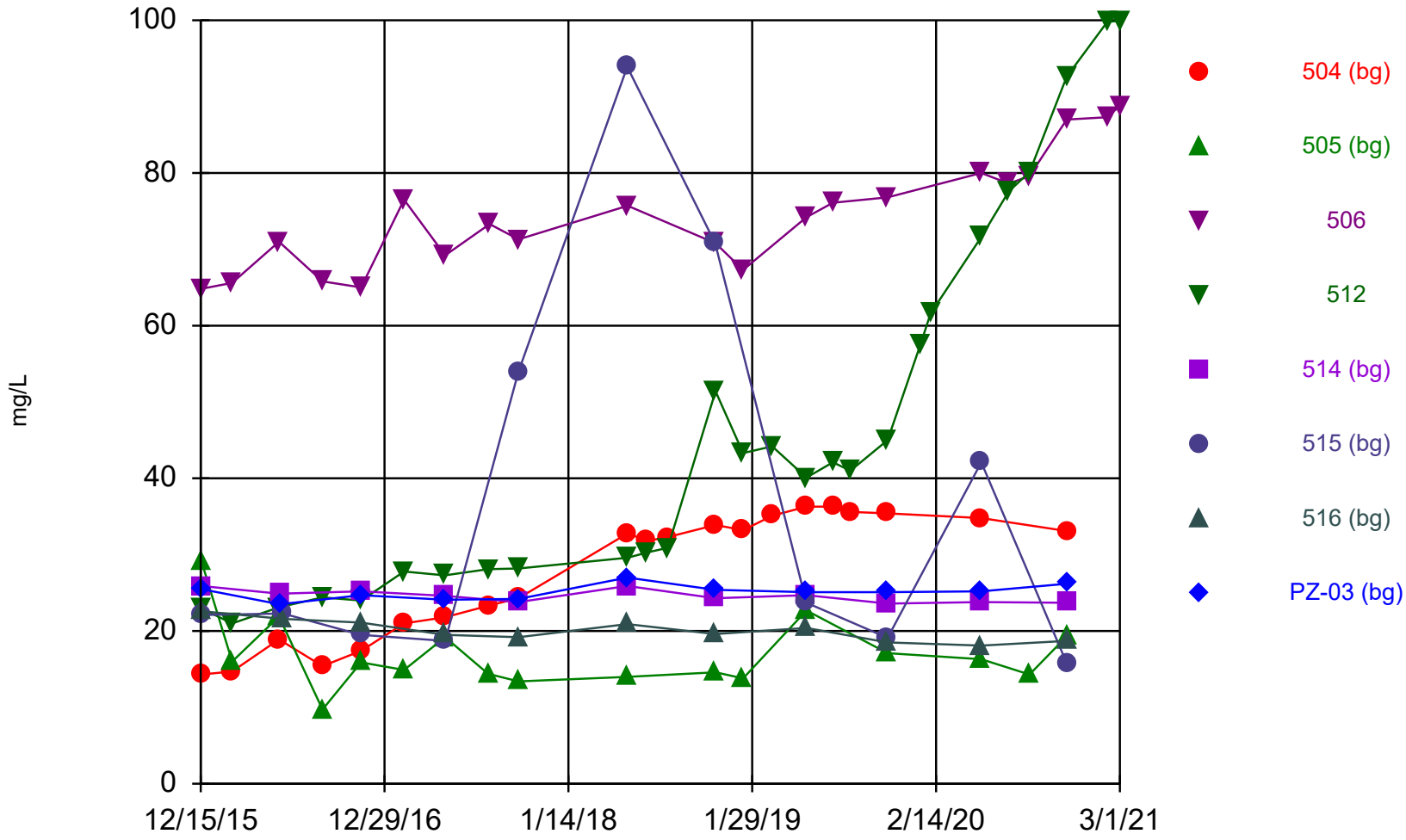
Time Series

Constituent: Dissolved Solids (mg/l) Analysis Run 4/14/2021 11:34 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	504 (bg)	505 (bg)	512	514 (bg)	515 (bg)	516 (bg)	PZ-03 (bg)
12/15/2015			425	212	202	207	330
12/16/2015	155	162					
2/18/2016	236	148	366				
5/25/2016	385	172	467				
5/26/2016				202			318
6/2/2016					171	189	
8/23/2016	168	182	422				
11/11/2016	173	152	443	186	181	177	305
2/8/2017	174	151	404				
5/3/2017			436				
5/4/2017	181	159		190	176	183	300
8/1/2017	156	156	414				
10/3/2017	181	158	423	193	246	179	292
5/16/2018				600	660	632	481
5/17/2018	193	170	419				
11/14/2018				190	283	178	314
11/15/2018	211	167	452				
5/22/2019	197	180	445	217	222	272	301
11/6/2019	177	146	403	159	197	164	266
5/18/2020	205	179	481	190	247	201	300
7/14/2020			501				
8/26/2020			493				
11/11/2020	201	175	508	196	206	198	302
2/3/2021			487				
3/1/2021			508				

Time Series



Constituent: Sulfate Analysis Run 4/14/2021 11:31 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Time Series

Constituent: Sulfate (mg/L) Analysis Run 4/14/2021 11:32 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

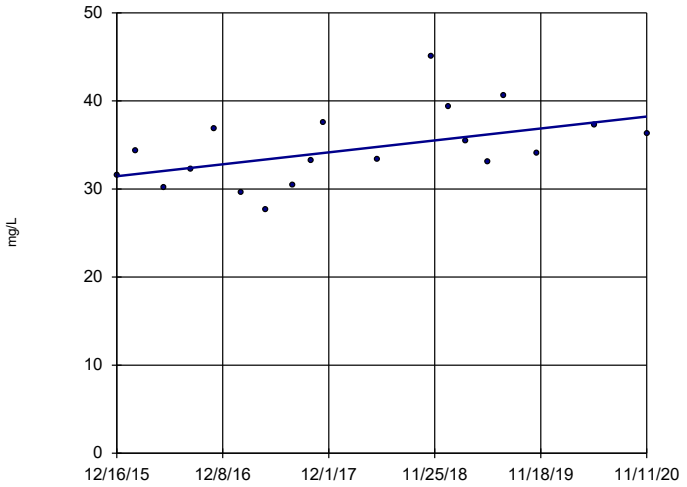
	504 (bg)	505 (bg)	506	512	514 (bg)	515 (bg)	516 (bg)	PZ-03 (bg)
12/15/2015			64.8	23	25.9	22.1	22.6	25.5
12/16/2015	14.3	29.2						
2/18/2016	14.7	16	65.6	21				
5/25/2016	18.9	21.9	71	23.1				
5/26/2016					24.9			23.5
6/2/2016						22.3	21.6	
8/23/2016	15.4	9.73	65.8	24.4				
11/11/2016	17.4	15.9	65	24	25.2	19.5	21.1	24.7
2/8/2017	21	14.9	76.5	27.8				
5/3/2017				27.3				
5/4/2017	21.8	19.2	69.2		24.6	18.7	19.5	24.1
8/1/2017	23.3	14.4		28.1				
8/4/2017			73.3					
10/3/2017	24.3	13.4	71.3	28.2	23.8	54	19.2	24.2
5/16/2018					25.9	93.9	20.9	27
5/17/2018	32.8	14	75.7	29.6				
6/27/2018	31.8			30.3				
8/8/2018	32.3			30.9				
11/14/2018					24.3	70.8	19.6	25.4
11/15/2018	33.9	14.6	70.8	51.4				
1/11/2019	33.2	13.8	67.3	43.3				
3/12/2019	35.1			44.2				
5/22/2019	36.3	22.7	74.2	40.1	24.7	23.7	20.4	25.1
7/16/2019	36.3		76.1	42.1				
8/21/2019	35.6			41				
11/6/2019	35.4	17.1	76.8	45	23.6	19.1	18.5	25.1
1/13/2020				57.5				
2/3/2020				61.6				
5/18/2020	34.8	16.3	80	71.6	23.8	42.1	18.1	25.2
7/14/2020			78.6	77.6				
8/26/2020		14.3 (i)	79.6	80.1				
11/11/2020	33.1	19.3	87	92.6	23.7	15.8	18.7	26.2
2/3/2021			87.3	99.8				
3/1/2021			88.8	99.9				

Appendix C

Trend Analysis

Sen's Slope Estimator

504 (bg)



n = 19

Slope = 1.382 units per year.

Mann-Kendall statistic = 63
critical = 68

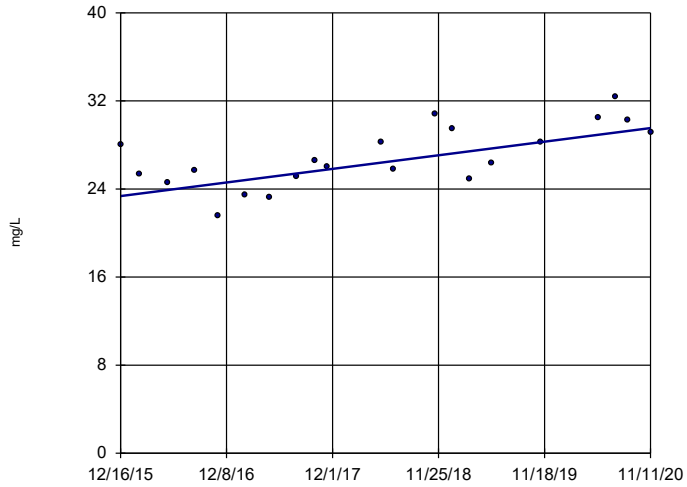
Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 4/26/2021 12:18 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

505 (bg)



n = 21

Slope = 1.259 units per year.

Mann-Kendall statistic = 101
critical = 78

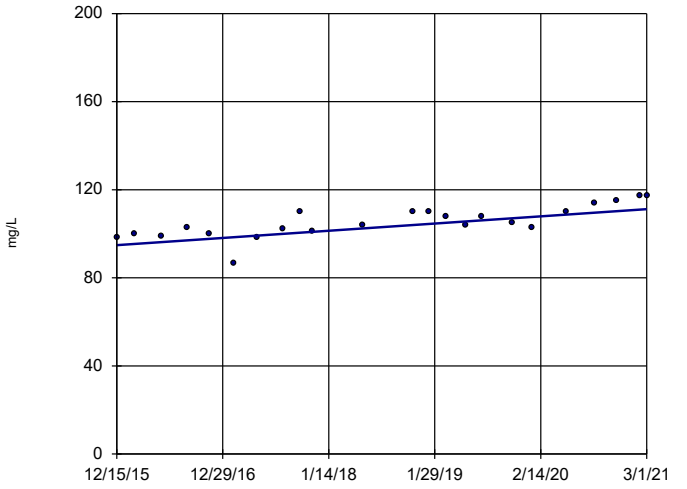
Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 4/26/2021 12:18 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

512



n = 23

Slope = 3.145 units per year.

Mann-Kendall statistic = 164
critical = 89

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 4/26/2021 12:18 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

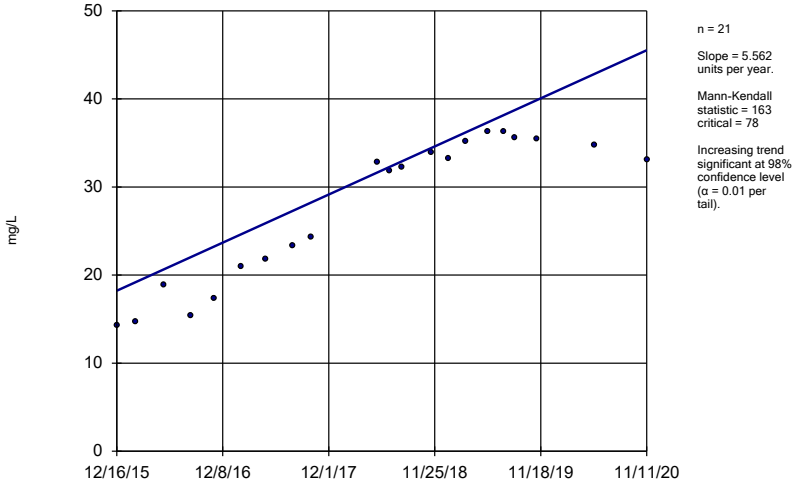
Trend Test

Sibley Client: SCS Engineers Data: Sibley Printed 4/26/2021, 12:22 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium (mg/L)	504 (bg)	1.382	63	68	No	19	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**505 (bg)**	**1.259**	**101**	**78**	**Yes**	**21**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	**512**	**3.145**	**164**	**89**	**Yes**	**23**	**0**	**n/a**	**n/a**	**0.02**	**NP**

Sen's Slope Estimator

504 (bg)



n = 21

Slope = 5.562 units per year.

Mann-Kendall statistic = 163 critical = 78

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 4/28/2021 8:58 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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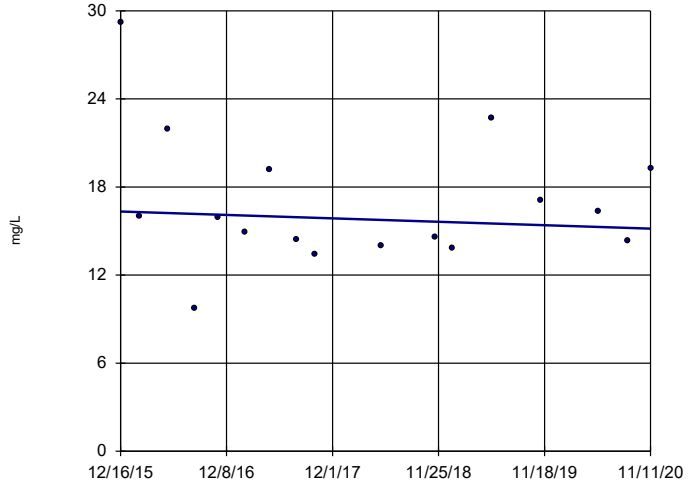
Sen's Slope Estimator

505 (bg)



n = 17

Slope = -0.2376 units per year.

Mann-Kendall statistic = -10 critical = -58

Trend not significant at 98% confidence level (α = 0.01 per tail).

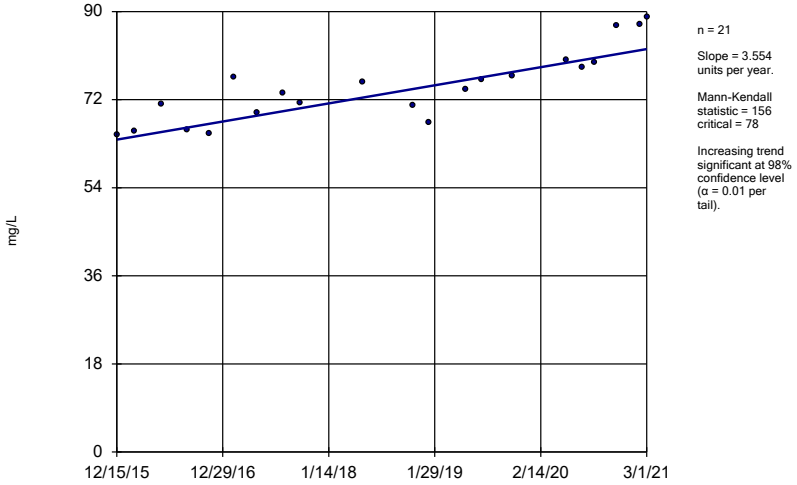
Constituent: Sulfate Analysis Run 4/28/2021 8:58 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

506



n = 21

Slope = 3.554 units per year.

Mann-Kendall statistic = 156 critical = 78

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

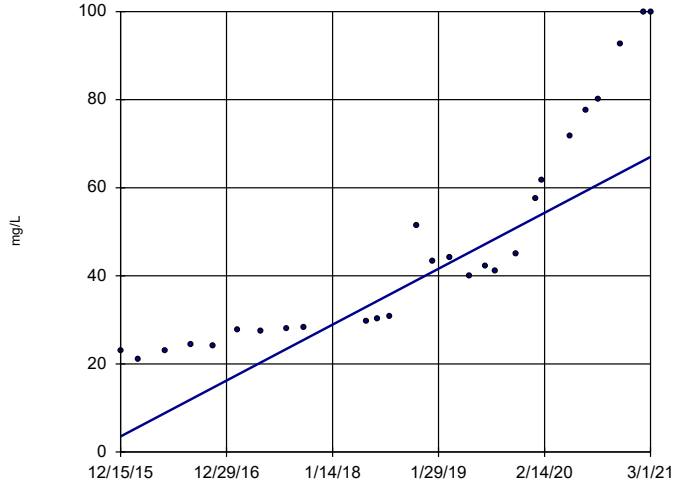
Constituent: Sulfate Analysis Run 4/28/2021 8:58 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

512



n = 27

Slope = 12.18 units per year.

Mann-Kendall statistic = 319 critical = 112

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 4/28/2021 8:58 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Trend Test

Sibley Client: SCS Engineers Data: Sibley Printed 4/28/2021, 9:01 AM

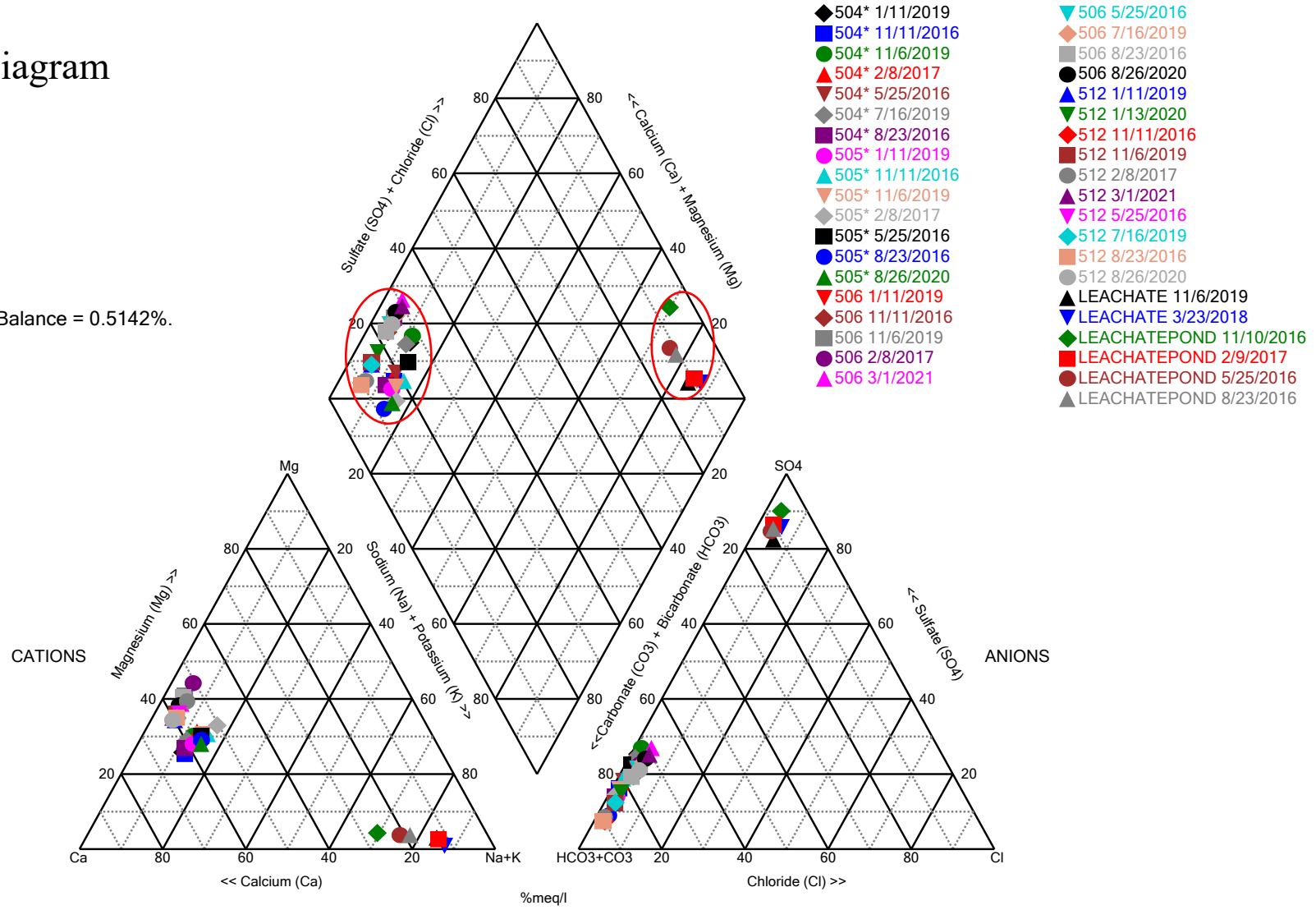
Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Sulfate (mg/L)	**504 (bg)**	**5.562**	**163**	**78**	**Yes**	**21**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	505 (bg)	-0.2376	-10	-58	No	17	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	**506**	**3.554**	**156**	**78**	**Yes**	**21**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	**512**	**12.18**	**319**	**112**	**Yes**	**27**	**0**	**n/a**	**n/a**	**0.02**	**NP**

Appendix D

Piper Diagram Plots and Analytical Results

Piper Diagram

Cation-Anion Balance = 0.5142%.



Analysis Run 4/26/2021 8:56 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Piper Diagram

Analysis Run 4/26/2021 9:00 AM View: LF III

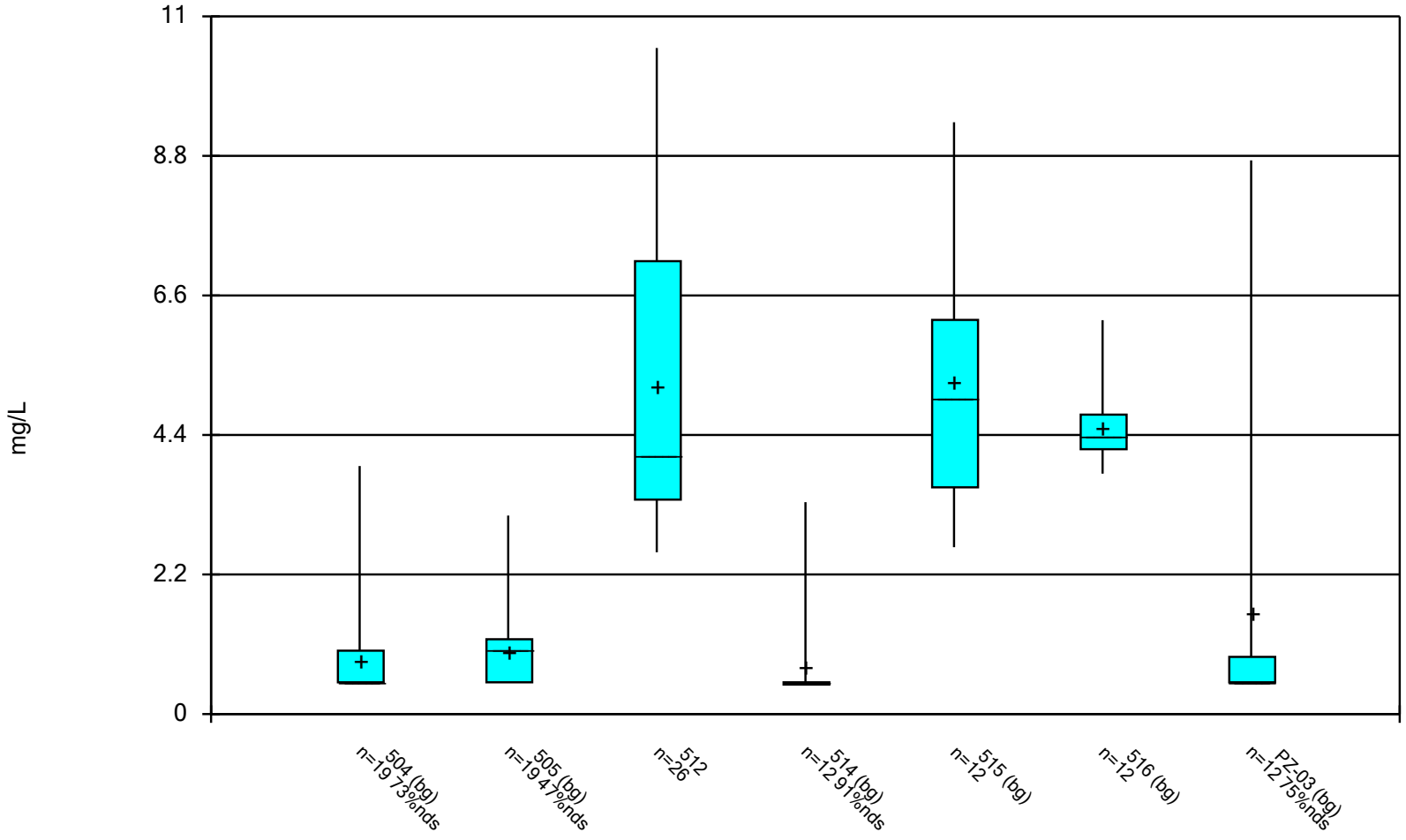
Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3	CO3
504* 5/25/2016	6.54	1.27	30.2	8.36	0.5	18.9	89	10
504* 8/23/2016	6.61	1.15	32.2	8.56	0.5	15.4	99.5	10
504* 11/11/2016	8.17	1.3	36.9	8.97	0.5	17.4	94.7	10
504* 2/8/2017	6.83	1.28	29.6	9.94	0.5	21	105	10
504* 1/11/2019	7.64	1.9	39.3	9.85	0.5	33.2	103	10
504* 7/16/2019	7.92	1.49	40.6	11.8	0.5	36.3	124	10
504* 11/6/2019	7.31	1.33	34.1	10.7	0.5	35.4	101	10
505* 5/25/2016	6.93	0.5	24.6	8.05	0.5	21.9	75.3	10
505* 8/23/2016	7.28	0.5	25.7	7.97	1.19	9.73	101	10
505* 11/11/2016	6.91	0.5	21.6	7.39	0.5	15.9	68.5	10
505* 2/8/2017	8.52	0.5	23.5	9.3	0.5	14.9	94	10
505* 1/11/2019	7.54	0.5	29.5	8.42	1	13.8	87.5	10
505* 11/6/2019	8.24	0.5	28.2	9.54	0.5	17.1	93.6	10
505* 8/26/2020	8.95	1	30.3	8.95	1.03	14.3	110	10
506 5/25/2016	8.51	2.19	98.3	43.6	5.76	71	304	10
506 8/23/2016	8.28	1.79	97.2	42.8	6.16	65.8	326	10
506 11/11/2016	8.44	2.37	96.5	41.2	6.13	65	312	10
506 2/8/2017	8.25	2.04	83.6	43.9	5.89	76.5	307	10
506 1/11/2019	8.21	1.85	93	39.7	6.39	67.3	292	10
506 7/16/2019	8.24	1.89	95.3	40.7	7.33	76.1	291	10
506 11/6/2019	8.1	1.88	93.7	42.2	6.66	76.8	306	10
506 8/26/2020	8.15	1	93.9	38.2	7.31	79.6	289	10
506 3/1/2021	8.14	1	93	38.8	8.05	88.8	277	10
512 5/25/2016	10	2.24	98.9	36.8	2.55	23.1	356	10
512 8/23/2016	10.3	2.13	103	36.9	3.23	24.4	384	10
512 11/11/2016	9.96	2.16	100	35.6	3.17	24	352	10
512 2/8/2017	10	2.35	86.4	37.9	3.14	27.8	358	10
512 1/11/2019	10.6	2.25	110	37.8	3.85	43.3	366	10
512 7/16/2019	10.4	2.33	108	38.6	4.35	42.1	363	10
512 11/6/2019	10	2.21	105	39.4	4.48	45	377	10
512 1/13/2020	9.87	2.18	103	38.4	5.97	57.5	391	10
512 8/26/2020	10.4	2.13	114	38.9	8.79	80.1	349	10
512 3/1/2021	10	2.13	117	40.8	10.4	99.9	340	10
LEACHATEPOND 5/25/2016	499	58.6	129	12.9	44.1	1440	10	119
LEACHATEPOND 8/23/2016	479	56.8	108	12.8	42.8	1320	10	104
LEACHATEPOND 11/10/2016	651	75.3	224	22.5	50.4	1820	30.5	68.3
LEACHATEPOND 2/9/2017	678	66.2	89.4	10.8	64.5	2200	38.9	146
LEACHATE 3/23/2018	741	70.3	88.5	4.66	79.1	1690	10	108
LEACHATE 11/6/2019	732	76.4	101	13.5	74.3	1630	53.3	125

Appendix E

Box and Whiskers Plots

Box & Whiskers Plot



Constituent: Chloride Analysis Run 4/14/2021 11:36 AM View: LF III

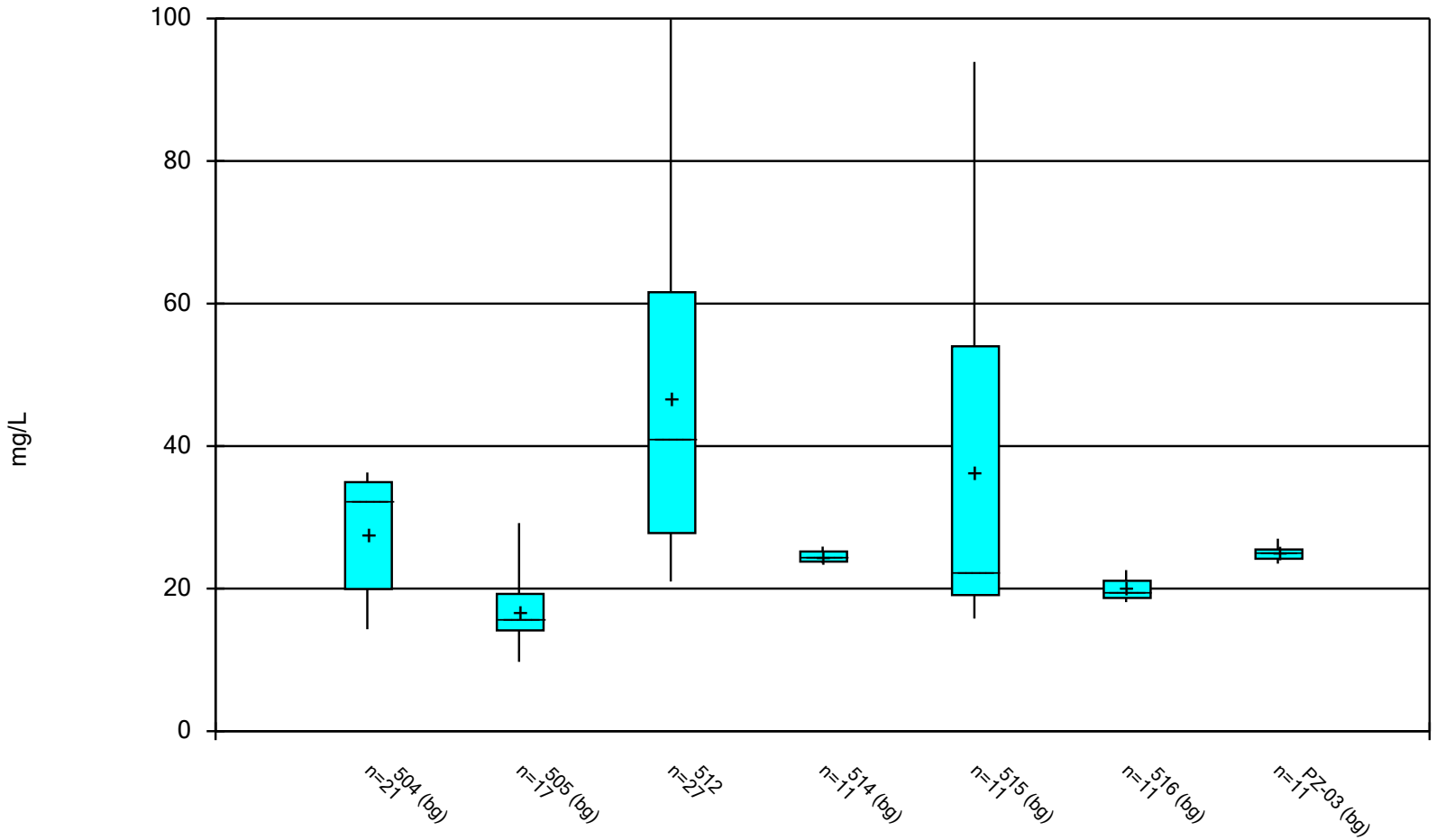
Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Sibley Client: SCS Engineers Data: Sibley Printed 4/14/2021, 11:38 AM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Chloride (mg/L)	504 (bg)	19	0.8321	0.8092	0.1857	0.5	0.5	3.91	73.68
Chloride (mg/L)	505 (bg)	19	0.9968	0.6861	0.1574	1	0.5	3.13	47.37
Chloride (mg/L)	512	26	5.175	2.531	0.4963	4.07	2.55	10.5	0
Chloride (mg/L)	514 (bg)	12	0.7367	0.8198	0.2367	0.5	0.5	3.34	91.67
Chloride (mg/L)	515 (bg)	12	5.248	2.124	0.613	4.97	2.63	9.33	0
Chloride (mg/L)	516 (bg)	12	4.527	0.6338	0.183	4.39	3.79	6.21	0
Chloride (mg/L)	PZ-03 (bg)	12	1.597	2.541	0.7334	0.5	0.5	8.73	75

Box & Whiskers Plot



Constituent: Sulfate Analysis Run 4/14/2021 11:43 AM View: LF III

Sibley Client: SCS Engineers Data: Sibley

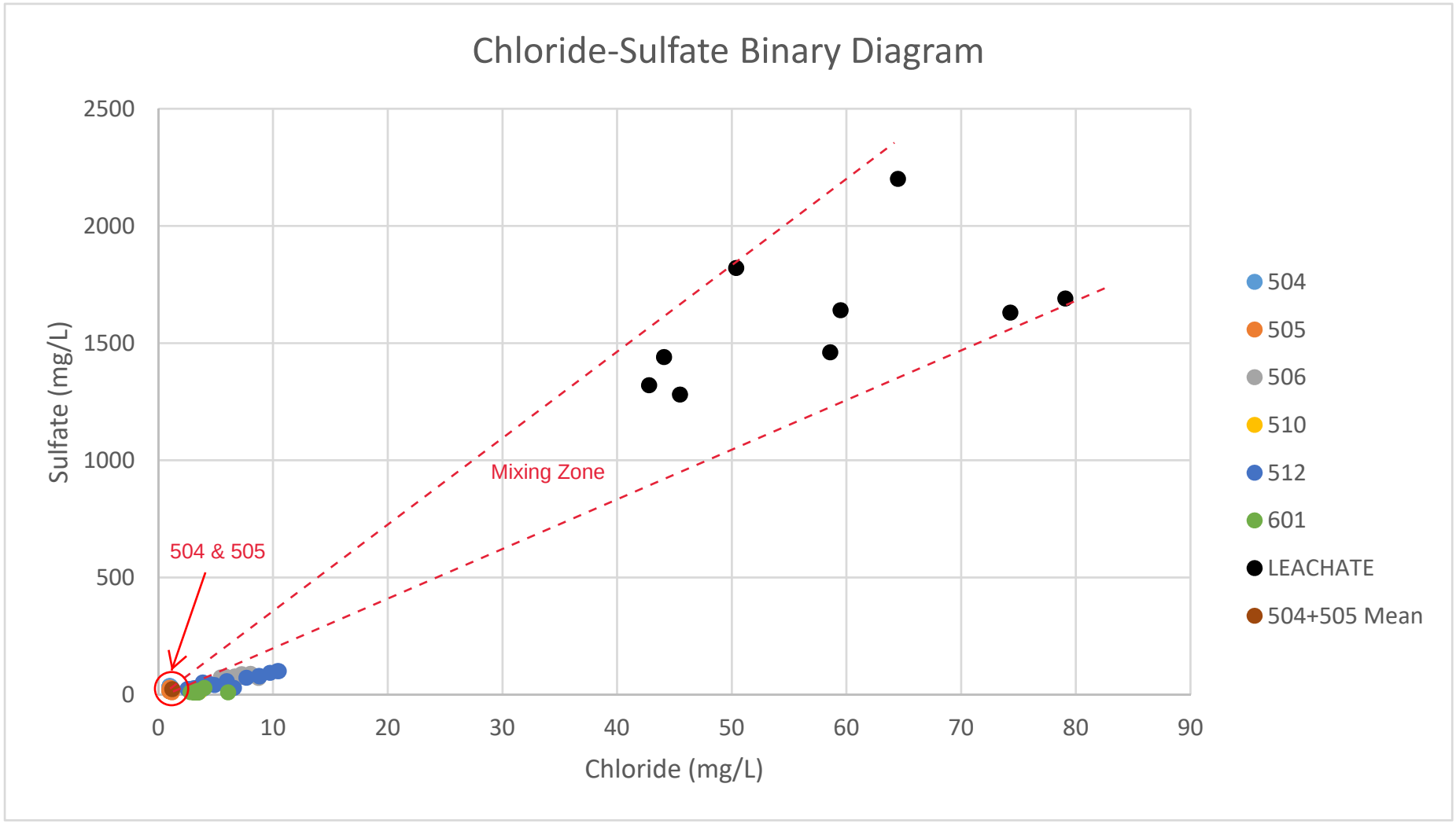
Box & Whiskers Plot

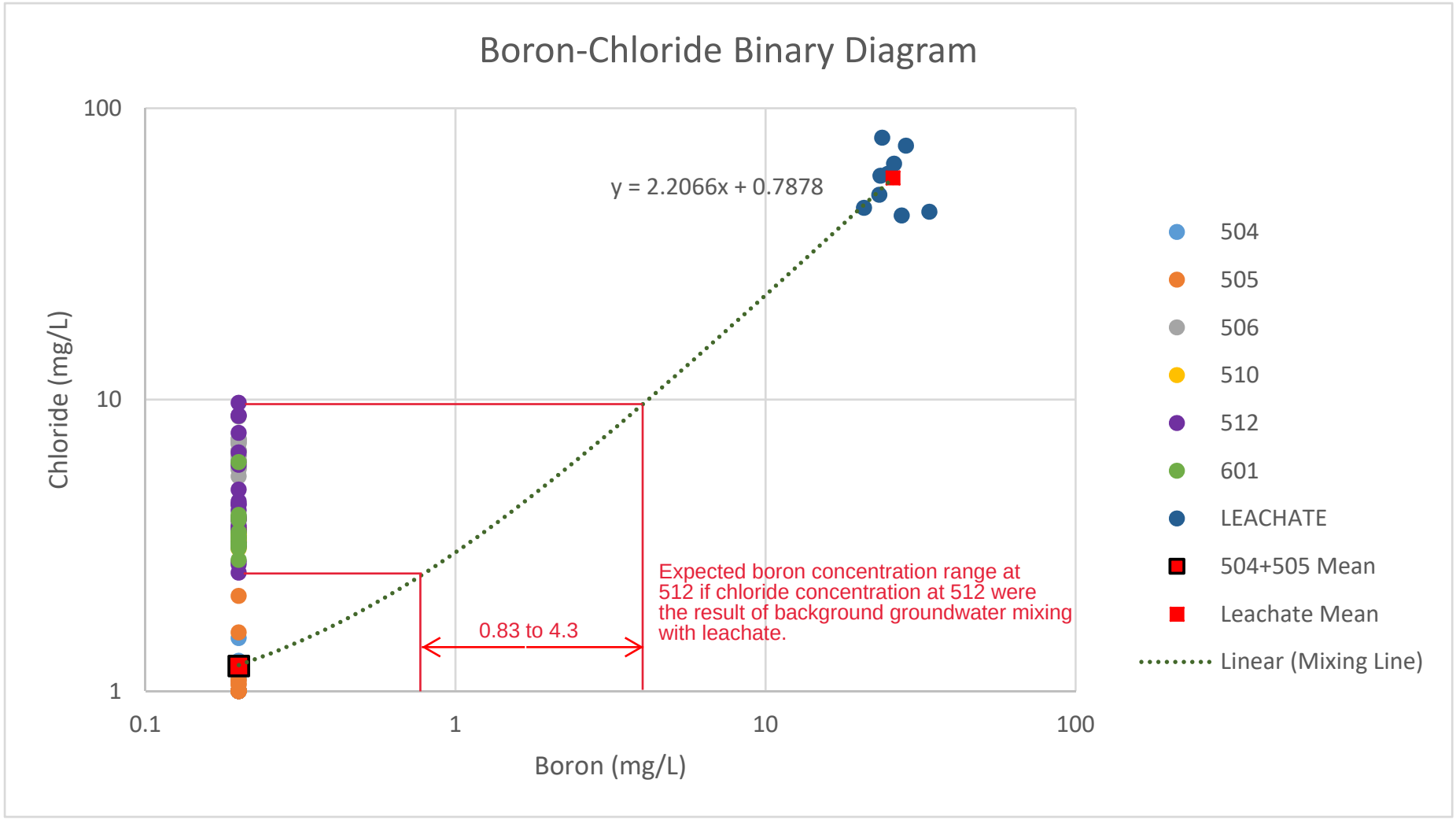
Sibley Client: SCS Engineers Data: Sibley Printed 4/14/2021, 11:44 AM

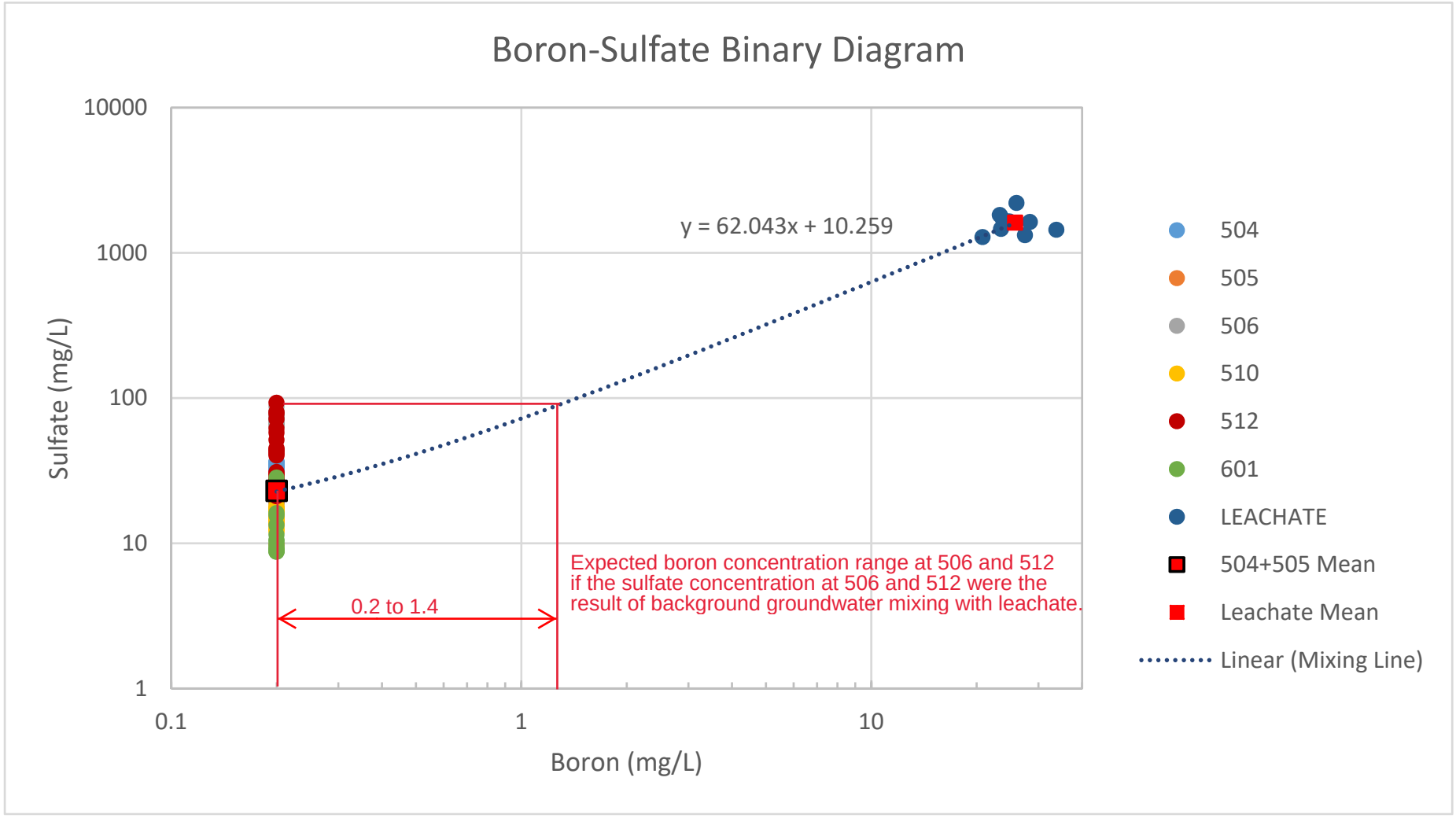
Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Sulfate (mg/L)	504 (bg)	21	27.7	8.157	1.78	32.3	14.3	36.3	0
Sulfate (mg/L)	505 (bg)	17	16.87	4.522	1.097	15.9	9.73	29.2	0
Sulfate (mg/L)	512	27	46.87	24.77	4.767	41	21	99.9	0
Sulfate (mg/L)	514 (bg)	11	24.58	0.8376	0.2526	24.6	23.6	25.9	0
Sulfate (mg/L)	515 (bg)	11	36.55	25.92	7.815	22.3	15.8	93.9	0
Sulfate (mg/L)	516 (bg)	11	20.02	1.418	0.4274	19.6	18.1	22.6	0
Sulfate (mg/L)	PZ-03 (bg)	11	25.09	0.9803	0.2956	25.1	23.5	27	0

Appendix F

Binary Plots


Chloride-Sulfate Binary Diagram
Sulfate (mg/L)
2500
2000
1500
1000
500
0
0
10
20
30
40
50
60
70
80
90
Chloride (mg/L)
Mixing Zone
504 & 505
504
505
506
510
512
601
LEACHATE
504+505 Mean


Boron-Chloride Binary Diagram
y = 2.2066x + 0.7878
Chloride (mg/L)
Boron (mg/L)
100
10
1
0.1
1
10
100
0.83 to 4.3
Expected boron concentration range at 512 if chloride concentration at 512 were the result of background groundwater mixing with leachate.
504
505
506
510
512
601
LEACHATE
504+505 Mean
Leachate Mean
Linear (Mixing Line)


Boron-Sulfate Binary Diagram
10000
1000
100
10
1
Sulfate (mg/L)
0.1
1
10
Boron (mg/L)
y = 62.043x + 10.259
0.2 to 1.4
Expected boron concentration range at 506 and 512 if the sulfate concentration at 506 and 512 were the result of background groundwater mixing with leachate.
504
505
506
510
512
601
LEACHATE
504+505 Mean
Leachate Mean
Linear (Mixing Line)

C.2 Groundwater Monitoring Alternative Source Demonstration Report May 2021 Groundwater Monitoring Event, CCR Landfill, Sibley Generating Station (January 2022)

CCR GROUNDWATER MONITORING
ALTERNATIVE SOURCE DEMONSTRATION REPORT
MAY 2021 GROUNDWATER MONITORING EVENT

CCR LANDFILL

Sibley Generating Station
Evergy Missouri West, Inc.
Sibley, Missouri

SCS ENGINEERS

January 2022
File No. 27213169.21

8575 W. 110th Suite 100
Overland Park, KS 66210
913-749-0700

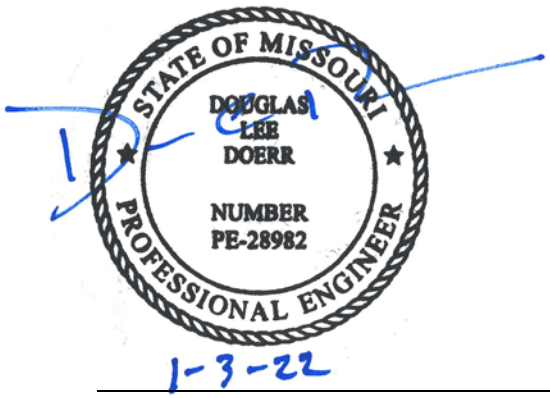
CERTIFICATIONS

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 CCR Landfill 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 CCR Landfill 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

Section **Page**

Appendices

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 CCR Landfill 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 24, 2021. Review and validation of the results from the May 2021 Detection Monitoring Event was completed on July 9, 2021, 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 19, 2021 and September 2, 2021.

The completed statistical evaluation identified two Appendix III constituents above their respective prediction limits established for upgradient monitoring well MW-505, two Appendix III constituents above their respective prediction limits established for monitoring well MW-506 and four Appendix III constituents above their respective prediction limits established for monitoring well MW-512.

Monitoring Well/Constituent	*UPL	Observation May 24, 2021	1st Verification July 19, 2021	2nd Verification September 2, 2021
MW-505				
Calcium	29.31	34.4	34.8	34.1
Total Dissolved Solids	180.3	181	184	188
MW-506				
Chloride	7.578	8.09	8.01	8.03
Sulfate	76.83	89.1	89.1	88.7

Monitoring Well/Constituent	*UPL	Observation May 24, 2021	1st Verification July 19, 2021	2nd Verification September 2, 2021
MW-512				
Calcium	111.3	114	120	114
Chloride	5.094	10.6	10.2	10.2
Total Dissolved Solids	466.4	505	524	555
Sulfate	44.8	110	104	107

*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 identified eight SSIs above the background prediction limits. These include calcium and total dissolved solids (TDS) at upgradient monitoring well MW-505, chloride and sulfate at monitoring well MW-506, and calcium, chloride, TDS, and sulfate at monitoring well MW-512.

3 ALTERNATIVE SOURCE DEMONSTRATION

An Alternative Source Demonstration (ASD) 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 CCR Landfill 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 CCR Landfill. Select multiple lines of supporting evidence are described as follows.

3.1 TIME SERIES PLOTS

Time series plots provide a graphical method to view changes in data at a particular well (monitoring point) or wells over time. Time series plots display the variability in concentration levels over time and can be used to indicate possible outliers or data errors (i.e. “spikes”). More than one well can be compared on the same plot to look for differences between wells. Non-detect data is plotted as censored data at one-half of the laboratory reporting limit. Time series plots can also be used to examine the data for trends.

The time series plot for chloride in monitoring wells MW-506 and MW-512 were compared to time series plots for chloride in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. The comparisons indicate the chloride concentrations have increased in upgradient wells MW-515 and MW-516 and the concentrations in MW-506 and MW-512 are near the concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill and that non-impacted groundwater chloride concentrations can fluctuate naturally within non-impacted wells such as MW-515 and MW-516.

The time series plots for TDS in upgradient monitoring well MW-505 and MW-512 were compared to time series plots for TDS in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. TDS comparisons indicate the concentrations in both MW-505 and MW-512 are within or near the range of concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill.

Time series plots for sulfate in monitoring wells MW-506 and MW-512 were compared to time series plots for sulfate in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Sulfate comparisons indicate the concentrations in MW-506 and MW-512 are within or very near the range of concentration levels for upgradient groundwater in the vicinity of the CCR Landfill, which could not be impacted by landfill operations; specifically MW-515. Additionally, there has been increasing concentrations of sulfate in upgradient well MW-504 and large variations of concentrations in MW-515, both of which are upgradient and have not been impacted by the landfill.

Figure 1 in **Appendix A** shows these upgradient and non-CCR monitoring system wells and their relationships to groundwater flow near and beneath the CCR Landfill. Because the non-CCR monitoring system wells are located in a nearby area where they could not be impacted by the landfill due to their upgradient and side-gradient locations, and exhibit variability that includes concentrations within the range or similar to those seen in MW-505, MW-506 and MW-512, the observed concentrations are within the range of expected natural spatial variation within and between wells. This demonstrates that a source other than the CCR Landfill caused the SSIs over the background levels, or that the SSIs could have resulted from natural variation in groundwater quality. Time series plots are provided in **Appendix B**.

3.2 TREND ANALYSIS

Trend analysis was performed to evaluate for statistically significant trends utilizing Sen's Slope/Mann-Kendall Statistical Analysis. Sen's Slope/Mann-Kendall statistical analysis is used to determine if the data exhibits an SSI or statistically significant decreasing (SSD) trend. A trend is the general increase or decrease in observed values of a variable over time. A trend analysis can be used to determine the significance of an apparent trend and to estimate the magnitude of that trend. The Mann-Kendall test is nonparametric, meaning that it does not depend on an assumption of a particular underlying distribution. The test uses only the relative magnitude of data rather than actual values. Therefore, missing values are allowed, and values that are recorded as non-detects by the laboratory can still be used in the statistical analysis by assigning values equal to half their detection limits. Sen's Slope is a simple nonparametric procedure developed to estimate the true slope. The advantage of this method over linear regression is that it is not greatly affected by gross data errors or outliers, and can be computed when data are missing.

The Sen's Slope/Mann-Kendall Statistical Analysis was performed at the 98 percent confidence level utilizing the statistical program Sanitas™. Calcium data from December 2015 through the most recent data for upgradient wells MW-504 and MW-505 and downgradient well MW-512 were used to perform trend analysis. The trend analysis for calcium indicates upgradient well MW-505 and downgradient well MW-512 both have increasing trends and upgradient well MW-504 also has a positive slope (i.e. increasing trend but not statistically significant). Since an upgradient well has an increasing trend due to natural conditions not due to the unit, it is also likely the downgradient wells can increase due to natural conditions not due to the unit.

Chloride data from December 2015 through the most recent data for upgradient and side-gradient non-CCR monitoring system well MW-515 and downgradient wells MW-506 and MW-512 were used to perform trend analysis. The trend analysis for chloride indicates upgradient well MW-515 has a positive slope (i.e. increasing trend but not statistically significant) and concentrations greater than that of MW-

506 and near that of MW-512. Since this non-impacted upgradient well shows a positive concentration slope and a concentration range similar to MW-506 and MW-512 and represents un-impacted natural conditions, it is also likely the downgradient wells can increase similarly due to natural conditions and not due to impact from the unit.

TDS data from December 2015 through the most recent data for upgradient and side-gradient non-CCR monitoring system wells MW-504, MW-505 and MW-515 and downgradient well MW-512 were used to perform trend analysis. The trend analysis for TDS indicates upgradient well MW-505 and downgradient well MW-512 both have increasing trends and upgradient well MW-504 and side-gradient non-CCR well MW-515 both have positive slopes (i.e. increasing trend but not statistically significant). This indicates that non-impacted wells can have an increasing trend or positive concentration slope. Additionally, the concentration range for MW-512 is within the total range for MW-515. Since these non-impacted wells show an increasing trend or positive concentration slope, it is also likely that downgradient wells can increase similarly due to natural conditions and not due to impact from the unit.

Sulfate data from December 2015 through the most recent data for upgradient wells MW-504 and MW-505 and downgradient wells MW-506 and MW-512 were used to perform trend analysis. The trend analysis for sulfate indicates upgradient well MW-504 and downgradient wells MW-506 and MW-512 have increasing trends. Since an upgradient well has an increasing trend due to natural conditions not due to the unit, it is also likely the downgradient wells can also increase due to natural conditions not due to the unit.

These trend analyses demonstrate that a source other than the CCR Landfill could have caused the SSIs over the background level for calcium, chloride, TDS and sulfate or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Trend analyses are provided in **Appendix C**.

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 generated for upgradient wells MW-504 and MW-505, downgradient wells MW-506 and MW-512, and landfill leachate is provided in **Appendix D** along with analytical results. The Piper diagram

indicates the groundwater from these four wells have similar geochemical characteristics and do not exhibit the same geochemical characteristics as the leachate. The groundwater and the leachate plot in different hydrochemical facies indicating there is no mixing of the two types of water (groundwater and leachate) and that both upgradient and downgradient groundwater characteristics are different from the leachate. This demonstrate that a source other than the CCR Landfill caused the SSIs over the background levels in MW-505, and MW-506, and MW-512, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.4 STIFF DIAGRAMS

Stiff diagrams are a graphical method commonly used to portray water compositions and facilitate the interpretation and presentation of chemical analysis. They 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.

Stiff diagrams are calculated in terms of milliequivalents and take into account ionic charge and the formula weight for major ions, specifically Sodium (Na) plus Potassium (K), Calcium (Ca), Magnesium (Mg), Chloride (Cl), Sulfate (SO4), Carbonate (CO3), and Bicarbonate (HCO3). The milliequivalents per liter of the cation and anions are plotted across from each other along a central vertical line and the distance from the center line is the value for each constituent.

Stiff diagrams were prepared for MW-505, MW-506 and MW-512 alongside Stiff diagrams calculated for leachate and are provided in **Appendix E**. The Stiff diagrams indicate the groundwater from these three wells have similar geochemical characteristics and do not exhibit the same geochemical characteristics as the leachate. The groundwater and the leachate stiff diagram shapes are dis-similar indicating there is no mixing of the two types of water (groundwater and leachate) and that both upgradient and downgradient groundwater characteristics are different from the leachate. This demonstrate that a source other than the CCR Landfill caused the SSIs over the background levels in MW-505, and MW-506, and MW-512, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

3.5 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 chloride in monitoring wells MW-506 and MW-512 were compared to box and whisker plots for chloride in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Chloride comparisons indicate the

concentrations in MW-506 and MW-512 are generally within expected concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill.

The box and whiskers plot for TDS in monitoring wells MW-505 and MW-512 were compared to box and whisker plots for TDS in several upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. TDS comparisons indicate the concentrations in MW-505 and MW-512 are generally within expected concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill.

The box and whiskers plot for sulfate in monitoring wells MW-506 and MW-512 were compared to box and whisker plots for sulfate in upgradient and side-gradient non-CCR monitoring system wells installed for future state-permitted landfill expansion purposes. Sulfate comparisons indicate the concentrations in MW-506 and MW-512 are generally within the range of concentration levels for non-impacted groundwater in the vicinity of the CCR Landfill; specifically MW-515.

Figure 1 in **Appendix A** shows these upgradient and non-CCR monitoring system wells and their relationships to groundwater flow near and beneath the CCR Landfill. Because the non-CCR monitoring system wells are located in a nearby area where they could not be impacted by the landfill due to their upgradient and side-gradient locations, and exhibit natural variability that includes concentrations similar to those seen in MW-505, MW-506 and MW-512, the observed concentrations are within the range of expected natural spatial variation within and between wells. This demonstrates that a source other than the CCR Landfill caused the SSIs over the background levels, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots are provided in **Appendix F**.

3.6 BINARY PLOTS

Binary plots are another way to visualize data and allow evaluation of mixing of various waters. Binary plots for the monitoring wells and leachate were prepared for pairs of highly mobile constituents. These include chloride - sulfate, boron - sulfate, and boron - chloride. The chloride – sulfate plot identifies the mixing zone between the mean concentrations for upgradient groundwater (MW-504 and MW-505) and leachate. If leachate were mixing with upgradient groundwater, the data for the downgradient wells would fall within the mixing zone on the plot; however, the data for the downgradient wells falls below the mixing zone. The boron – sulfate and boron - chloride plots identify the mixing line between the mean concentrations for upgradient groundwater (MW-504 and MW-505) and leachate. If leachate were mixing with upgradient groundwater, the sulfate – boron and chloride – boron data for MW-506 and MW-512 would fall on the mixing line and the boron concentrations would range from 0.20 mg/L to 1.65 mg/L based on the sulfate mixing line and approximately 0.83 mg/L to 4.6 mg/L based on the chloride mixing line. However, the boron in downgradient wells was not detected at a concentration above the reporting limit of 0.2 mg/L. Therefore, because boron is present in the leachate but is not present in the downgradient wells, leachate is not mixing with groundwater.

These binary plots demonstrate that leachate is not mixing with upgradient groundwater and that a source other than the CCR Landfill caused the SSI over the background level for sulfate or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Binary plots are provided in **Appendix G**.

4 CONCLUSION

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

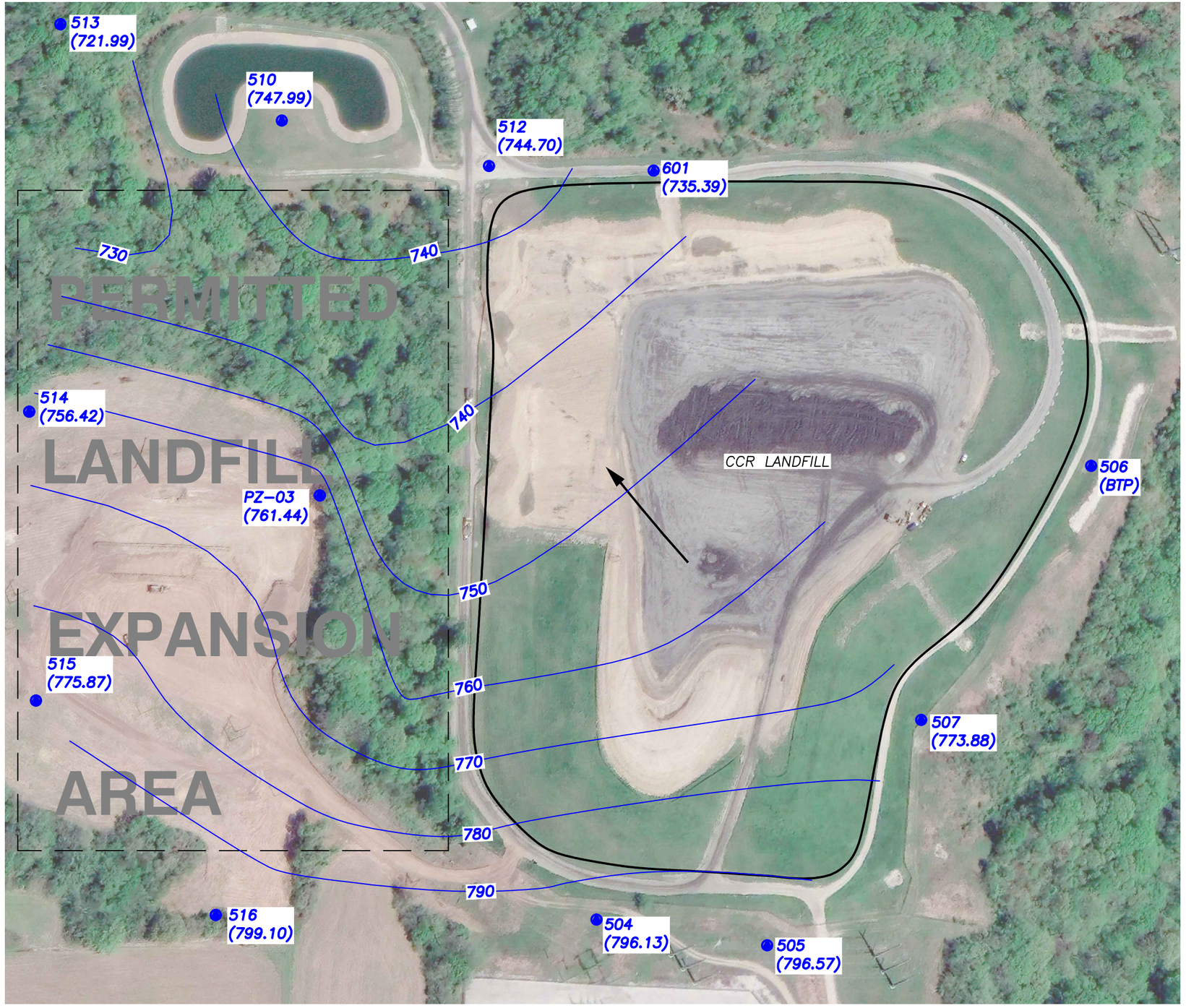
5 GENERAL COMMENTS

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 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 opinions 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



LEGEND:

- *760* — GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
- *601 (738.07)* — GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- CCR LANDFILL UNIT BOUNDARY
- GROUNDWATER FLOW DIRECTION
- BTP — BELOW TOP OF PUMP

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. GOOGLE EARTH AERIAL IMAGE. APRIL 2020.
3. BOUNDARY AND MONITORING WELL WELL LOCATIONS SHOWN ARE APPROXIMATE.

200 0 200 400

SCALE FEET

REV.	DATE
-	-

SHEET TITLE: POTENTIOMETRIC SURFACE MAP (MAY 2021)

PROJECT TITLE: ALTERNATIVE SOURCE DEMONSTRATION (MAY 2021)

CLIENT: EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

SCS ENGINEERS
8575 W. 110th St, Ste. 100
Overland Park, Kansas 66210
PH. (913) 681-0030 FAX. (913) 681-0012

PROJ. NO. 27213167.20
DSN. BY: ALR
DWN. BY: ALR
CHK. BY: JRR
QA RVW BY: JRR
PROJ. MGR: JRF

CADD FILE: Fig 2 - MAY 2021 - ASD.DWG

DATE: 12/15/21

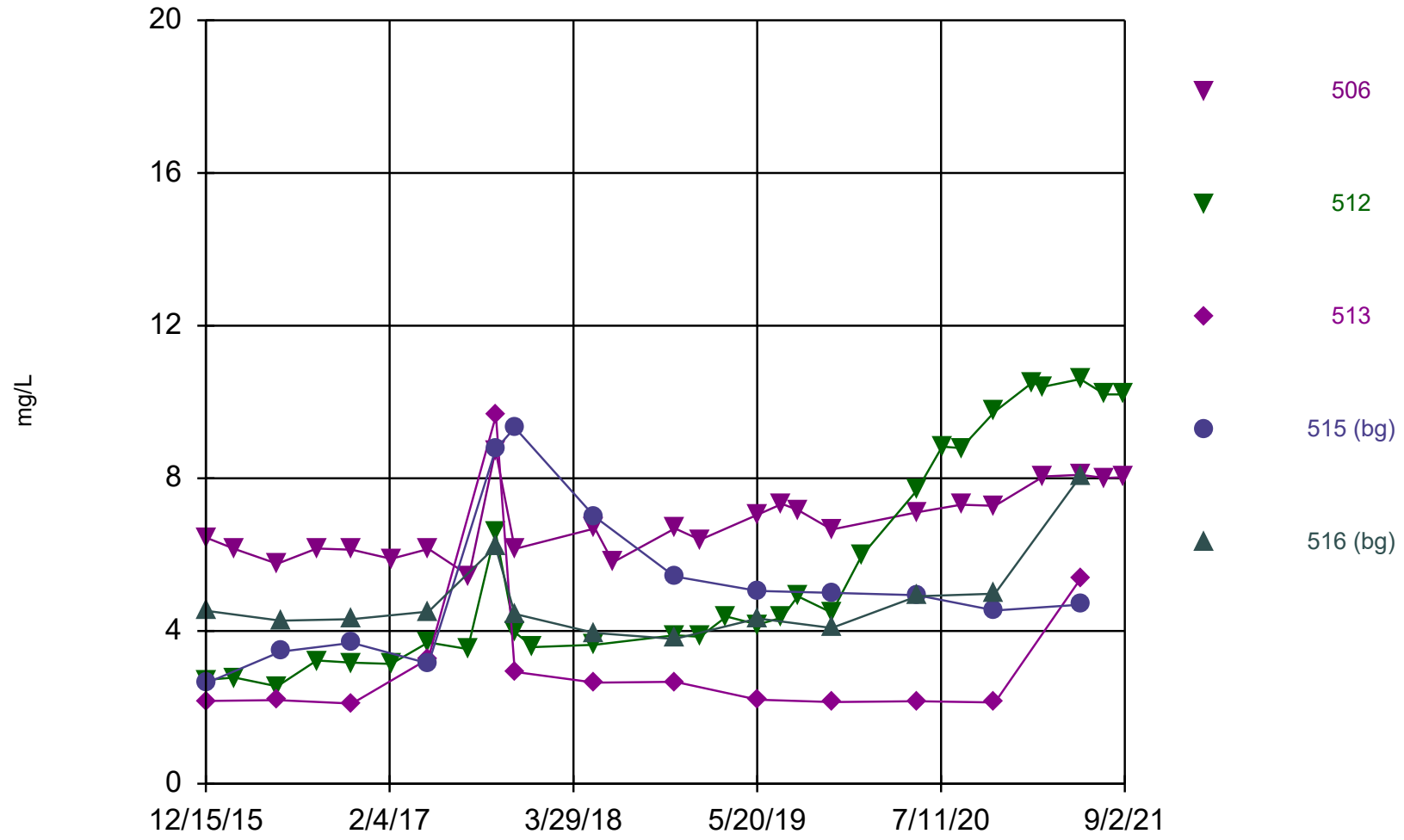
FIGURE NO. 1

N:\KCPL\Projects\Groundwater\DWG\Sibley\2021\GW\Fig 2 - May 2021 - ASD.dwg Dec 15, 2021 - 10:55am Layout Name: Fig 2 By: 4415alr

Appendix B

Time Series Plots

Time Series



Constituent: Chloride Analysis Run 12/9/2021 1:23 PM View: LF III Sibley Client: SCS Engineers Data: Sibley

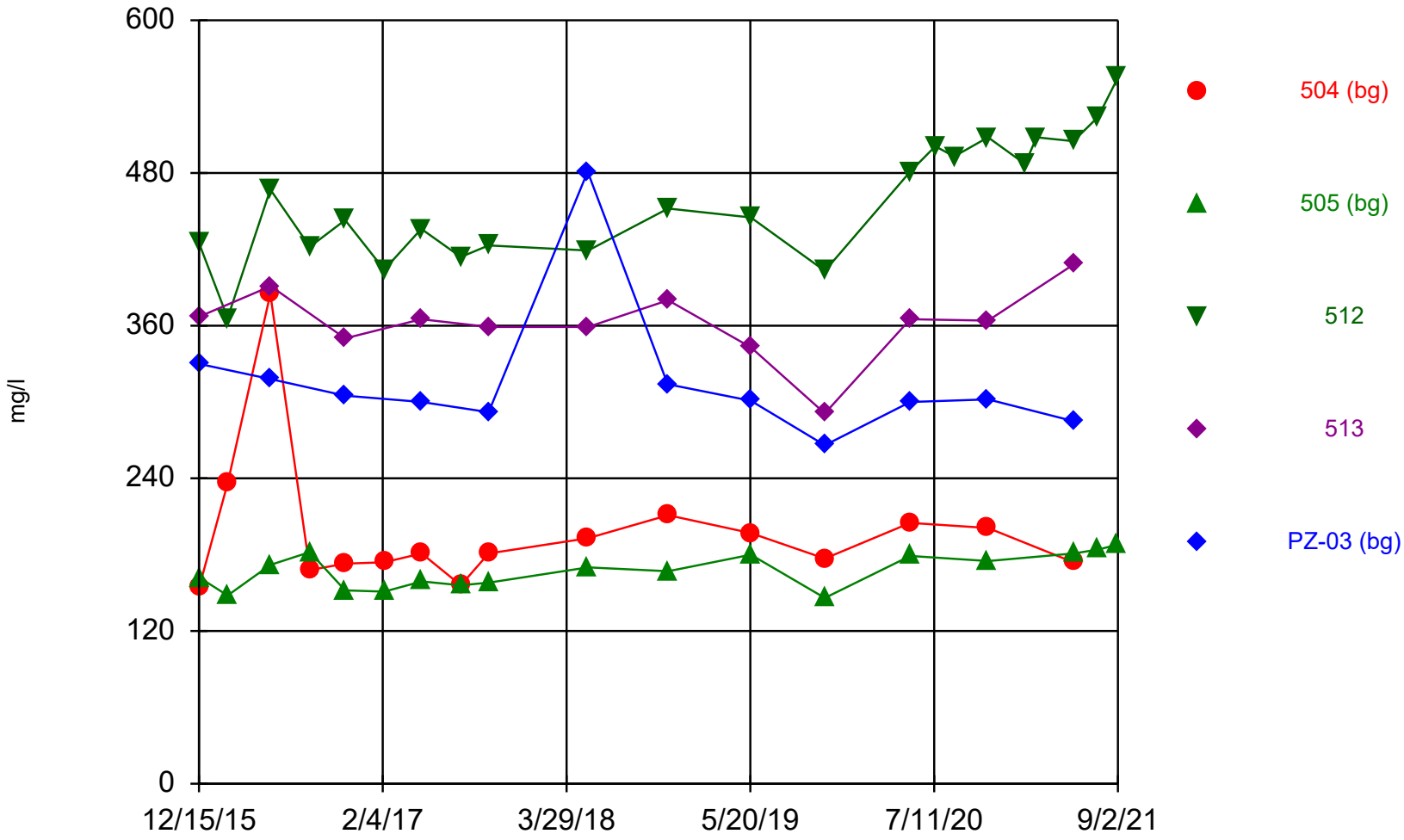
Time Series

Constituent: Chloride (mg/L) Analysis Run 12/9/2021 1:24 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	506	512	513	515 (bg)	516 (bg)
12/15/2015	6.45	2.72	2.17	2.63	4.53
2/18/2016	6.15	2.78			
5/25/2016	5.76	2.55			
5/26/2016			2.19		
6/2/2016				3.46	4.27
8/23/2016	6.16	3.23			
11/11/2016	6.13	3.17	2.1	3.69	4.31
2/8/2017	5.89	3.14			
5/3/2017		3.7	3.27		
5/4/2017	6.15			3.15	4.51
8/1/2017		3.53			
8/4/2017	5.45				
10/3/2017	8.74	6.59		8.75	6.21
10/4/2017			9.64		
11/16/2017	6.15	3.97	2.93	9.33	4.45
12/28/2017		3.58			
5/16/2018				7	3.95
5/17/2018	6.69	3.64	2.65		
6/27/2018	5.8				
11/14/2018				5.43	3.79
11/15/2018	6.69	3.89	2.67		
1/11/2019	6.39	3.85			
3/12/2019		4.38			
5/22/2019	7.05	4.17	2.2	5.05	4.33
7/16/2019	7.33	4.35			
8/21/2019	7.17	4.91			
11/6/2019	6.66	4.48	2.14	5	4.08
1/13/2020		5.97			
5/18/2020	7.11	7.69	2.16	4.94	4.91
7/14/2020		8.83			
8/26/2020	7.31	8.79			
11/11/2020	7.28	9.75	2.13	4.54	4.98
2/3/2021		10.5			
3/1/2021	8.05	10.4			
5/24/2021	8.09	10.6	5.36	4.69	8.05
7/19/2021	8.01	10.2			
9/2/2021	8.03	10.2			

Time Series



Constituent: Dissolved Solids Analysis Run 12/9/2021 1:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

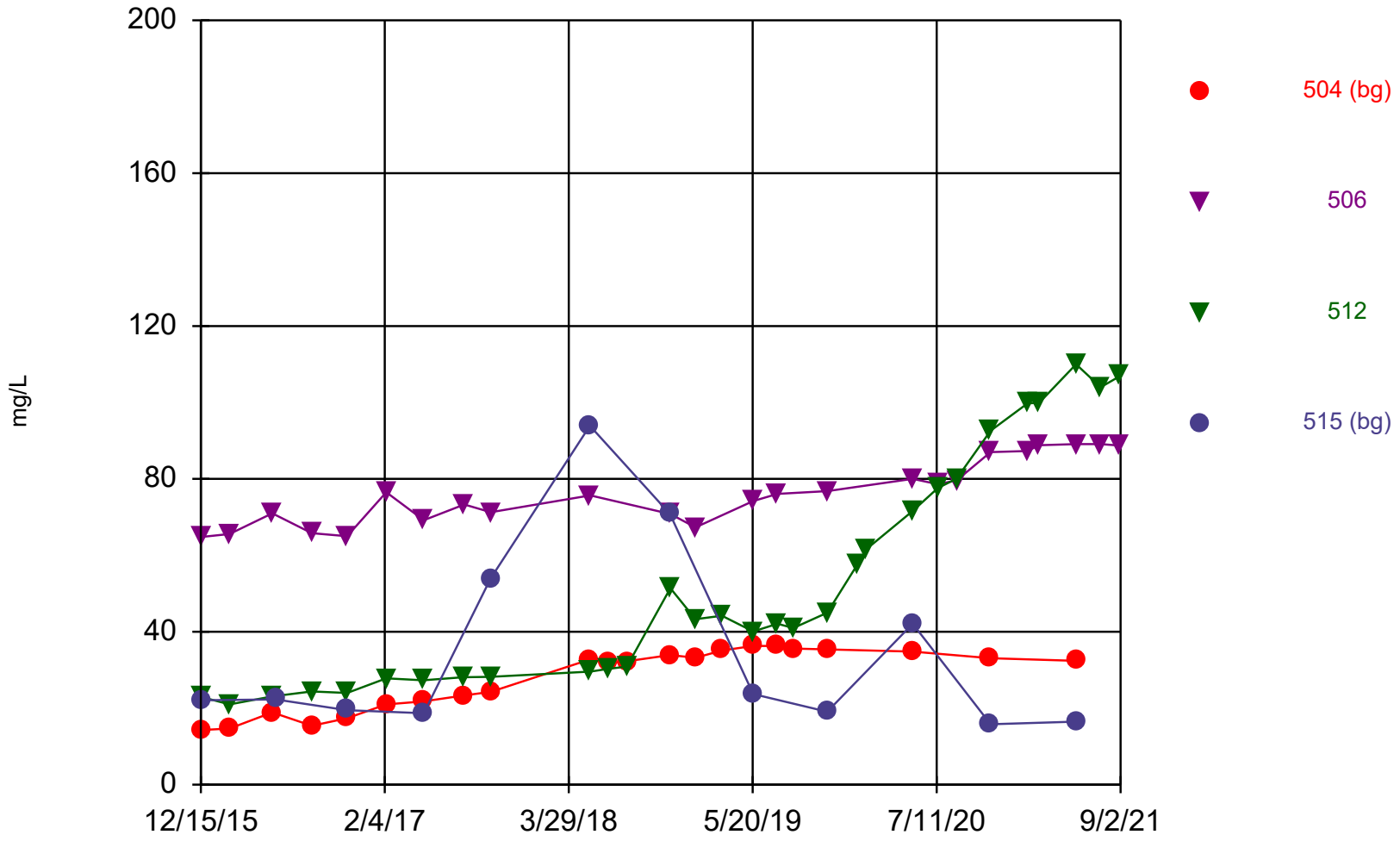
Time Series

Constituent: Dissolved Solids (mg/l) Analysis Run 12/9/2021 1:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	504 (bg)	505 (bg)	512	513	PZ-03 (bg)
12/15/2015			425	367	330
12/16/2015	155	162			
2/18/2016	236	148	366		
5/25/2016	385	172	467		
5/26/2016				391	318
8/23/2016	168	182	422		
11/11/2016	173	152	443	350	305
2/8/2017	174	151	404		
5/3/2017			436	365	
5/4/2017	181	159			300
8/1/2017	156	156	414		
10/3/2017	181	158	423		292
10/4/2017				359	
5/16/2018					481
5/17/2018	193	170	419	359	
11/14/2018					314
11/15/2018	211	167	452	380	
5/22/2019	197	180	445	343	301
11/6/2019	177	146	403	291	266
5/18/2020	205	179	481	365	300
7/14/2020			501		
8/26/2020			493		
11/11/2020	201	175	508	364	302
2/3/2021			487		
3/1/2021			508		
5/24/2021	174	181	505	408	285
7/19/2021		184	524		
9/2/2021		188	555		

Time Series



Constituent: Sulfate Analysis Run 12/9/2021 1:25 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Time Series

Constituent: Sulfate (mg/L) Analysis Run 12/9/2021 1:26 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

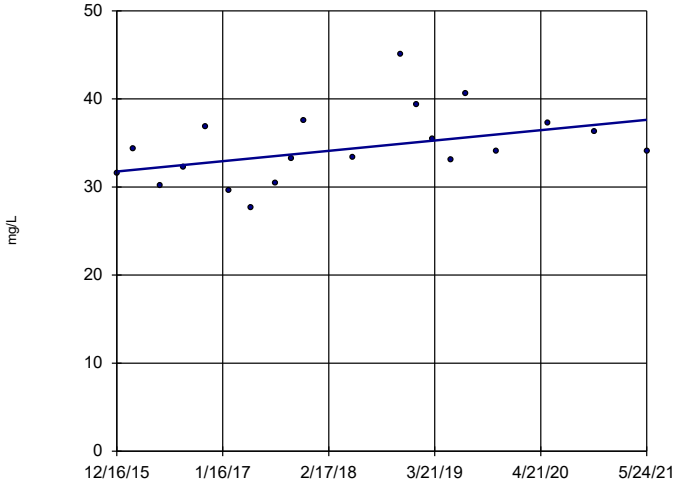
	504 (bg)	506	512	515 (bg)
12/15/2015		64.8	23	22.1
12/16/2015	14.3			
2/18/2016	14.7	65.6	21	
5/25/2016	18.9	71	23.1	
6/2/2016				22.3
8/23/2016	15.4	65.8	24.4	
11/11/2016	17.4	65	24	19.5
2/8/2017	21	76.5	27.8	
5/3/2017			27.3	
5/4/2017	21.8	69.2		18.7
8/1/2017	23.3		28.1	
8/4/2017		73.3		
10/3/2017	24.3	71.3	28.2	54
5/16/2018				93.9
5/17/2018	32.8	75.7	29.6	
6/27/2018	31.8		30.3	
8/8/2018	32.3		30.9	
11/14/2018				70.8
11/15/2018	33.9	70.8	51.4	
1/11/2019	33.2	67.3	43.3	
3/12/2019	35.1		44.2	
5/22/2019	36.3	74.2	40.1	23.7
7/16/2019	36.3	76.1	42.1	
8/21/2019	35.6		41	
11/6/2019	35.4	76.8	45	19.1
1/13/2020			57.5	
2/3/2020			61.6	
5/18/2020	34.8	80	71.6	42.1
7/14/2020		78.6	77.6	
8/26/2020		79.6	80.1	
11/11/2020	33.1	87	92.6	15.8
2/3/2021		87.3	99.8	
3/1/2021		88.8	99.9	
5/24/2021	32.4	89.1	110	16.5
7/19/2021		89.1	104	
9/2/2021		88.7	107	

Appendix C

Trend Analysis

Sen's Slope Estimator

504 (bg)



n = 20

Slope = 1.078 units per year.

Mann-Kendall statistic = 63 critical = 73

Trend not significant at 98% confidence level (α = 0.01 per tail).

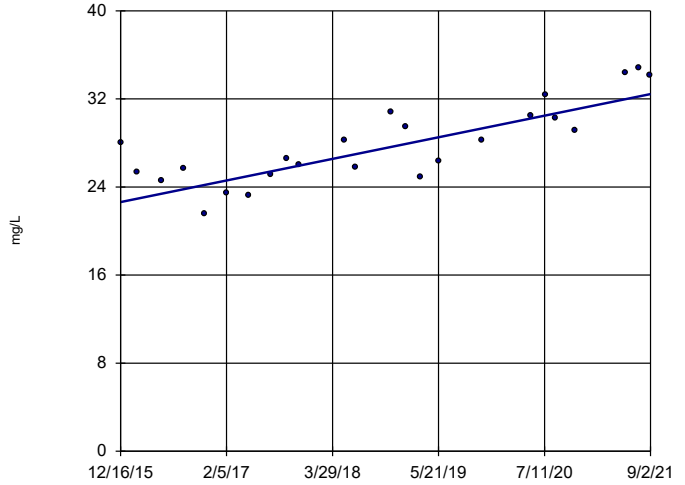
Constituent: Calcium Analysis Run 11/30/2021 1:25 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

505 (bg)



n = 24

Slope = 1.717 units per year.

Mann-Kendall statistic = 163 critical = 95

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

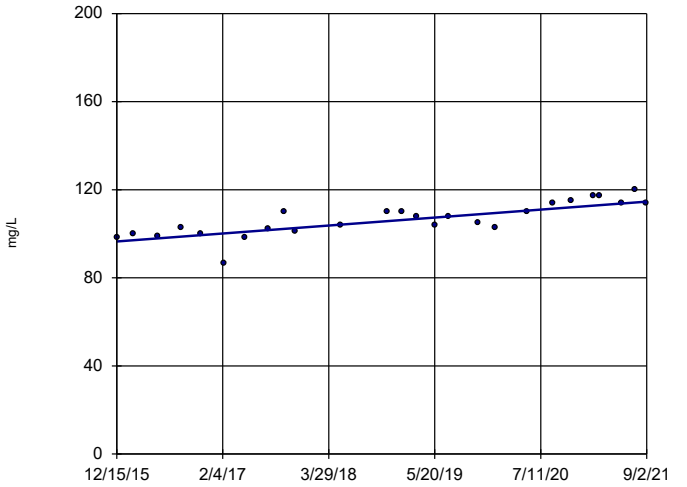
Constituent: Calcium Analysis Run 11/30/2021 1:25 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

512



n = 26

Slope = 3.168 units per year.

Mann-Kendall statistic = 219 critical = 106

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Calcium Analysis Run 11/30/2021 1:25 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

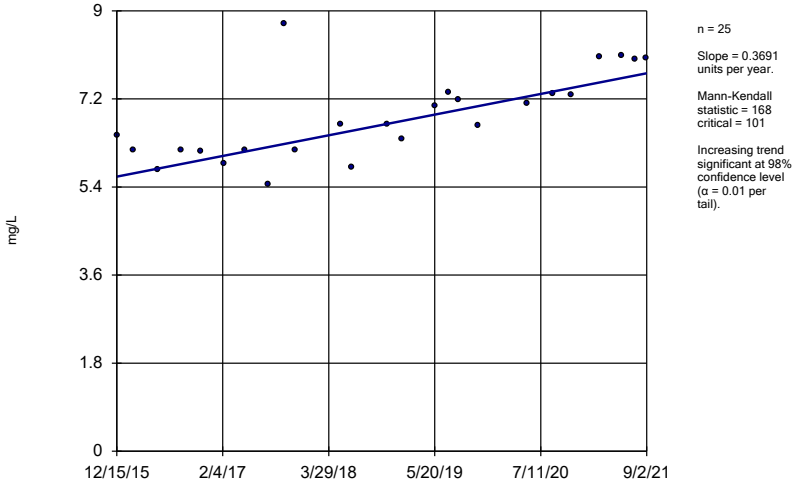
Trend Test

Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 1:26 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Calcium (mg/L)	504 (bg)	1.078	63	73	No	20	0	n/a	n/a	0.02	NP
Calcium (mg/L)	**505 (bg)**	**1.717**	**163**	**95**	**Yes**	**24**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Calcium (mg/L)	**512**	**3.168**	**219**	**106**	**Yes**	**26**	**0**	**n/a**	**n/a**	**0.02**	**NP**

Sen's Slope Estimator

506



n = 25

Slope = 0.3691 units per year.

Mann-Kendall statistic = 168
critical = 101

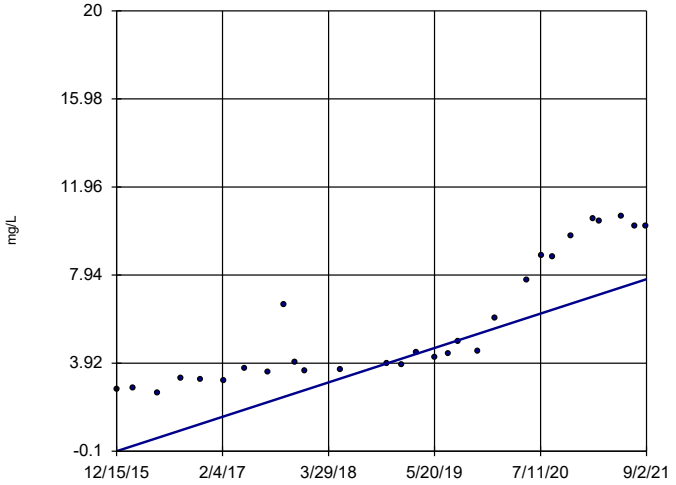
Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Chloride Analysis Run 11/30/2021 1:22 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

512



n = 29

Slope = 1.371 units per year.

Mann-Kendall statistic = 335
critical = 125

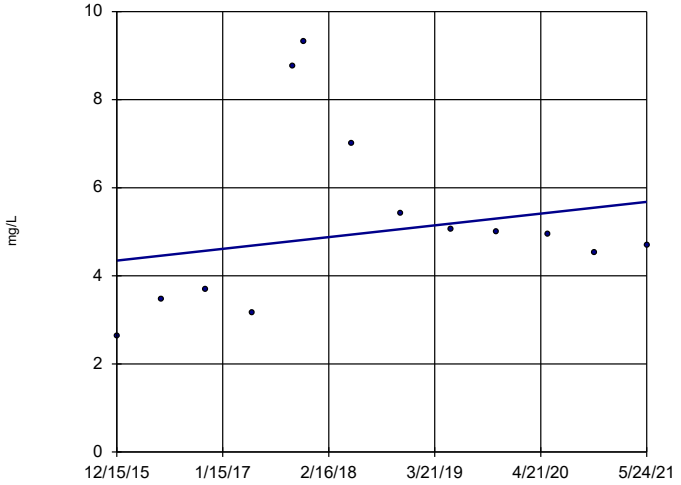
Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Chloride Analysis Run 11/30/2021 1:22 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

515 (bg)



n = 13

Slope = 0.245 units per year.

Mann-Kendall statistic = 6
critical = 39

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Chloride Analysis Run 11/30/2021 1:22 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

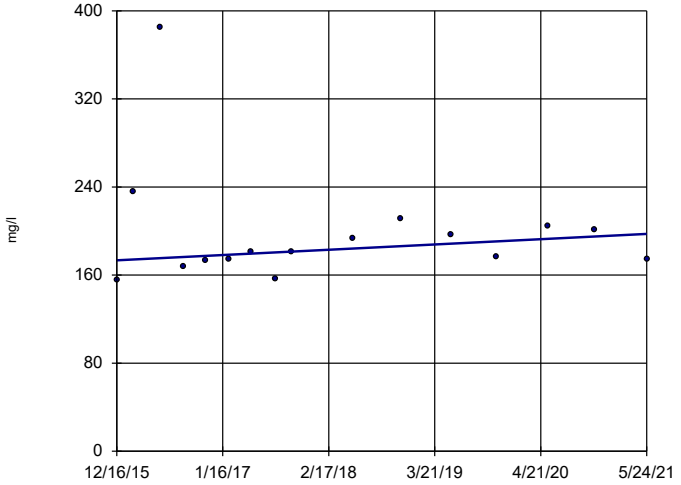
Trend Test

Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 1:24 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Chloride (mg/L)	**506**	**0.3691**	**168**	**101**	**Yes**	**25**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Chloride (mg/L)	**512**	**1.371**	**335**	**125**	**Yes**	**29**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Chloride (mg/L)	515 (bg)	0.245	6	39	No	13	0	n/a	n/a	0.02	NP

Sen's Slope Estimator

504 (bg)



n = 16

Slope = 4.41 units per year.

Mann-Kendall statistic = 24 critical = 53

Trend not significant at 98% confidence level (α = 0.01 per tail).

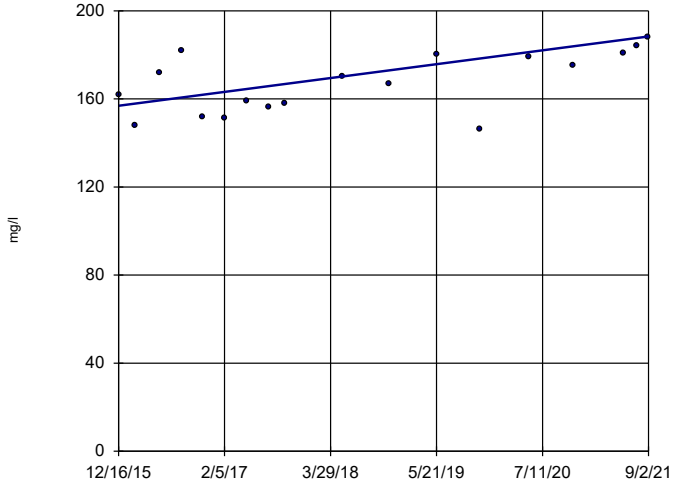
Constituent: Dissolved Solids Analysis Run 11/30/2021 1:20 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

505 (bg)



n = 18

Slope = 5.509 units per year.

Mann-Kendall statistic = 67 critical = 63

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

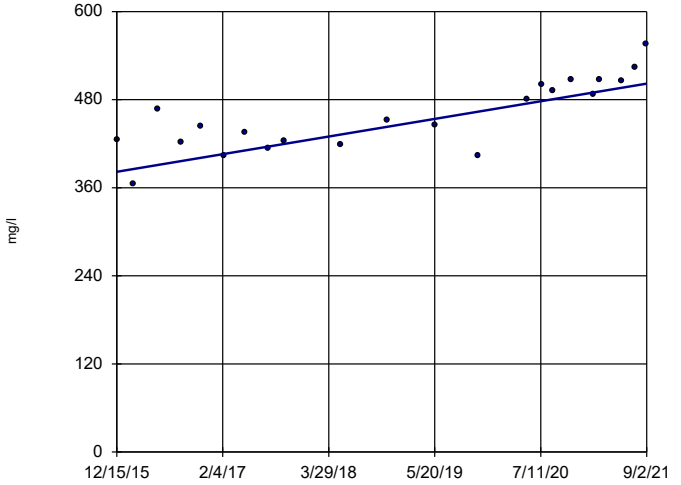
Constituent: Dissolved Solids Analysis Run 11/30/2021 1:20 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

512



n = 22

Slope = 21 units per year.

Mann-Kendall statistic = 140 critical = 84

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

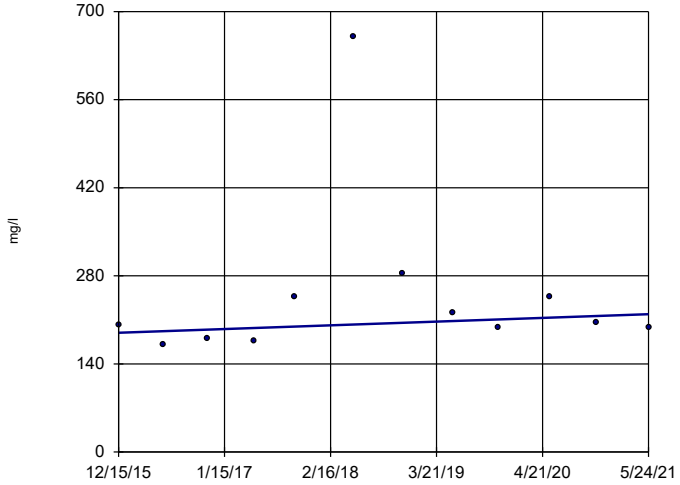
Constituent: Dissolved Solids Analysis Run 11/30/2021 1:20 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

515 (bg)



n = 12

Slope = 5.423 units per year.

Mann-Kendall statistic = 12 critical = 35

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Dissolved Solids Analysis Run 11/30/2021 1:20 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

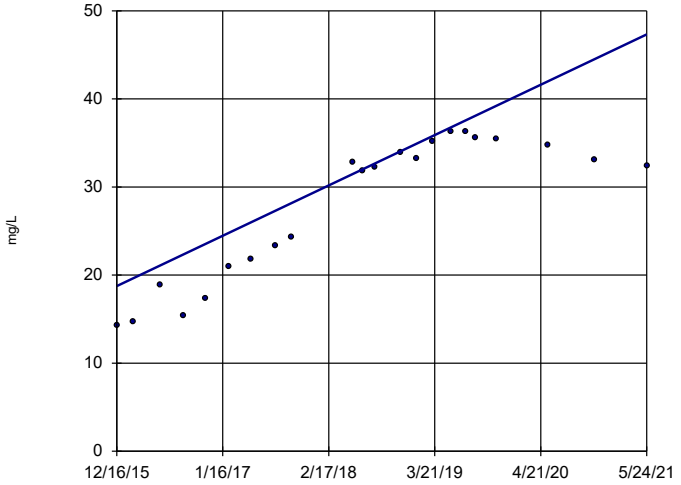
Trend Test

Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 1:22 PM

Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Dissolved Solids (mg/l)	504 (bg)	4.41	24	53	No	16	0	n/a	n/a	0.02	NP
Dissolved Solids (mg/l)	**505 (bg)**	**5.509**	**67**	**63**	**Yes**	**18**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Dissolved Solids (mg/l)	**512**	**21**	**140**	**84**	**Yes**	**22**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Dissolved Solids (mg/l)	515 (bg)	5.423	12	35	No	12	0	n/a	n/a	0.02	NP

Sen's Slope Estimator

504 (bg)



n = 22

Slope = 5.251 units per year.

Mann-Kendall statistic = 164
critical = 84

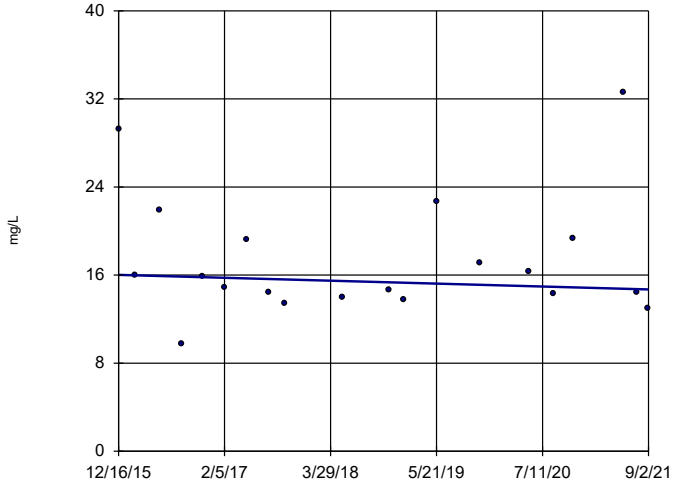
Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 11/30/2021 1:11 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

505 (bg)



n = 20

Slope = -0.2325 units per year.

Mann-Kendall statistic = -17
critical = -73

Trend not significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 11/30/2021 1:11 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

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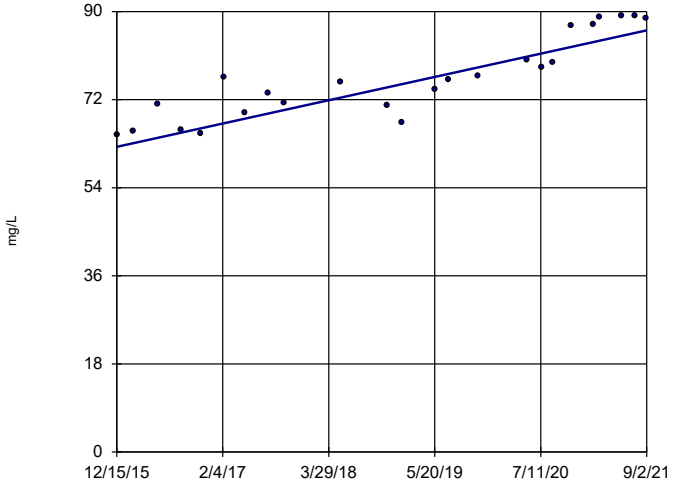
Sen's Slope Estimator

506



n = 24

Slope = 4.16 units per year.

Mann-Kendall statistic = 215
critical = 95

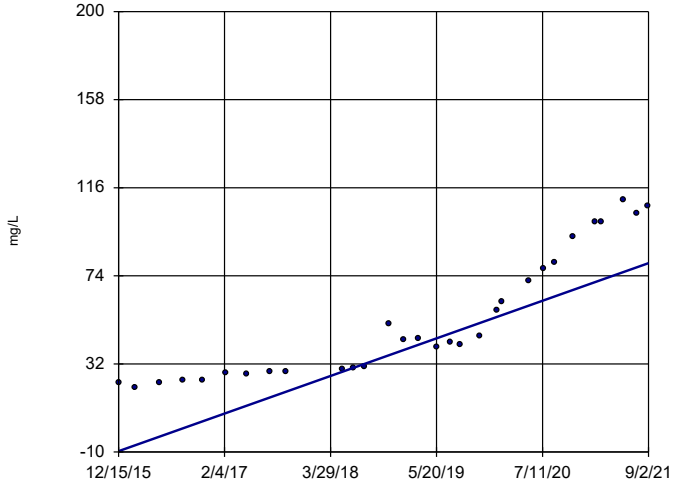
Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 11/30/2021 1:11 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Sen's Slope Estimator

512



n = 30

Slope = 15.68 units per year.

Mann-Kendall statistic = 399
critical = 132

Increasing trend significant at 98% confidence level (α = 0.01 per tail).

Constituent: Sulfate Analysis Run 11/30/2021 1:11 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Trend Test

Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 1:12 PM

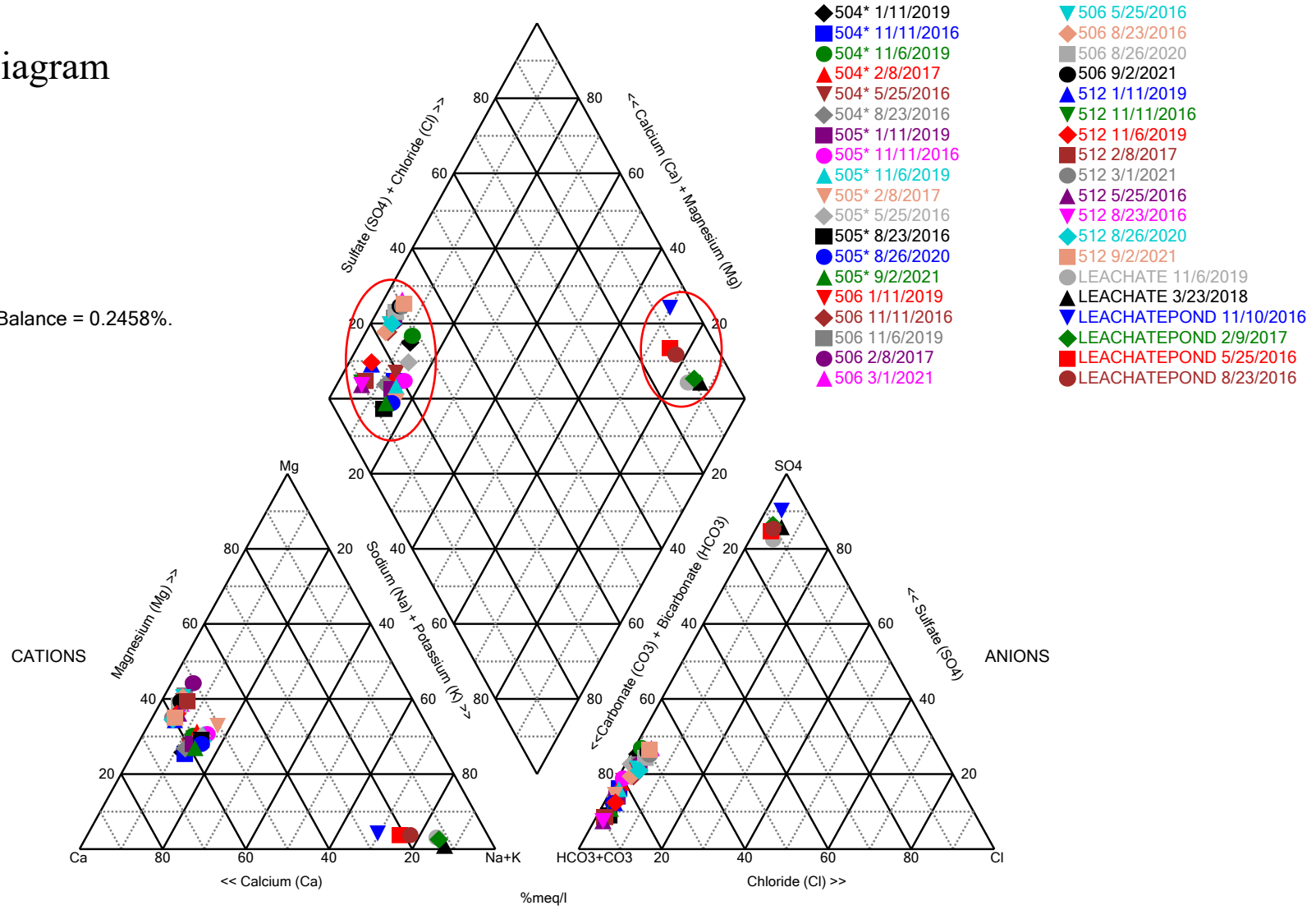
Constituent	Well	Slope	Calc.	Critical	Sig.	N	%NDs	Normality	Xform	Alpha	Method
Sulfate (mg/L)	**504 (bg)**	**5.251**	**164**	**84**	**Yes**	**22**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	505 (bg)	-0.2325	-17	-73	No	20	0	n/a	n/a	0.02	NP
Sulfate (mg/L)	**506**	**4.16**	**215**	**95**	**Yes**	**24**	**0**	**n/a**	**n/a**	**0.02**	**NP**
Sulfate (mg/L)	**512**	**15.68**	**399**	**132**	**Yes**	**30**	**0**	**n/a**	**n/a**	**0.02**	**NP**

Appendix D

Piper Diagram Plots and Analytical Results

Piper Diagram

Cation-Anion Balance = 0.2458%.



Analysis Run 11/30/2021 2:02 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Piper Diagram

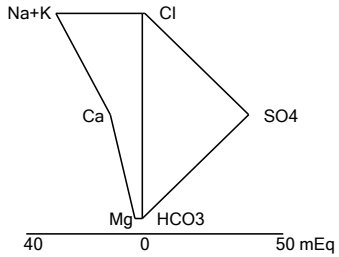
Analysis Run 11/30/2021 2:03 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

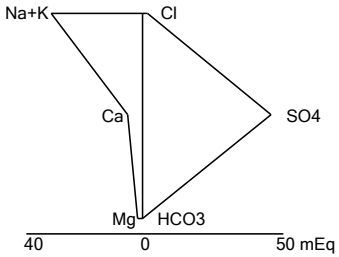
Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3	CO3
504* 5/25/2016	6.54	1.27	30.2	8.36	0.5	18.9	89	10
504* 8/23/2016	6.61	1.15	32.2	8.56	0.5	15.4	99.5	10
504* 11/11/2016	8.17	1.3	36.9	8.97	0.5	17.4	94.7	10
504* 2/8/2017	6.83	1.28	29.6	9.94	0.5	21	105	10
504* 1/11/2019	7.64	1.9	39.3	9.85	0.5	33.2	103	10
504* 11/6/2019	7.31	1.33	34.1	10.7	0.5	35.4	101	10
505* 5/25/2016	6.93	0.5	24.6	8.05	0.5	21.9	75.3	10
505* 8/23/2016	7.28	0.5	25.7	7.97	1.19	9.73	101	10
505* 11/11/2016	6.91	0.5	21.6	7.39	0.5	15.9	68.5	10
505* 2/8/2017	8.52	0.5	23.5	9.3	0.5	14.9	94	10
505* 1/11/2019	7.54	0.5	29.5	8.42	1	13.8	87.5	10
505* 11/6/2019	8.24	0.5	28.2	9.54	0.5	17.1	93.6	10
505* 8/26/2020	8.95	1	30.3	8.95	1.03	14.3	110	10
505* 9/2/2021	8.97	1	34.1	9.34	1.23	13	118	10
506 5/25/2016	8.51	2.19	98.3	43.6	5.76	71	304	10
506 8/23/2016	8.28	1.79	97.2	42.8	6.16	65.8	326	10
506 11/11/2016	8.44	2.37	96.5	41.2	6.13	65	312	10
506 2/8/2017	8.25	2.04	83.6	43.9	5.89	76.5	307	10
506 1/11/2019	8.21	1.85	93	39.7	6.39	67.3	292	10
506 11/6/2019	8.1	1.88	93.7	42.2	6.66	76.8	306	10
506 8/26/2020	8.15	1	93.9	38.2	7.31	79.6	289	10
506 3/1/2021	8.14	1	93	38.8	8.05	88.8	277	10
506 9/2/2021	8.43	1	91.1	38.3	8.03	88.7	296	10
512 5/25/2016	10	2.24	98.9	36.8	2.55	23.1	356	10
512 8/23/2016	10.3	2.13	103	36.9	3.23	24.4	384	10
512 11/11/2016	9.96	2.16	100	35.6	3.17	24	352	10
512 2/8/2017	10	2.35	86.4	37.9	3.14	27.8	358	10
512 1/11/2019	10.6	2.25	110	37.8	3.85	43.3	366	10
512 11/6/2019	10	2.21	105	39.4	4.48	45	377	10
512 8/26/2020	10.4	2.13	114	38.9	8.79	80.1	349	10
512 3/1/2021	10	2.13	117	40.8	10.4	99.9	340	10
512 9/2/2021	10.3	2.16	114	39.9	10.2	107	349	10
LEACHATEPOND 5/25/2016	499	58.6	129	12.9	44.1	1440	10	119
LEACHATEPOND 8/23/2016	479	56.8	108	12.8	42.8	1320	10	104
LEACHATEPOND 11/10/2016	651	75.3	224	22.5	50.4	1820	30.5	68.3
LEACHATEPOND 2/9/2017	678	66.2	89.4	10.8	64.5	2200	38.9	146
LEACHATE 3/23/2018	741	70.3	88.5	4.66	79.1	1690	10	108
LEACHATE 11/6/2019	732	76.4	101	13.5	74.3	1630	53.3	125

Appendix E

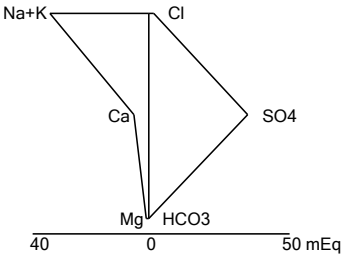
Stiff Diagrams and Analytical Results



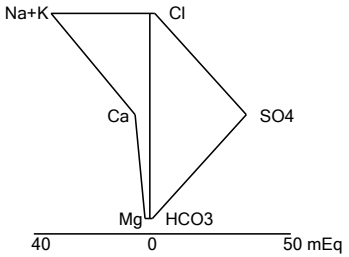
LEACHATEPOND 11/10/2016



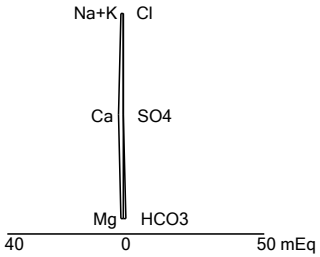
LEACHATEPOND 2/9/2017



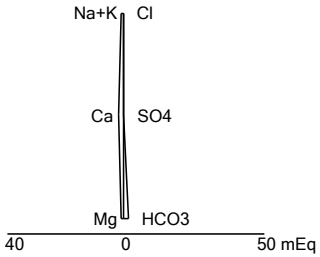
LEACHATE 3/23/2018



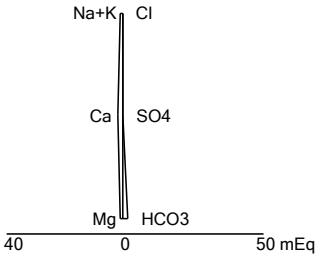
LEACHATE 11/6/2019



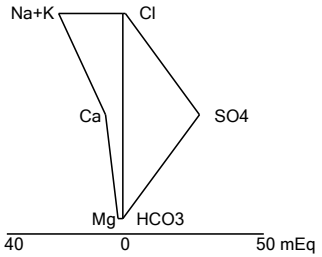
505* 11/6/2019



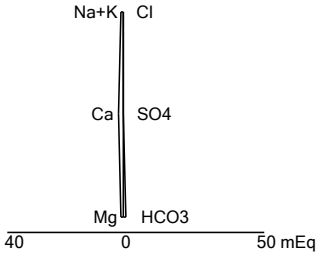
505* 8/26/2020



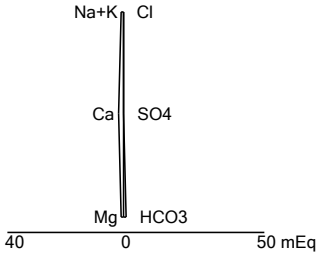
505* 9/2/2021



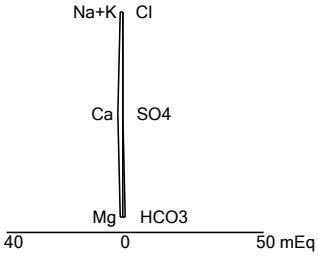
LEACHATEPOND 8/23/2016



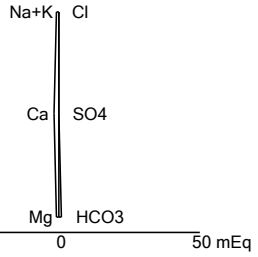
505* 8/23/2016



505* 11/11/2016



505* 2/8/2017



505* 1/11/2019

Stiff Diagram Analysis Run 11/30/2021 2:15 PM View: LF III

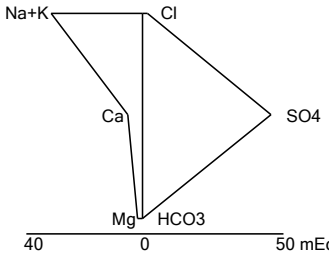
Sibley Client: SCS Engineers Data: Sibley

Stiff Diagram

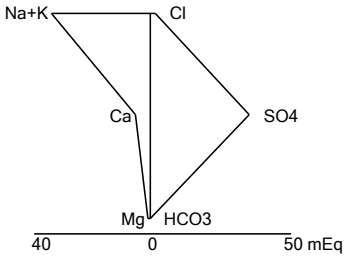
Analysis Run 11/30/2021 2:16 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

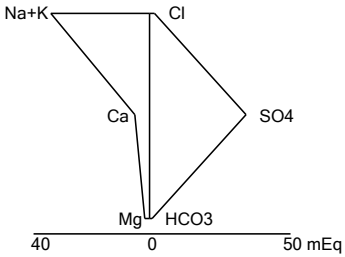
Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3
505* 8/23/2016	7.28	0.5	25.7	7.97	1.19	9.73	101
505* 11/11/2016	6.91	0.5	21.6	7.39	0.5	15.9	68.5
505* 2/8/2017	8.52	0.5	23.5	9.3	0.5	14.9	94
505* 1/11/2019	7.54	0.5	29.5	8.42	1	13.8	87.5
505* 11/6/2019	8.24	0.5	28.2	9.54	0.5	17.1	93.6
505* 8/26/2020	8.95	1	30.3	8.95	1.03	14.3	110
505* 9/2/2021	8.97	1	34.1	9.34	1.23	13	118
LEACHATEPOND 8/23/2016	479	56.8	108	12.8	42.8	1320	10
LEACHATEPOND 11/10/2016	651	75.3	224	22.5	50.4	1820	30.5
LEACHATEPOND 2/9/2017	678	66.2	89.4	10.8	64.5	2200	38.9
LEACHATE 3/23/2018	741	70.3	88.5	4.66	79.1	1690	10
LEACHATE 11/6/2019	732	76.4	101	13.5	74.3	1630	53.3



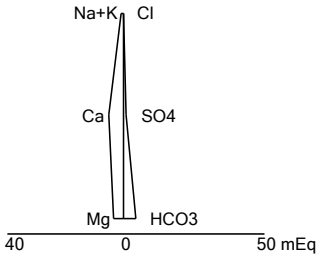
LEACHATEPOND 2/9/2017



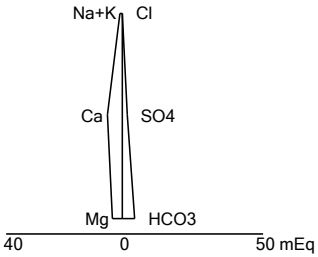
LEACHATE 3/23/2018



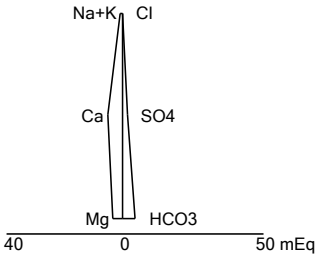
LEACHATE 11/6/2019



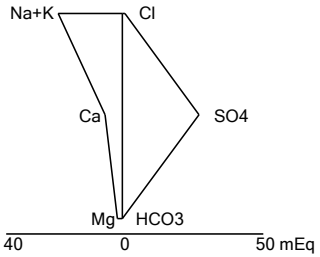
506 8/26/2020



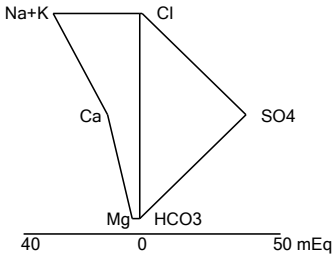
506 3/1/2021



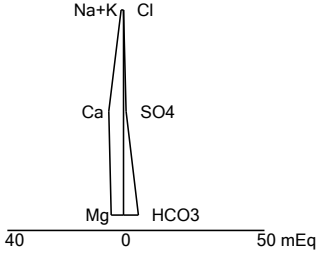
506 9/2/2021



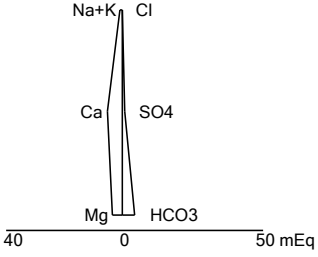
LEACHATEPOND 8/23/2016



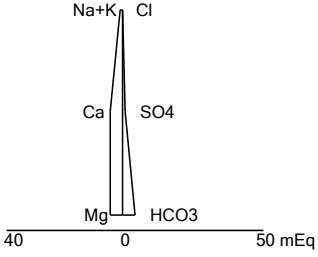
LEACHATEPOND 11/10/2016



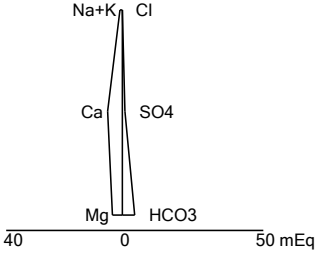
506 8/23/2016



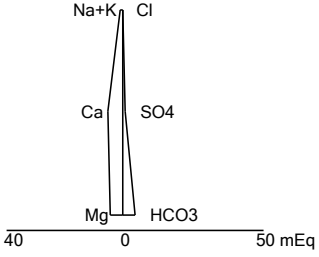
506 11/11/2016



506 2/8/2017



506 1/11/2019



506 11/6/2019

Stiff Diagram Analysis Run 11/30/2021 2:13 PM View: LF III

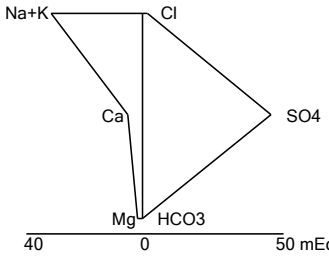
Sibley Client: SCS Engineers Data: Sibley

Stiff Diagram

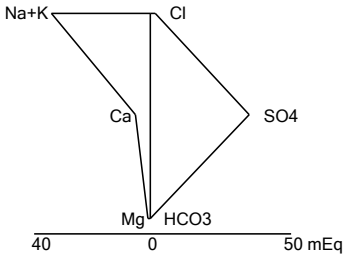
Analysis Run 11/30/2021 2:14 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

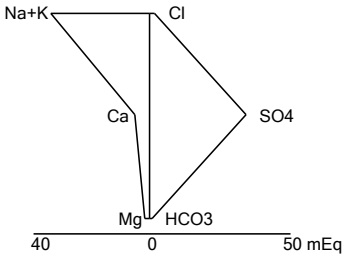
Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3
506 8/23/2016	8.28	1.79	97.2	42.8	6.16	65.8	326
506 11/11/2016	8.44	2.37	96.5	41.2	6.13	65	312
506 2/8/2017	8.25	2.04	83.6	43.9	5.89	76.5	307
506 1/11/2019	8.21	1.85	93	39.7	6.39	67.3	292
506 11/6/2019	8.1	1.88	93.7	42.2	6.66	76.8	306
506 8/26/2020	8.15	1	93.9	38.2	7.31	79.6	289
506 3/1/2021	8.14	1	93	38.8	8.05	88.8	277
506 9/2/2021	8.43	1	91.1	38.3	8.03	88.7	296
LEACHATEPOND 8/23/2016	479	56.8	108	12.8	42.8	1320	10
LEACHATEPOND 11/10/2016	651	75.3	224	22.5	50.4	1820	30.5
LEACHATEPOND 2/9/2017	678	66.2	89.4	10.8	64.5	2200	38.9
LEACHATE 3/23/2018	741	70.3	88.5	4.66	79.1	1690	10
LEACHATE 11/6/2019	732	76.4	101	13.5	74.3	1630	53.3



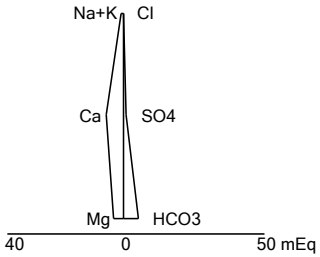
LEACHATEPOND 2/9/2017



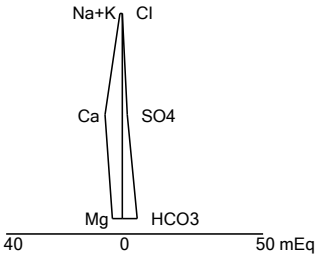
LEACHATE 3/23/2018



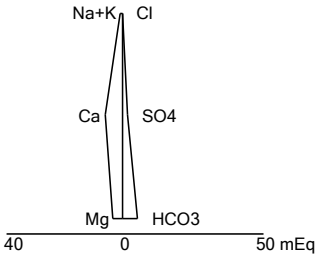
LEACHATE 11/6/2019



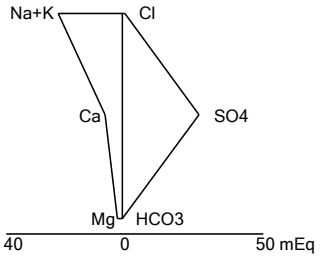
512 8/26/2020



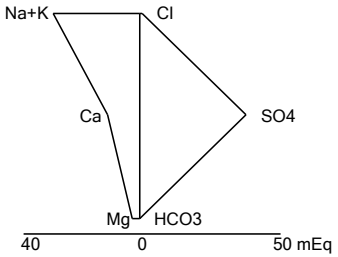
512 3/1/2021



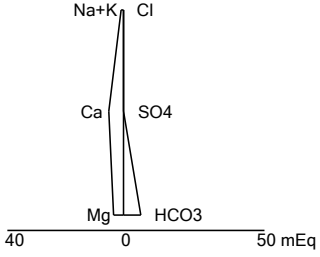
512 9/2/2021



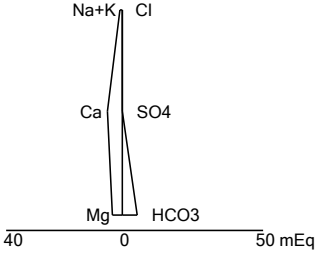
LEACHATEPOND 8/23/2016



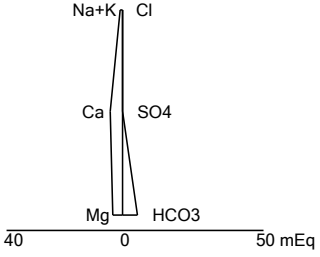
LEACHATEPOND 11/10/2016



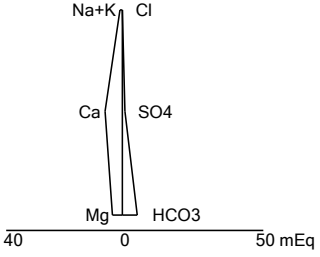
512 8/23/2016



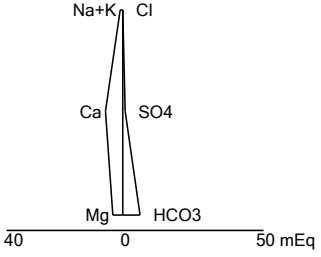
512 11/11/2016



512 2/8/2017



512 1/11/2019



512 11/6/2019

Stiff Diagram Analysis Run 11/30/2021 2:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Stiff Diagram

Analysis Run 11/30/2021 2:13 PM View: LF III

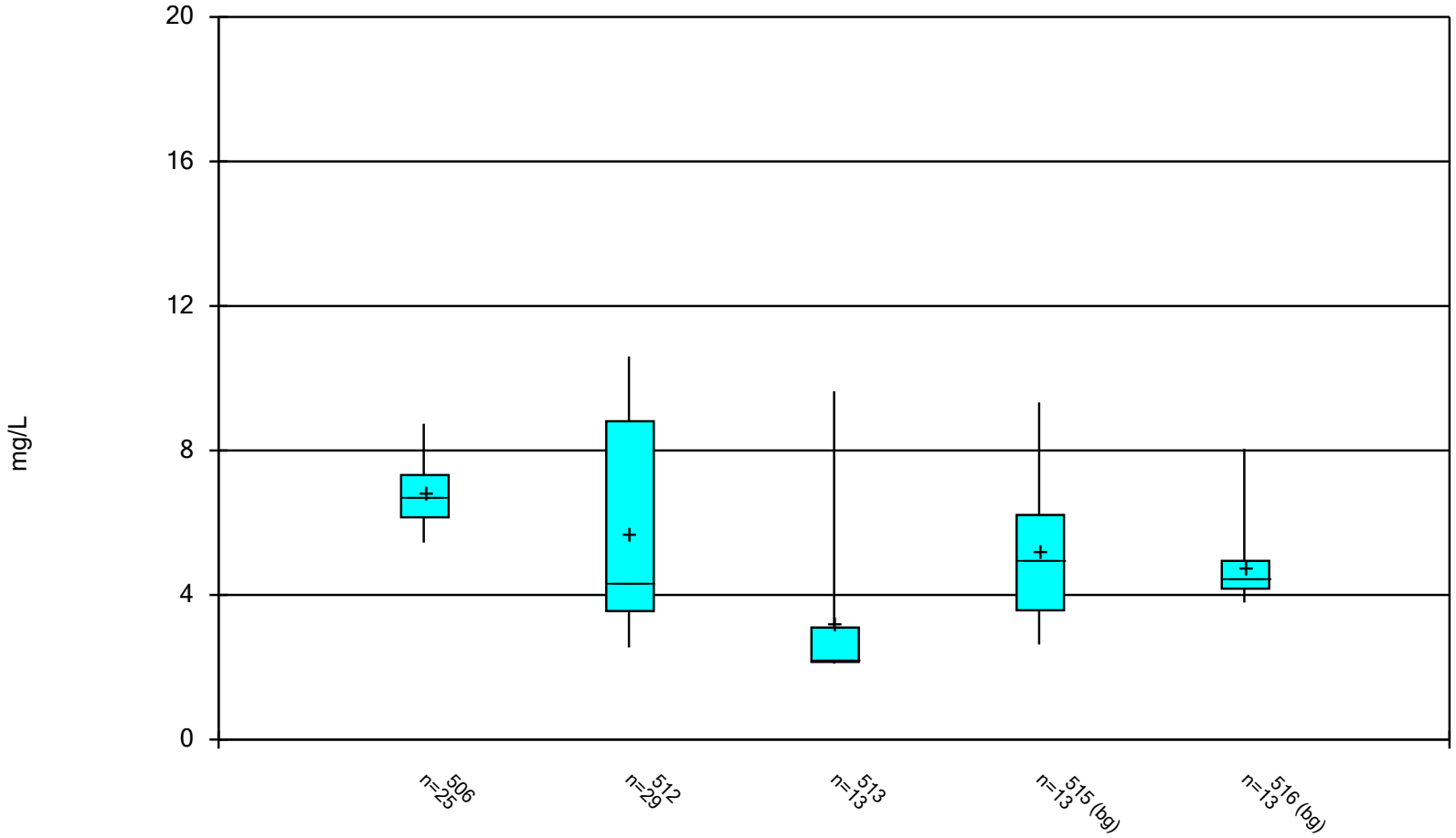
Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3
512 8/23/2016	10.3	2.13	103	36.9	3.23	24.4	384
512 11/11/2016	9.96	2.16	100	35.6	3.17	24	352
512 2/8/2017	10	2.35	86.4	37.9	3.14	27.8	358
512 1/11/2019	10.6	2.25	110	37.8	3.85	43.3	366
512 11/6/2019	10	2.21	105	39.4	4.48	45	377
512 8/26/2020	10.4	2.13	114	38.9	8.79	80.1	349
512 3/1/2021	10	2.13	117	40.8	10.4	99.9	340
512 9/2/2021	10.3	2.16	114	39.9	10.2	107	349
LEACHATEPOND 8/23/2016	479	56.8	108	12.8	42.8	1320	10
LEACHATEPOND 11/10/2016	651	75.3	224	22.5	50.4	1820	30.5
LEACHATEPOND 2/9/2017	678	66.2	89.4	10.8	64.5	2200	38.9
LEACHATE 3/23/2018	741	70.3	88.5	4.66	79.1	1690	10
LEACHATE 11/6/2019	732	76.4	101	13.5	74.3	1630	53.3

Appendix F

Box and Whiskers Plots

Box & Whiskers Plot



Constituent: Chloride Analysis Run 11/30/2021 3:23 PM View: LF III

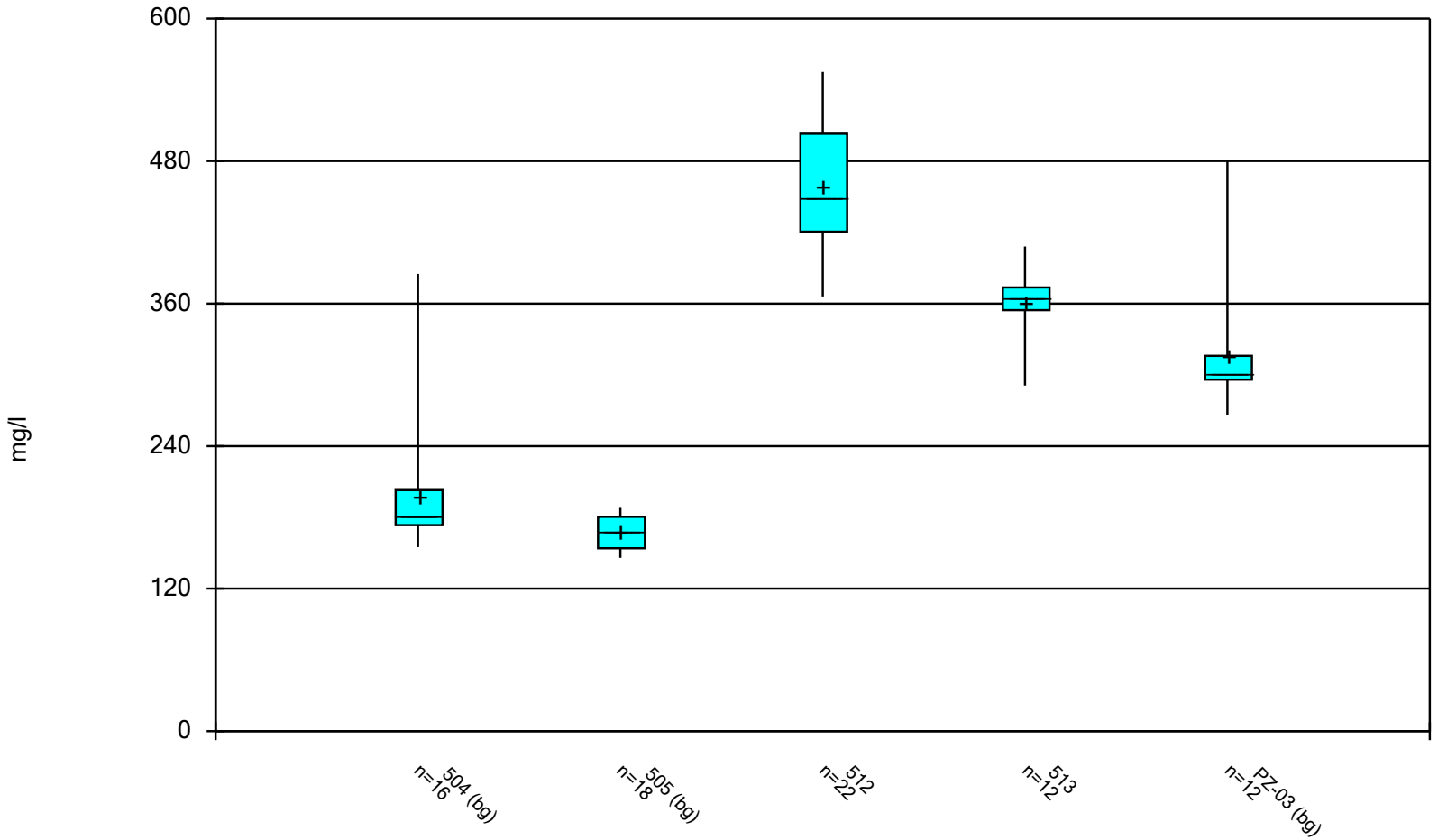
Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 3:24 PM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Chloride (mg/L)	506	25	6.828	0.871	0.1742	6.69	5.45	8.74	0
Chloride (mg/L)	512	29	5.709	2.877	0.5342	4.35	2.55	10.6	0
Chloride (mg/L)	513	13	3.201	2.13	0.5907	2.2	2.1	9.64	0
Chloride (mg/L)	515 (bg)	13	5.205	2.039	0.5655	4.94	2.63	9.33	0
Chloride (mg/L)	516 (bg)	13	4.798	1.15	0.319	4.45	3.79	8.05	0

Box & Whiskers Plot



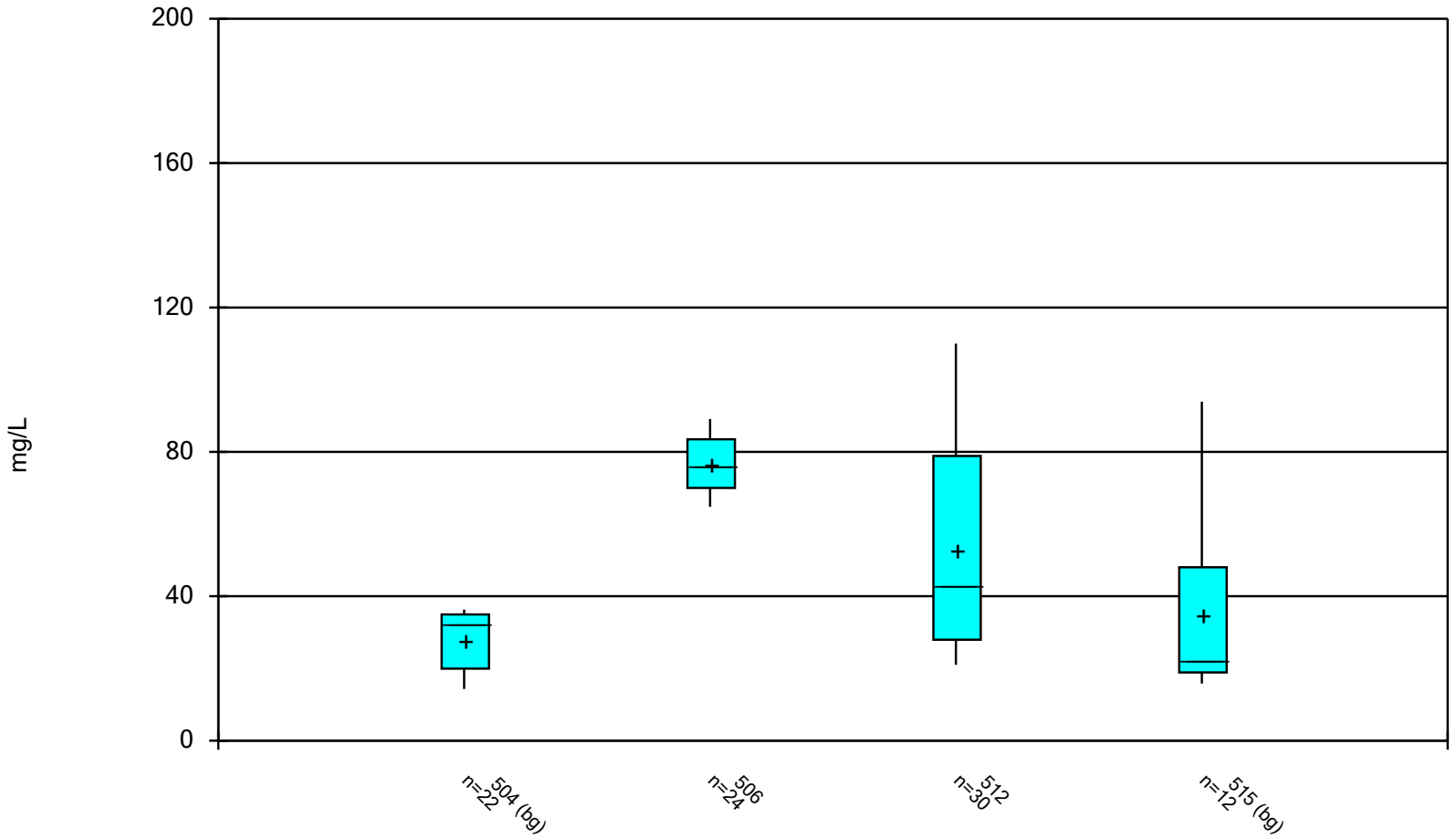
Constituent: Dissolved Solids Analysis Run 11/30/2021 3:44 PM View: LF III Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 3:45 PM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Dissolved Solids (mg/l)	504 (bg)	16	197.9	54.14	13.54	181	155	385	0
Dissolved Solids (mg/l)	505 (bg)	18	167.2	13.58	3.201	168.5	146	188	0
Dissolved Solids (mg/l)	512	22	458.2	47.75	10.18	448.5	366	555	0
Dissolved Solids (mg/l)	513	12	361.8	28.43	8.207	364.5	291	408	0
Dissolved Solids (mg/l)	PZ-03 (bg)	12	316.2	54.37	15.7	301.5	266	481	0

Box & Whiskers Plot



Constituent: Sulfate Analysis Run 11/30/2021 3:52 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

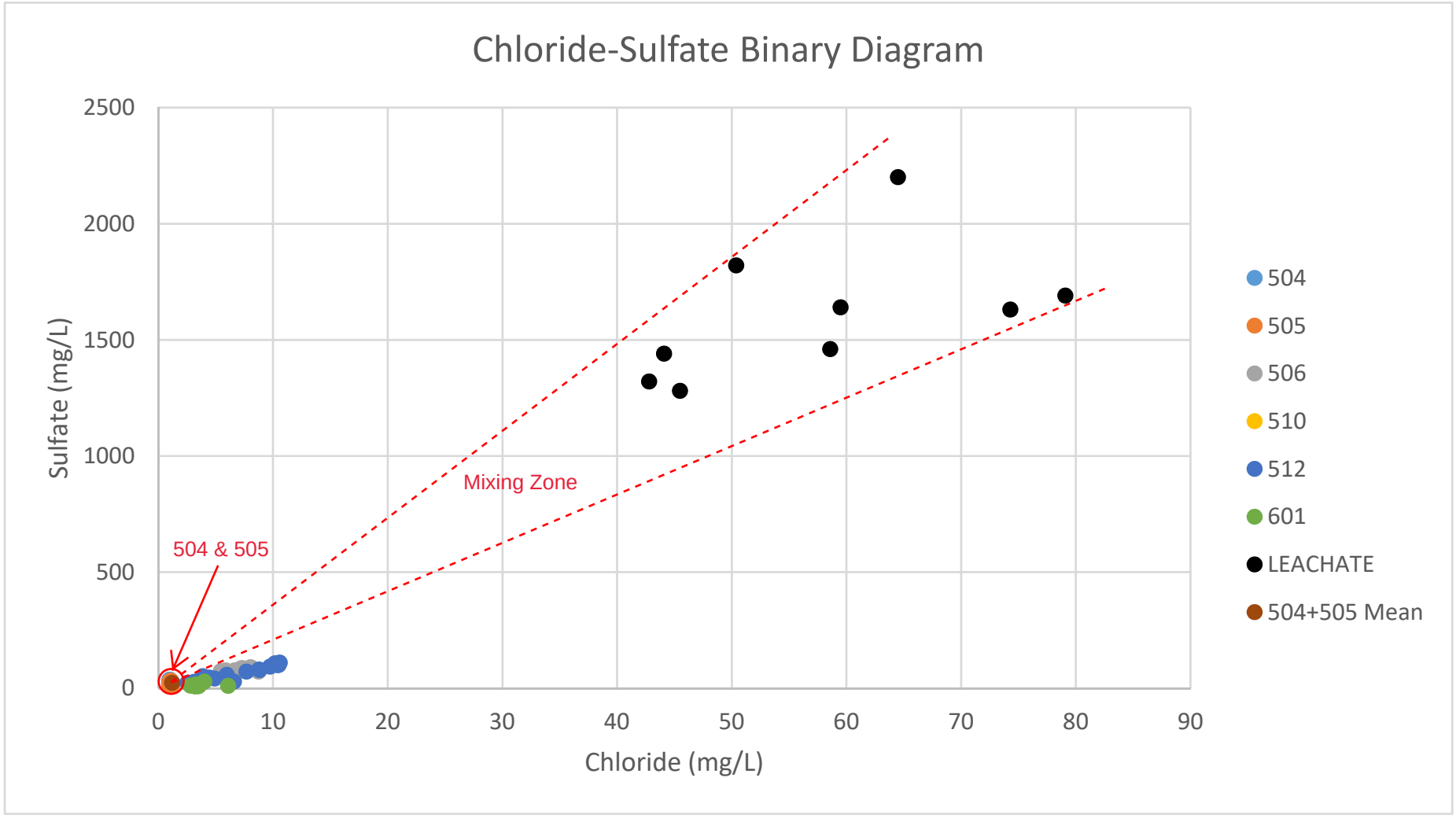
Box & Whiskers Plot

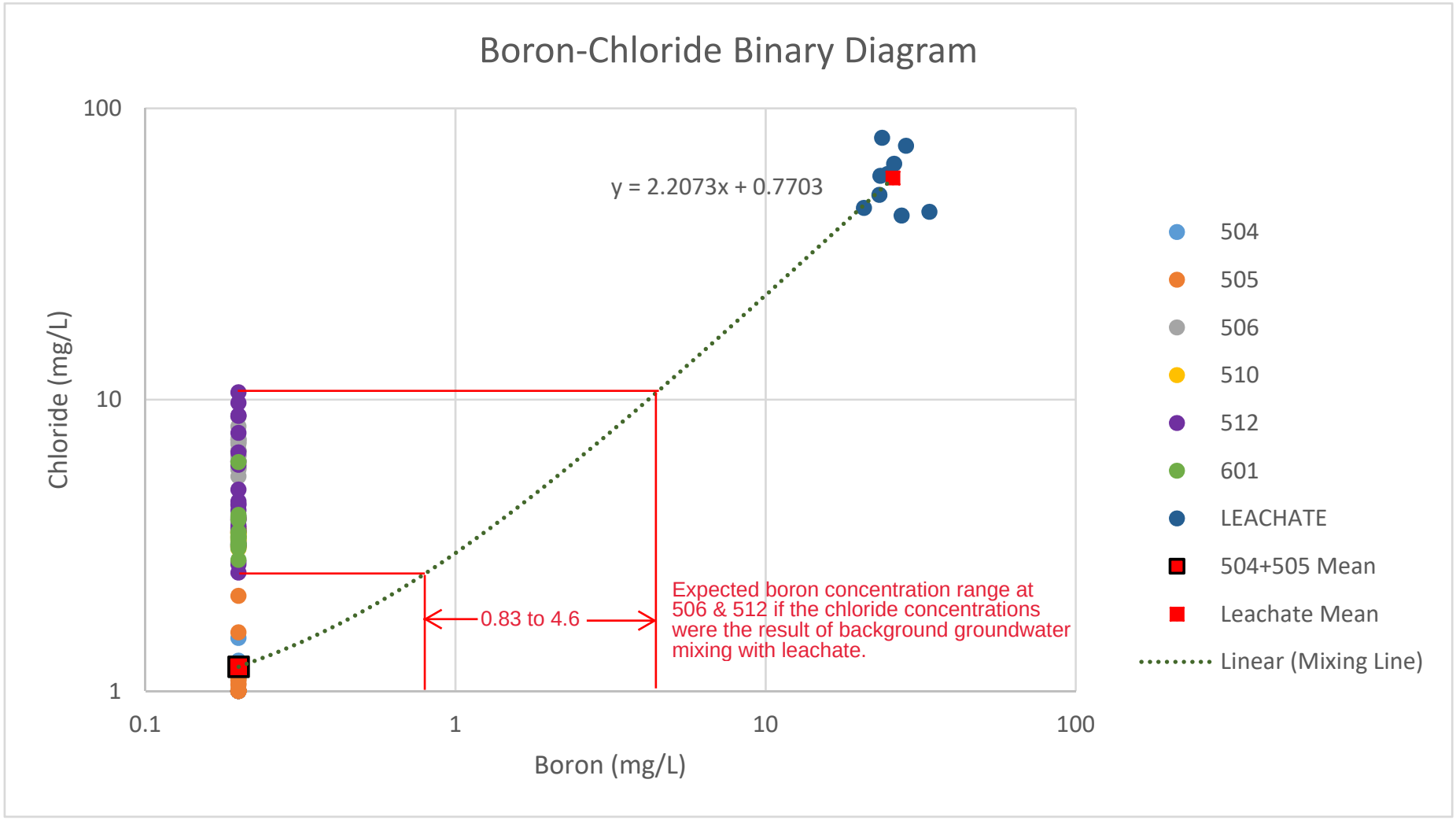
Sibley Client: SCS Engineers Data: Sibley Printed 11/30/2021, 3:53 PM

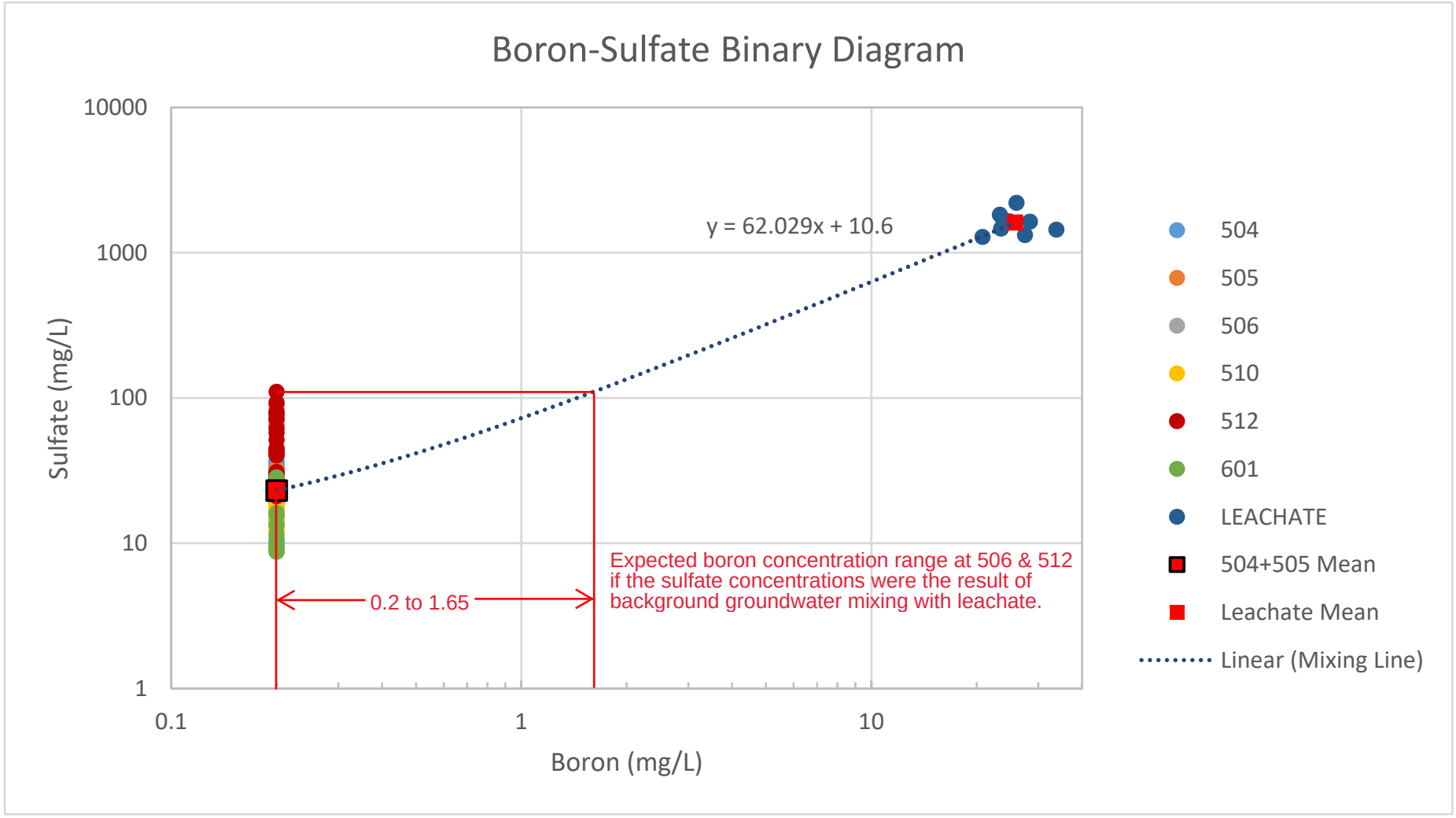
Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Sulfate (mg/L)	504 (bg)	22	27.91	8.023	1.71	32.35	14.3	36.3	0
Sulfate (mg/L)	506	24	76.32	8.384	1.711	75.9	64.8	89.1	0
Sulfate (mg/L)	512	30	52.88	29.79	5.438	42.7	21	110	0
Sulfate (mg/L)	515 (bg)	12	34.88	25.38	7.327	22.2	15.8	93.9	0

Appendix G

Binary Plots


Chloride-Sulfate Binary Diagram
Sulfate (mg/L)
2500
2000
1500
1000
500
0
0
10
20
30
40
50
60
70
80
90
Chloride (mg/L)
Mixing Zone
504 & 505
504
505
506
510
512
601
LEACHATE
504+505 Mean


Boron-Chloride Binary Diagram
100
10
1
Chloride (mg/L)
0.1
1
10
100
Boron (mg/L)
y = 2.2073x + 0.7703
0.83 to 4.6
Expected boron concentration range at 506 & 512 if the chloride concentrations were the result of background groundwater mixing with leachate.
504
505
506
510
512
601
LEACHATE
504+505 Mean
Leachate Mean
Linear (Mixing Line)


Boron-Sulfate Binary Diagram
10000
1000
100
10
1
Sulfate (mg/L)
0.1
1
10
Boron (mg/L)
y = 62.029x + 10.6
0.2 to 1.65
Expected boron concentration range at 506 & 512 if the sulfate concentrations were the result of background groundwater mixing with leachate.
504
505
506
510
512
601
LEACHATE
504+505 Mean
Leachate Mean
Linear (Mixing Line)

Addendum 1

2021 Groundwater Monitoring and Corrective Action Report
Addendum 1

December 16, 2022
File No. 27213167.21

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: 2021 Annual Groundwater Monitoring and Corrective Action Report Addendum 1
Evergy Missouri West, Inc.
CCR Landfill
Sibley Generating Station – Sibley, Missouri

The CCR Landfill at the Sibley Generating Station is subject to the groundwater monitoring and corrective action requirements of the "Coal Combustion Residuals (CCR) Final Rule" (Rule); as described in CFR 40 257.90 through CFR 40 257.98. An Annual Groundwater Monitoring and Corrective Action (GWMCA) Report documenting activities completed in 2021 for the CCR Landfill was completed and placed in the facility's operating record on January 28, 2022, as required by the Rule. The Annual GWMCA report was to fulfill the requirements specified in 40 CFR 257.90(e).

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:

  - February 2021 – First verification sampling for the Fall 2020 detection monitoring sampling event.
  - March 2021 – Second verification sampling for the Fall 2020 detection monitoring sampling event.
  - May 2021 – Spring 2021 semiannual detection monitoring sampling event.
  - July 2021 – First verification sampling for the Spring 2021 detection monitoring sampling event.
  - September 2021 – Second verification sampling for the Spring 2021 detection monitoring sampling event.
  - November 2021 - Fall 2021 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 2021 included the following:

  - Fall 2020 semiannual detection monitoring statistical analyses.
  - Spring 2021 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:

  - May 2021 - Spring 2021 semiannual detection monitoring sampling event.
  - November 2021 - Fall 2021 semiannual detection monitoring sampling event.

Jared Morrison
December 16, 2022

ATTACHMENT 1

Laboratory Analytical Reports

Jared Morrison
December 16, 2022

ATTACHMENT 1-1

February 2021 Sampling Event Laboratory Report

Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

February 16, 2021

SCS Engineers - KS

Sample Delivery Group:	L1314464
Samples Received:	02/05/2021
Project Number:	27213169.21
Description:	Sibley Generating Station

Report To: Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

MW-506 L1314464-01 GW

Collected by: G. Penaflor
Collected date/time: 02/03/21 13:45
Received date/time: 02/05/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1618819	1	02/11/21 16:55	02/11/21 16:55	MCG	Mt. Juliet, TN

MW-512 L1314464-02 GW

Collected by: G. Penaflor
Collected date/time: 02/03/21 13:20
Received date/time: 02/05/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1618387	1	02/09/21 04:33	02/09/21 06:15	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1618819	1	02/11/21 17:08	02/11/21 17:08	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1618819	5	02/11/21 22:34	02/11/21 22:34	MCG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1618516	1	02/11/21 16:01	02/11/21 19:15	CCE	Mt. Juliet, TN

DUPLICATE 1 L1314464-03 GW

Collected by: G. Penaflor
Collected date/time: 02/03/21 13:30
Received date/time: 02/05/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1620060	1	02/11/21 17:03	02/11/21 18:23	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1618819	1	02/11/21 17:47	02/11/21 17:47	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1618819	5	02/11/21 22:47	02/11/21 22:47	MCG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1618516	1	02/11/21 16:01	02/11/21 19:39	CCE	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

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Sulfate	87300		5000	1	02/11/2021 16:55	WG1618819

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Dissolved Solids	487000	J3	10000	1	02/09/2021 06:15	WG1618387

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	10500		1000	1	02/11/2021 17:08	WG1618819
Sulfate	99800		25000	5	02/11/2021 22:34	WG1618819

Metals (ICP) by Method 6010B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Calcium	117000	V	1000	1	02/11/2021 19:15	WG1618516

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Dissolved Solids	500000		10000	1	02/11/2021 18:23	WG1620060

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10400		1000	1	02/11/2021 17:47	WG1618819
Sulfate	100000		25000	5	02/11/2021 22:47	WG1618819

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	117000		1000	1	02/11/2021 19:39	WG1618516

Method Blank (MB)

(MB) R3621442-1 02/09/21 06:15

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Dissolved Solids	U		2820	10000

L1314195-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314195-02 02/09/21 06:15 • (DUP) R3621442-3 02/09/21 06:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	10500000	11000000	1	4.83		5

L1314464-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314464-02 02/09/21 06:15 • (DUP) R3621442-4 02/09/21 06:15

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Dissolved Solids	487000	459000	1	5.92	J3	5

Laboratory Control Sample (LCS)

(LCS) R3621442-2 02/09/21 06:15

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Dissolved Solids	8800000	8660000	98.4	77.4-123	

Method Blank (MB)

(MB) R3622102-1 02/11/21 18:23

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Dissolved Solids	U		2820	10000

Laboratory Control Sample (LCS)

(LCS) R3622102-2 02/11/21 18:23

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800000	8380000	95.2	77.4-123	

Method Blank (MB)

(MB) R3621989-1 02/11/21 10:25

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Sulfate	U		594	5000

L1314344-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1314344-02 02/11/21 15:25 • (DUP) R3621989-3 02/11/21 15:38

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	ND	ND	5	0.000		15
Sulfate	482000	481000	5	0.208		15

L1314536-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1314536-01 02/11/21 21:03 • (DUP) R3621989-10 02/11/21 21:16

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	38000	38500	1	1.32		15
Sulfate	64200	64500	1	0.526		15

Laboratory Control Sample (LCS)

(LCS) R3621989-2 02/11/21 10:37

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	39900	99.7	80.0-120	
Sulfate	40000	40700	102	80.0-120	

L1314464-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314464-02 02/11/21 17:08 • (MS) R3621989-4 02/11/21 17:21 • (MSD) R3621989-5 02/11/21 17:34

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	10500	60400	61500	99.9	102	1	80.0-120			1.84	15
Sulfate	50000	102000	149000	151000	93.1	97.0	1	80.0-120	E	E	1.31	15

L1314460-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314460-02 02/11/21 19:18 • (MS) R3621989-6 02/11/21 19:32 • (MSD) R3621989-7 02/11/21 19:45

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	16800	66700	67500	99.8	101	1	80.0-120			1.15	15
Sulfate	50000	ND	50800	51600	100	102	1	80.0-120			1.60	15

L1314503-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314503-01 02/11/21 19:58 • (MS) R3621989-8 02/11/21 20:11 • (MSD) R3621989-9 02/11/21 20:24

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	59300	107000	104000	94.8	88.9	1	80.0-120	E	E	2.80	15
Sulfate	50000	1860000	1840000	1630000	0.000	0.000	1	80.0-120	E V	E V	12.1	15

Method Blank (MB)

(MB) R3621871-1 02/11/21 18:58

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3621871-2 02/11/21 19:01

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Calcium	10000	9900	99.0	80.0-120	

L1314460-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314460-02 02/11/21 19:04 • (MS) R3621871-4 02/11/21 19:09 • (MSD) R3621871-5 02/11/21 19:12

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	141000	149000	148000	79.2	72.0	1	75.0-125		V	0.485	20

L1314464-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314464-02 02/11/21 19:15 • (MS) R3621871-6 02/11/21 19:17 • (MSD) R3621871-7 02/11/21 19:20

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	117000	125000	124000	75.7	73.0	1	75.0-125		V	0.213	20

L1314558-10 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1314558-10 02/11/21 19:23 • (MS) R3621871-8 02/11/21 19:31 • (MSD) R3621871-9 02/11/21 19:34

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	94400	102000	102000	78.5	79.6	1	75.0-125			0.112	20

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.

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

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).
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.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
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* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

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California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
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EPA–Crypto	TN00003		

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ANSI National Accreditation Board	L2239

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Texas	T104704328-20-18

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

Company Name/Address:
SCS Engineers - KS

8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Pres Chk

Report to:
Jason Franks

Email To:
jfranks@scsengineers.com;jay.martin@evergy.c

Project Description:
Sibley Generating Station

City/State Collected: Sibley, MO

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project #
27213169.18

Lab Project #
AQUAOPKS-SIBLEY

Collected by (print):
G. Penaflor

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed
Std

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Ca - 6010 250mlHDPE-HNO3	Chloride, SO4 125mlHDPE-NoPres	SO4 125mlHDPE-NoPres	TDS 250mlHDPE-NoPres	Remarks	Sample # (lab only)
MW-506	GRAB	GW		2/3/21	1345	1			X			-01
MW-512		GW			1320	3	X	X		X		02
DUPLICATE 1		GW			1325	3	X	X		X		03
MW-512 MS/MSD		GW			1330	2	X	X				02

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/3/21		2-4-21 1340
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) Kayley Miller

Trip Blank Received: Yes / No
HCl / MeoH
TBR

Temp: °C Bottles Received:
0.5+1.2=0.7 A2

Date: 2/5/21 Time: 1330

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Sample Receipt Checklist
COC Seal Present/Intact: NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

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SDG # 1314464

G189

Acctnum: AQUAOPKS
Template: T117427
Prelogin: P825414
PM: 206 - Jeff Carr
PB:
Shipped Via:

Jared Morrison
December 16, 2022

ATTACHMENT 1-2

March 2021 Sampling Event Laboratory Report

ANALYTICAL REPORT

March 10, 2021

SCS Engineers - KS

Sample Delivery Group:	L1322448
Samples Received:	03/03/2021
Project Number:	27213169.21
Description:	Sibley Generating Station

Report To: Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-506 L1322448-01 GW

Collected by: Whit Martin
Collected date/time: 03/01/21 16:20
Received date/time: 03/03/21 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1631305	1	03/09/21 02:17	03/09/21 02:17	MCG	Mt. Juliet, TN

MW-512 L1322448-02 GW

Collected by: Whit Martin
Collected date/time: 03/01/21 17:10
Received date/time: 03/03/21 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1629155	1	03/04/21 08:54	03/04/21 10:27	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1631305	1	03/09/21 02:30	03/09/21 02:30	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1631305	5	03/09/21 08:56	03/09/21 08:56	MCG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1629875	1	03/08/21 17:27	03/09/21 10:54	KMG	Mt. Juliet, TN

DUPLICATE 1 L1322448-03 GW

Collected by: Whit Martin
Collected date/time: 03/01/21 17:10
Received date/time: 03/03/21 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1629155	1	03/04/21 08:54	03/04/21 10:27	CAT	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1631305	1	03/09/21 03:09	03/09/21 03:09	MCG	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1631305	5	03/09/21 09:09	03/09/21 09:09	MCG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1629875	1	03/08/21 17:27	03/09/21 11:54	KMG	Mt. Juliet, TN

CASE NARRATIVE

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

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Sulfate	88900		5000	1	03/09/2021 02:17	WG1631305

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	508		10.0	1	03/04/2021 10:27	WG1629155

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10400		1000	1	03/09/2021 02:30	WG1631305
Sulfate	99900		25000	5	03/09/2021 08:56	WG1631305

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	117000	O1 V	1000	1	03/09/2021 10:54	WG1629875

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	505		10.0	1	03/04/2021 10:27	WG1629155

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10400		1000	1	03/09/2021 03:09	WG1631305
Sulfate	103000		25000	5	03/09/2021 09:09	WG1631305

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	117000		1000	1	03/09/2021 11:54	WG1629875

Method Blank (MB)

(MB) R3627598-1 03/04/21 10:27

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1322448-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1322448-02 03/04/21 10:27 • (DUP) R3627598-3 03/04/21 10:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	508	502	1	1.19		5

L1322448-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1322448-03 03/04/21 10:27 • (DUP) R3627598-4 03/04/21 10:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	505	500	1	0.995		5

Laboratory Control Sample (LCS)

(LCS) R3627598-2 03/04/21 10:27

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8700	98.9	77.4-123	

Method Blank (MB)

(MB) R3628675-1 03/08/21 10:36

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Sulfate	U		594	5000

L1322458-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1322458-02 03/09/21 03:43 • (DUP) R3628675-5 03/09/21 03:56

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	17100	17100	1	0.0421		15
Sulfate	48300	48300	1	0.0213		15

L1323107-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1323107-06 03/09/21 08:04 • (DUP) R3628675-6 03/09/21 08:17

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	63100	63100	1	0.0518		15
Sulfate	ND	ND	1	8.37		15

Laboratory Control Sample (LCS)

(LCS) R3628675-2 03/08/21 10:49

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40300	101	80.0-120	
Sulfate	40000	40300	101	80.0-120	

L1322448-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1322448-02 03/09/21 02:30 • (MS) R3628675-3 03/09/21 02:43 • (MSD) R3628675-4 03/09/21 02:56

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	10400	63100	63100	105	105	1	80.0-120			0.0472	15
Sulfate	50000	107000	156000	156000	99.2	99.3	1	80.0-120	E	E	0.0530	15

L1323107-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1323107-06 03/09/21 08:04 • (MS) R3628675-7 03/09/21 08:30

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	63100	112000	98.0	1	80.0-120	E
Sulfate	50000	ND	53300	105	1	80.0-120	

QUALITY CONTROL SUMMARY

L1322448-02,03

Method Blank (MB)

(MB) R3628906-1 03/09/21 10:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3628906-2 03/09/21 10:52

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10000	9740	97.4	80.0-120	

L1322448-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1322448-02 03/09/21 10:54 • (MS) R3628906-4 03/09/21 11:00 • (MSD) R3628906-5 03/09/21 11:02

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10000	117000	125000	125000	77.5	74.0	1	75.0-125		V	0.278	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.

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

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.
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Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
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Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
O1	The analyte failed the method required serial dilution test and/or subsequent post-spike criteria. These failures indicate matrix interference.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SCS Engineers - KS

8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Pres Chk

Report to:
Jason Franks

Email To:
jfranks@scsengineers.com;jay.martin@evergy.c

Project Description:
Sibley Generating Station

City/State Collected: Sibley, MO

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project #
27213169.21

Lab Project #
AQUAOPKS-SIBLEY

Collected by (print):
Whit Martin

Site/Facility ID #

P.O. #

Collected by (signature):
Whit Mart

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: Std

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Ca - 6010 250mlHDPE-HNO3	Chloride, SO4 125mlHDPE-NoPres	SO4 125mlHDPE-NoPres	TDS 250mlHDPE-NoPres							Remarks	Sample # (lab only)
MW-506	Grab	GW		3/1/21	1620	1			X									-01
MW-512	Grab	GW		3/1/21	1710	3	X	X		X								02
DUPLICATE 1	Grab	GW		3/1/21	1710	3	X	X		X								03
MW-512 MS/MSD	Grab	GW		3/1/21	1710	2	X	X										02

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical® National Center for Testing & Innovation

12065 Lebanon Road Mt Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1322446
1094

Acctnum: **AQUAOPKS**
Template: **T117427**
Prelogin: **P830729**
PM: **206 - Jeff Carr**
PB:

Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

	Date:	Time:		
Relinquished by : (Signature) Whit Mart	3/2/21	1214	Received by: (Signature)	3-2-21 1214
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 3/3/21 Time: 1300

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 0.3 °C Bottles Received: 9
0.3-0.3=0.2

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

ANALYTICAL REPORT

March 10, 2021

SCS Engineers - KS

Sample Delivery Group:	L1322455
Samples Received:	03/03/2021
Project Number:	27213169.21
Description:	Evergy Sibley Generating Station

Report To:

Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

TABLE OF CONTENTS

MW-506 L1322455-01 GW

Collected by: Whit Martin
Collected date/time: 03/01/21 16:20
Received date/time: 03/03/21 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1629824	1	03/05/21 06:34	03/05/21 06:34	SL	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1630926	1	03/09/21 05:44	03/09/21 05:44	MCG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1629875	1	03/08/21 17:27	03/09/21 11:56	KMG	Mt. Juliet, TN

MW-512 L1322455-02 GW

Collected by: Whit Martin
Collected date/time: 03/01/21 17:10
Received date/time: 03/03/21 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1629824	1	03/05/21 06:46	03/05/21 06:46	SL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1629875	1	03/08/21 17:27	03/09/21 11:59	KMG	Mt. Juliet, TN

MW-803 L1322455-03 GW

Collected by: Whit Martin
Collected date/time: 03/01/21 15:30
Received date/time: 03/03/21 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1629824	1	03/05/21 06:56	03/05/21 06:56	SL	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1630926	5	03/09/21 06:00	03/09/21 06:00	MCG	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1629875	1	03/08/21 17:27	03/09/21 12:02	KMG	Mt. Juliet, TN

CASE NARRATIVE

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

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Alkalinity,Bicarbonate	277000		20000	1	03/05/2021 06:34	WG1629824
Alkalinity,Carbonate	ND		20000	1	03/05/2021 06:34	WG1629824

Sample Narrative:

L1322455-01 WG1629824: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	8050		1000	1	03/09/2021 05:44	WG1630926

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	93000		1000	1	03/09/2021 11:56	WG1629875
Magnesium	38800		1000	1	03/09/2021 11:56	WG1629875
Potassium	ND		2000	1	03/09/2021 11:56	WG1629875
Sodium	8140		3000	1	03/09/2021 11:56	WG1629875

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Alkalinity,Bicarbonate	340000		20000	1	03/05/2021 06:46	WG1629824
Alkalinity,Carbonate	ND		20000	1	03/05/2021 06:46	WG1629824

Sample Narrative:

L1322455-02 WG1629824: Endpoint pH 4.5 Headspace

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Magnesium	40800		1000	1	03/09/2021 11:59	WG1629875
Potassium	2130		2000	1	03/09/2021 11:59	WG1629875
Sodium	10000		3000	1	03/09/2021 11:59	WG1629875

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	274000		20000	1	03/05/2021 06:56	WG1629824
Alkalinity,Carbonate	ND		20000	1	03/05/2021 06:56	WG1629824

Sample Narrative:

L1322455-03 WG1629824: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Sulfate	115000		25000	5	03/09/2021 06:00	WG1630926

Metals (ICP) by Method 6010B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Calcium	115000		1000	1	03/09/2021 12:02	WG1629875
Magnesium	22000		1000	1	03/09/2021 12:02	WG1629875
Potassium	2150		2000	1	03/09/2021 12:02	WG1629875
Sodium	23000		3000	1	03/09/2021 12:02	WG1629875

Method Blank (MB)

(MB) R3627767-1 03/05/21 03:38

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1322190-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1322190-02 03/05/21 04:46 • (DUP) R3627767-2 03/05/21 04:59

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	145000	145000	1	0.147		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

L1322687-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1322687-02 03/05/21 13:21 • (DUP) R3627767-4 03/05/21 13:35

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	21300	20400	1	4.39		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Method Blank (MB)

(MB) R3628601-1 03/08/21 11:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Chloride	U		379	1000
Sulfate	U		594	5000

L1322262-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1322262-01 03/08/21 21:48 • (DUP) R3628601-3 03/08/21 22:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	121000	121000	1	0.0180	E	15
Sulfate	53800	53800	1	0.0312		15

L1322439-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1322439-02 03/09/21 04:55 • (DUP) R3628601-7 03/09/21 05:11

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	ug/l	ug/l		%		%
Chloride	58000	58100	1	0.206		15
Sulfate	1920000	1920000	1	0.0348	E	15

Laboratory Control Sample (LCS)

(LCS) R3628601-2 03/08/21 11:46

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Chloride	40000	40800	102	80.0-120	
Sulfate	40000	42200	105	80.0-120	

L1322262-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1322262-02 03/08/21 22:21 • (MS) R3628601-4 03/08/21 22:37

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	ug/l	ug/l	ug/l	%		%	
Chloride	50000	92600	141000	97.1	1	80.0-120	E
Sulfate	50000	37500	84100	93.2	1	80.0-120	

L1322439-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1322439-01 03/09/21 03:33 • (MS) R3628601-5 03/09/21 04:22 • (MSD) R3628601-6 03/09/21 04:38

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	58200	102000	102000	87.1	87.2	1	80.0-120	E	E	0.0505	15
Sulfate	50000	1920000	1890000	1900000	0.000	0.000	1	80.0-120	E V	E V	0.269	15

Method Blank (MB)

(MB) R3628906-1 03/09/21 10:49

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium	U		79.3	1000
Magnesium	U		85.3	1000
Potassium	U		261	2000
Sodium	U		504	3000

Laboratory Control Sample (LCS)

(LCS) R3628906-2 03/09/21 10:52

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10000	9740	97.4	80.0-120	
Magnesium	10000	9670	96.7	80.0-120	
Potassium	10000	9080	90.8	80.0-120	
Sodium	10000	9550	95.5	80.0-120	

L1322448-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1322448-02 03/09/21 10:54 • (MS) R3628906-4 03/09/21 11:00 • (MSD) R3628906-5 03/09/21 11:02

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10000	117000	125000	125000	77.5	74.0	1	75.0-125		V	0.278	20
Magnesium	10000	40500	49100	49100	85.6	86.3	1	75.0-125			0.134	20
Potassium	10000	2180	11500	11500	93.2	93.6	1	75.0-125			0.379	20
Sodium	10000	10200	19700	19700	95.3	95.0	1	75.0-125			0.171	20

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V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SCS Engineers - KS

8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Pres Chk

Report to:
Jason Franks

Email To:
jfranks@scsengineers.com;jay.martin@evergy.c

Project Description:
Evergy Sibley Generating Station

City/State Collected: **Sibley, MO**

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project #
27213169.21

Lab Project #
AQUAOPKS-SIBLEY

Collected by (print):
Whit Martin

Site/Facility ID #

P.O. #

Collected by (signature):
Whit Martin

Immediately Packed on Ice N ___ Y **X**

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: **std**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALKBI, ALKCA 125mlHDPE-NoPres	Ca, K, Mg, Na - 6010 250mlHDPE-HNO3	Chloride - 9056 125mlHDPE-NoPres	K, Mg, Na - 6010 250mlHDPE-HNO3	SO4 - 9056 125mlHDPE-NoPres	Remarks	Sample # (lab only)
								12		12			
MW-506	Grab	GW		3/1/21	1620	3	X	X	X				-01
MW-512	Grab	GW		3/1/21	1710	2	X			X			02
MW-803	Grab	GW		3/1/21	1530	3	X	X			X		03

Chain of Custody Page 1 of 1

Pace Analytical®
National Center for Testing & Innovation

12065 Lebanon Road Mt Juliet, TN 37122
Phone: 615-758-5858 Alt: 800-767-5859
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1322455
1096

Acctnum: **AQUAOPKS**
Template: **T152962**
Prelogin: **P830736**
PM: **206 - Jeff Carr**
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist
COC Seal Present/Intact: ✓ NP __Y __N
COC Signed/Accurate: ✓ Y __N
Bottles arrive intact: ✓ Y __N
Correct bottles used: ✓ Y __N
Sufficient volume sent: ✓ Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓ Y __N
RAD Screen <0.5 mR/hr: ✓ Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCl / MeoH TBR
Whit Martin	3/2/21	1214	Alan Wilson 3-2-21 1214	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2° °C 0.5-3=0.2 Bottles Received: 8
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 3/3/21 Time: 1300

If preservation required by Login: Date/Time

Hold:

Condition: NCF / (OK)

Jared Morrison
December 16, 2022

ATTACHMENT 1-3

May 2021 Sampling Event Laboratory Report

ANALYTICAL REPORT

June 11, 2021

SCS Engineers - KS

Sample Delivery Group:	L1358236
Samples Received:	05/26/2021
Project Number:	27213169.21-A
Description:	Evergy - Sibley Generating Station

Report To:

Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

TABLE OF CONTENTS

MW-504 L1358236-01 GW

Collected by: A. Thompson | Collected date/time: 05/24/21 11:40 | Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 03:05	06/08/21 03:05	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/11/21 00:52	EL	Mt. Juliet, TN

MW-505 L1358236-02 GW

Collected by: A. Thompson | Collected date/time: 05/24/21 10:45 | Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 04:11	06/08/21 04:11	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/11/21 01:01	EL	Mt. Juliet, TN

MW-506 L1358236-03 GW

Collected by: A. Thompson | Collected date/time: 05/24/21 11:20 | Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 04:44	06/08/21 04:44	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/11/21 01:04	EL	Mt. Juliet, TN

MW-510 L1358236-04 GW

Collected by: A. Thompson | Collected date/time: 05/24/21 13:35 | Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 05:17	06/08/21 05:17	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/11/21 01:07	EL	Mt. Juliet, TN

MW-512 L1358236-05 GW

Collected by: A. Thompson | Collected date/time: 05/24/21 12:35 | Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 05:50	06/08/21 05:50	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	5	06/08/21 06:06	06/08/21 06:06	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/11/21 01:09	EL	Mt. Juliet, TN

MW-601 L1358236-06 GW

Collected by: A. Thompson | Collected date/time: 05/24/21 12:10 | Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 06:22	06/08/21 06:22	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/10/21 23:58	EL	Mt. Juliet, TN

DUPLICATE L1358236-07 GW

Collected by: A. Thompson
Collected date/time: 05/24/21 12:20
Received date/time: 05/26/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1679335	1	05/28/21 19:41	05/28/21 20:56	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1682598	1	06/08/21 08:01	06/08/21 08:01	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1685902	1	06/10/21 16:35	06/11/21 01:12	EL	Mt. Juliet, TN

CASE NARRATIVE

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

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	174		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	ND		1000	1	06/08/2021 03:05	WG1682598
Fluoride	201		150	1	06/08/2021 03:05	WG1682598
Sulfate	32400		5000	1	06/08/2021 03:05	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/11/2021 00:52	WG1685902
Calcium	34100		1000	1	06/11/2021 00:52	WG1685902

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	181		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	1110		1000	1	06/08/2021 04:11	WG1682598
Fluoride	180		150	1	06/08/2021 04:11	WG1682598
Sulfate	32600		5000	1	06/08/2021 04:11	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/11/2021 01:01	WG1685902
Calcium	34400		1000	1	06/11/2021 01:01	WG1685902

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	433		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	8090		1000	1	06/08/2021 04:44	WG1682598
Fluoride	344		150	1	06/08/2021 04:44	WG1682598
Sulfate	89100		5000	1	06/08/2021 04:44	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/11/2021 01:04	WG1685902
Calcium	91400		1000	1	06/11/2021 01:04	WG1685902

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	468		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	3530		1000	1	06/08/2021 05:17	WG1682598
Fluoride	338		150	1	06/08/2021 05:17	WG1682598
Sulfate	14500		5000	1	06/08/2021 05:17	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/11/2021 01:07	WG1685902
Calcium	116000		1000	1	06/11/2021 01:07	WG1685902

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	505		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10600		1000	1	06/08/2021 05:50	WG1682598
Fluoride	318		150	1	06/08/2021 05:50	WG1682598
Sulfate	110000		25000	5	06/08/2021 06:06	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/11/2021 01:09	WG1685902
Calcium	114000		1000	1	06/11/2021 01:09	WG1685902

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	381		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	3400		1000	1	06/08/2021 06:22	WG1682598
Fluoride	278		150	1	06/08/2021 06:22	WG1682598
Sulfate	9710		5000	1	06/08/2021 06:22	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/10/2021 23:58	WG1685902
Calcium	97400	V	1000	1	06/10/2021 23:58	WG1685902

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	378		10.0	1	05/28/2021 20:56	WG1679335

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	3400		1000	1	06/08/2021 08:01	WG1682598
Fluoride	279		150	1	06/08/2021 08:01	WG1682598
Sulfate	9590		5000	1	06/08/2021 08:01	WG1682598

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	06/11/2021 01:12	WG1685902
Calcium	96800		1000	1	06/11/2021 01:12	WG1685902

Method Blank (MB)

(MB) R3661353-1 05/28/21 20:56

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1357998-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1357998-01 05/28/21 20:56 • (DUP) R3661353-3 05/28/21 20:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	550	571	1	3.75		5

L1357998-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1357998-06 05/28/21 20:56 • (DUP) R3661353-4 05/28/21 20:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	651	654	1	0.460		5

Laboratory Control Sample (LCS)

(LCS) R3661353-2 05/28/21 20:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8420	95.7	77.4-123	

QUALITY CONTROL SUMMARY

L1358236-01,02,03,04,05,06,07

Method Blank (MB)

(MB) R3664365-1 06/07/21 15:31

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Fluoride	U		64.0	150
Sulfate	U		594	5000

L1358223-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1358223-01 06/07/21 22:10 • (DUP) R3664365-3 06/07/21 22:27

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	206000	205000	5	0.580		15
Fluoride	ND	ND	5	0.000		15
Sulfate	126000	126000	5	0.166		15

Laboratory Control Sample (LCS)

(LCS) R3664365-2 06/07/21 15:47

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40100	100	80.0-120	
Fluoride	8000	8280	103	80.0-120	
Sulfate	40000	40200	100	80.0-120	

L1358223-04 Original Sample (OS) • Matrix Spike (MS)

(OS) L1358223-04 06/07/21 23:16 • (MS) R3664365-4 06/07/21 23:32

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	159000	202000	87.5	1	80.0-120	E
Fluoride	5000	ND	5400	108	1	80.0-120	
Sulfate	50000	113000	152000	79.0	1	80.0-120	E J6

L1358236-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1358236-06 06/08/21 06:22 • (MS) R3664365-6 06/08/21 07:12 • (MSD) R3664365-7 06/08/21 07:28

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	3400	50200	50500	93.5	94.2	1	80.0-120			0.652	15
Fluoride	5000	278	5070	5070	95.8	95.8	1	80.0-120			0.0592	15

L1358236-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1358236-06 06/08/21 06:22 • (MS) R3664365-6 06/08/21 07:12 • (MSD) R3664365-7 06/08/21 07:28

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Sulfate	50000	9710	54500	55300	89.5	91.1	1	80.0-120			1.49	15

Method Blank (MB)

(MB) R3666011-1 06/10/21 23:52

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	U		20.0	200
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3666011-2 06/10/21 23:55

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1000	919	91.9	80.0-120	
Calcium	10000	9230	92.3	80.0-120	

L1358236-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1358236-06 06/10/21 23:58 • (MS) R3666011-4 06/11/21 00:03 • (MSD) R3666011-5 06/11/21 00:06

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	ND	952	953	92.2	92.3	1	75.0-125			0.119	20
Calcium	10000	97400	105000	104000	75.4	68.9	1	75.0-125		V	0.626	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.

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

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).
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SCS Engineers - KS

8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Pres Chk

Report to:
Jason Franks

Email To:
jfranks@scsengineers.com;jay.martin@evergy.c

Project Description:
Evergy - Sibley Generating Station

City/State Collected:

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project #
27213169.21-A

Lab Project #
AQUAOPKS-SIBLEY

Collected by (print):
A. Thompson

Site/Facility ID #

P.O. #

Collected by (signature):
A. Thompson

Immediately
Packed on Ice N ___ Y ___

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Anions (Cld, F, SO4) 125mlHDPE-NoPres	B, Ca - 6010 250mlHDPE-HNO3	TDS 250mlHDPE-NoPres							Remarks	Sample # (lab only)
MW-504	Grab	GW		5/24/21	1140	3	X	X	X								-01
MW-505		GW			1045	3	X	X	X								-02
MW-506		GW			1120	3	X	X	X								-03
MW-510		GW			1335	3	X	X	X								-04
MW-512		GW			1235	3	X	X	X								-05
MW-601		GW			1210	3	X	X	X								-06
MS/MSD		GW			1215	3	X	X	X								-06
DUPLICATE 2 601		GW			1220	3	X	X	X								-07

Chain of Custody Page 2 of 3

Pace Analytical®

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1358236

Table #

Acctnum: **AQUAOPKS**

Template: **T136014**

Prelogin: **P846702**

PM: **206 - Jeff Carr**

PB:

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS ✓ FedEx __ Courier _____

Tracking #

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
A. Thompson	5/25/21	1600			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: HM °C AG 1.5+.1=1.6 Bottles Received: 92	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 5/26/21 Time: 0930	Hold: / Condition: NCF / OK

Jared Morrison
December 16, 2022

ATTACHMENT 1-4

July 2021 Sampling Event Laboratory Report

ANALYTICAL REPORT

August 04, 2021

SCS Engineers - KS

Sample Delivery Group:	L1381183
Samples Received:	07/21/2021
Project Number:	27213169.21 - G
Description:	Sibley Generating Station

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 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.

TABLE OF CONTENTS

MW-505 L1381183-01 GW

Collected by: Whit Martin | Collected date/time: 07/19/21 13:15 | Received date/time: 07/21/21 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1710219	1	07/22/21 15:12	07/22/21 16:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1710980	1	07/27/21 11:43	07/27/21 11:43	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1712954	1	07/29/21 11:05	08/03/21 16:51	CCE	Mt. Juliet, TN

MW-506 L1381183-02 GW

Collected by: Whit Martin | Collected date/time: 07/19/21 14:15 | Received date/time: 07/21/21 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1710980	1	07/27/21 11:56	07/27/21 11:56	ELN	Mt. Juliet, TN

MW-512 L1381183-03 GW

Collected by: Whit Martin | Collected date/time: 07/19/21 14:50 | Received date/time: 07/21/21 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1710219	1	07/22/21 15:12	07/22/21 16:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1710980	1	07/27/21 12:09	07/27/21 12:09	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1710980	5	07/27/21 20:05	07/27/21 20:05	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1712954	1	07/29/21 11:05	08/03/21 16:33	CCE	Mt. Juliet, TN

DUPLICATE L1381183-04 GW

Collected by: Whit Martin | Collected date/time: 07/19/21 14:50 | Received date/time: 07/21/21 08:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1710219	1	07/22/21 15:12	07/22/21 16:20	KAB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1710980	1	07/27/21 13:28	07/27/21 13:28	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1710980	5	07/27/21 20:32	07/27/21 20:32	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1712954	1	07/29/21 11:05	08/03/21 16:59	CCE	Mt. Juliet, TN

CASE NARRATIVE

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

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	184		10.0	1	07/22/2021 16:20	WG1710219

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Sulfate	14400		5000	1	07/27/2021 11:43	WG1710980

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	34800		1000	1	08/03/2021 16:51	WG1712954

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	8010		1000	1	07/27/2021 11:56	WG1710980
Sulfate	89100		5000	1	07/27/2021 11:56	WG1710980

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	524		10.0	1	07/22/2021 16:20	WG1710219

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10200		1000	1	07/27/2021 12:09	WG1710980
Sulfate	104000		25000	5	07/27/2021 20:05	WG1710980

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	120000	V	1000	1	08/03/2021 16:33	WG1712954

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	529		10.0	1	07/22/2021 16:20	WG1710219

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10400		1000	1	07/27/2021 13:28	WG1710980
Sulfate	110000		25000	5	07/27/2021 20:32	WG1710980

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	115000		1000	1	08/03/2021 16:59	WG1712954

Method Blank (MB)

(MB) R3683581-1 07/22/21 16:20

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1379748-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1379748-01 07/22/21 16:20 • (DUP) R3683581-3 07/22/21 16:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	2850	2910	1	2.08		5

L1380281-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1380281-01 07/22/21 16:20 • (DUP) R3683581-4 07/22/21 16:20

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	2390	2490	1	4.10		5

Laboratory Control Sample (LCS)

(LCS) R3683581-2 07/22/21 16:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	9530	108	77.4-123	

Method Blank (MB)

(MB) R3684788-1 07/27/21 10:21

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Sulfate	U		594	5000

L1381183-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1381183-03 07/27/21 12:09 • (DUP) R3684788-3 07/27/21 12:22

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	10200	10100	1	0.600		15

L1381288-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1381288-06 07/27/21 16:47 • (DUP) R3684788-6 07/27/21 17:00

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	1420	1550	1	8.63		15

L1381183-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1381183-03 07/27/21 20:05 • (DUP) R3684788-8 07/27/21 20:19

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	104000	105000	5	0.569		15

L1381288-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1381288-06 07/27/21 21:11 • (DUP) R3684788-9 07/27/21 21:25

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	159000	159000	5	0.0388		15

Laboratory Control Sample (LCS)

(LCS) R3684788-2 07/27/21 10:35

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40900	102	80.0-120	
Sulfate	40000	40700	102	80.0-120	

L1381183-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1381183-03 07/27/21 12:09 • (MS) R3684788-4 07/27/21 12:35 • (MSD) R3684788-5 07/27/21 12:49

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	10200	61800	62200	103	104	1	80.0-120			0.588	15
Sulfate	50000	115000	161000	162000	91.4	92.3	1	80.0-120	E	E	0.279	15

L1381288-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1381288-06 07/27/21 16:47 • (MS) R3684788-7 07/27/21 17:13

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50000	1420	52300	102	1	80.0-120	
Sulfate	50000	167000	210000	84.9	1	80.0-120	E

Method Blank (MB)

(MB) R3687468-1 08/03/21 16:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	ug/l		ug/l	ug/l
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3687468-2 08/03/21 16:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	ug/l	ug/l	%	%	
Calcium	10000	10200	102	80.0-120	

L1381183-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1381183-03 08/03/21 16:33 • (MS) R3687468-4 08/03/21 16:38 • (MSD) R3687468-5 08/03/21 16:40

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	120000	127000	126000	68.3	58.6	1	75.0-125	V	V	0.766	20

L1381295-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1381295-05 08/03/21 16:43 • (MS) R3687468-6 08/03/21 16:46 • (MSD) R3687468-7 08/03/21 16:48

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
	ug/l	ug/l	ug/l	ug/l	%	%		%			%	%
Calcium	10000	64600	73300	72600	86.9	79.4	1	75.0-125			1.02	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.

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

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.
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

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
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Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SCS Engineers - KS
8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Report to: **Jason Franks**

Email To: **jfranks@scsengineers.com;jay.martin@evergy.c**

Project Description: **Sibley Generating Station**

City/State Collected: **Sibley, MO**

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project # **27213169.21 - G**

Lab Project # **AQUAOPKS-SIBLEY**

Collected by (print): **Whit Martin**

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: Std

Pres Chk

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Ca - 6010 250mlHDPE-HNO3	Chloride, SO4 125mlHDPE-NoPres	SO4 125mlHDPE-NoPres	TDS 250mlHDPE-NoPres	Remarks	Sample # (lab only)
MW-505	Grab	GW		7/19/21	1315	3	X		X	X		-01
MW-506	Grab	GW		7/19/21	1415	1		X				-02
MW-512	Grab	GW		7/19/21	1450	3	X	X		X		-03
MW-512 MS/MSD	Grab	GW		7/19/21	1450	2	X	X				-03
DUPLICATE	Grab	GW		7/19/21	1450	3	X	X		X		-04

Chain of Custody Page 1 of 1

Pace Analytical®

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1381183

K135

Acctnum: **AQUAOPKS**
Template: **T117427**
Prelogin: **P861399**
PM: **206 - Jeff Carr**
PB:
Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS __ FedEx __ Courier _____

Tracking # 511744311103

Sample Receipt Checklist
COC Seal Present/Intact: __NP X Y __N
COC Signed/Accurate: X Y __N
Bottles arrive intact: X Y __N
Correct bottles used: X Y __N
Sufficient volume sent: X Y __N
If Applicable
VOA Zero Headspace: X Y __N
Preservation Correct/Checked: X Y __N
RAD Screen <0.5 mR/hr: X Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	7/20/21	1505	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / (No) HCl / MeOH TBR
1

Temp: 5.0-1=4.9 °C Bottles Received: 12

Date: 7/21/21 Time: 8:30

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Jared Morrison
December 16, 2022

ATTACHMENT 1-5

September 2021 Sampling Event Laboratory Report

ANALYTICAL REPORT

September 13, 2021

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SCS Engineers - KS

Sample Delivery Group:	L1398802
Samples Received:	09/03/2021
Project Number:	27213169.21 - G
Description:	Sibley Generating Station

Report To: Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

SAMPLE SUMMARY

MW-505 L1398802-01 GW

Collected by: Whit Martin
Collected date/time: 09/02/21 12:35
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1737791	1	09/09/21 21:23	09/09/21 22:33	VRP	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 21:19	CCE	Mt. Juliet, TN

MW-506 L1398802-02 GW

Collected by: Whit Martin
Collected date/time: 09/02/21 10:50
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1734517	1	09/04/21 10:45	09/04/21 10:45	ELN	Mt. Juliet, TN

MW-512 L1398802-03 GW

Collected by: Whit Martin
Collected date/time: 09/02/21 11:45
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1737791	1	09/09/21 21:23	09/09/21 22:33	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	1	09/04/21 11:18	09/04/21 11:18	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	5	09/04/21 12:40	09/04/21 12:40	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 20:50	CCE	Mt. Juliet, TN

DUPLICATE L1398802-04 GW

Collected by: Whit Martin
Collected date/time: 09/02/21 11:45
Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1737791	1	09/09/21 21:23	09/09/21 22:33	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	1	09/04/21 12:57	09/04/21 12:57	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	5	09/04/21 13:13	09/04/21 13:13	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 21:22	CCE	Mt. Juliet, TN

CASE NARRATIVE

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

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	188		10.0	1	09/09/2021 22:33	WG1737791

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	34100		1000	1	09/09/2021 21:19	WG1736127

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	8030		1000	1	09/04/2021 10:45	WG1734517
Sulfate	88700		5000	1	09/04/2021 10:45	WG1734517

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	555		10.0	1	09/09/2021 22:33	WG1737791

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	10200		1000	1	09/04/2021 11:18	WG1734517
Sulfate	107000		25000	5	09/04/2021 12:40	WG1734517

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	114000	V	1000	1	09/09/2021 20:50	WG1736127

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	551		10.0	1	09/09/2021 22:33	WG1737791

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	9990		1000	1	09/04/2021 12:57	WG1734517
Sulfate	108000		25000	5	09/04/2021 13:13	WG1734517

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	113000		1000	1	09/09/2021 21:22	WG1736127

Method Blank (MB)

(MB) R3703248-1 09/09/21 22:33

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1398830-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398830-01 09/09/21 22:33 • (DUP) R3703248-3 09/09/21 22:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	1310	1300	1	0.766		5

L1400116-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1400116-01 09/09/21 22:33 • (DUP) R3703248-4 09/09/21 22:33

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	741	756	1	1.96		5

Laboratory Control Sample (LCS)

(LCS) R3703248-2 09/09/21 22:33

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8500	96.6	77.4-123	

Method Blank (MB)

(MB) R3700955-1 09/03/21 10:19

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	501	J	379	1000
Sulfate	U		594	5000

L1398686-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398686-01 09/03/21 12:17 • (DUP) R3700955-3 09/03/21 12:31

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	10800	10800	1	0.0482		15
Sulfate	22900	22900	1	0.0577		15

L1398798-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398798-02 09/04/21 13:29 • (DUP) R3700966-3 09/04/21 13:46

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	20000	20100	1	0.264		15
Sulfate	ND	ND	1	0.832		15

Laboratory Control Sample (LCS)

(LCS) R3700955-2 09/03/21 10:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40100	100	80.0-120	
Sulfate	40000	40700	102	80.0-120	

L1398798-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398798-01 09/03/21 17:08 • (MS) R3700955-4 09/03/21 17:23 • (MSD) R3700955-5 09/03/21 17:37

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	19800	70600	70800	102	102	1	80.0-120			0.275	15
Sulfate	50000	ND	51100	51100	101	101	1	80.0-120			0.114	15

L1398802-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398802-03 09/04/21 11:18 • (MS) R3700966-1 09/04/21 11:34 • (MSD) R3700966-2 09/04/21 11:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	10200	60900	60200	101	100	1	80.0-120			1.12	15
Sulfate	50000	107000	152000	152000	90.3	89.2	1	80.0-120	E	E	0.389	15

L1398798-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398798-03 09/04/21 14:02 • (MS) R3700966-4 09/04/21 14:19 • (MSD) R3700966-5 09/04/21 14:35

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	6750	57800	57800	102	102	1	80.0-120			0.0268	15
Sulfate	50000	41700	89900	90400	96.4	97.4	1	80.0-120			0.582	15

QUALITY CONTROL SUMMARY

L1398802-01,03,04

Method Blank (MB)

(MB) R3702618-1 09/09/21 20:45

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3702618-2 09/09/21 20:47

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10000	9420	94.2	80.0-120	

L1398802-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398802-03 09/09/21 20:50 • (MS) R3702618-4 09/09/21 20:56 • (MSD) R3702618-5 09/09/21 20:59

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Calcium	10000	114000	121000	122000	70.0	79.6	1	75.0-125	V		0.793	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.

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

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.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SCS Engineers - KS

8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Pres Chk

Report to:
Jason Franks

Email To:
jfranks@scsengineers.com;jay.martin@evergy.c

Project Description:
Sibley Generating Station

City/State Collected: Sibley, MO

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project #
27213169.21 - G

Lab Project #
AQUAOPKS-SIBLEY

Collected by (print):
Whit Martin

Site/Facility ID #

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
X Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: Std

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Ca - 6010 250mlHDPE-HNO3	Chloride, SO4 125mlHDPE-NoPres	TDS 250mlHDPE-NoPres	Remarks	Sample # (lab only)
MW-505	Grab	GW	na	9/2/21	1235	2	X		X		-01
MW-506	Grab	GW	na	9/2/21	1050	1		X			02
MW-512	Grab	GW	na	9/2/21	1145	3	X	X	X		03
MW-512 MS/MSD	Grab	GW	na	9/2/21	~~1000~~ 1145	2	X	X			03
DUPLICATE	Grab	GW	na	9/2/21	~~1000~~ 1145	3	X	X	X		04

Chain of Custody Page 1 of 1

Pace Analytical®

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Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1398802

J126

Acctnum: **AQUAOPKS**

Template: **T117427**

Prelogin: **P870738**

PM: **206 - Jeff Carr**

PB:

Shipped Via:

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 5117 4431 0720

Sample Receipt Checklist

COC Seal Present/Intact:	NP	Y N
COC Signed/Accurate:		Y N
Bottles arrive intact:		Y N
Correct bottles used:		Y N
Sufficient volume sent:		Y N
If Applicable		
VOA Zero Headspace:		Y N
Preservation Correct/Checked:		Y N
RAD Screen <0.5 mR/hr:		Y N

Relinquished by : (Signature)	Date: 9/2/21	Time: 1500	Received by: (Signature)	Trip Blank Received: Yes / No (HCL / MeoH TBR)
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 0.3 °C Bottles Received: 11
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) T. Robertson	Date: 9/3/21 Time: 930

If preservation required by Login: Date/Time

Hold:

Conditions NCF / OK

ANALYTICAL REPORT

September 13, 2021

SCS Engineers - KS

Sample Delivery Group:	L1398801
Samples Received:	09/03/2021
Project Number:	27213169.21 - G
Description:	Evergy Sibley Generating Station

Report To:

Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

TABLE OF CONTENTS

MW-505 L1398801-01 GW

Collected by: Whit Martin | Collected date/time: 09/02/21 12:35 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1736008	1	09/07/21 12:56	09/07/21 12:56	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	1	09/04/21 15:08	09/04/21 15:08	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736126	1	09/08/21 08:29	09/11/21 05:54	KMG	Mt. Juliet, TN

MW-506 L1398801-02 GW

Collected by: Whit Martin | Collected date/time: 09/02/21 10:50 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1736008	1	09/07/21 12:58	09/07/21 12:58	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 21:01	CCE	Mt. Juliet, TN

MW-512 L1398801-03 GW

Collected by: Whit Martin | Collected date/time: 09/02/21 11:45 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1737291	1	09/09/21 11:13	09/09/21 11:13	ARD	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 21:04	CCE	Mt. Juliet, TN

MW-804 L1398801-04 GW

Collected by: Whit Martin | Collected date/time: 09/02/21 11:50 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1736008	1	09/07/21 13:02	09/07/21 13:02	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	1	09/04/21 09:56	09/04/21 09:56	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 21:07	CCE	Mt. Juliet, TN

MW-805 L1398801-05 GW

Collected by: Whit Martin | Collected date/time: 09/02/21 12:35 | Received date/time: 09/03/21 09:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 2320 B-2011	WG1736008	1	09/07/21 13:05	09/07/21 13:05	ARD	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1734517	1	09/04/21 10:12	09/04/21 10:12	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1736127	1	09/08/21 21:42	09/09/21 21:10	CCE	Mt. Juliet, TN

CASE NARRATIVE

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

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	118000		20000	1	09/07/2021 12:56	WG1736008
Alkalinity,Carbonate	ND		20000	1	09/07/2021 12:56	WG1736008

Sample Narrative:

L1398801-01 WG1736008: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	1230	B	1000	1	09/04/2021 15:08	WG1734517
Sulfate	13000		5000	1	09/04/2021 15:08	WG1734517

Metals (ICP) by Method 6010B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Magnesium	9340		1000	1	09/11/2021 05:54	WG1736126
Potassium	ND		2000	1	09/11/2021 05:54	WG1736126
Sodium	8970		3000	1	09/11/2021 05:54	WG1736126

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Alkalinity,Bicarbonate	296000		20000	1	09/07/2021 12:58	WG1736008
Alkalinity,Carbonate	ND		20000	1	09/07/2021 12:58	WG1736008

Sample Narrative:

L1398801-02 WG1736008: Endpoint pH 4.5 Headspace

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	91100		1000	1	09/09/2021 21:01	WG1736127
Magnesium	38300		1000	1	09/09/2021 21:01	WG1736127
Potassium	ND		2000	1	09/09/2021 21:01	WG1736127
Sodium	8430		3000	1	09/09/2021 21:01	WG1736127

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Alkalinity,Bicarbonate	349000		20000	1	09/09/2021 11:13	WG1737291
Alkalinity,Carbonate	ND		20000	1	09/09/2021 11:13	WG1737291

Sample Narrative:

L1398801-03 WG1737291: Endpoint pH 4.5 headspace

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Magnesium	39900		1000	1	09/09/2021 21:04	WG1736127
Potassium	2160		2000	1	09/09/2021 21:04	WG1736127
Sodium	10300		3000	1	09/09/2021 21:04	WG1736127

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Alkalinity,Bicarbonate	554000		20000	1	09/07/2021 13:02	WG1736008
Alkalinity,Carbonate	ND		20000	1	09/07/2021 13:02	WG1736008

Sample Narrative:

L1398801-04 WG1736008: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Sulfate	ND		5000	1	09/04/2021 09:56	WG1734517

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Calcium	139000		1000	1	09/09/2021 21:07	WG1736127
Magnesium	34400		1000	1	09/09/2021 21:07	WG1736127
Potassium	5480		2000	1	09/09/2021 21:07	WG1736127
Sodium	27200		3000	1	09/09/2021 21:07	WG1736127

Wet Chemistry by Method 2320 B-2011

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Alkalinity,Bicarbonate	249000		20000	1	09/07/2021 13:05	WG1736008
Alkalinity,Carbonate	ND		20000	1	09/07/2021 13:05	WG1736008

Sample Narrative:

L1398801-05 WG1736008: Endpoint pH 4.5 Headspace

Wet Chemistry by Method 9056A

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Chloride	6830		1000	1	09/04/2021 10:12	WG1734517
Sulfate	41700		5000	1	09/04/2021 10:12	WG1734517

Metals (ICP) by Method 6010B

Analyte	Result ug/l	Qualifier	RDL ug/l	Dilution	Analysis date / time	Batch
Calcium	88700		1000	1	09/09/2021 21:10	WG1736127
Magnesium	12300		1000	1	09/09/2021 21:10	WG1736127
Potassium	ND		2000	1	09/09/2021 21:10	WG1736127
Sodium	8420		3000	1	09/09/2021 21:10	WG1736127

Method Blank (MB)

(MB) R3701170-2 09/07/21 12:38

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

Method Blank (MB)

(MB) R3702218-2 09/09/21 10:39

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Alkalinity,Bicarbonate	U		8450	20000
Alkalinity,Carbonate	U		8450	20000

Sample Narrative:

BLANK: Endpoint pH 4.5

L1398801-03 Original Sample (OS) • Duplicate (DUP)

(OS) L1398801-03 09/09/21 11:13 • (DUP) R3702218-3 09/09/21 11:16

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	349000	354000	1	1.45		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

L1399042-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1399042-01 09/09/21 11:26 • (DUP) R3702218-4 09/09/21 11:30

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity,Bicarbonate	100000	97400	1	2.71		20
Alkalinity,Carbonate	ND	ND	1	0.000		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

QUALITY CONTROL SUMMARY

L1398801-01,04,05

Method Blank (MB)

(MB) R3700955-1 09/03/21 10:19

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	501	J	379	1000
Sulfate	U		594	5000

L1398686-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1398686-01 09/03/21 12:17 • (DUP) R3700955-3 09/03/21 12:31

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	10800	10800	1	0.0482		15
Sulfate	22900	22900	1	0.0577		15

L1398798-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1398798-02 09/04/21 13:29 • (DUP) R3700966-3 09/04/21 13:46

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	20000	20100	1	0.264		15
Sulfate	ND	ND	1	0.832		15

Laboratory Control Sample (LCS)

(LCS) R3700955-2 09/03/21 10:33

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	40100	100	80.0-120	
Sulfate	40000	40700	102	80.0-120	

L1398798-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398798-01 09/03/21 17:08 • (MS) R3700955-4 09/03/21 17:23 • (MSD) R3700955-5 09/03/21 17:37

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	19800	70600	70800	102	102	1	80.0-120			0.275	15
Sulfate	50000	ND	51100	51100	101	101	1	80.0-120			0.114	15

L1398802-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398802-03 09/04/21 11:18 • (MS) R3700966-1 09/04/21 11:34 • (MSD) R3700966-2 09/04/21 11:51

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	10200	60900	60200	101	100	1	80.0-120			1.12	15
Sulfate	50000	107000	152000	152000	90.3	89.2	1	80.0-120	E	E	0.389	15

L1398798-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398798-03 09/04/21 14:02 • (MS) R3700966-4 09/04/21 14:19 • (MSD) R3700966-5 09/04/21 14:35

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	6750	57800	57800	102	102	1	80.0-120			0.0268	15
Sulfate	50000	41700	89900	90400	96.4	97.4	1	80.0-120			0.582	15

Method Blank (MB)

(MB) R3703149-1 09/11/21 12:40

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Magnesium	U		85.3	1000
Potassium	U		261	2000
Sodium	U		504	3000

Laboratory Control Sample (LCS)

(LCS) R3703149-2 09/11/21 12:43

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Magnesium	10000	9230	92.3	80.0-120	
Potassium	10000	9210	92.1	80.0-120	
Sodium	10000	9670	96.7	80.0-120	

L1398737-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1398737-01 09/11/21 12:45 • (MS) R3703149-4 09/11/21 12:51 • (MSD) R3703149-5 09/11/21 12:54

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Magnesium	10000	24700	33700	33500	90.3	88.9	1	75.0-125			0.423	20
Potassium	10000	6670	15900	15800	92.7	91.7	1	75.0-125			0.636	20
Sodium	10000	73700	81600	81100	79.3	73.5	1	75.0-125		V	0.710	20

Method Blank (MB)

(MB) R3702618-1 09/09/21 20:45

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Calcium	U		79.3	1000
Magnesium	U		85.3	1000
Potassium	U		261	2000
Sodium	U		504	3000

Laboratory Control Sample (LCS)

(LCS) R3702618-2 09/09/21 20:47

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Calcium	10000	9420	94.2	80.0-120	
Magnesium	10000	9260	92.6	80.0-120	
Potassium	10000	8920	89.2	80.0-120	
Sodium	10000	9590	95.9	80.0-120	

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.

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

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
B	The same analyte is found in the associated blank.
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.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:
SCS Engineers - KS

8575 W. 110th Street
Overland Park, KS 66210

Billing Information:
Accounts Payable
8575 W. 110th Street
Overland Park, KS 66210

Pres Chk

Report to:
Jason Franks

Email To:
jfranks@scsengineers.com;jay.martin@evergy.c

Project Description:
Evergy Sibley Generating Station

City/State Collected: Sibley, MO

Please Circle: PT MT CT ET

Phone: **913-681-0030**

Client Project #
27213169.21 - G

Lab Project #
AQUAOPKS-SIBLEY

Collected by (print):
Whit Martin

Site/Facility ID #

P.O. #

Collected by (signature):

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed: Std

Quote #

Immediately Packed on Ice N___ Y___

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	ALKBI, ALKCA 125mlHDPE-NoPres	Ca, K, Mg, Na - 6010 250mlHDPE-HNO3	Ca,K, Mg, Na - 6010 250mlHDPE-HNO3	Chloride, SO4 - 9056 125mlHDPE-NoPres	K, Mg, Na - 6010 250mlHDPE-HNO3	SO4 - 9056 125mlHDPE-NoPres	Remarks	Sample # (lab only)
MW-505	Grab	GW	na	9/2/21	1235	3	X			X	X			-01
MW-506	Grab	GW	na	9/2/21	1050	2	X		X					02
MW-512	Grab	GW	na	9/2/21	1145	2	X				X			03
MW-804	Grab	GW	na	9/2/21	1150	3	X	X				X		04
MW-805	Grab	GW	na	9/2/21	1235	3	X	X		X				05

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

Pace Analytical®

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # L1398601

J127

Acctnum: AQUAOPKS

Template: T152962

Prelogin: P870744

PM: 206 - Jeff Carr

PB:

Shipped Via:

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____

Flow _____ Other _____

Samples returned via:
__ UPS __ FedEx __ Courier _____

Tracking # 5117 4143 0720

Sample Receipt Checklist
COC Seal Present/Intact: __NP Y N
COC Signed/Accurate: Y N
Bottles arrive intact: Y N
Correct bottles used: Y N
Sufficient volume sent: Y N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: Y N
RAD Screen <0.5 mR/hr: Y N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: (Yes / No) HCL / MeoH TBR	If preservation required by Login: Date/Time
Whit Martin	9/2/21	1500			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 4.3 °C Bottles Received: 13	
				0.5+0.0.5	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 9/3/21 Time: 0730	Hold: Condition: NCF (OK)
			T. Robertson		

Jared Morrison
December 16, 2022

ATTACHMENT 1-6

November 2021 Sampling Event Laboratory Report

ANALYTICAL REPORT

December 13, 2021

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

SCS Engineers - KS

Sample Delivery Group:	L1432587
Samples Received:	11/17/2021
Project Number:	27213169.21-A
Description:	Evergy - Sibley Generating Station

Report To: Jason Franks
8575 W. 110th Street
Overland Park, KS 66210

Entire Report Reviewed By:

Jeff Carr
Project Manager

Pace Analytical National
12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

TABLE OF CONTENTS

MW-504 L1432587-01 GW

Collected by: Jason R Franks | Collected date/time: 11/15/21 13:55 | Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1777787	1	11/20/21 12:11	11/20/21 17:39	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/08/21 19:40	12/08/21 19:40	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785185	1	12/07/21 10:06	12/10/21 09:17	CCE	Mt. Juliet, TN

MW-505 L1432587-02 GW

Collected by: Jason R Franks | Collected date/time: 11/15/21 14:35 | Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1777787	1	11/20/21 12:11	11/20/21 17:39	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/08/21 20:06	12/08/21 20:06	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785689	1	12/08/21 00:49	12/10/21 21:35	KMG	Mt. Juliet, TN

MW-506 L1432587-03 GW

Collected by: Jason R Franks | Collected date/time: 11/15/21 12:35 | Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1777787	1	11/20/21 12:11	11/20/21 17:39	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/08/21 20:32	12/08/21 20:32	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785185	1	12/07/21 10:06	12/10/21 09:19	CCE	Mt. Juliet, TN

MW-510 L1432587-04 GW

Collected by: Jason R Franks | Collected date/time: 11/15/21 14:35 | Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1778639	1	11/22/21 14:27	11/22/21 15:59	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/08/21 20:58	12/08/21 20:58	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785185	1	12/07/21 10:06	12/10/21 09:22	CCE	Mt. Juliet, TN

MW-512 L1432587-05 GW

Collected by: Jason R Franks | Collected date/time: 11/15/21 10:30 | Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1777787	1	11/20/21 12:11	11/20/21 17:39	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/08/21 21:50	12/08/21 21:50	ELN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	10	12/08/21 22:03	12/08/21 22:03	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785185	1	12/07/21 10:06	12/10/21 09:25	CCE	Mt. Juliet, TN

MW-601 L1432587-06 GW

Collected by: Jason R Franks | Collected date/time: 11/15/21 11:10 | Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1777787	1	11/20/21 12:11	11/20/21 17:39	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/08/21 22:16	12/08/21 22:16	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785185	1	12/07/21 10:06	12/08/21 10:50	CCE	Mt. Juliet, TN

DUPLICATE L1432587-07 GW

Collected by: Jason R Franks
Collected date/time: 11/15/21 11:20
Received date/time: 11/17/21 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1777787	1	11/20/21 12:11	11/20/21 17:39	VRP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1785619	1	12/09/21 03:39	12/09/21 03:39	ELN	Mt. Juliet, TN
Metals (ICP) by Method 6010D	WG1785185	1	12/07/21 10:06	12/10/21 09:27	CCE	Mt. Juliet, TN

CASE NARRATIVE

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

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	192		10.0	1	11/20/2021 17:39	WG1777787

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	ND		1000	1	12/08/2021 19:40	WG1785619
Fluoride	178	B	150	1	12/08/2021 19:40	WG1785619
Sulfate	27900		5000	1	12/08/2021 19:40	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/10/2021 09:17	WG1785185
Calcium	35300		1000	1	12/10/2021 09:17	WG1785185

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	181		10.0	1	11/20/2021 17:39	WG1777787

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	1130		1000	1	12/08/2021 20:06	WG1785619
Fluoride	181	B	150	1	12/08/2021 20:06	WG1785619
Sulfate	20400		5000	1	12/08/2021 20:06	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/10/2021 21:35	WG1785689
Calcium	27700		1000	1	12/10/2021 21:35	WG1785689

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	466		10.0	1	11/20/2021 17:39	WG1777787

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	7780		1000	1	12/08/2021 20:32	WG1785619
Fluoride	275	B	150	1	12/08/2021 20:32	WG1785619
Sulfate	89800		5000	1	12/08/2021 20:32	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/10/2021 09:19	WG1785185
Calcium	98800		1000	1	12/10/2021 09:19	WG1785185

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	486		10.0	1	11/22/2021 15:59	WG1778639

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	3330		1000	1	12/08/2021 20:58	WG1785619
Fluoride	271	B	150	1	12/08/2021 20:58	WG1785619
Sulfate	21400		5000	1	12/08/2021 20:58	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/10/2021 09:22	WG1785185
Calcium	124000		1000	1	12/10/2021 09:22	WG1785185

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	527		10.0	1	11/20/2021 17:39	WG1777787

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	9690		1000	1	12/08/2021 21:50	WG1785619
Fluoride	257	B	150	1	12/08/2021 21:50	WG1785619
Sulfate	93100		50000	10	12/08/2021 22:03	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/10/2021 09:25	WG1785185
Calcium	121000		1000	1	12/10/2021 09:25	WG1785185

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	399		10.0	1	11/20/2021 17:39	WG1777787

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	3440		1000	1	12/08/2021 22:16	WG1785619
Fluoride	234	B	150	1	12/08/2021 22:16	WG1785619
Sulfate	9320		5000	1	12/08/2021 22:16	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/08/2021 10:50	WG1785185
Calcium	95600		1000	1	12/08/2021 10:50	WG1785185

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	398		10.0	1	11/20/2021 17:39	WG1777787

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Chloride	3110		1000	1	12/09/2021 03:39	WG1785619
Fluoride	233	B	150	1	12/09/2021 03:39	WG1785619
Sulfate	8820		5000	1	12/09/2021 03:39	WG1785619

Metals (ICP) by Method 6010D

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	ug/l		ug/l		date / time	
Boron	ND		200	1	12/10/2021 09:27	WG1785185
Calcium	102000		1000	1	12/10/2021 09:27	WG1785185

Method Blank (MB)

(MB) R3733767-1 11/20/21 17:39

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1431968-13 Original Sample (OS) • Duplicate (DUP)

(OS) L1431968-13 11/20/21 17:39 • (DUP) R3733767-3 11/20/21 17:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	626	620	1	0.963		5

L1432587-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1432587-05 11/20/21 17:39 • (DUP) R3733767-4 11/20/21 17:39

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	527	535	1	1.51		5

Laboratory Control Sample (LCS)

(LCS) R3733767-2 11/20/21 17:39

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8660	98.4	77.4-123	

Method Blank (MB)

(MB) R3733766-1 11/22/21 15:59

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		10.0	10.0

L1432164-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1432164-05 11/22/21 15:59 • (DUP) R3733766-3 11/22/21 15:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	58.0	53.0	1	9.01	J3	5

L1432164-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1432164-06 11/22/21 15:59 • (DUP) R3733766-4 11/22/21 15:59

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	263	246	1	6.68	J3	5

Laboratory Control Sample (LCS)

(LCS) R3733766-2 11/22/21 15:59

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8130	92.4	77.4-123	

Method Blank (MB)

(MB) R3739336-1 12/08/21 12:52

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Chloride	U		379	1000
Fluoride	69.7	J	64.0	150
Sulfate	U		594	5000

L1432580-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1432580-01 12/08/21 16:25 • (DUP) R3739336-3 12/08/21 16:38

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	1580	1530	1	3.19		15

L1432580-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1432580-05 12/08/21 17:56 • (DUP) R3739336-6 12/08/21 18:09

Analyte	Original Result ug/l	DUP Result ug/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	4170	4400	1	5.32		15

Laboratory Control Sample (LCS)

(LCS) R3739336-2 12/08/21 13:05

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40000	38600	96.6	80.0-120	
Fluoride	8000	7890	98.6	80.0-120	
Sulfate	40000	38100	95.3	80.0-120	

L1432580-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1432580-01 12/08/21 16:25 • (MS) R3739336-4 12/08/21 16:51 • (MSD) R3739336-5 12/08/21 17:04

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	1580	48800	49000	94.4	94.8	1	80.0-120			0.457	15

L1432587-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1432587-06 12/08/21 22:16 • (MS) R3739336-9 12/09/21 10:21 • (MSD) R3739336-10 12/09/21 10:34

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50000	3440	51600	51700	96.4	96.6	1	80.0-120			0.191	15
Sulfate	50000	9320	56700	56500	94.8	94.4	1	80.0-120			0.376	15

Method Blank (MB)

(MB) R3738526-1 12/08/21 10:44

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	U		20.0	200
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3738526-2 12/08/21 10:47

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1000	881	88.1	80.0-120	
Calcium	10000	9160	91.6	80.0-120	

L1432587-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1432587-06 12/08/21 10:50 • (MS) R3738526-4 12/08/21 10:55 • (MSD) R3738526-5 12/08/21 10:57

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	ND	941	937	89.7	89.4	1	75.0-125			0.373	20
Calcium	10000	95600	104000	104000	86.9	87.2	1	75.0-125			0.0256	20

Method Blank (MB)

(MB) R3739621-1 12/10/21 20:52

Analyte	MB Result ug/l	MB Qualifier	MB MDL ug/l	MB RDL ug/l
Boron	U		20.0	200
Calcium	U		79.3	1000

Laboratory Control Sample (LCS)

(LCS) R3739621-2 12/10/21 20:55

Analyte	Spike Amount ug/l	LCS Result ug/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1000	953	95.3	80.0-120	
Calcium	10000	9560	95.6	80.0-120	

L1432167-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1432167-02 12/10/21 20:58 • (MS) R3739621-4 12/10/21 21:03 • (MSD) R3739621-5 12/10/21 21:05

Analyte	Spike Amount ug/l	Original Result ug/l	MS Result ug/l	MSD Result ug/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1000	ND	996	1010	97.1	98.2	1	75.0-125			1.08	20
Calcium	10000	82500	91600	90500	90.5	79.7	1	75.0-125			1.19	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.

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

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
B	The same analyte is found in the associated blank.
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.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

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

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.

Company Name/Address:	Billing Information:	Pres Chk
SCS Engineers - KS 8575 W. 110th Street Overland Park, KS 66210	Accounts Payable 8575 W. 110th Street Overland Park, KS 66210	

Report to: **Jason Franks**

Email To: jfranks@scsengineers.com;jay.martin@evergy.c

Project Description: **Evergy - Sibley Generating Station**

City/State Collected: SIBLEY, MO

Please Circle: PT MT (CT) ET

Phone: **913-681-0030**

Client Project #: **27213169.21-A**

Lab Project #: **AQUAOPKS-SIBLEY**

Collected by (print): JASON R. FRANKS

Site/Facility ID #:

P.O. #:

Collected by (signature): [signature]

Immediately Packed on Ice N ___ Y ✓

Quote #:

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Date Results Needed

Chain of Custody Page 1 of 1

Pace Analytical®

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # 1432587

C158

Acctnum: **AQUAOPKS**
Template: **T136014**
Prelogin: **P885801**
PM: **206 - Jeff Carr**
PB:
Shipped Via: **FedEX Ground**

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	Anions (Cld, F, SO4) 125mlHDPE-NoPres	B, Ca - 6010 250mlHDPE-HNO3	TDS 250mlHDPE-NoPres	Remarks	Sample # (lab only)
MW-504	GRAB	GW	—	11/15/21	1355	3	X	X	X		-01
MW-505	↓	GW	—	↓	1435	3	X	X	X		-02
MW-506		GW	—		1235	3	X	X	X		-03
MW-510		GW	—		1435	3	X	X	X		-04
MW-512		GW	—		1030	3	X	X	X		-05
MW-601		GW	—		1110	3	X	X	X		-06
601 MS/MSD		GW	—		1115	3	X	X	X		
DUPLICATE		GW	—		1120	3	X	X	X		-07

* Matrix:
SS - Soil AIR - Air F - Filter
GW - Groundwater B - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other________

Remarks:

pH ______ Temp ______
Flow ______ Other ______

Samples returned via: __ UPS ✓ FedEx __ Courier ________

Tracking # 5300 4294 6205/6249/6250/6282

Sample Receipt Checklist
COC Seal Present/Intact: __NP ✓Y __N
COC Signed/Accurate: ✓Y __N
Bottles arrive intact: ✓Y __N
Correct bottles used: ✓Y __N
Sufficient volume sent: ✓Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: ✓Y __N
RAD Screen <0.5 mR/hr: ✓Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / (No) HCL / MeoH TBR	
[signature]	11/16/21	1600			
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: [illegible] °C 0.6+0=0.6 Bottles Received: 24	If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature) [signature]	Date: 11-17-21 Time: 0900	Hold: Condition: NCF / (OK)

Jared Morrison
December 16, 2022

ATTACHMENT 2

Statistical Analyses

Jared Morrison
December 16, 2022

ATTACHMENT 2-1

Fall 2020 Semiannual Detection Monitoring Statistical Analyses

MEMORANDUM

March 24, 2021

To: Sibley Generating Station
33200 E Johnson Road
Sibley, Missouri 64088
Evergy Missouri West, Inc.

From: SCS Engineers

RE: Determination of Statistically Significant Increases - CCR Landfill
Fall 2020 Semiannual Detection Monitoring 40 CFR 257.94

Statistical analysis of monitoring data from the groundwater monitoring system for the CCR Landfill 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 11, 2020. Review and validation of the results from the November 2020 Detection Monitoring Event was completed on December 24, 2020, 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 February 3, 2021 and March 1, 2021.

The completed statistical evaluation identified one Appendix III constituent above the prediction limit established for monitoring well MW-506 and four Appendix III constituents above the prediction limits established for monitoring well MW-512.

Constituent/Monitoring Well	*UPL	Observation November 11, 2020	1st Verification February 3, 2021	2nd Verification March 1, 2021
Calcium				
MW-512	111.3	115	117	117
Chloride				
MW-512	5.094	9.75	10.5	10.4
Total Dissolved Solids				
MW-512	466.4	508	487	508
Sulfate				
MW-506	76.83	87	87.3	88.9
MW-512	44.8	92.6	99.8	99.9

*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 identified five SSIs above the background prediction limits. These include sulfate at monitoring well MW-506 and calcium, chloride, total dissolved solids, and sulfate at monitoring well MW-512.

Attached to this memorandum are the following backup information:

Attachment 1: Sanitas™ Output:

Statistical evaluation output from Sanitas™ for the prediction limit analysis. This includes prediction limit plots, prediction limit background data, detection sample results, 1st verification re-sample results (when applicable), 2nd verification re-sample results (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
CCR Landfill
March 24, 2021

ATTACHMENT 1

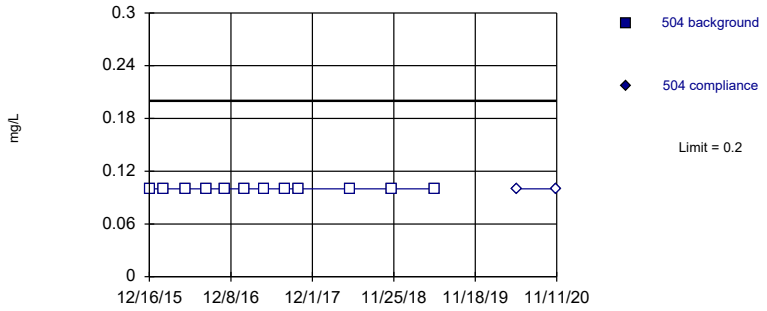
Sanitas™ Output

Sanitas™ v.9.6.28 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/10/2021 1:12 PM View: LF III

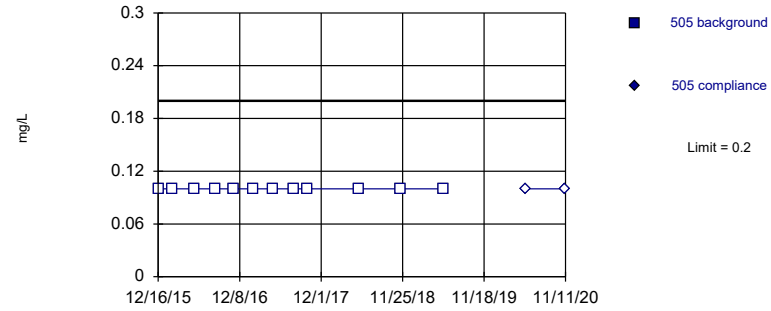
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/10/2021 1:12 PM View: LF III

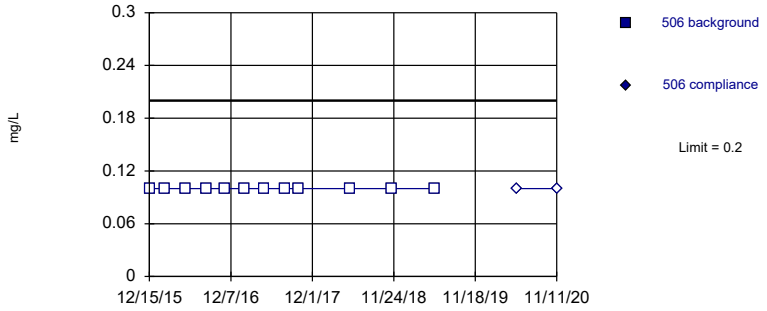
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/10/2021 1:12 PM View: LF III

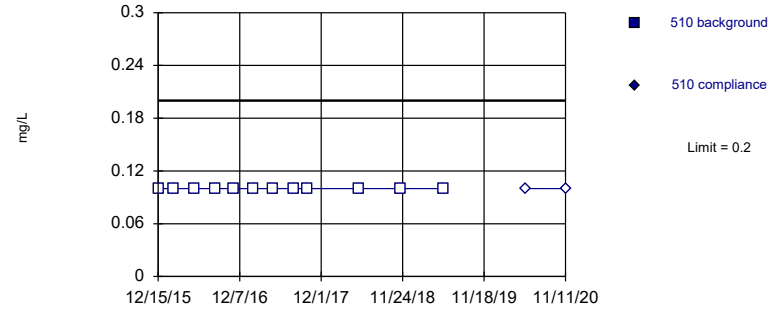
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Boron Analysis Run 3/10/2021 1:17 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

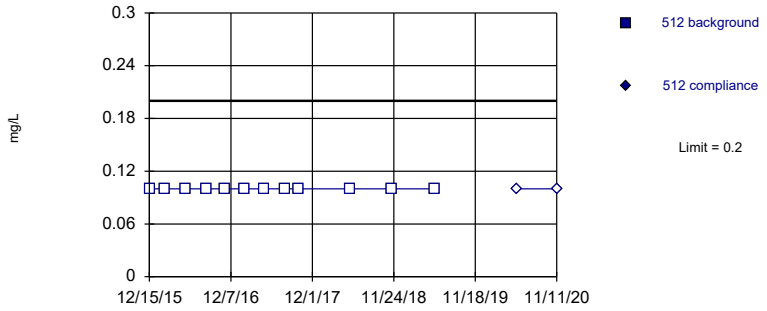
	504	504	505	505	506	506	510	510
12/15/2015					<0.2		<0.2	
12/16/2015	<0.2		<0.2					
2/18/2016	<0.2		<0.2		<0.2		<0.2	
5/25/2016	<0.2		<0.2		<0.2		<0.2	
8/23/2016	<0.2		<0.2		<0.2		<0.2	
11/10/2016							<0.2	
11/11/2016	<0.2		<0.2		<0.2			
2/8/2017	<0.2		<0.2		<0.2		<0.2	
5/3/2017							<0.2	
5/4/2017	<0.2		<0.2		<0.2			
8/1/2017	<0.2		<0.2				<0.2	
8/4/2017					<0.2			
10/3/2017	<0.2		<0.2		<0.2		<0.2	
5/17/2018	<0.2		<0.2		<0.2		<0.2	
11/15/2018	<0.2		<0.2		<0.2		<0.2	
5/22/2019	<0.2		<0.2		<0.2		<0.2	
5/18/2020		<0.2		<0.2		<0.2		<0.2
11/11/2020		<0.2		<0.2		<0.2		<0.2

Sanitas™ v.9.6.28 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/10/2021 1:12 PM View: LF III

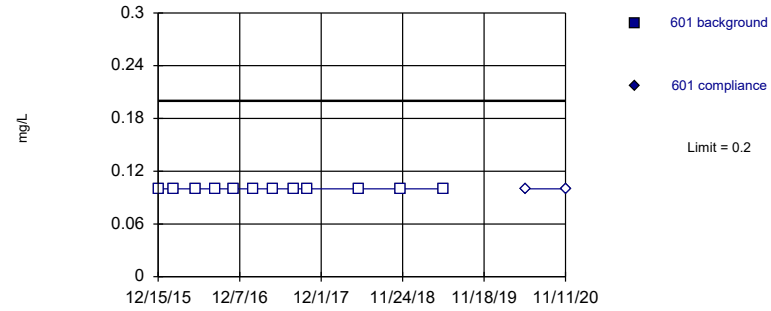
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 3/10/2021 1:12 PM View: LF III

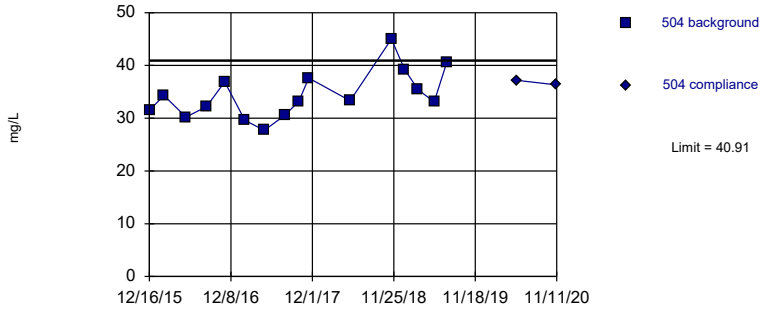
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=34.4, Std. Dev.=4.551, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9536, critical = 0.844. Kappa = 1.43 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 3/10/2021 1:12 PM View: LF III

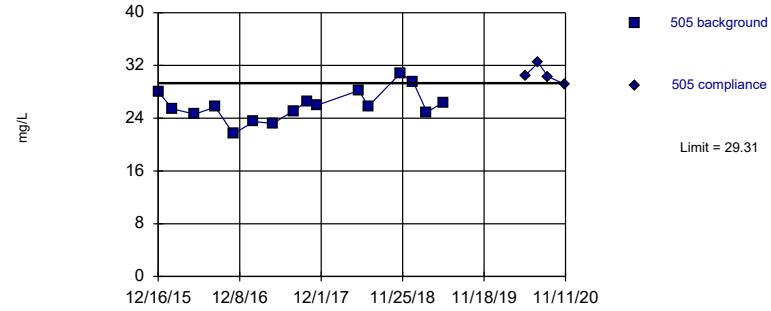
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=25.96, Std. Dev.=2.346, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9775, critical = 0.844. Kappa = 1.43 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Boron, Calcium Analysis Run 3/10/2021 1:17 PM View: LF III

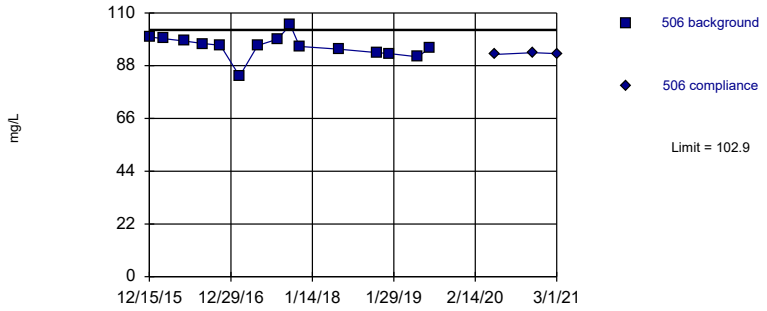
Sibley Client: SCS Engineers Data: Sibley

	512	512	601	601	504	504	505	505	
12/15/2015	<0.2		<0.2						
12/16/2015					31.5		28		
2/18/2016	<0.2		<0.2		34.3		25.4		
5/25/2016	<0.2				30.2		24.6		
5/26/2016			<0.2						
8/23/2016	<0.2		<0.2		32.2		25.7		
11/11/2016	<0.2		<0.2		36.9		21.6		
2/8/2017	<0.2		<0.2		29.6		23.5		
5/3/2017	<0.2		<0.2						
5/4/2017					27.7		23.2		
8/1/2017	<0.2		<0.2		30.5		25.1		
10/3/2017	<0.2		<0.2		33.2		26.6		
11/16/2017					37.6		26		
5/17/2018	<0.2		<0.2		33.3		28.2		
6/27/2018							25.8		
11/15/2018	<0.2		<0.2		45		30.8		
1/11/2019					39.3		29.5		
3/12/2019					35.4		24.9		
5/22/2019	<0.2		<0.2		33.1		26.4		
7/16/2019					40.6				
5/18/2020		<0.2		<0.2		37.2		30.5	
7/14/2020								32.4	1st Verification
8/26/2020								30.3	2nd Verification
11/11/2020		<0.2		<0.2		36.3		29.1	

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=95.97, Std. Dev.=4.734, n=15. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9252, critical = 0.835. Kappa = 1.458 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

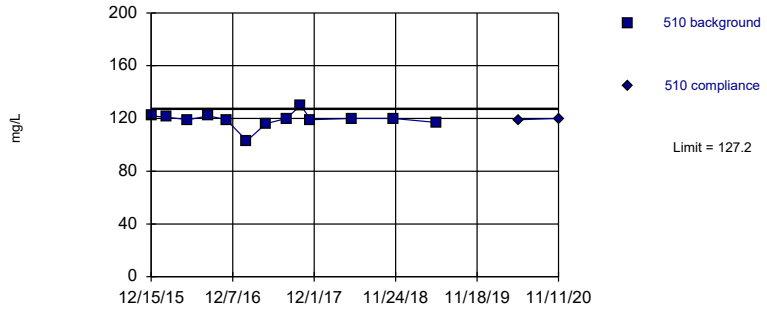
Constituent: Calcium Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube transformation): Mean=1699613, Std. Dev.=238011, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8274, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

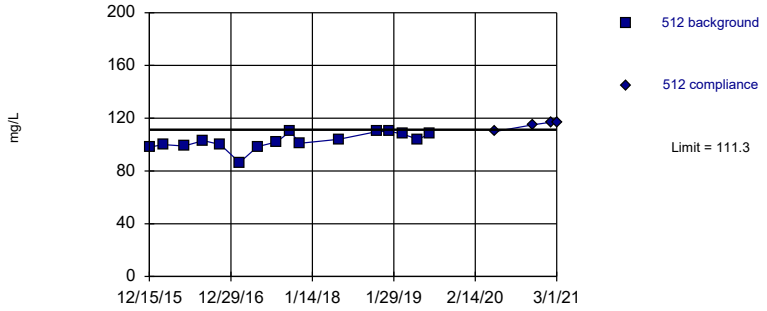
Constituent: Calcium Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=102.6, Std. Dev.=6.094, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.892, critical = 0.844. Kappa = 1.43 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

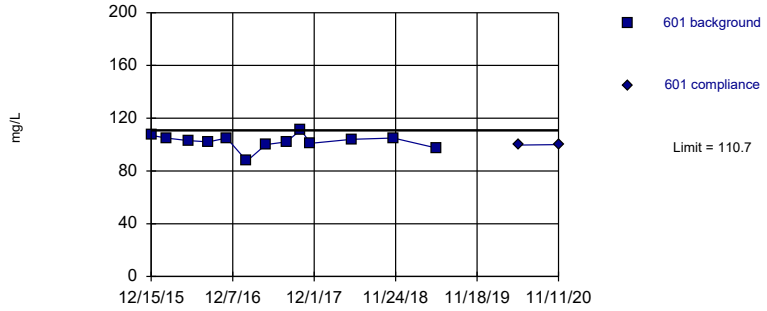
Constituent: Calcium Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=102.3, Std. Dev.=5.577, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8789, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Calcium Analysis Run 3/10/2021 1:17 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

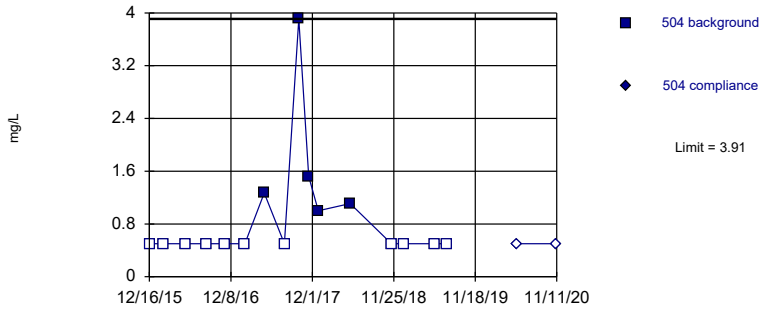
	506	506	510	510	512	512	601	601
12/15/2015	100		122		98.1		107	
2/18/2016	99.3		121		100		105	
5/25/2016	98.3		119		98.9			
5/26/2016							103	
8/23/2016	97.2		122		103		102	
11/10/2016			119					
11/11/2016	96.5				100		105	
2/8/2017	83.6		103		86.4		87.5	
5/3/2017			116		98.4		100	
5/4/2017	96.4							
8/1/2017			120		102		102	
8/4/2017	99							
10/3/2017	105		130		110		111	
11/16/2017	96		119		101		101	
5/17/2018	94.9		120		104		104	
11/15/2018	93.4		120		110		105	
1/11/2019	93				110			
3/12/2019					108			
5/22/2019	91.7		117		104		97.4	
7/16/2019	95.3				108			
5/18/2020		92.7		119		110		99.6
11/11/2020		93.4		120		115		100
2/3/2021						117	1st Verification	
3/1/2021		93	Extra Sample			117	2nd Verification	

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 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Chloride Analysis Run 3/10/2021 1:12 PM View: LF III

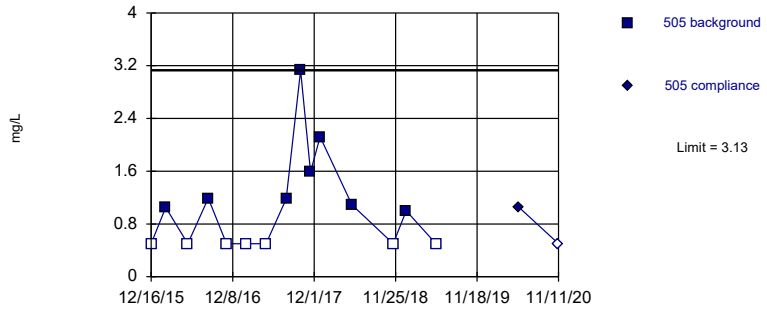
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 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 the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 15 background values. 46.67% NDs. Well-constituent pair annual alpha = 0.002624. Individual comparison alpha = 0.001313 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Chloride Analysis Run 3/10/2021 1:12 PM View: LF III

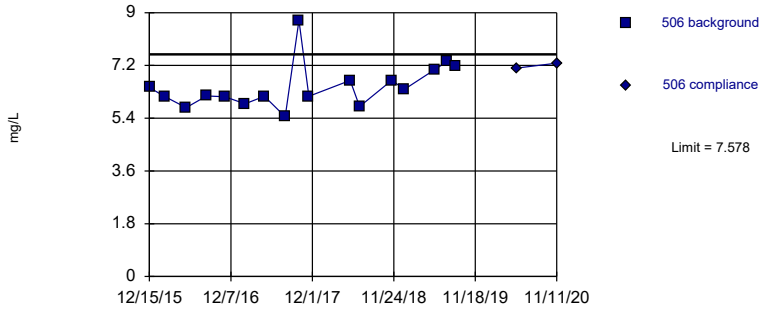
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.479, Std. Dev.=0.7774, n=17. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.851. Kappa = 1.413 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Chloride Analysis Run 3/10/2021 1:12 PM View: LF III

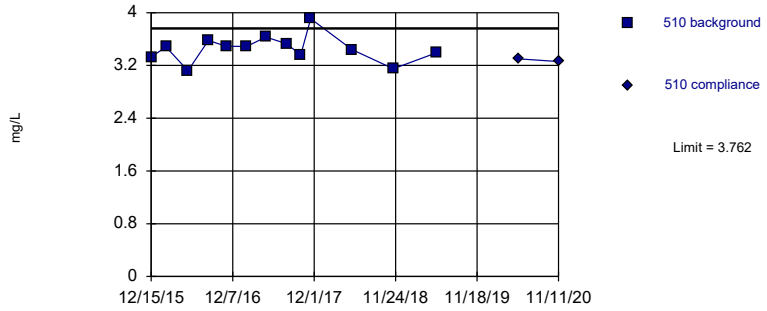
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.28 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.454, Std. Dev.=0.2034, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9481, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Chloride Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Chloride Analysis Run 3/10/2021 1:17 PM View: LF III

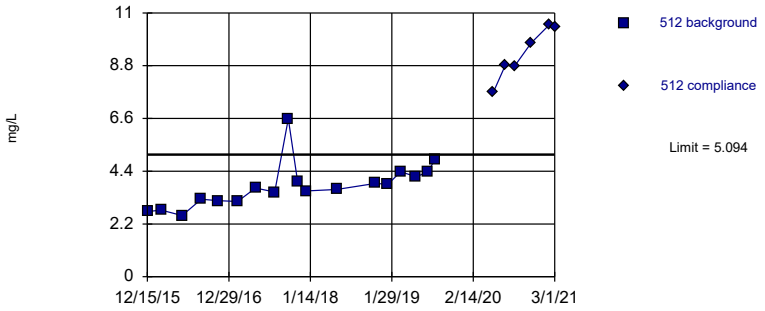
Sibley Client: SCS Engineers Data: Sibley

	504	504	505	505	506	506	510	510
12/15/2015					6.45		3.33	
12/16/2015	<1		<1					
2/18/2016	<1		1.05		6.15		3.48	
5/25/2016	<1		<1		5.76		3.12	
8/23/2016	<1		1.19		6.16		3.58	
11/10/2016							3.49	
11/11/2016	<1		<1		6.13			
2/8/2017	<1		<1		5.89		3.49	
5/3/2017							3.63	
5/4/2017	1.27		<1		6.15			
8/1/2017	<1		1.18				3.53	
8/4/2017					5.45			
10/3/2017	3.91		3.13		8.74		3.36	
11/16/2017	1.52		1.59		6.15		3.91	
12/28/2017	1		2.12					
5/17/2018	1.11		1.09		6.69		3.44	
6/27/2018					5.8			
11/15/2018	<1		<1		6.69		3.15	
1/11/2019	<1		1		6.39			
5/22/2019	<1		<1		7.05		3.39	
7/16/2019	<1				7.33			
8/21/2019					7.17			
5/18/2020		<1		1.06		7.11		3.3
11/11/2020		<1		<1		7.28		3.26

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.786, Std. Dev.=0.9366, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8846, critical = 0.858. Kappa = 1.396 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

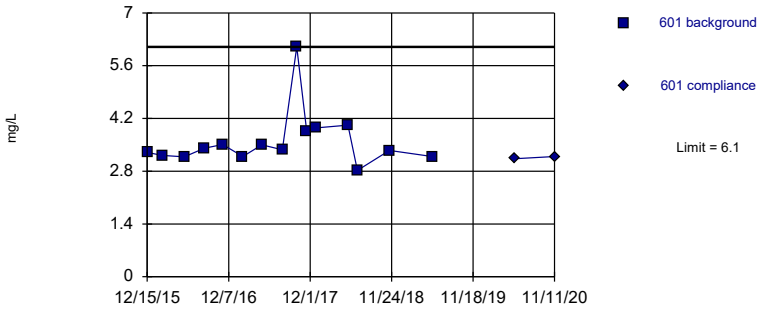
Constituent: Chloride Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 15 background values. Well-constituent pair annual alpha = 0.002624. Individual comparison alpha = 0.001313 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

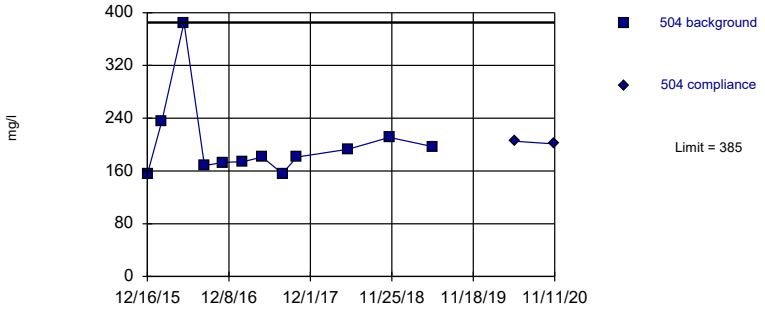
Constituent: Chloride Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

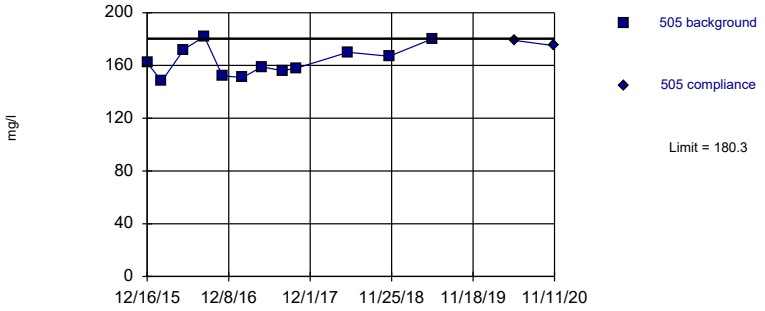
Constituent: Dissolved Solids Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=163.1, Std. Dev.=11.19, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9461, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Chloride, Dissolved Solids Analysis Run 3/10/2021 1:17 PM View: LF III

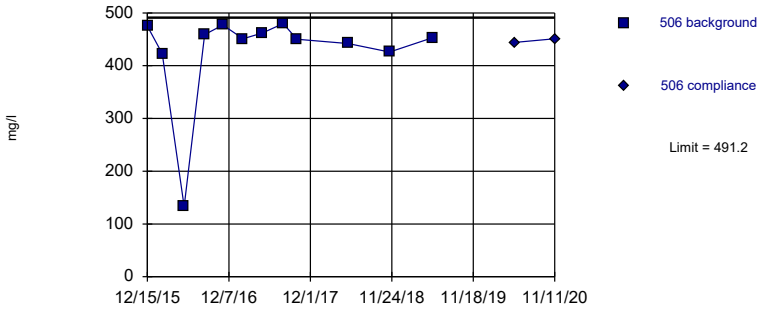
Sibley Client: SCS Engineers Data: Sibley

	512	512		601	601	504	504	505	505
12/15/2015	2.72			3.3					
12/16/2015						155		162	
2/18/2016	2.78			3.22		236		148	
5/25/2016	2.55					385		172	
5/26/2016				3.18					
8/23/2016	3.23			3.41		168		182	
11/11/2016	3.17			3.51		173		152	
2/8/2017	3.14			3.19		174		151	
5/3/2017	3.7			3.5					
5/4/2017						181		159	
8/1/2017	3.53			3.37		156		156	
10/3/2017	6.59			6.1		181		158	
11/16/2017	3.97			3.87					
12/28/2017	3.58			3.95					
5/17/2018	3.64			4.02		193		170	
6/27/2018				2.82					
11/15/2018	3.89			3.35		211		167	
1/11/2019	3.85								
3/12/2019	4.38								
5/22/2019	4.17			3.19		197		180	
7/16/2019	4.35								
8/21/2019	4.91								
5/18/2020		7.69			3.13		205		179
7/14/2020		8.83	1st Verification						
8/26/2020		8.79	2nd Verification						
11/11/2020		9.75			3.19		201		175
2/3/2021		10.5	1st Verification						
3/1/2021		10.4	2nd Verification						

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on x^5 transformation): Mean=1.8e13, Std. Dev.=6.8e12, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8456, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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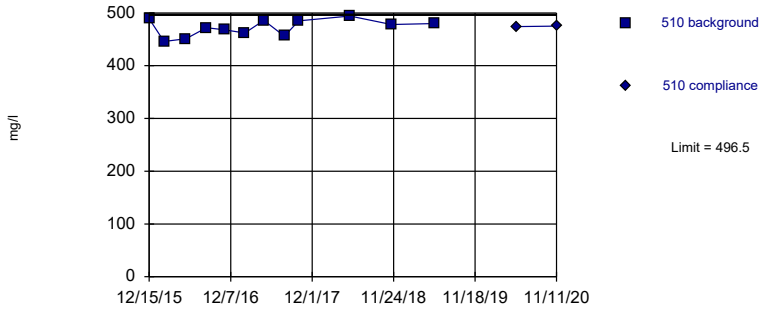
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=472.3, Std. Dev.=15.74, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.95, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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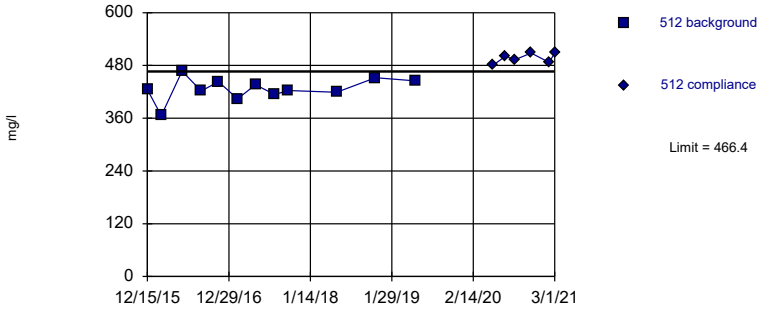
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=426.3, Std. Dev.=25.95, n=12. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9454, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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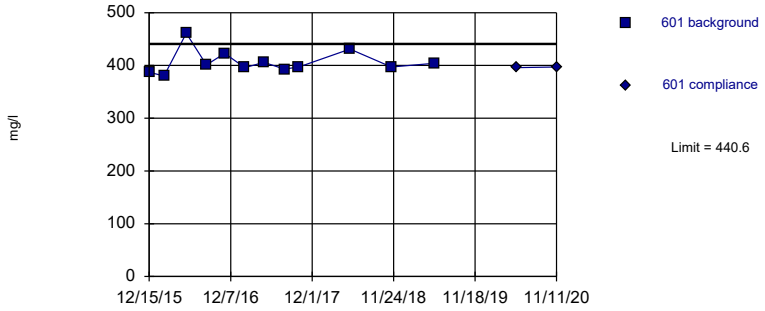
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=406.3, Std. Dev.=22.23, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8601, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 3/10/2021 1:12 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Dissolved Solids Analysis Run 3/10/2021 1:17 PM View: LF III

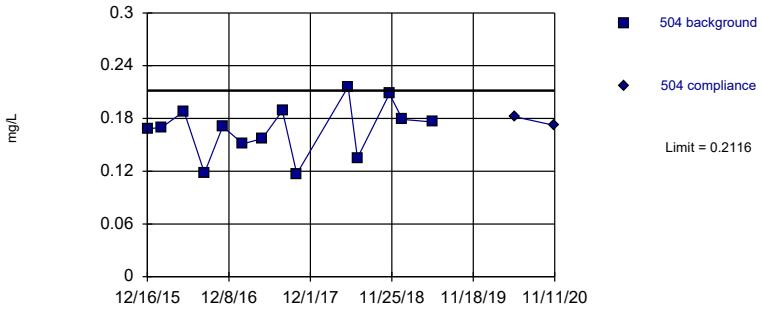
Sibley Client: SCS Engineers Data: Sibley

	506	506	510	510	512	512	601	601
12/15/2015	475		489		425		387	
2/18/2016	423		446		366		380	
5/25/2016	133		451		467			
5/26/2016							461	
8/23/2016	459		472		422		401	
11/10/2016			468					
11/11/2016	477				443		423	
2/8/2017	451		462		404		396	
5/3/2017			486		436		406	
5/4/2017	462							
8/1/2017			456		414		393	
8/4/2017	480							
10/3/2017	450		485		423		397	
5/17/2018	442		494		419		431	
11/15/2018	426		478		452		397	
5/22/2019	453		480		445		404	
5/18/2020		444		474		481		396
7/14/2020						501 1st Verification		
8/26/2020						493 2nd Verification		
11/11/2020		451		475		508		397
2/3/2021						487 1st Verification		
3/1/2021						508 2nd Verification		

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1674, Std. Dev.=0.02979, n=14. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.958, critical = 0.825. Kappa = 1.486 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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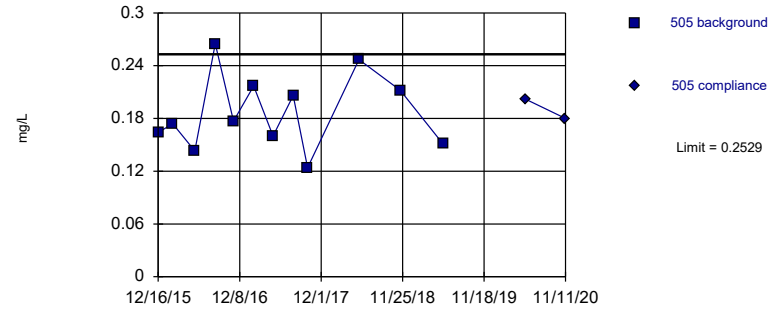
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1867, Std. Dev.=0.04296, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9585, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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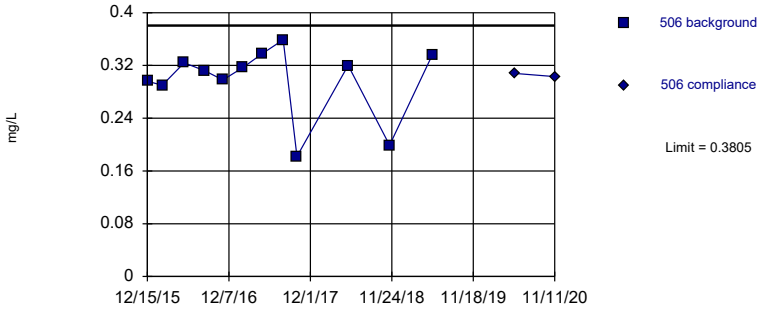
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2976, Std. Dev.=0.05377, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8104, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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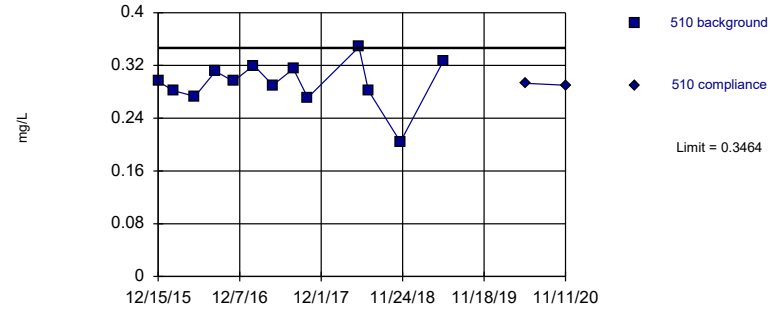
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2934, Std. Dev.=0.03503, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9129, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Fluoride Analysis Run 3/10/2021 1:17 PM View: LF III

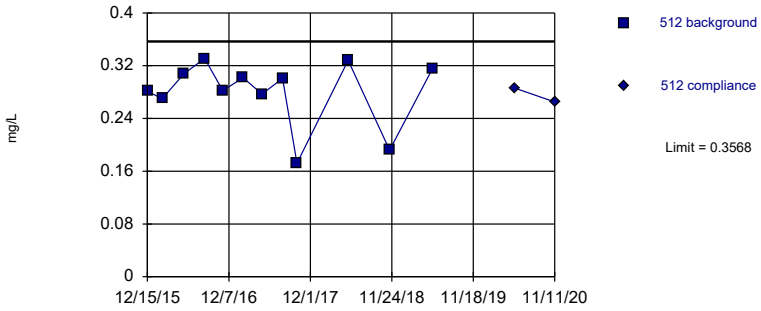
Sibley Client: SCS Engineers Data: Sibley

	504	504	505	505	506	506	510	510
12/15/2015					0.296		0.296	
12/16/2015	0.168		0.164					
2/18/2016	0.17		0.174		0.29		0.282	
5/25/2016	0.188		0.143		0.324		0.273	
8/23/2016	0.118		0.265		0.312		0.311	
11/10/2016							0.296	
11/11/2016	0.171		0.177		0.298			
2/8/2017	0.151		0.217		0.317		0.32	
5/3/2017							0.29	
5/4/2017	0.157		0.16		0.338			
8/1/2017	0.189		0.206				0.315	
8/4/2017					0.359			
10/3/2017	0.117		0.124		0.182		0.271	
5/17/2018	0.216		0.247		0.32		0.348	
6/27/2018	0.135						0.282	
11/15/2018	0.208		0.212		0.199		0.204	
1/11/2019	0.179							
5/22/2019	0.176		0.151		0.336		0.326	
5/18/2020		0.182		0.202		0.308		0.293
11/11/2020		0.172		0.18		0.303		0.29

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2799, Std. Dev.=0.04987, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8252, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

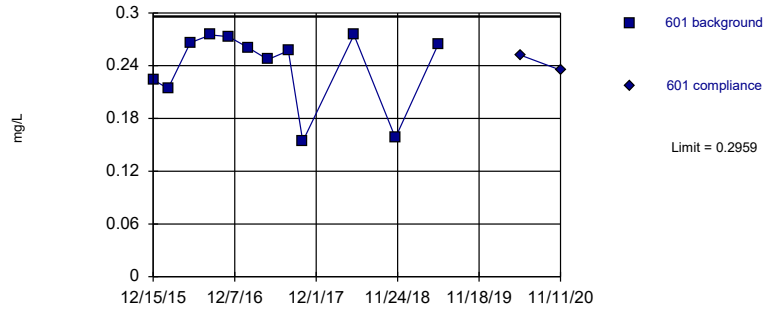
Constituent: Fluoride Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=0.0588, Std. Dev.=0.01866, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8225, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

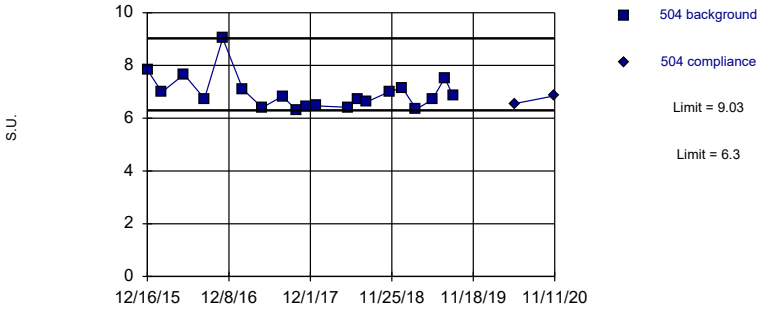
Constituent: Fluoride Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 20 background values. Well-constituent pair annual alpha = 0.00225. Individual comparison alpha = 0.001125 (1 of 3). Seasonality was not detected with 95% confidence.

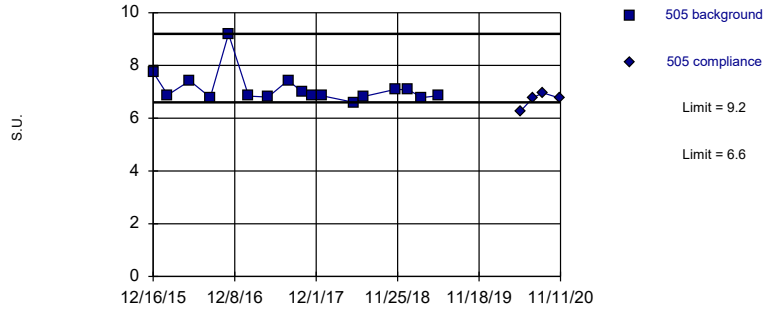
Constituent: pH Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 17 background values. Well-constituent pair annual alpha = 0.003639. Individual comparison alpha = 0.00182 (1 of 3). Seasonality was not detected with 95% confidence.

Constituent: pH Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Fluoride, pH Analysis Run 3/10/2021 1:17 PM View: LF III

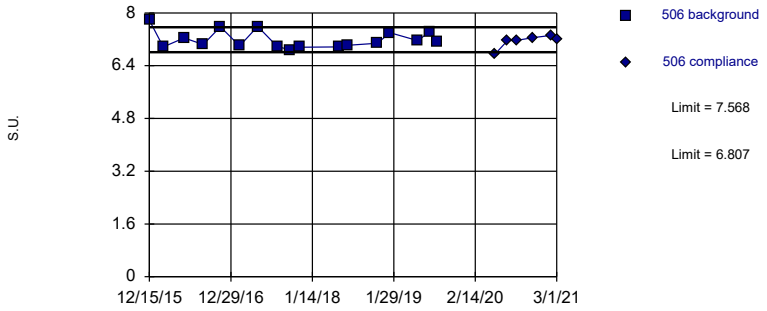
Sibley Client: SCS Engineers Data: Sibley

	512	512	601	601	504	504	505	505	
12/15/2015	0.281		0.224						
12/16/2015					7.83		7.74		
2/18/2016	0.27		0.214		6.99		6.88		
5/25/2016	0.308				7.66		7.42		
5/26/2016			0.266						
8/23/2016	0.331		0.275		6.74		6.79		
11/11/2016	0.282		0.273		9.03		9.2		
2/8/2017	0.302		0.26		7.09		6.84		
5/3/2017	0.277		0.247						
5/4/2017					6.4		6.8		
8/1/2017	0.301		0.257		6.83		7.44		
10/3/2017	0.172		0.154		6.3		6.98		
11/16/2017					6.45		6.84		
12/28/2017					6.47		6.85		
5/17/2018	0.328		0.275		6.41		6.6		
6/27/2018					6.7		6.82		
8/8/2018					6.62				
11/15/2018	0.192		0.158		7.01		7.09		
1/11/2019					7.15		7.08		
3/12/2019					6.34		6.78		
5/22/2019	0.315		0.264		6.7		6.85		
7/16/2019					7.53				
8/21/2019					6.85				
5/18/2020		0.286		0.252		6.55		6.26	
7/14/2020								6.79	1st Verification
8/26/2020								6.96	Extra Sample
11/11/2020		0.265		0.235		6.85		6.75	

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.188, Std. Dev.=0.2694, n=17. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8664, critical = 0.851. Kappa = 1.413 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: pH Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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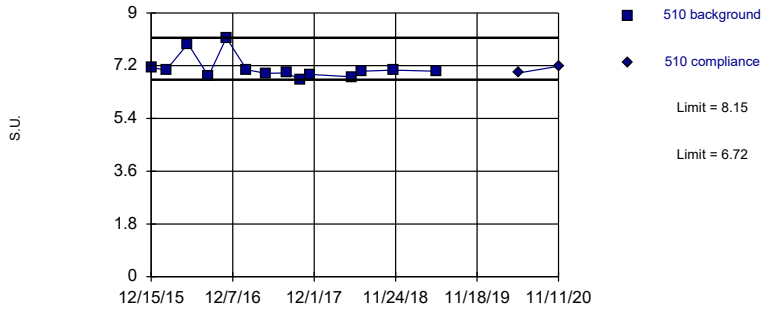
Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 14 background values. Well-constituent pair annual alpha = 0.006393. Individual comparison alpha = 0.003199 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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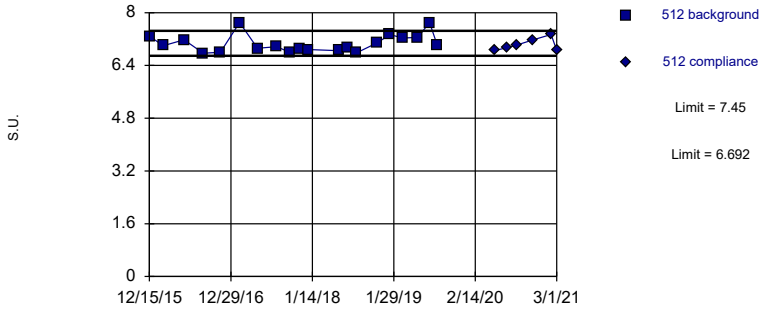
Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.071, Std. Dev.=0.2785, n=20. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8734, critical = 0.868. Kappa = 1.362 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: pH Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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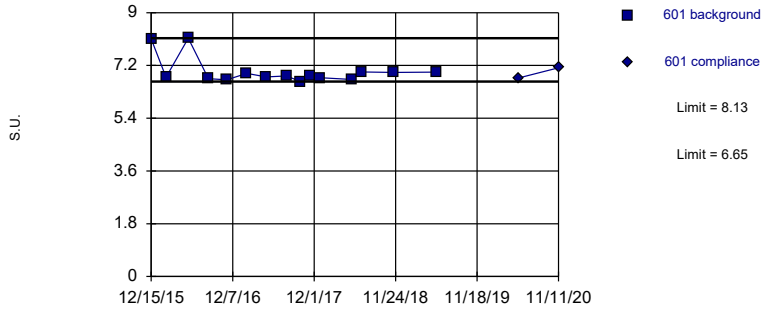
Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 15 background values. Well-constituent pair annual alpha = 0.005248. Individual comparison alpha = 0.002625 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: pH Analysis Run 3/10/2021 1:17 PM View: LF III

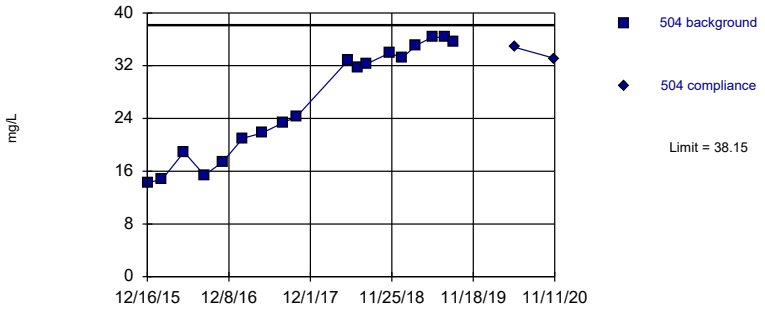
Sibley Client: SCS Engineers Data: Sibley

	506	506		510	510	512	512		601	601
12/15/2015	7.78			7.14		7.29			8.11	
2/18/2016	6.97			7.05		7			6.8	
5/25/2016	7.24			7.95		7.18				
5/26/2016									8.13	
8/23/2016	7.04			6.84		6.77			6.75	
11/10/2016				8.15						
11/11/2016	7.58					6.8			6.71	
2/8/2017	7			7.06		7.7			6.93	
5/3/2017				6.94		6.92				
5/4/2017	7.59								6.81	
8/1/2017				6.95		6.97			6.84	
8/4/2017	6.98									
10/3/2017	6.88			6.72		6.79			6.65	
11/16/2017	6.96			6.9		6.92			6.84	
12/28/2017						6.88			6.78	
5/17/2018	6.97			6.82		6.85			6.72	
6/27/2018	7.02			7.01		6.95			6.98	
8/8/2018						6.78				
11/15/2018	7.08			7.05		7.09			6.96	
1/11/2019	7.4					7.34				
3/12/2019						7.23				
5/22/2019	7.16			7.01		7.25			6.97	
7/16/2019	7.43					7.7				
8/21/2019	7.11					7.01				
5/18/2020		6.76			6.95		6.86			6.77
7/14/2020		7.16	1st Verification				6.94	1st Verification		
8/26/2020		7.17	Extra Sample				7.02	Extra Sample		
11/11/2020		7.25			7.18		7.18			7.12
2/3/2021		7.32	Extra Sample				7.34	Extra Sample		
3/1/2021		7.21	Extra Sample				6.86	Extra Sample		

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=26.58, Std. Dev.=8.293, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8677, critical = 0.858. Kappa = 1.396 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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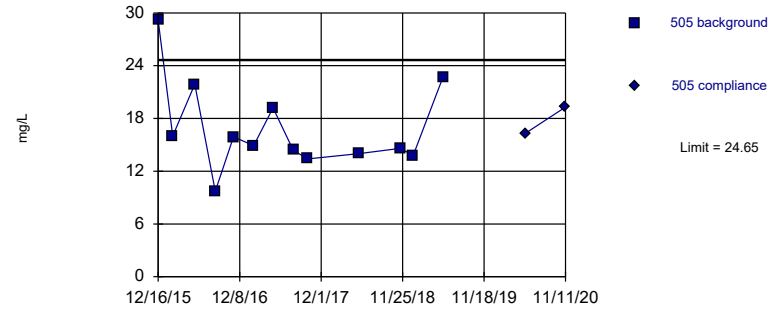
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=16.9, Std. Dev.=5.117, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8783, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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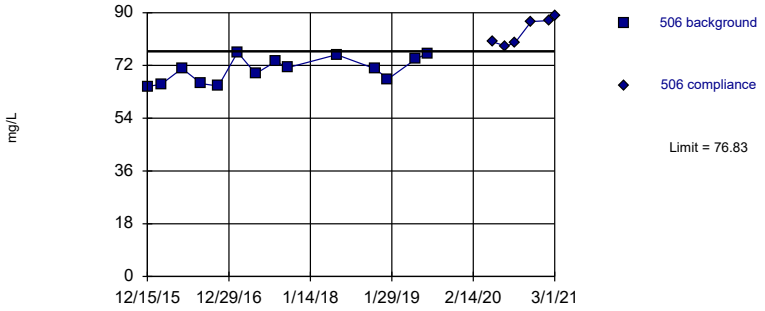
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=70.47, Std. Dev.=4.276, n=14. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9125, critical = 0.825. Kappa = 1.486 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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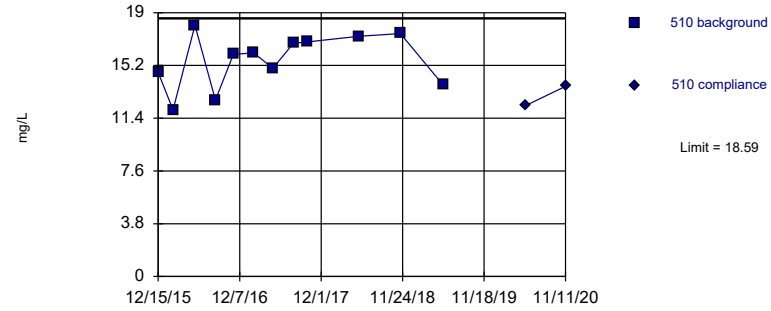
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=15.58, Std. Dev.=1.955, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9362, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Sulfate Analysis Run 3/10/2021 1:17 PM View: LF III

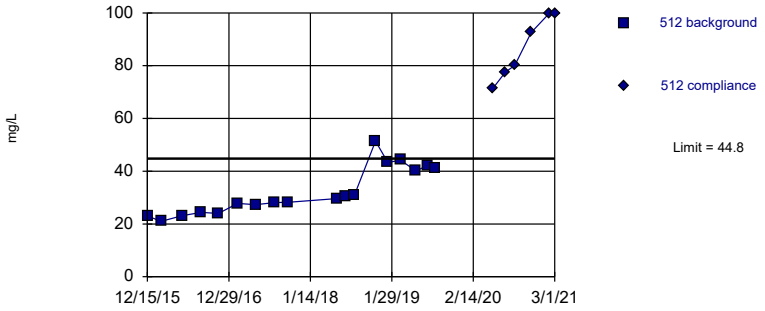
Sibley Client: SCS Engineers Data: Sibley

	504	504	505	505	506	506	510	510
12/15/2015					64.8		14.7	
12/16/2015	14.3		29.2					
2/18/2016	14.7		16		65.6		12	
5/25/2016	18.9		21.9		71		18.1	
8/23/2016	15.4		9.73		65.8		12.7	
11/10/2016							16	
11/11/2016	17.4		15.9		65			
2/8/2017	21		14.9		76.5		16.1	
5/3/2017							15	
5/4/2017	21.8		19.2		69.2			
8/1/2017	23.3		14.4				16.8	
8/4/2017					73.3			
10/3/2017	24.3		13.4		71.3		16.9	
5/17/2018	32.8		14		75.7		17.3	
6/27/2018	31.8							
8/8/2018	32.3							
11/15/2018	33.9		14.6		70.8		17.5	
1/11/2019	33.2		13.8		67.3			
3/12/2019	35.1							
5/22/2019	36.3		22.7		74.2		13.8	
7/16/2019	36.3				76.1			
8/21/2019	35.6							
5/18/2020		34.8		16.3		80		12.3
7/14/2020						78.6 1st Verification		
8/26/2020						79.6 2nd Verification		
11/11/2020		33.1		19.3		87		13.7
2/3/2021						87.3 1st Verification		
3/1/2021						88.8 2nd Verification		

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=32.21, Std. Dev.=9.019, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8926, critical = 0.858. Kappa = 1.396 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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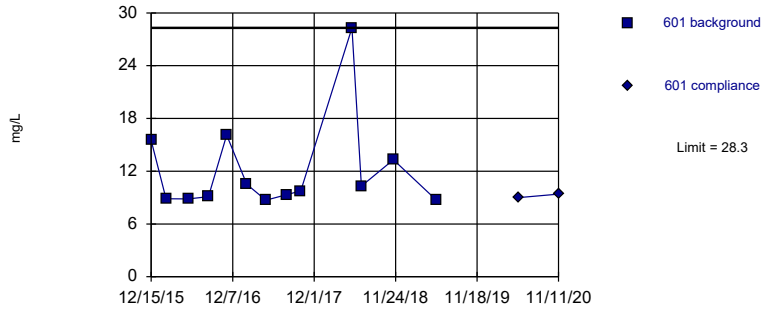
Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 13 background values. Well-constituent pair annual alpha = 0.003769. Individual comparison alpha = 0.001886 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Sulfate Analysis Run 3/10/2021 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Sulfate Analysis Run 3/10/2021 1:17 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	512	512		601	601
12/15/2015	23			15.5	
2/18/2016	21			8.87	
5/25/2016	23.1				
5/26/2016				8.85	
8/23/2016	24.4			9.11	
11/11/2016	24			16.1	
2/8/2017	27.8			10.5	
5/3/2017	27.3			8.71	
8/1/2017	28.1			9.33	
10/3/2017	28.2			9.76	
5/17/2018	29.6			28.3	
6/27/2018	30.3			10.3	
8/8/2018	30.9				
11/15/2018	51.4			13.3	
1/11/2019	43.3				
3/12/2019	44.2				
5/22/2019	40.1			8.74	
7/16/2019	42.1				
8/21/2019	41				
5/18/2020		71.6			9
7/14/2020		77.6	1st Verification		
8/26/2020		80.1	2nd Verification		
11/11/2020		92.6			9.39
2/3/2021		99.8	1st Verification		
3/1/2021		99.9	2nd Verification		

Prediction Limit

Sibley Client: SCS Engineers Data: Sibley Printed 3/10/2021, 1:17 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	504	0.2	n/a	11/11/2020	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	505	0.2	n/a	11/11/2020	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	506	0.2	n/a	11/11/2020	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	510	0.2	n/a	11/11/2020	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	512	0.2	n/a	11/11/2020	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	601	0.2	n/a	11/11/2020	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Calcium (mg/L)	504	40.91	n/a	11/11/2020	36.3	No	16	0	No	0.00188	Param Intra 1 of 3
Calcium (mg/L)	505	29.31	n/a	11/11/2020	29.1	No	16	0	No	0.00188	Param Intra 1 of 3
Calcium (mg/L)	506	102.9	n/a	3/1/2021	93	No	15	0	No	0.00188	Param Intra 1 of 3
Calcium (mg/L)	510	127.2	n/a	11/11/2020	120	No	13	0	x^3	0.00188	Param Intra 1 of 3
Calcium (mg/L)	**512**	**111.3**	**n/a**	**3/1/2021**	**117**	**Yes**	**16**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Calcium (mg/L)	601	110.7	n/a	11/11/2020	100	No	13	0	No	0.00188	Param Intra 1 of 3
Chloride (mg/L)	504	3.91	n/a	11/11/2020	0.5ND	No	16	68.75	n/a	0.001026	NP Intra (NDs) 1 of 3
Chloride (mg/L)	505	3.13	n/a	11/11/2020	0.5ND	No	15	46.67	n/a	0.001313	NP Intra (normality) ...
Chloride (mg/L)	506	7.578	n/a	11/11/2020	7.28	No	17	0	No	0.00188	Param Intra 1 of 3
Chloride (mg/L)	510	3.762	n/a	11/11/2020	3.26	No	13	0	No	0.00188	Param Intra 1 of 3
Chloride (mg/L)	**512**	**5.094**	**n/a**	**3/1/2021**	**10.4**	**Yes**	**18**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Chloride (mg/L)	601	6.1	n/a	11/11/2020	3.19	No	15	0	n/a	0.001313	NP Intra (normality) ...
Dissolved Solids (mg/l)	504	385	n/a	11/11/2020	201	No	12	0	n/a	0.002173	NP Intra (normality) ...
Dissolved Solids (mg/l)	505	180.3	n/a	11/11/2020	175	No	12	0	No	0.00188	Param Intra 1 of 3
Dissolved Solids (mg/l)	506	491.2	n/a	11/11/2020	451	No	12	0	x^5	0.00188	Param Intra 1 of 3
Dissolved Solids (mg/l)	510	496.5	n/a	11/11/2020	475	No	12	0	No	0.00188	Param Intra 1 of 3
Dissolved Solids (mg/l)	**512**	**466.4**	**n/a**	**3/1/2021**	**508**	**Yes**	**12**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Dissolved Solids (mg/l)	601	440.6	n/a	11/11/2020	397	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	504	0.2116	n/a	11/11/2020	0.172	No	14	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	505	0.2529	n/a	11/11/2020	0.18	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	506	0.3805	n/a	11/11/2020	0.303	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	510	0.3464	n/a	11/11/2020	0.29	No	13	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	512	0.3568	n/a	11/11/2020	0.265	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	601	0.2959	n/a	11/11/2020	0.235	No	12	0	x^2	0.00188	Param Intra 1 of 3
pH (S.U.)	504	9.03	6.3	11/11/2020	6.85	No	20	0	n/a	0.001125	NP Intra (normality) ...
pH (S.U.)	505	9.2	6.6	11/11/2020	6.75	No	17	0	n/a	0.00182	NP Intra (normality) ...
pH (S.U.)	506	7.568	6.807	3/1/2021	7.21	No	17	0	No	0.000...	Param Intra 1 of 3
pH (S.U.)	510	8.15	6.72	11/11/2020	7.18	No	14	0	n/a	0.003199	NP Intra (normality) ...
pH (S.U.)	512	7.45	6.692	3/1/2021	6.86	No	20	0	No	0.000...	Param Intra 1 of 3
pH (S.U.)	601	8.13	6.65	11/11/2020	7.12	No	15	0	n/a	0.002625	NP Intra (normality) ...
Sulfate (mg/L)	504	38.15	n/a	11/11/2020	33.1	No	18	0	No	0.00188	Param Intra 1 of 3
Sulfate (mg/L)	505	24.65	n/a	11/11/2020	19.3	No	13	0	No	0.00188	Param Intra 1 of 3
Sulfate (mg/L)	**506**	**76.83**	**n/a**	**3/1/2021**	**88.8**	**Yes**	**14**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Sulfate (mg/L)	510	18.59	n/a	11/11/2020	13.7	No	12	0	No	0.00188	Param Intra 1 of 3
Sulfate (mg/L)	**512**	**44.8**	**n/a**	**3/1/2021**	**99.9**	**Yes**	**18**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Sulfate (mg/L)	601	28.3	n/a	11/11/2020	9.39	No	13	0	n/a	0.001886	NP Intra (normality) ...

ATTACHMENT 2

Sanitas™ Configuration Settings

Data | Output | Trend Test | Control Cht | Prediction Lim | Tolerance Lim | Conf/Tol Int | ANOVA | Welchs | Other Tests

Exclude data flags: i

Data Reading Options

- (•) Individual Observations
- ( ) Mean of Each: ( ) Month
- ( ) Median of Each: ( ) Season

Non-Detect / Trace Handling...

Setup Seasons...

[ ] Automatically Process Resamples...

Data | Output | Trend Test | Control Cht | Prediction Lim | Tolerance Lim | Conf/Tol Int | ANOVA | Welchs | Other Tests

- [ ] Black and White Output
- [x] Four Plots Per Page
  - [x] Always Combine Data Pages...
  - [x] Include Tick Marks on Data Page
  - [ ] Use Constituent Name for Graph Title
- [ ] Draw Border Around Text Reports and Data Pages
- [x] Enlarge/Reduce Fonts (Graphs): 100%
- [x] Enlarge/Reduce Fonts (Data/Text Reports): 100%
- [x] Wide Margins (on reports without explicit setting)
- [ ] Use CAS# (Not Const. Name)
- [ ] Truncate File Names to 20 Characters
- [ ] Include Limit Lines when found in Database...
- [x] Show Deselected Data on Time Series Lighter
- [ ] Show Deselected Data on all Data Pages Light

Setup Symbols and Colors...

- [x] Prompt to Overwrite/Append Summary Tables
- [ ] Round Limits to 2 Sig. Digits (when not set in data file)
- [ ] User-Set Scale
- [x] Indicate Background Data
- [ ] Show Exact Dates
- [ ] Thick Plot Lines

Zoom Factor: 200%

Output Decimal Precision

- ( ) Less Precision
- (•) Normal Precision
- ( ) More Precision

- [x] 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

☐ Use Modified Alpha... 0.02

☑ Test Residuals For Normality (Parametric test only) using Shapiro-Wilk/Francia at Alpha = 0.01

☐ Continue Parametric if Unable to Normalize

Transformation (Parametric test only)

- ◉ Use Ladder of Powers
- ○ Natural Log or No Transformation
- ○ Never Transform
- ○ Use Specific Transformation:

☐ Use Best W Statistic

☐ Plot Transformed Values

Use Non-Parametric Test (Sen's Slope/Mann-Kendall) when Non-Detects Percent > 75

☐ Include 95. % Confidence Interval around Trend Line

☐ Automatically Remove Outliers (Parametric test only)

Note: there is no "Always Use Non-Parametric" checkbox on this tab because, for consistency with prior versions, Sen's Slope / Mann-Kendall (the non-parametric alternative) is available as a report in its own right, under Analysis->Intrawell->Trend.

Data | Output | Trend Test | Control Cht | **Prediction Lim** | Tolerance Lim | Conf/Tol Int | ANOVA | Welchs | Other Tests

☑ Test for Normality using Shapiro-Wilk/Francia at Alpha = 0.01

☑ 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

Transformation

- ◉ Use Ladder of Powers
- ○ Natural Log or No Transformation
- ○ Never Transform
- ○ Use Specific Transformation: Natural Log

☐ Use Best W Statistic

☐ Plot Transformed Values

Deseasonalize (Intra- and InterWell)

- ◉ 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: 2

Constituents Analyzed: 7

Downgradient (Compliance) Wells: 4

Sampling Plan

Comparing Individual Observations

○ 1 of 1 ○ 1 of 2 ◉ 1 of 3 ○ 1 of 4

○ 2 of 4 ("Modified California")

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
- ○ Most Recent Background Value (subst. method)

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...
- [ ] Combine Background Wells on Mann-Whitney...

Outlier Tests

- ( ) EPA 1989 Outlier Screening (fixed alpha of 0.05)
- (•) Dixon's at α= 0.05 or if n > 22 Rosner's at α= 0.01 [x] Use EPA Screening to establish Suspected Outliers
- ( ) Tukey's Outlier Screening, with IQR Multiplier = 3.0 [ ] Use Ladder of Powers to achieve Best W Stat

[x] Test For Normality using Shapiro-Wilk/Francia at Alpha = 0.1

- (•) 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

[x] No Outlier If Less Than 3.0 Times Median

[ ] Apply Rules found in Ohio Guidance Document 0715

[ ] Combine Background Wells on the Outlier Report...

Piper, Stiff Diagram

- [ ] Combine Wells
- [ ] Combine Dates
- (•) Use Default Constituent Names
- ( ) Use Constituent Definition File Edit

- [x] Label Constituents
- [x] Label Axes
- [x] Note Cation-Anion Balance (Piper only)

Jared Morrison
December 16, 2022

ATTACHMENT 2-2

Spring 2021 Semiannual Detection Monitoring Statistical Analyses

MEMORANDUM

October 5, 2021
January 3, 2022 Revision 1

To: Sibley Generating Station
33200 E Johnson Road
Sibley, Missouri 64088
Evergy Missouri West, Inc.

From: SCS Engineers

RE: Determination of Statistically Significant Increases - CCR Landfill
Spring 2021 Semiannual Detection Monitoring 40 CFR 257.94

Statistical analysis of monitoring data from the groundwater monitoring system for the CCR Landfill 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 24, 2021. Review and validation of the results from the May 2021 Detection Monitoring Event was completed on July 9, 2021, 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 19, 2021 and September 2, 2021.

The completed statistical evaluation identified two Appendix III constituents above their respective prediction limits established for upgradient monitoring well MW-505, two Appendix III constituents above their respective prediction limits established for monitoring well MW-506 and four Appendix III constituents above their respective prediction limits established for monitoring well MW-512.

Monitoring Well/Constituent	*UPL	Observation May 24, 2021	1st Verification July 19, 2021	2nd Verification September 2, 2021
MW-505				
Calcium	29.31	34.4	34.8	34.1
Total Dissolved Solids	180.3	181	184	188
MW-506				
Chloride	7.578	8.09	8.01	8.03
Sulfate	76.83	89.1	89.1	88.7
MW-512				
Calcium	111.3	114	120	114
Chloride	5.094	10.6	10.2	10.2
Total Dissolved Solids	466.4	505	524	555
Sulfate	44.8	110	104	107

*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 identified eight SSIs above the background prediction limits. These include calcium and total dissolved solids (TDS) at upgradient monitoring well MW-505, chloride and sulfate at monitoring well MW-506, and calcium, chloride, TDS, and sulfate at monitoring well MW-512.

Attached to this memorandum are the following backup information:

Attachment 1: Sanitas™ Output:

Statistical evaluation output from Sanitas™ for the prediction limit analysis. This includes prediction limit plots, prediction limit background data, detection sample results, 1st verification re-sample results (when applicable), 2nd verification re-sample results (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
1	January 3, 2022	No	Date of completion for the review and validation of the results from the May 2021 Detection Monitoring Event was corrected to July 9, 2021 from the incorrect date of July 27, 2021.

Sibley Generating Station
Determination of Statistically Significant Increases
CCR Landfill
October 5, 2021
January 3, 2021 Revision 1

ATTACHMENT 1

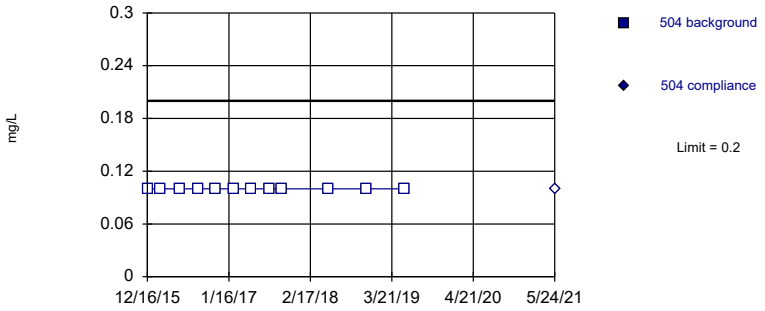
Sanitas™ Output

Sanitas™ v.9.6.31 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 = 12) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Boron Analysis Run 9/20/2021 12:26 PM View: LF III

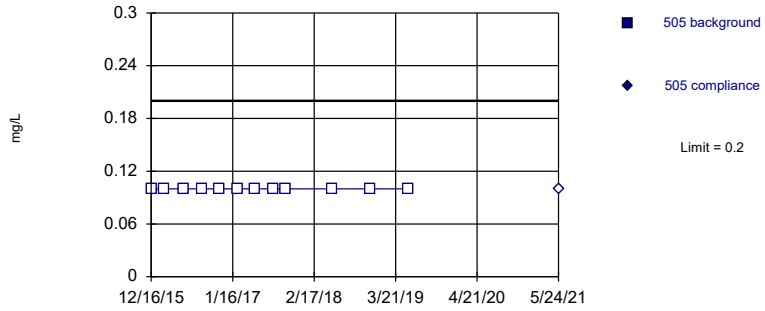
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



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Constituent: Boron Analysis Run 9/20/2021 12:26 PM View: LF III

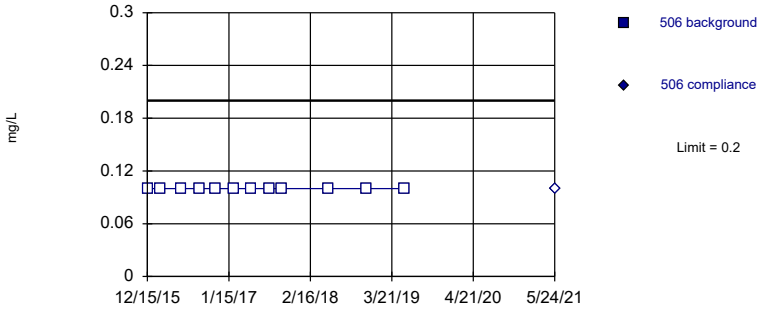
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



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Constituent: Boron Analysis Run 9/20/2021 12:26 PM View: LF III

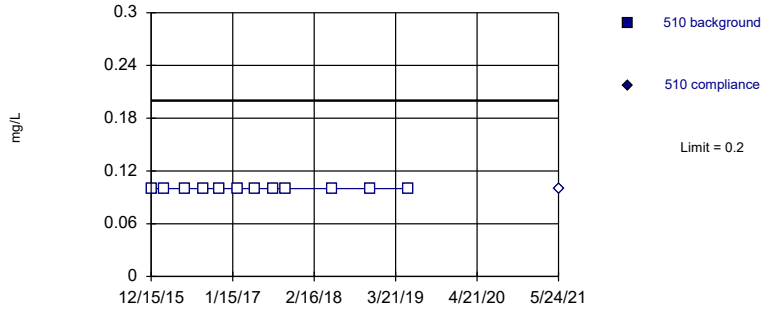
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



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Constituent: Boron Analysis Run 9/20/2021 12:26 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Boron Analysis Run 9/20/2021 12:29 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

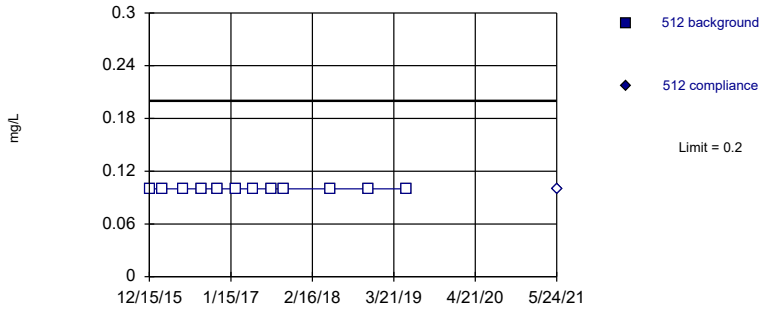
	504	504	505	505	506	506	510	510
12/15/2015					<0.2		<0.2	
12/16/2015	<0.2		<0.2					
2/18/2016	<0.2		<0.2		<0.2		<0.2	
5/25/2016	<0.2		<0.2		<0.2		<0.2	
8/23/2016	<0.2		<0.2		<0.2		<0.2	
11/10/2016							<0.2	
11/11/2016	<0.2		<0.2		<0.2			
2/8/2017	<0.2		<0.2		<0.2		<0.2	
5/3/2017							<0.2	
5/4/2017	<0.2		<0.2		<0.2			
8/1/2017	<0.2		<0.2				<0.2	
8/4/2017					<0.2			
10/3/2017	<0.2		<0.2		<0.2		<0.2	
5/17/2018	<0.2		<0.2		<0.2		<0.2	
11/15/2018	<0.2		<0.2		<0.2		<0.2	
5/22/2019	<0.2		<0.2		<0.2		<0.2	
5/24/2021		<0.2		<0.2		<0.2		<0.2

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



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Constituent: Boron Analysis Run 9/20/2021 12:26 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

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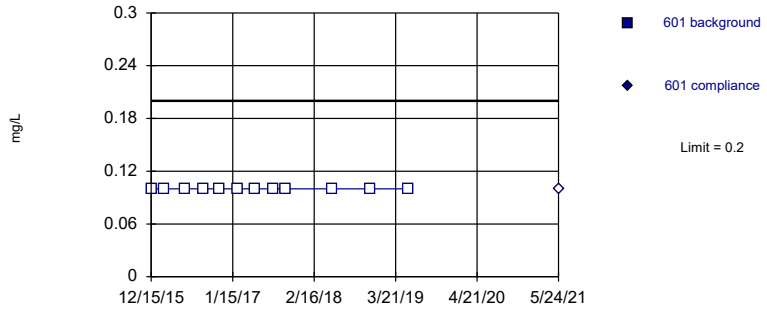
Hollow symbols indicate censored values.

Within Limit

Prediction Limit

Intrawell Non-parametric



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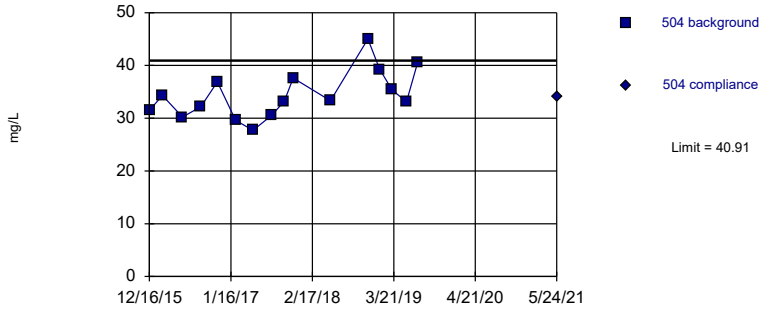
Constituent: Boron Analysis Run 9/20/2021 12:26 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=34.4, Std. Dev.=4.551, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9536, critical = 0.844. Kappa = 1.43 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

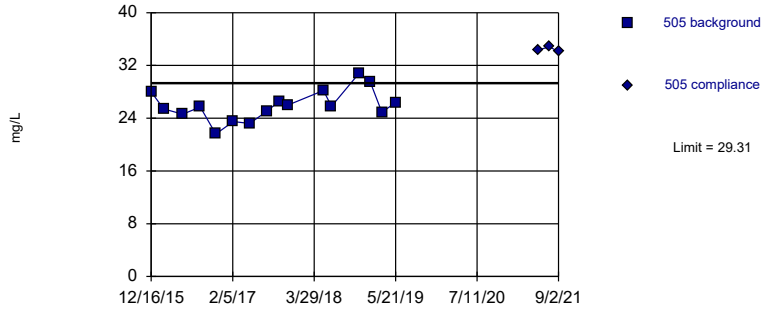
Constituent: Calcium Analysis Run 9/20/2021 12:26 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=25.96, Std. Dev.=2.346, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9775, critical = 0.844. Kappa = 1.43 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 9/20/2021 12:26 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Boron, Calcium Analysis Run 9/20/2021 12:29 PM View: LF III

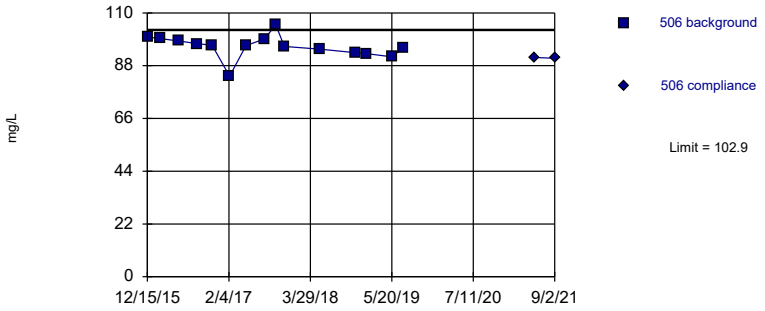
Sibley Client: SCS Engineers Data: Sibley

	512	512	601	601	504	504	505	505
12/15/2015	<0.2		<0.2					
12/16/2015					31.5		28	
2/18/2016	<0.2		<0.2		34.3		25.4	
5/25/2016	<0.2				30.2		24.6	
5/26/2016			<0.2					
8/23/2016	<0.2		<0.2		32.2		25.7	
11/11/2016	<0.2		<0.2		36.9		21.6	
2/8/2017	<0.2		<0.2		29.6		23.5	
5/3/2017	<0.2		<0.2					
5/4/2017					27.7		23.2	
8/1/2017	<0.2		<0.2		30.5		25.1	
10/3/2017	<0.2		<0.2		33.2		26.6	
11/16/2017					37.6		26	
5/17/2018	<0.2		<0.2		33.3		28.2	
6/27/2018							25.8	
11/15/2018	<0.2		<0.2		45		30.8	
1/11/2019					39.3		29.5	
3/12/2019					35.4		24.9	
5/22/2019	<0.2		<0.2		33.1		26.4	
7/16/2019					40.6			
5/24/2021		<0.2		<0.2		34.1		34.4
7/19/2021								34.8
9/2/2021								34.1

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=95.97, Std. Dev.=4.734, n=15. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9252, critical = 0.835. Kappa = 1.458 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

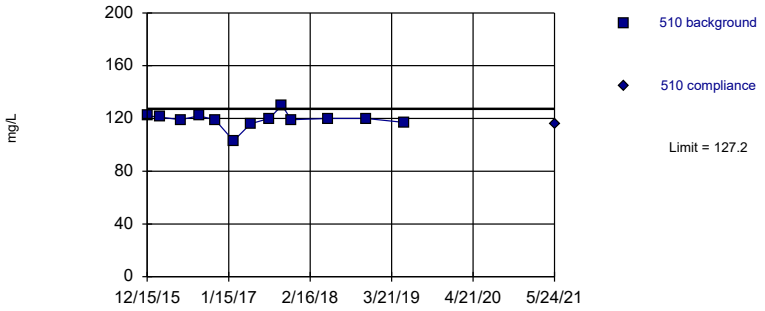
Constituent: Calcium Analysis Run 9/20/2021 12:26 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on cube transformation): Mean=1699613, Std. Dev.=238011, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8274, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

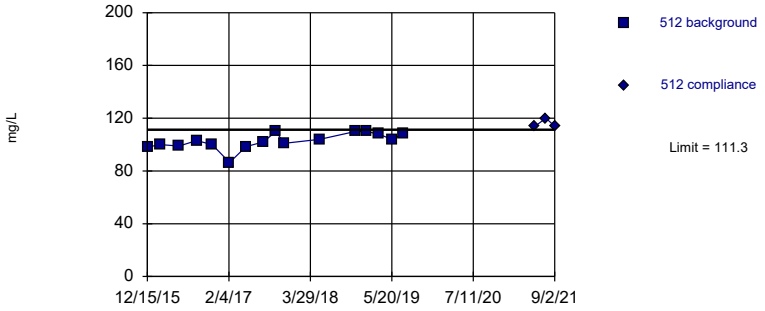
Constituent: Calcium Analysis Run 9/20/2021 12:26 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=102.6, Std. Dev.=6.094, n=16. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.892, critical = 0.844. Kappa = 1.43 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

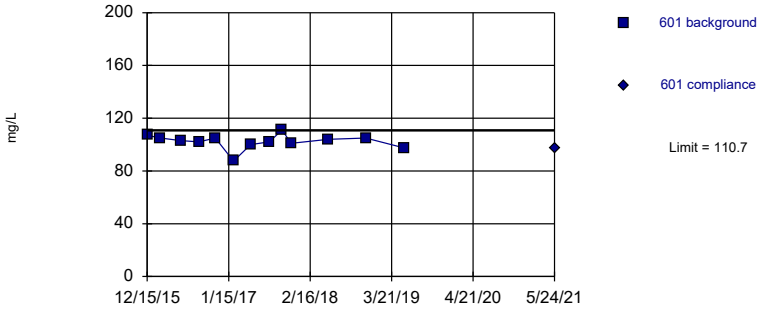
Constituent: Calcium Analysis Run 9/20/2021 12:26 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=102.3, Std. Dev.=5.577, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8789, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Calcium Analysis Run 9/20/2021 12:26 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Calcium Analysis Run 9/20/2021 12:29 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	506	506	510	510	512	512	601	601
12/15/2015	100		122		98.1		107	
2/18/2016	99.3		121		100		105	
5/25/2016	98.3		119		98.9			
5/26/2016							103	
8/23/2016	97.2		122		103		102	
11/10/2016			119					
11/11/2016	96.5				100		105	
2/8/2017	83.6		103		86.4		87.5	
5/3/2017			116		98.4		100	
5/4/2017	96.4							
8/1/2017			120		102		102	
8/4/2017	99							
10/3/2017	105		130		110		111	
11/16/2017	96		119		101		101	
5/17/2018	94.9		120		104		104	
11/15/2018	93.4		120		110		105	
1/11/2019	93				110			
3/12/2019					108			
5/22/2019	91.7		117		104		97.4	
7/16/2019	95.3				108			
5/24/2021		91.4		116		114		97.4
7/19/2021						120		
9/2/2021		91.1				114		

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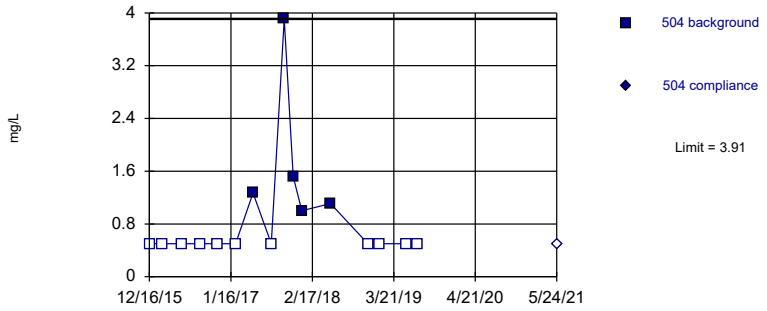
Hollow symbols indicate censored values.

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 16 background values. 68.75% NDs. Well-constituent pair annual alpha = 0.002051. Individual comparison alpha = 0.001026 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

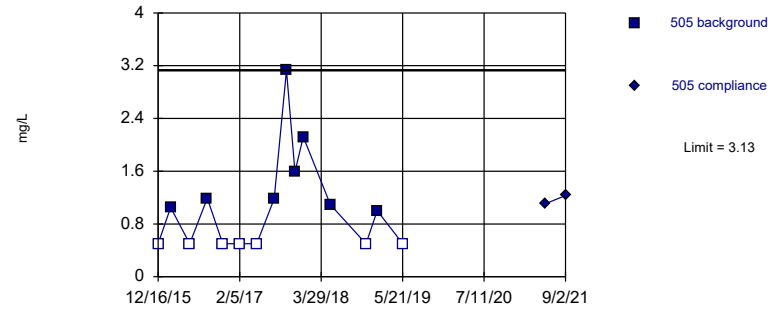
Constituent: Chloride Analysis Run 9/20/2021 12:27 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 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 the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 15 background values. 46.67% NDs. Well-constituent pair annual alpha = 0.002624. Individual comparison alpha = 0.001313 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

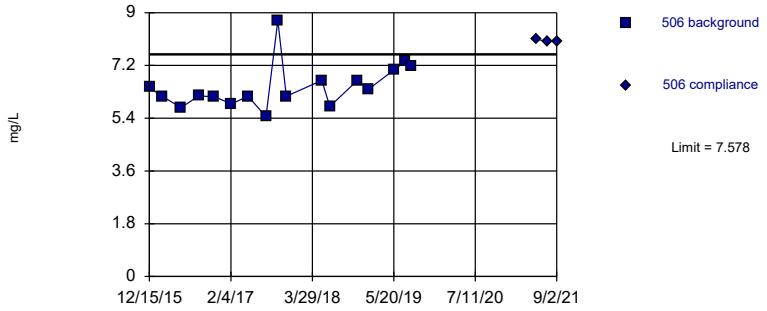
Constituent: Chloride Analysis Run 9/20/2021 12:27 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=6.479, Std. Dev.=0.7774, n=17. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8712, critical = 0.851. Kappa = 1.413 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

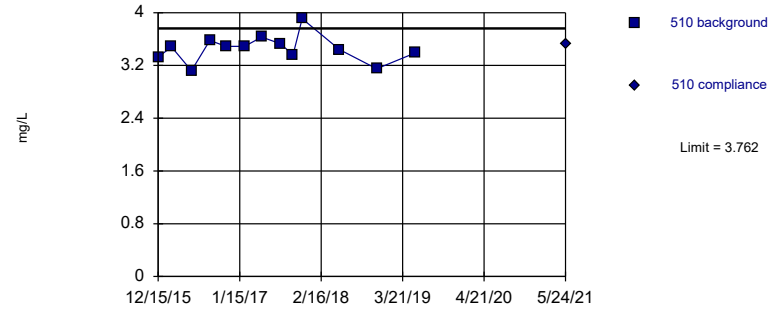
Constituent: Chloride Analysis Run 9/20/2021 12:27 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.454, Std. Dev.=0.2034, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9481, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Chloride Analysis Run 9/20/2021 12:27 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Chloride Analysis Run 9/20/2021 12:29 PM View: LF III

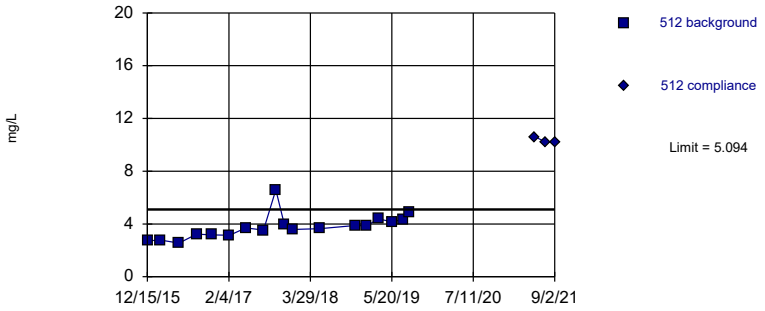
Sibley Client: SCS Engineers Data: Sibley

	504	504	505	505	506	506	510	510
12/15/2015					6.45		3.33	
12/16/2015	<1		<1					
2/18/2016	<1		1.05		6.15		3.48	
5/25/2016	<1		<1		5.76		3.12	
8/23/2016	<1		1.19		6.16		3.58	
11/10/2016							3.49	
11/11/2016	<1		<1		6.13			
2/8/2017	<1		<1		5.89		3.49	
5/3/2017							3.63	
5/4/2017	1.27		<1		6.15			
8/1/2017	<1		1.18				3.53	
8/4/2017					5.45			
10/3/2017	3.91		3.13		8.74		3.36	
11/16/2017	1.52		1.59		6.15		3.91	
12/28/2017	1		2.12					
5/17/2018	1.11		1.09		6.69		3.44	
6/27/2018					5.8			
11/15/2018	<1		<1		6.69		3.15	
1/11/2019	<1		1		6.39			
5/22/2019	<1		<1		7.05		3.39	
7/16/2019	<1				7.33			
8/21/2019					7.17			
5/24/2021		<1		1.11		8.09		3.53
7/19/2021						8.01		
9/2/2021				1.23		8.03		

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=3.786, Std. Dev.=0.9366, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8846, critical = 0.858. Kappa = 1.396 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

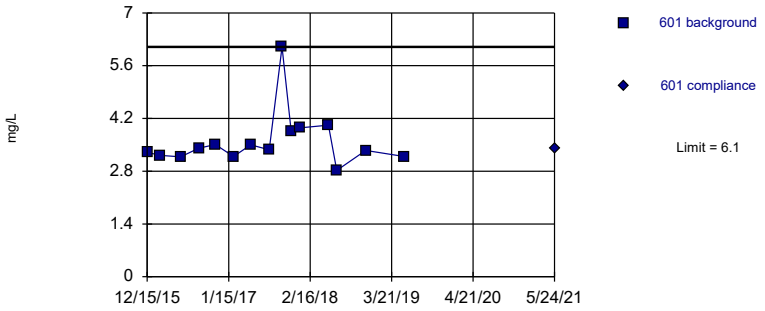
Constituent: Chloride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 15 background values. Well-constituent pair annual alpha = 0.002624. Individual comparison alpha = 0.001313 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

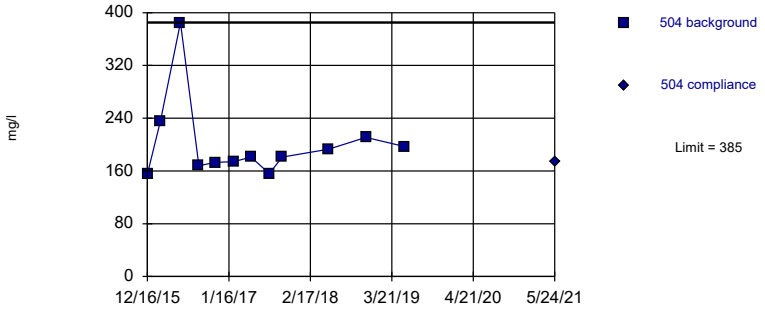
Constituent: Chloride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 12 background values. Well-constituent pair annual alpha = 0.004342. Individual comparison alpha = 0.002173 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

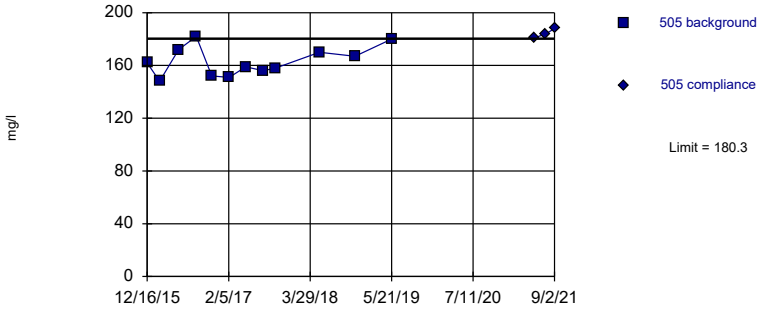
Constituent: Dissolved Solids Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=163.1, Std. Dev.=11.19, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9461, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Chloride, Dissolved Solids Analysis Run 9/20/2021 12:29 PM View: LF III

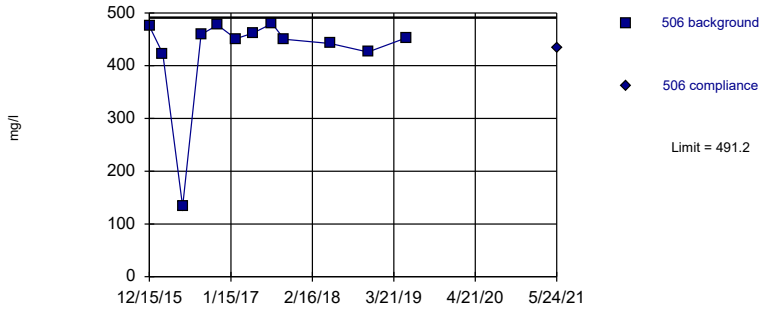
Sibley Client: SCS Engineers Data: Sibley

	512	512	601	601	504	504	505	505
12/15/2015	2.72		3.3					
12/16/2015					155		162	
2/18/2016	2.78		3.22		236		148	
5/25/2016	2.55				385		172	
5/26/2016			3.18					
8/23/2016	3.23		3.41		168		182	
11/11/2016	3.17		3.51		173		152	
2/8/2017	3.14		3.19		174		151	
5/3/2017	3.7		3.5					
5/4/2017					181		159	
8/1/2017	3.53		3.37		156		156	
10/3/2017	6.59		6.1		181		158	
11/16/2017	3.97		3.87					
12/28/2017	3.58		3.95					
5/17/2018	3.64		4.02		193		170	
6/27/2018			2.82					
11/15/2018	3.89		3.35		211		167	
1/11/2019	3.85							
3/12/2019	4.38							
5/22/2019	4.17		3.19		197		180	
7/16/2019	4.35							
8/21/2019	4.91							
5/24/2021		10.6		3.4		174		181
7/19/2021		10.2						184
9/2/2021		10.2						188

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on x^5 transformation): Mean=1.8e13, Std. Dev.=6.8e12, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8456, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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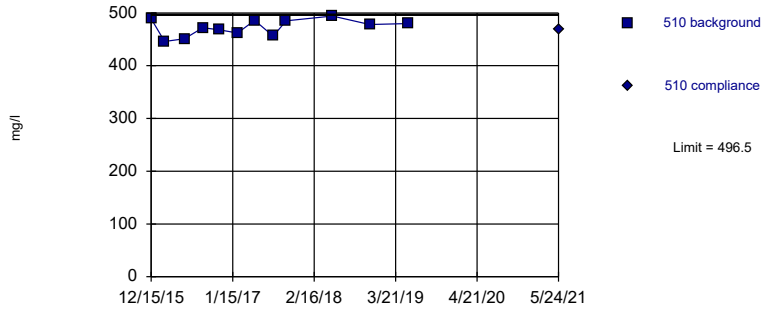
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=472.3, Std. Dev.=15.74, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.95, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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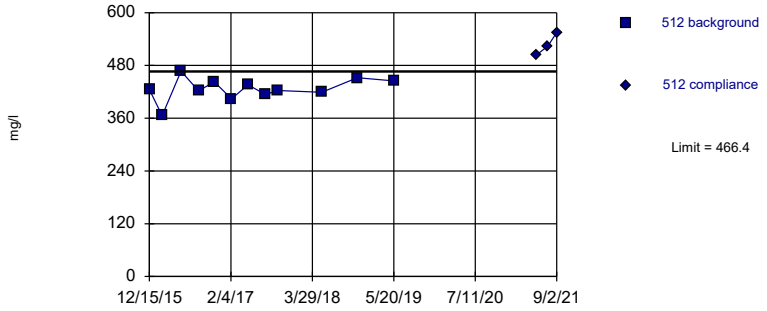
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=426.3, Std. Dev.=25.95, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9454, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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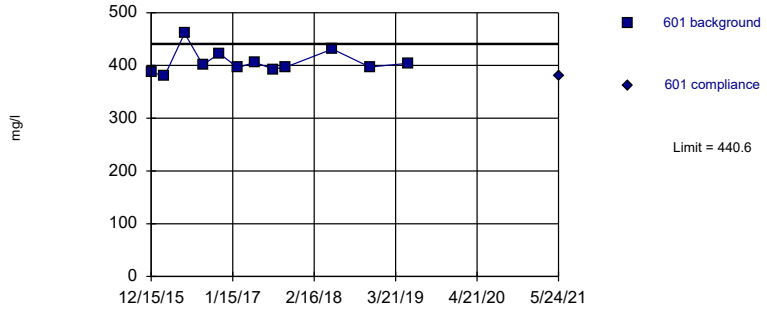
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=406.3, Std. Dev.=22.23, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8601, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Dissolved Solids Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Dissolved Solids Analysis Run 9/20/2021 12:29 PM View: LF III

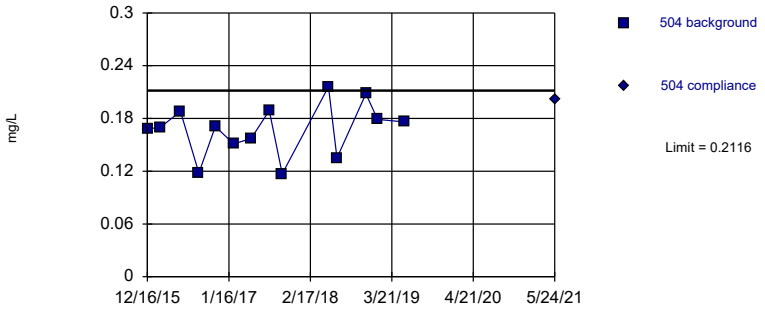
Sibley Client: SCS Engineers Data: Sibley

	506	506	510	510	512	512	601	601
12/15/2015	475		489		425		387	
2/18/2016	423		446		366		380	
5/25/2016	133		451		467			
5/26/2016							461	
8/23/2016	459		472		422		401	
11/10/2016			468					
11/11/2016	477				443		423	
2/8/2017	451		462		404		396	
5/3/2017			486		436		406	
5/4/2017	462							
8/1/2017			456		414		393	
8/4/2017	480							
10/3/2017	450		485		423		397	
5/17/2018	442		494		419		431	
11/15/2018	426		478		452		397	
5/22/2019	453		480		445		404	
5/24/2021		433		468		505		381
7/19/2021						524		
9/2/2021						555		

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1674, Std. Dev.=0.02979, n=14. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.958, critical = 0.825. Kappa = 1.486 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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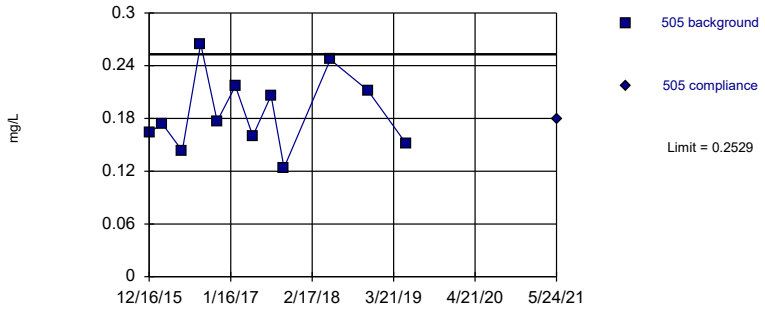
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.1867, Std. Dev.=0.04296, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9585, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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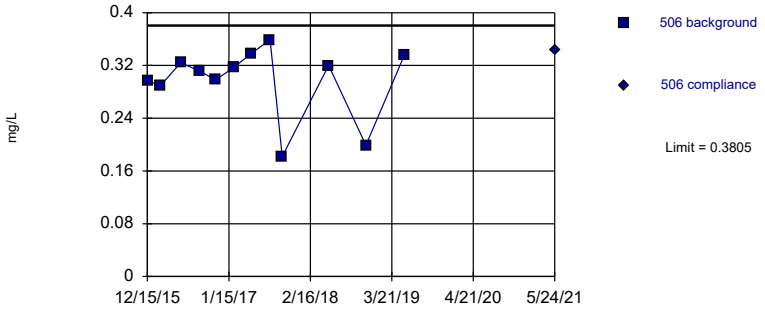
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2976, Std. Dev.=0.05377, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8104, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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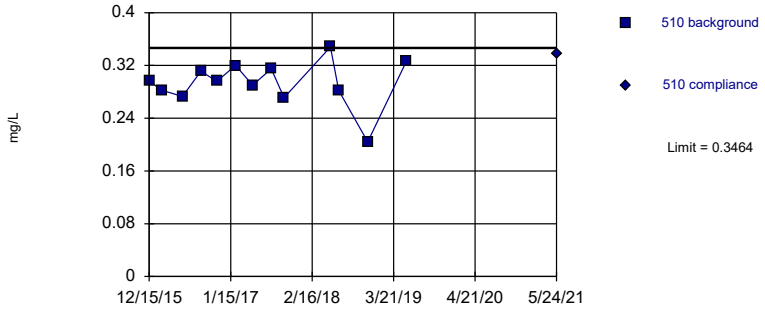
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2934, Std. Dev.=0.03503, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9129, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Fluoride Analysis Run 9/20/2021 12:29 PM View: LF III

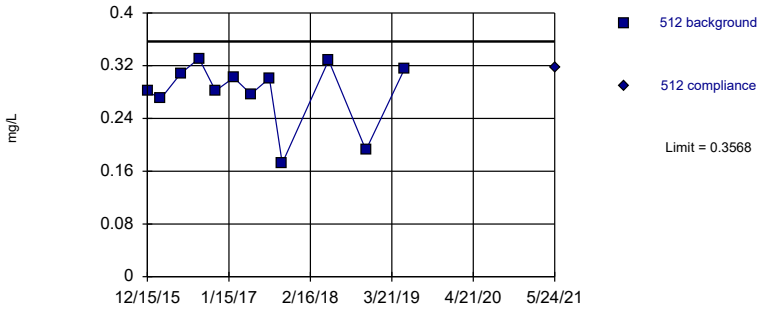
Sibley Client: SCS Engineers Data: Sibley

	504	504	505	505	506	506	510	510
12/15/2015					0.296		0.296	
12/16/2015	0.168		0.164					
2/18/2016	0.17		0.174		0.29		0.282	
5/25/2016	0.188		0.143		0.324		0.273	
8/23/2016	0.118		0.265		0.312		0.311	
11/10/2016							0.296	
11/11/2016	0.171		0.177		0.298			
2/8/2017	0.151		0.217		0.317		0.32	
5/3/2017							0.29	
5/4/2017	0.157		0.16		0.338			
8/1/2017	0.189		0.206				0.315	
8/4/2017					0.359			
10/3/2017	0.117		0.124		0.182		0.271	
5/17/2018	0.216		0.247		0.32		0.348	
6/27/2018	0.135						0.282	
11/15/2018	0.208		0.212		0.199		0.204	
1/11/2019	0.179							
5/22/2019	0.176		0.151		0.336		0.326	
5/24/2021		0.201		0.18		0.344		0.338

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=0.2799, Std. Dev.=0.04987, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8252, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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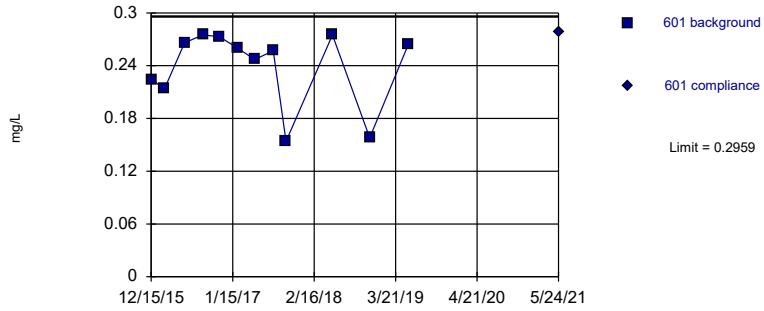
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary (based on square transformation): Mean=0.0588, Std. Dev.=0.01866, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8225, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Fluoride Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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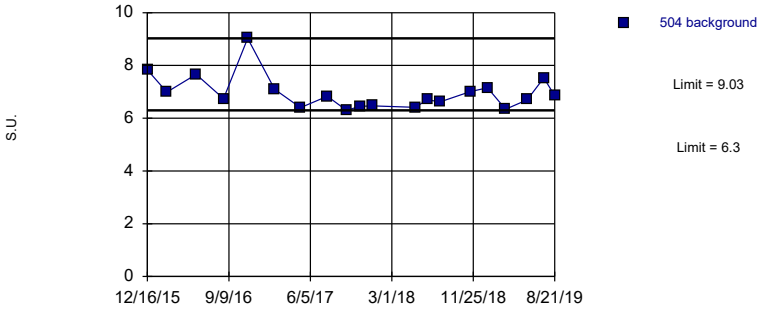
Prediction Limit

Intrawell Non-parametric, 504 (bg)



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 20 background values. Well-constituent pair annual alpha = 0.00225. Individual comparison alpha = 0.001125 (1 of 3). Assumes 1 future value. Seasonality was not detected with 95% confidence.

Constituent: pH Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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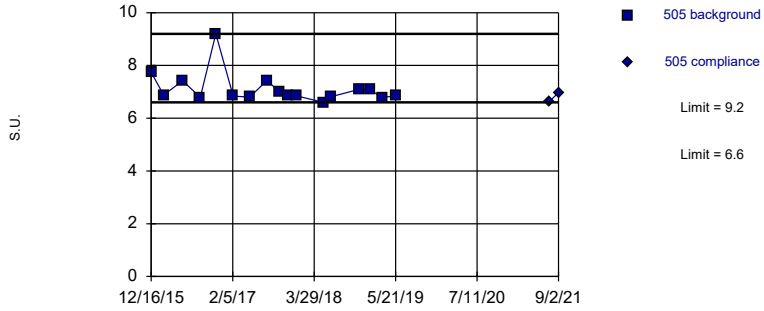
Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 17 background values. Well-constituent pair annual alpha = 0.003639. Individual comparison alpha = 0.00182 (1 of 3). Seasonality was not detected with 95% confidence.

Constituent: pH Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Fluoride, pH Analysis Run 9/20/2021 12:29 PM View: LF III

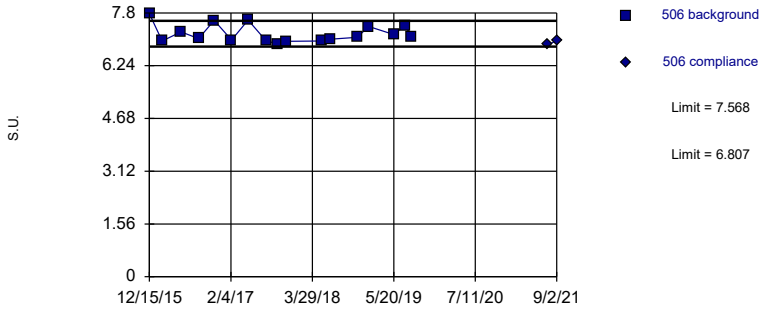
Sibley Client: SCS Engineers Data: Sibley

	512	512	601	601	504	505	505
12/15/2015	0.281		0.224				
12/16/2015					7.83	7.74	
2/18/2016	0.27		0.214		6.99	6.88	
5/25/2016	0.308				7.66	7.42	
5/26/2016			0.266				
8/23/2016	0.331		0.275		6.74	6.79	
11/11/2016	0.282		0.273		9.03	9.2	
2/8/2017	0.302		0.26		7.09	6.84	
5/3/2017	0.277		0.247				
5/4/2017					6.4	6.8	
8/1/2017	0.301		0.257		6.83	7.44	
10/3/2017	0.172		0.154		6.3	6.98	
11/16/2017					6.45	6.84	
12/28/2017					6.47	6.85	
5/17/2018	0.328		0.275		6.41	6.6	
6/27/2018					6.7	6.82	
8/8/2018					6.62		
11/15/2018	0.192		0.158		7.01	7.09	
1/11/2019					7.15	7.08	
3/12/2019					6.34	6.78	
5/22/2019	0.315		0.264		6.7	6.85	
7/16/2019					7.53		
8/21/2019					6.85		
5/24/2021		0.318		0.278			
7/19/2021							6.65
9/2/2021							6.97

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.188, Std. Dev.=0.2694, n=17. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8664, critical = 0.851. Kappa = 1.413 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

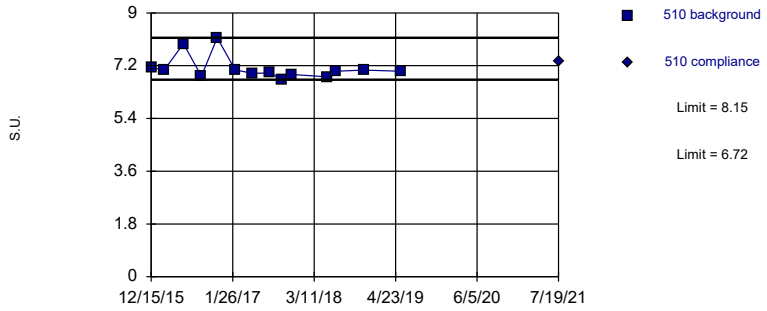
Constituent: pH Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 14 background values. Well-constituent pair annual alpha = 0.006393. Individual comparison alpha = 0.003199 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

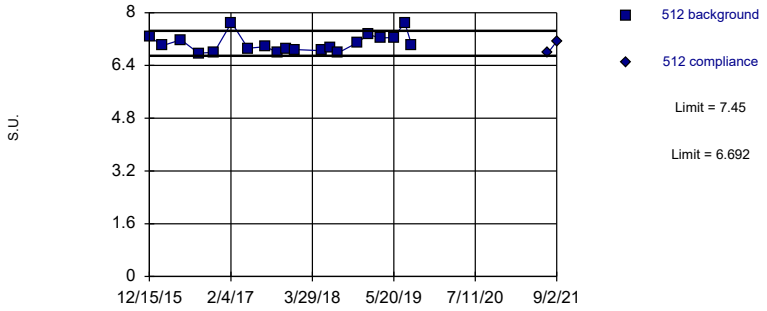
Constituent: pH Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limits

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=7.071, Std. Dev.=0.2785, n=20. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8734, critical = 0.868. Kappa = 1.362 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

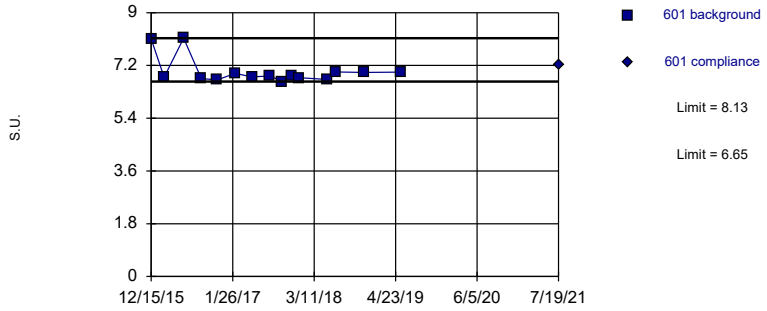
Constituent: pH Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Within Limits

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limits are highest and lowest of 15 background values. Well-constituent pair annual alpha = 0.005248. Individual comparison alpha = 0.002625 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: pH Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: pH Analysis Run 9/20/2021 12:29 PM View: LF III

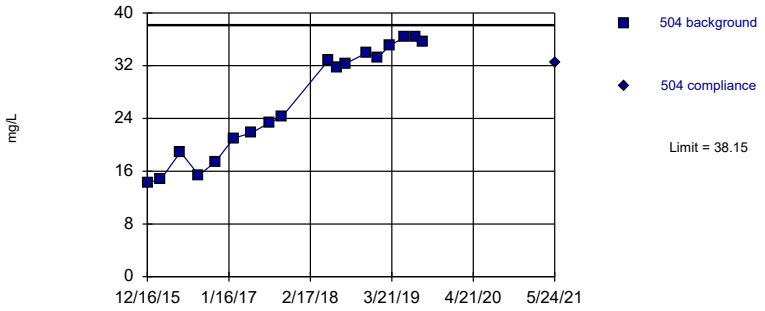
Sibley Client: SCS Engineers Data: Sibley

	506	506	510	510	512	512	601	601
12/15/2015	7.78		7.14		7.29		8.11	
2/18/2016	6.97		7.05		7		6.8	
5/25/2016	7.24		7.95		7.18			
5/26/2016							8.13	
8/23/2016	7.04		6.84		6.77		6.75	
11/10/2016			8.15					
11/11/2016	7.58				6.8		6.71	
2/8/2017	7		7.06		7.7		6.93	
5/3/2017			6.94		6.92			
5/4/2017	7.59						6.81	
8/1/2017			6.95		6.97		6.84	
8/4/2017	6.98							
10/3/2017	6.88		6.72		6.79		6.65	
11/16/2017	6.96		6.9		6.92		6.84	
12/28/2017					6.88		6.78	
5/17/2018	6.97		6.82		6.85		6.72	
6/27/2018	7.02		7.01		6.95		6.98	
8/8/2018					6.78			
11/15/2018	7.08		7.05		7.09		6.96	
1/11/2019	7.4				7.34			
3/12/2019					7.23			
5/22/2019	7.16		7.01		7.25		6.97	
7/16/2019	7.43				7.7			
8/21/2019	7.11				7.01			
7/19/2021		6.86		7.36		6.78		7.21
9/2/2021		6.98				7.13		

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=26.58, Std. Dev.=8.293, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8677, critical = 0.858. Kappa = 1.396 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 9/20/2021 12:27 PM View: LF III

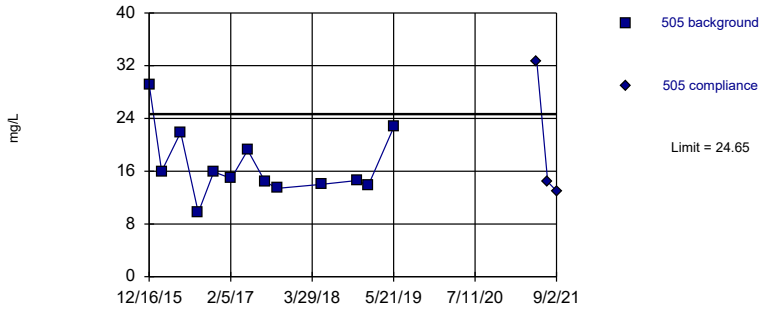
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=16.9, Std. Dev.=5.117, n=13. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8783, critical = 0.814. Kappa = 1.514 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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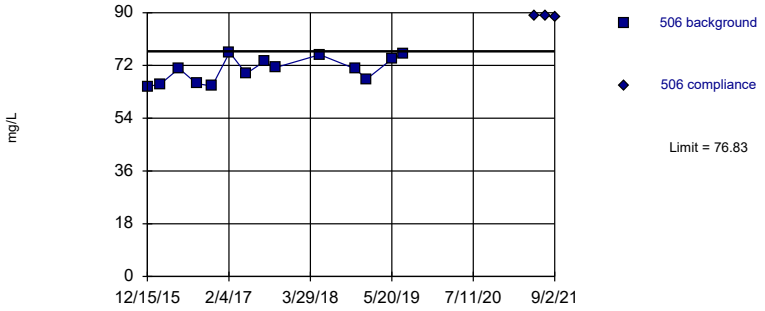
Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=70.47, Std. Dev.=4.276, n=14. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9125, critical = 0.825. Kappa = 1.486 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

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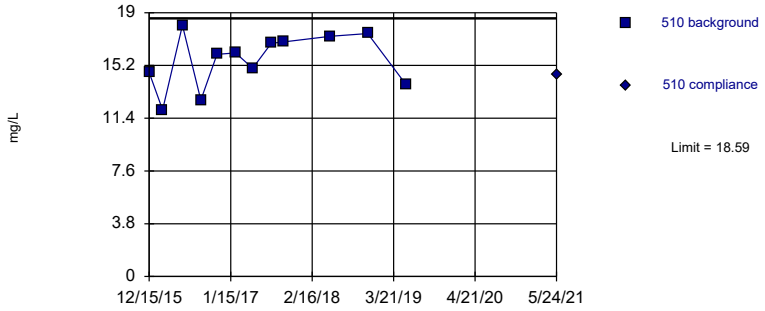
Within Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=15.58, Std. Dev.=1.955, n=12. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9362, critical = 0.805. Kappa = 1.542 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Sulfate Analysis Run 9/20/2021 12:29 PM View: LF III

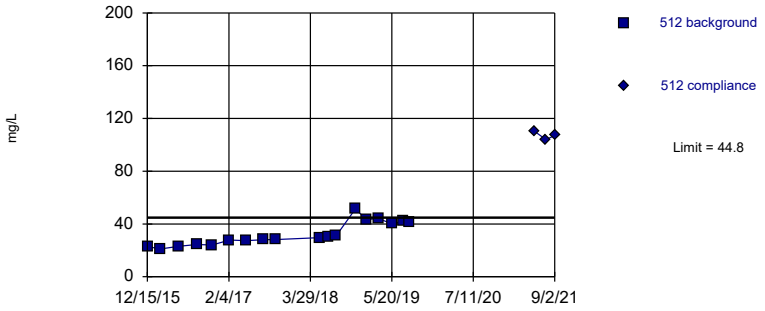
Sibley Client: SCS Engineers Data: Sibley

	504	504	505	505	506	506	510	510
12/15/2015					64.8		14.7	
12/16/2015	14.3		29.2					
2/18/2016	14.7		16		65.6		12	
5/25/2016	18.9		21.9		71		18.1	
8/23/2016	15.4		9.73		65.8		12.7	
11/10/2016							16	
11/11/2016	17.4		15.9		65			
2/8/2017	21		14.9		76.5		16.1	
5/3/2017							15	
5/4/2017	21.8		19.2		69.2			
8/1/2017	23.3		14.4				16.8	
8/4/2017					73.3			
10/3/2017	24.3		13.4		71.3		16.9	
5/17/2018	32.8		14		75.7		17.3	
6/27/2018	31.8							
8/8/2018	32.3							
11/15/2018	33.9		14.6		70.8		17.5	
1/11/2019	33.2		13.8		67.3			
3/12/2019	35.1							
5/22/2019	36.3		22.7		74.2		13.8	
7/16/2019	36.3				76.1			
8/21/2019	35.6							
5/24/2021		32.4		32.6		89.1		14.5
7/19/2021				14.4		89.1		
9/2/2021				13		88.7		

Exceeds Limit

Prediction Limit

Intrawell Parametric



Background Data Summary: Mean=32.21, Std. Dev.=9.019, n=18. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8926, critical = 0.858. Kappa = 1.396 (c=7, w=4, 1 of 3, event alpha = 0.05132). Report alpha = 0.00188.

Constituent: Sulfate Analysis Run 9/20/2021 12:27 PM View: LF III

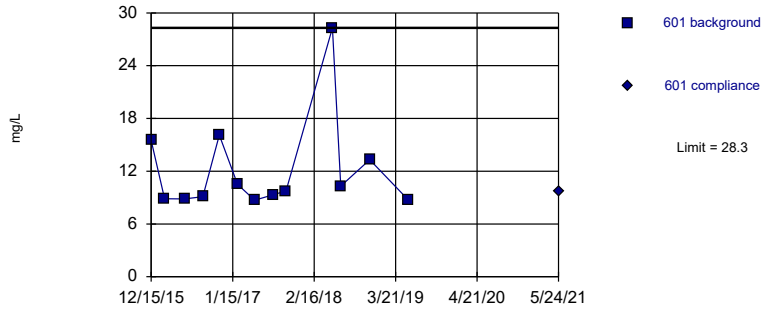
Sibley Client: SCS Engineers Data: Sibley

Sanitas™ v.9.6.31 Sanitas software licensed to SCS Engineers. UG

Within Limit

Prediction Limit

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Wilk normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 13 background values. Well-constituent pair annual alpha = 0.003769. Individual comparison alpha = 0.001886 (1 of 3). Insufficient data to test for seasonality: data were not deseasonalized.

Constituent: Sulfate Analysis Run 9/20/2021 12:27 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Prediction Limit

Constituent: Sulfate Analysis Run 9/20/2021 12:29 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	512	512	601	601
12/15/2015	23		15.5	
2/18/2016	21		8.87	
5/25/2016	23.1			
5/26/2016			8.85	
8/23/2016	24.4		9.11	
11/11/2016	24		16.1	
2/8/2017	27.8		10.5	
5/3/2017	27.3		8.71	
8/1/2017	28.1		9.33	
10/3/2017	28.2		9.76	
5/17/2018	29.6		28.3	
6/27/2018	30.3		10.3	
8/8/2018	30.9			
11/15/2018	51.4		13.3	
1/11/2019	43.3			
3/12/2019	44.2			
5/22/2019	40.1		8.74	
7/16/2019	42.1			
8/21/2019	41			
5/24/2021		110		9.71
7/19/2021		104		
9/2/2021		107		

Prediction Limit

Sibley Client: SCS Engineers Data: Sibley Printed 9/20/2021, 12:29 PM

Constituent	Well	Upper Lim.	Lower Lim.	Date	Observ.	Sig.	Bg N	%NDs	Transform	Alpha	Method
Boron (mg/L)	504	0.2	n/a	5/24/2021	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	505	0.2	n/a	5/24/2021	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	506	0.2	n/a	5/24/2021	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	510	0.2	n/a	5/24/2021	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	512	0.2	n/a	5/24/2021	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Boron (mg/L)	601	0.2	n/a	5/24/2021	0.1ND	No	12	100	n/a	0.002173	NP Intra (NDs) 1 of 3
Calcium (mg/L)	504	40.91	n/a	5/24/2021	34.1	No	16	0	No	0.00188	Param Intra 1 of 3
Calcium (mg/L)	**505**	**29.31**	**n/a**	**9/2/2021**	**34.1**	**Yes**	**16**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Calcium (mg/L)	506	102.9	n/a	9/2/2021	91.1	No	15	0	No	0.00188	Param Intra 1 of 3
Calcium (mg/L)	510	127.2	n/a	5/24/2021	116	No	13	0	x^3	0.00188	Param Intra 1 of 3
Calcium (mg/L)	**512**	**111.3**	**n/a**	**9/2/2021**	**114**	**Yes**	**16**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Calcium (mg/L)	601	110.7	n/a	5/24/2021	97.4	No	13	0	No	0.00188	Param Intra 1 of 3
Chloride (mg/L)	504	3.91	n/a	5/24/2021	0.5ND	No	16	68.75	n/a	0.001026	NP Intra (NDs) 1 of 3
Chloride (mg/L)	505	3.13	n/a	9/2/2021	1.23	No	15	46.67	n/a	0.001313	NP Intra (normality) ...
Chloride (mg/L)	**506**	**7.578**	**n/a**	**9/2/2021**	**8.03**	**Yes**	**17**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Chloride (mg/L)	510	3.762	n/a	5/24/2021	3.53	No	13	0	No	0.00188	Param Intra 1 of 3
Chloride (mg/L)	**512**	**5.094**	**n/a**	**9/2/2021**	**10.2**	**Yes**	**18**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Chloride (mg/L)	601	6.1	n/a	5/24/2021	3.4	No	15	0	n/a	0.001313	NP Intra (normality) ...
Dissolved Solids (mg/l)	504	385	n/a	5/24/2021	174	No	12	0	n/a	0.002173	NP Intra (normality) ...
Dissolved Solids (mg/l)	**505**	**180.3**	**n/a**	**9/2/2021**	**188**	**Yes**	**12**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Dissolved Solids (mg/l)	506	491.2	n/a	5/24/2021	433	No	12	0	x^5	0.00188	Param Intra 1 of 3
Dissolved Solids (mg/l)	510	496.5	n/a	5/24/2021	468	No	12	0	No	0.00188	Param Intra 1 of 3
Dissolved Solids (mg/l)	**512**	**466.4**	**n/a**	**9/2/2021**	**555**	**Yes**	**12**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Dissolved Solids (mg/l)	601	440.6	n/a	5/24/2021	381	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	504	0.2116	n/a	5/24/2021	0.201	No	14	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	505	0.2529	n/a	5/24/2021	0.18	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	506	0.3805	n/a	5/24/2021	0.344	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	510	0.3464	n/a	5/24/2021	0.338	No	13	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	512	0.3568	n/a	5/24/2021	0.318	No	12	0	No	0.00188	Param Intra 1 of 3
Fluoride (mg/L)	601	0.2959	n/a	5/24/2021	0.278	No	12	0	x^2	0.00188	Param Intra 1 of 3
pH (S.U.)	504	9.03	6.3	n/a	1 future	n/a	20	0	n/a	0.001125	NP Intra (normality) ...
pH (S.U.)	505	9.2	6.6	9/2/2021	6.97	No	17	0	n/a	0.00182	NP Intra (normality) ...
pH (S.U.)	506	7.568	6.807	9/2/2021	6.98	No	17	0	No	0.000...	Param Intra 1 of 3
pH (S.U.)	510	8.15	6.72	7/19/2021	7.36	No	14	0	n/a	0.003199	NP Intra (normality) ...
pH (S.U.)	512	7.45	6.692	9/2/2021	7.13	No	20	0	No	0.000...	Param Intra 1 of 3
pH (S.U.)	601	8.13	6.65	7/19/2021	7.21	No	15	0	n/a	0.002625	NP Intra (normality) ...
Sulfate (mg/L)	504	38.15	n/a	5/24/2021	32.4	No	18	0	No	0.00188	Param Intra 1 of 3
Sulfate (mg/L)	505	24.65	n/a	9/2/2021	13	No	13	0	No	0.00188	Param Intra 1 of 3
Sulfate (mg/L)	**506**	**76.83**	**n/a**	**9/2/2021**	**88.7**	**Yes**	**14**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Sulfate (mg/L)	510	18.59	n/a	5/24/2021	14.5	No	12	0	No	0.00188	Param Intra 1 of 3
Sulfate (mg/L)	**512**	**44.8**	**n/a**	**9/2/2021**	**107**	**Yes**	**18**	**0**	**No**	**0.00188**	**Param Intra 1 of 3**
Sulfate (mg/L)	601	28.3	n/a	5/24/2021	9.71	No	13	0	n/a	0.001886	NP Intra (normality) ...

ATTACHMENT 2

Sanitas™ Configuration Settings

Data | Output | Trend Test | Control Cht | Prediction Lim | Tolerance Lim | Conf/Tol Int | ANOVA | Welchs | Other Tests

Exclude data flags: i

Data Reading Options

- (•) Individual Observations
- ( ) Mean of Each: ( ) Month
- ( ) Median of Each: ( ) Season

Non-Detect / Trace Handling...

Setup Seasons...

[ ] Automatically Process Resamples...

Data | Output | Trend Test | Control Cht | Prediction Lim | Tolerance Lim | Conf/Tol Int | ANOVA | Welchs | Other Tests

- [ ] Black and White Output
- [x] Four Plots Per Page
  - [x] Always Combine Data Pages...
  - [x] Include Tick Marks on Data Page
  - [ ] Use Constituent Name for Graph Title
- [ ] Draw Border Around Text Reports and Data Pages
- [x] Enlarge/Reduce Fonts (Graphs): 100%
- [x] Enlarge/Reduce Fonts (Data/Text Reports): 100%
- [x] Wide Margins (on reports without explicit setting)
- [ ] Use CAS# (Not Const. Name)
- [ ] Truncate File Names to 20 Characters
- [ ] Include Limit Lines when found in Database...
- [x] Show Deselected Data on Time Series Lighter
- [ ] Show Deselected Data on all Data Pages Light

Setup Symbols and Colors...

- [x] Prompt to Overwrite/Append Summary Tables
- [ ] Round Limits to 2 Sig. Digits (when not set in data file)
- [ ] User-Set Scale
- [x] Indicate Background Data
- [ ] Show Exact Dates
- [ ] Thick Plot Lines

Zoom Factor: 200%

Output Decimal Precision

- ( ) Less Precision
- (•) Normal Precision
- ( ) More Precision

- [x] 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

☐ Use Modified Alpha... 0.02

☑ Test Residuals For Normality (Parametric test only) using Shapiro-Wilk/Francia at Alpha = 0.01

☐ Continue Parametric if Unable to Normalize

Transformation (Parametric test only)

- ◉ Use Ladder of Powers
- ○ Natural Log or No Transformation
- ○ Never Transform
- ○ Use Specific Transformation:

☐ Use Best W Statistic

☐ Plot Transformed Values

Use Non-Parametric Test (Sen's Slope/Mann-Kendall) when Non-Detects Percent > 75

☐ Include 95. % Confidence Interval around Trend Line

☐ Automatically Remove Outliers (Parametric test only)

Note: there is no "Always Use Non-Parametric" checkbox on this tab because, for consistency with prior versions, Sen's Slope / Mann-Kendall (the non-parametric alternative) is available as a report in its own right, under Analysis->Intrawell->Trend.

Data | Output | Trend Test | Control Cht | **Prediction Lim** | Tolerance Lim | Conf/Tol Int | ANOVA | Welchs | Other Tests

☑ Test for Normality using Shapiro-Wilk/Francia at Alpha = 0.01

☑ 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

Transformation

- ◉ Use Ladder of Powers
- ○ Natural Log or No Transformation
- ○ Never Transform
- ○ Use Specific Transformation: Natural Log

☐ Use Best W Statistic

☐ Plot Transformed Values

Deseasonalize (Intra- and InterWell)

- ◉ 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: 2

Constituents Analyzed: 7

Downgradient (Compliance) Wells: 4

Sampling Plan

Comparing Individual Observations

○ 1 of 1 ○ 1 of 2 ◉ 1 of 3 ○ 1 of 4

○ 2 of 4 ("Modified California")

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
- ○ Most Recent Background Value (subst. method)

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...
- [ ] Combine Background Wells on Mann-Whitney...

Outlier Tests

- ( ) EPA 1989 Outlier Screening (fixed alpha of 0.05)
- (•) Dixon's at α= 0.05 or if n > 22 Rosner's at α= 0.01 [x] Use EPA Screening to establish Suspected Outliers
- ( ) Tukey's Outlier Screening, with IQR Multiplier = 3.0 [ ] Use Ladder of Powers to achieve Best W Stat

[x] Test For Normality using Shapiro-Wilk/Francia at Alpha = 0.1

- (•) 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

[x] No Outlier If Less Than 3.0 Times Median

[ ] Apply Rules found in Ohio Guidance Document 0715

[ ] Combine Background Wells on the Outlier Report...

Piper, Stiff Diagram

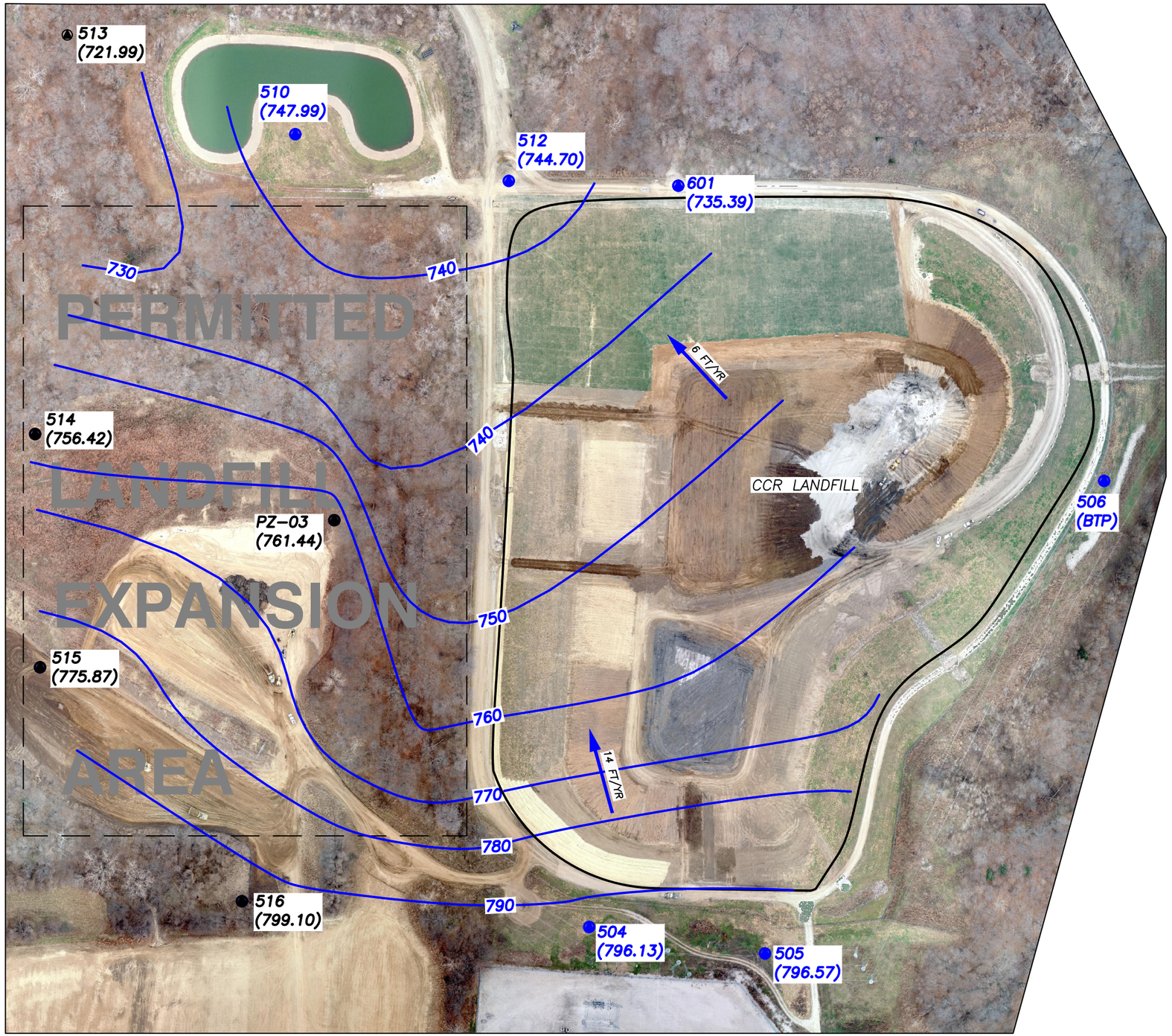
- [ ] Combine Wells
- [ ] Combine Dates
- (•) Use Default Constituent Names
- ( ) Use Constituent Definition File Edit

- [x] Label Constituents
- [x] Label Axes
- [x] Note Cation-Anion Balance (Piper only)

Jared Morrison
December 16, 2022

ATTACHMENT 3

Groundwater Potentiometric Surface Maps



LEGEND:

- *760* — *GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)*
- *601 (738.07)* — *GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)*
- *514 (756.42)* — *LANDFILL EXPANSION WELLS*
- *CCR LANDFILL UNIT BOUNDARY*
- *5 FT/YR* — *GROUNDWATER FLOW DIRECTION AND CALCULATED FLOW RATE (FT/YR)*
- *BTP* — *BELOW TOP OF PUMP*

NOTES:

1. *HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010*
2. *AERIAL IMAGE BY TUKUH TECHNOLOGIES ON DECEMBER 10, 2021.*
3. *BOUNDARY AND MONITORING WELL LOCATIONS SHOWN ARE APPROXIMATE.*
4. *WATER LEVEL MEASUREMENTS COLLECTED ON MAY 24, 2021.*

200 0 200 400

SCALE FEET

REV.	DATE
-	-

SHEET TITLE
POTENTIOMETRIC SURFACE MAP
CCR LANDFILL (MAY 2021)

PROJECT TITLE
2021 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT ADDENDUM

CLIENT
EVERGY MISSOURI WEST, INC.
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

SCS ENGINEERS
8575 W. 110th St, Ste. 100
Overland Park, Kansas 66210
PH. (913) 681-0030 FAX. (913) 681-0012

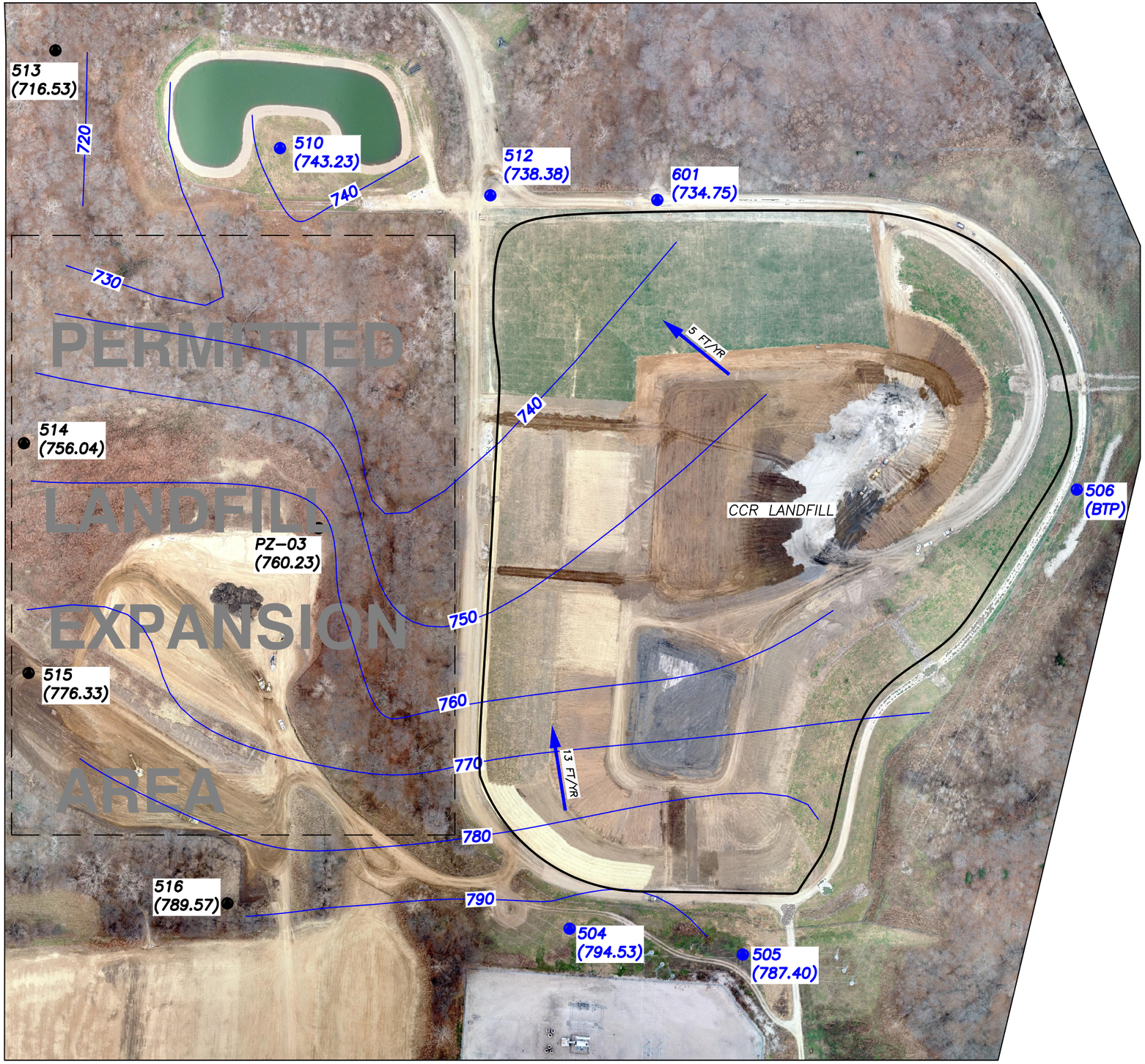
PROJ. NO. 27213167.20
DSN. BY: ALR
DWN. BY: ALR
CHK. BY: JRR
QA RVW BY: JRR
PROJ. MGR: JRF

CADD FILE:
FIG 2 - MAY 2021 V2.DWG

DATE:
12/14/22

FIGURE NO.
2

N:\KCPL\Projects\Groundwater\DWG\Sibley\Annual CCR Reporting\2021\Fig 2 - May 2021 v2.dwg Dec 14, 2022 - 10:48am Layout Name: Fig 2 By: 5412jds



LEGEND:

- 760 — GROUNDWATER POTENTIOMETRIC SURFACE ELEVATIONS (REPRESENTATIVE OF THIS UNIT)
- 601 (738.07) GROUNDWATER MONITORING SYSTEM WELLS (GROUNDWATER ELEVATION)
- 514 (756.04) LANDFILL EXPANSION WELLS
- CCR LANDFILL UNIT BOUNDARY
- 5 FT/YR GROUNDWATER FLOW DIRECTION AND CALCULATED FLOW RATE (FT/YR)
- BTP BELOW TOP OF PUMP

NOTES:

1. HORIZONTAL & VERTICAL DATUM: URS PLANS FOR CONSTRUCTION, KCP&L SIBLEY GENERATING STATION, DESIGN FILE 16530511.00001, DATED JANUARY 2010
2. AERIAL IMAGE BY TUKUH TECHNOLOGIES ON DECEMBER 10, 2021.
3. BOUNDARY AND MONITORING WELL LOCATIONS SHOWN ARE APPROXIMATE.
4. WATER LEVEL MEASUREMENTS COLLECTED ON NOVEMBER 15, 2021.

200 0 200 400
SCALE FEET

REV. | DATE
- | -

SHEET TITLE
POTENTIOMETRIC SURFACE MAP
CCR LANDFILL (NOVEMBER 2021)

PROJECT TITLE
2021 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT ADDENDUM

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PROJ. MGR: JRF

CADD FILE:
FIG 3 – NOVEMBER 2021 V2.DWG

DATE:
12/14/22

FIGURE NO.
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