2019 ANNUAL GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

SLAG SETTLING IMPOUNDMENT
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

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

SCS ENGINEERS

27213169.19 | January 2020

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

CERTIFICATIONS

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

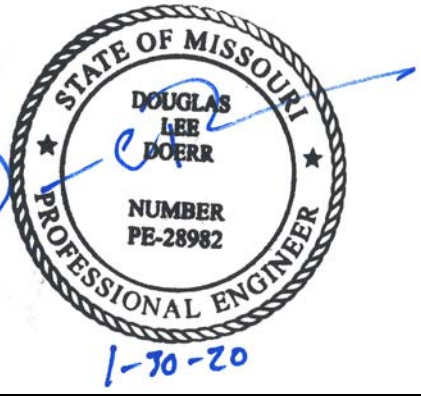
John R. Rockhold, R.G.

SCS Engineers

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

Douglas L. Doerr

Digitally signed by Douglas L. Doerr
Date: 2020.01.30 13:41:02 -06'00'



Douglas L. Doerr, P.E.

SCS Engineers

Revision Number	Revision Date	Revision Section	Summary of Revisions

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Appendices

1 INTRODUCTION

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

2 § 257.90(E) ANNUAL REPORT REQUIREMENTS

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

2.1 § 257.90(E)(1) SITE MAP

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

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

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

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

No new monitoring wells were installed and no wells were decommissioned as part of the CCR groundwater monitoring program for the Slag Settling Impoundment in 2019.

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

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

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

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

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

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

2.5 § 257.90(e)(5) OTHER REQUIREMENTS

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

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

2.5.1 § 257.90(e) Program Status

Status of Groundwater Monitoring and Corrective Action Program.

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

Summary of Key Actions Completed.

a. completion of the statistical evaluation of the Fall 2018 semiannual detection monitoring sampling and analysis event per the certified statistical method,

b. completion of the 2018 Annual Groundwater Monitoring and Corrective Action Report,

c. completion of the Spring 2019 semiannual detection monitoring sampling and analysis event, and subsequent verification sampling per the certified statistical method,

d. completion of the statistical evaluation of the Spring 2019 semiannual detection monitoring sampling and analysis event per the certified statistical method,

e. completion of a successful alternative source demonstration for the Spring 2019 semiannual

detection monitoring sampling and analysis event, and

f. initiation of the Fall 2019 semiannual detection monitoring sampling and analysis event.

Description of Any Problems Encountered.

No noteworthy problems were encountered.

Discussion of Actions to Resolve the Problems.

Not applicable because no noteworthy problems were encountered.

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

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

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

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

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

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

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

The following demonstration report is included as **Appendix C:**

CCR Groundwater Monitoring Alternative Source Demonstration Report May 2019 Groundwater Monitoring Event, Slag Settling Impoundment, Sibley Generating Station (December 2019).

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

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

Not applicable because there was no assessment monitoring conducted.

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

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

Not applicable because there was no assessment monitoring conducted.

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

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

Not applicable because there was no assessment monitoring conducted.

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

Within 90 days of finding that any constituent listed in appendix IV to this part has been detected at a statistically significant level exceeding the groundwater protection standard defined under § 257.95(h), or immediately upon detection of a release from a CCR unit, the owner or operator must initiate an assessment of corrective measures to prevent further releases, to remediate any releases and to restore affected area to original conditions. The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to

complete the assessment of corrective measures due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for no longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or approval from EPA where EPA is the permitting authority.

Not applicable because there was no assessment monitoring conducted.

3 GENERAL COMMENTS

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

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

APPENDIX A

FIGURES

Figure 1: Site Map

LEGEND:

701 — CCR GROUNDWATER MONITORING SYSTEM WELLS

— CCR UNIT BOUNDARY

200 0 200 400

SCALE FEET

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, MARCH 2015. MONITOR WELL LOCATIONS ARE APPROXIMATE.
3. BOUNDARY AND MONITORING WELL WELL LOCATIONS SHOWN ARE APPROXIMATE.

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EVERGY MISSOURI WEST, INC
SIBLEY SLAG SETTLING IMPOUNDMENT
SIBLEY GENERATING STATION
2019 GROUNDWATER MONITORING AND CORRECTIVE ACTION REPORT

CHK. BY: JRR	DWN. BY: TGW	DSN. BY: TGW	PROJ. NO. 27213169.19
PROJ. MGR: JRR	DATE: 1/07/20	CADD FILE: FIG 1 – SIBLEY SLAG IMP2019.DWG	FIG. NO. 1

APPENDIX B

TABLES

Table 1: Appendix III Detection Monitoring Results

Table 2: Detection Monitoring Field Measurements

Table 1
Slag Settling Impoundment
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)	Dissolved Solids (mg/L)
MW-701	5/22/2019	<0.200	86.9	8.36	0.144	6.94	13.4	312
MW-701	11/6/2019	<0.200	82.8	7.91	0.145	7.07	12.6	275
MW-702	5/22/2019	<0.200	88.4	8.09	0.142	7.02	17.0	301
MW-702	11/6/2019	<0.200	82.8	8.30	0.131	7.28	17.0	266
MW-703	5/22/2019	0.535	89.9	15.0	0.251	6.99	17.8	381
MW-703	7/16/2019	---	---	---	---	**7.10	*11.1	---
MW-703	8/21/2019	---	---	---	---	**7.02	*5.73	---
MW-703	11/6/2019	0.476	129	22.2	0.353	7.15	<5.00	512
MW-704	5/22/2019	<0.200	101	18.1	0.177	6.98	37.6	376
MW-704	7/16/2019	---	---	*19.5	*0.157	**7.16	---	---
MW-704	8/21/2019	---	---	*15.2	---	**7.18	---	---
MW-704	11/6/2019	<0.200	88.5	13.7	0.172	7.26	20.1	303

* 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

--- Not Sampled

Table 2
Slag Settling Impoundment
Detection Monitoring Field Measurements
Evergy Sibley Generating Station

Well Number	Sample Date	pH (S.U.)	Specific Conductivity (µS)	Temperature (^{o}C)	Turbidity (NTU)	ORP (mV)	DO (mg/L)	Water Level (ft btoc)	Groundwater Elevation (ft NGVD)
MW-701	5/22/2019	6.94	526	14.57	14.4	35	3.15	10.03	717.23
MW-701	11/6/2019	7.07	524	14.44	17.1	97	3.92	13.82	713.44
MW-702	5/22/2019	7.02	544	13.80	18.7	-113	4.47	11.54	715.75
MW-702	11/6/2019	7.28	529	15.31	0.0	-74	1.27	17.63	709.66
MW-703	5/22/2019	6.99	718	14.44	10.8	-177	0.21	11.63	715.68
MW-703	7/16/2019	**7.10	922	16.86	0.0	-181	4.17	15.83	711.48
MW-703	8/21/2019	**7.02	1060	18.47	0.0	-98	0.00	16.26	711.05
MW-703	11/6/2019	7.15	1150	15.31	0.0	-166	0.49	17.35	709.96
MW-704	5/22/2019	6.98	644	14.42	5.7	-48	0.00	12.09	715.56
MW-704	7/16/2019	**7.16	576	18.01	0.0	-75	0.00	16.12	711.53
MW-704	8/21/2019	**7.18	514	20.82	0.0	106	0.00	16.35	711.30
MW-704	11/6/2019	7.26	564	16.99	0.0	-22	0.66	17.41	710.24

* 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

^{o}C - Degrees Celsius

ft btoc - Feet Below Top of Casing

ft NGVD - National Geodetic Vertical Datum (NAVD 88)

NTU - Nephelometric Turbidity Unit

APPENDIX C

ALTERNATIVE SOURCE DEMONSTRATION

Groundwater Monitoring Alternative Source Demonstration Report May 2019 Groundwater Monitoring Event, Sibley Generating Station (December 2019)

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

SLAG SETTLING IMPOUNDMENT
SIBLEY GENERATING STATION
SIBLEY, MISSOURI

Presented To:

Evergy Missouri West, Inc.

Presented By:

SCS ENGINEERS

8575 West 110th Street, Suite 100

Overland Park, Kansas 66210

December 2019

File No. 27213169.18

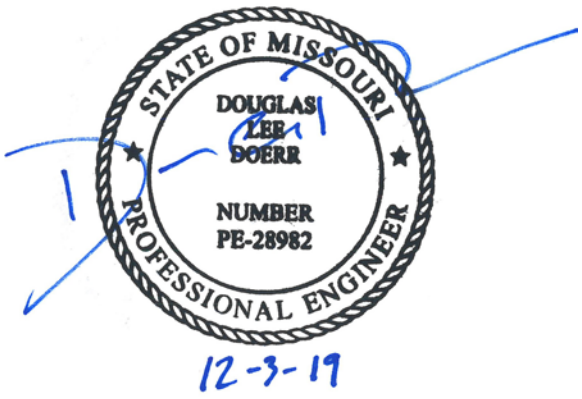
CERTIFICATIONS

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 Slag Settling Impoundment at the Sibley Generating Station. The Alternative Source Demonstration was prepared by me or under my direct supervision in accordance with generally accepted hydrogeological practices and the local standard of care.

John R. Rockhold, R.G.

SCS Engineers

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



Douglas L. Doerr, P.E.

SCS Engineers

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

The completed statistical evaluation identified one Appendix III constituent above its prediction limit in monitoring well MW-704.

Constituent/Monitoring Well	*UPL	Observation May 22, 2019	1st Verification July 16, 2019	2nd Verification August 21, 2019
Chloride				
704	14.12	18.1	19.5	15.2

*UPL – Upper Prediction Limit

Determination: A statistical evaluation was completed for all Appendix III detection monitoring constituents in accordance with the certified statistical method. The statistical evaluation confirmed one SSI above the background prediction limit for chloride in downgradient monitoring well MW-704.

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 Slag Settling Impoundment at the Sibley Generating Station, there are multiple lines of supporting evidence to indicate the above SSI was not caused by a release from the Slag Settling Impoundment. Select multiple lines of supporting evidence are described as follows.

3.1 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.

Box and whiskers plots for chloride in monitoring well MW-704 were compared to box and whisker plots for chloride in samples from the river and the Slag Settling Impoundment. Chloride comparisons indicate the concentrations in MW-704 are well below the concentration levels for the river and the Slag Settling Impoundment. Additionally, the chloride concentrations in the river and Slag Settling Impoundment are very similar indicating the chloride concentrations in MW-704 could be naturally occurring or from the river. This demonstrates that a source other than the Slag Settling Impoundment caused the SSI over background level, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Box and whisker plots for chloride are provided in **Appendix A**.

3.2 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.

Time series plots for chloride in monitoring well MW-704 were compared to time series plots for chloride in samples from the river and the Slag Settling Impoundment. Chloride comparisons indicate the concentrations in MW-704 are well below the concentration levels for the river and the Slag Settling Impoundment. Additionally, the chloride concentrations in the river and Slag Settling Impoundment are very similar indicating the chloride concentrations in MW-704 could be naturally occurring or from the river. This demonstrates that a source other than the Slag Settling Impoundment caused the SSI over background level, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Additionally, a time series plot was prepared for groundwater elevations for MW-704. The groundwater elevation for MW-704 increased significantly from the elevations observed during background sampling events. The background data set does not include data collected under the full spectrum of natural conditions such as those experienced during and after the historic Missouri River flooding in the spring and fall of 2019. This demonstrates that a source other than the Slag Settling Impoundment could have caused the SSI over background levels, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Time series plots for chloride are provided in **Appendix B**.

3.3 PIPER DIAGRAM PLOTS

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

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

A piper diagram generated for MW-704 and water from the Slag Settling Impoundment is provided in **Appendix C** and indicates the groundwater from MW-704 does not exhibit the same geochemical characteristics as the Slag Settling Impoundment. The groundwater and water from the Slag Settling Impoundment plot in separate clusters indicating there is no mixing of the two types of water (groundwater and Slag Settling Impoundment water). This demonstrates that a source other than the Slag Settling Impoundment caused the SSI over background levels for chloride, or that the SSI resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

4 CONCLUSION

Our opinion is that a sufficient body of evidence is available and presented above to demonstrate that a source other than the Slag Settling Impoundment caused the SSI over background levels, or that the SSI 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 Slag Settling Impoundment may continue with the detection monitoring program under § 257.94.

5 GENERAL COMMENTS

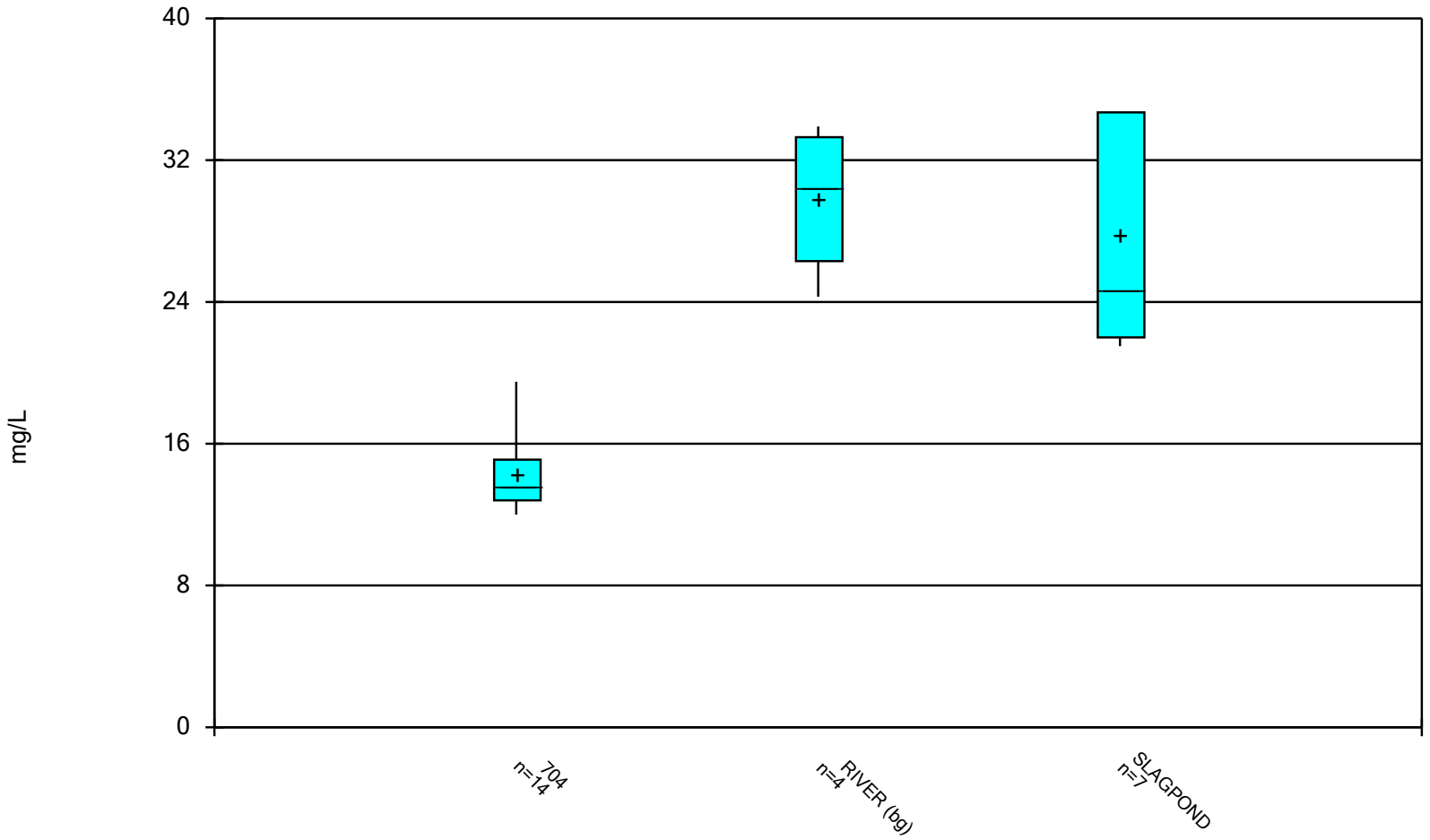
This report has been prepared and reviewed under the direction of a qualified groundwater scientist and qualified professional engineer. Please note that SCS Engineers does not warrant the work of regulatory agencies or other third parties supplying information used in the assimilation of this report.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

Box and Whiskers Plots

Box & Whiskers Plot



Constituent: Chloride Analysis Run 11/1/2019 1:14 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

Box & Whiskers Plot

Constituent: Chloride (mg/L) Analysis Run 11/1/2019 1:14 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	704	RIVER (bg)	SLAGPOND
5/26/2016	12.8	24.3	21.5
7/19/2016		32.7	
8/23/2016	13.4		24.7
11/10/2016	13.9	28.3	23.7
2/8/2017	13.4		34.7
2/9/2017		33.9	
5/3/2017	13.8		
5/4/2017			22
8/1/2017	13.6		33.2
10/3/2017	15		34.7
10/5/2017	13.6		
11/17/2017	12		
5/16/2018	12.8		
11/15/2018	12.8		
5/22/2019	18.1		
7/16/2019	19.5		
8/21/2019	15.2		
Median	13.6	30.5	24.7
LowerQ.	12.8	26.3	22
UpperQ.	15.1	33.3	34.7
Min	12	24.3	21.5
Max	19.5	33.9	34.7
Mean	14.28	29.8	27.79

Box & Whiskers Plot

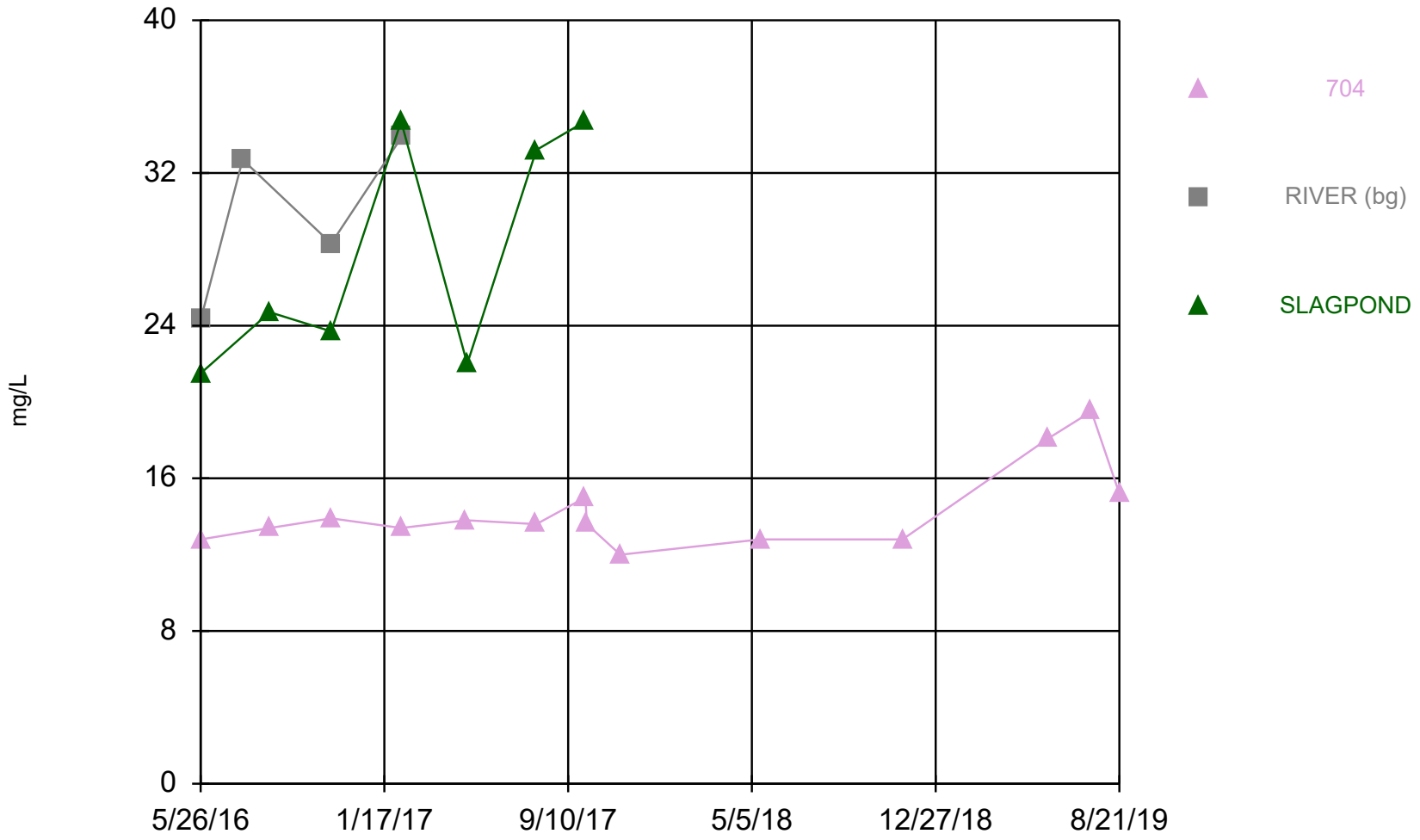
Sibley Client: SCS Engineers Data: Sibley Printed 11/1/2019, 1:14 PM

Constituent	Well	N	Mean	Std. Dev.	Std. Err.	Median	Min.	Max.	%NDs
Chloride (mg/L)	704	14	14.28	2.109	0.5637	13.6	12	19.5	0
Chloride (mg/L)	RIVER (bg)	4	29.8	4.386	2.193	30.5	24.3	33.9	0
Chloride (mg/L)	SLAGPOND	7	27.79	6.112	2.31	24.7	21.5	34.7	0

Appendix B

Time Series Plots

Time Series



Constituent: Chloride Analysis Run 11/1/2019 1:12 PM View: LF III Sibley Client: SCS Engineers Data: Sibley

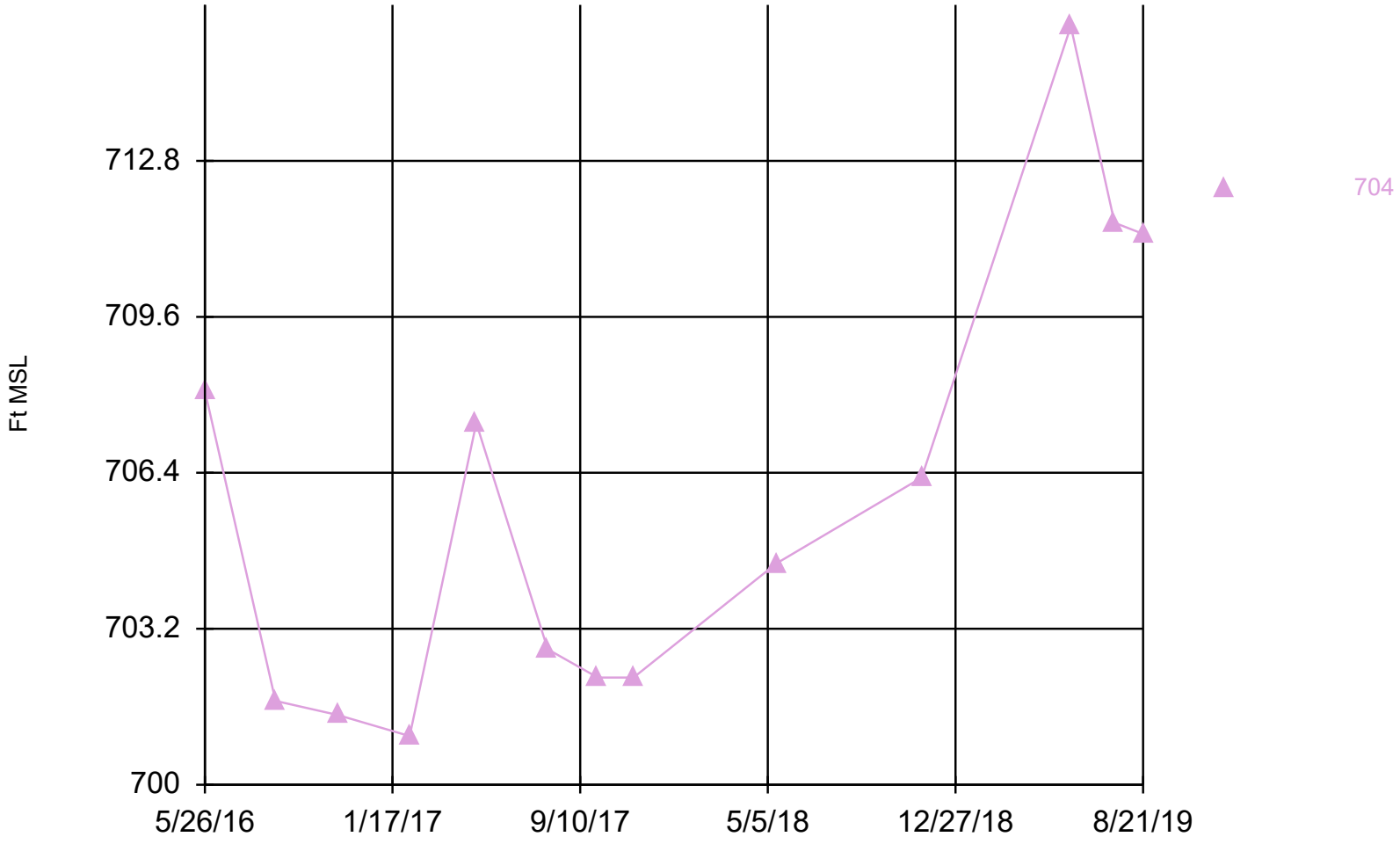
Time Series

Constituent: Chloride (mg/L) Analysis Run 11/1/2019 1:13 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

	704	RIVER (bg)	SLAGPOND
5/26/2016	12.8	24.3	21.5
7/19/2016		32.7	
8/23/2016	13.4		24.7
11/10/2016	13.9	28.3	23.7
2/8/2017	13.4		34.7
2/9/2017		33.9	
5/3/2017	13.8		
5/4/2017			22
8/1/2017	13.6		33.2
10/3/2017	15		34.7
10/5/2017	13.6		
11/17/2017	12		
5/16/2018	12.8		
11/15/2018	12.8		
5/22/2019	18.1		
7/16/2019	19.5		
8/21/2019	15.2		

Time Series



Constituent: Groundwater Elevation Analysis Run 11/1/2019 1:21 PM View: LF III
Sibley Client: SCS Engineers Data: Sibley

Time Series

Constituent: Groundwater Elevation (Ft MSL) Analysis Run 11/1/2019 1:22 PM View: LF III

Sibley Client: SCS Engineers Data: Sibley

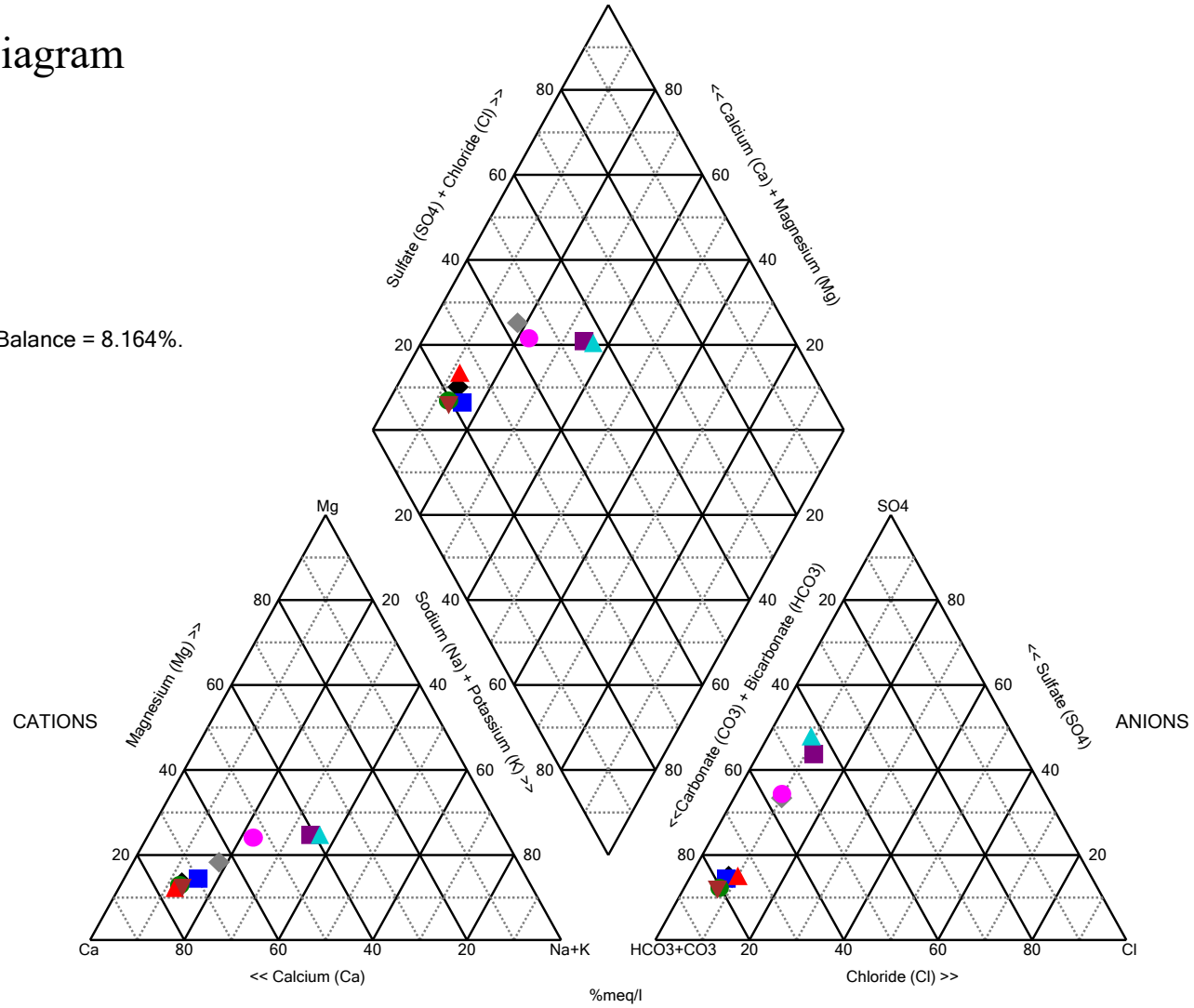
	704
5/26/2016	708.08
8/23/2016	701.72
11/10/2016	701.43
2/8/2017	701
5/3/2017	707.42
8/1/2017	702.78
10/3/2017	702.2
11/17/2017	702.2
5/16/2018	704.54
11/15/2018	706.3
5/22/2019	715.56
7/16/2019	711.53
8/21/2019	711.3

Appendix C

Piper Diagram

Piper Diagram

Cation-Anion Balance = 8.164%.



Analysis Run 11/1/2019 4:43 PM View: Slag Pond III

Sibley Client: SCS Engineers Data: Sibley

Piper Diagram

Analysis Run 11/1/2019 4:44 PM View: Slag Pond III

Sibley Client: SCS Engineers Data: Sibley

Totals (ppm)	Na	K	Ca	Mg	Cl	SO4	HCO3	CO3
704 5/26/2016	17.3	2.06	93.3	9.74	12.8	31.6	231	20
704 8/23/2016	18.8	1.87	95.2	9.61	13.4	31.7	245	20
704 11/10/2016	17.8	1.9	93.9	10.4	13.9	39.8	225	20
704 2/8/2017	19.5	1.98	80.9	9.96	13.4	37.7	225	20
704 7/16/2019	17.9	1.77	103	10.2	19.5	42.8	236	20
SLAGPOND 5/26/2016	36.1	6.13	82	22.5	21.5	111	193	20
SLAGPOND 8/23/2016	73.5	7.59	72	27.7	24.7	192	184	20
SLAGPOND 11/10/2016	52.6	5.83	169	28.9	23.7	118	217	20
SLAGPOND 2/8/2017	63.4	8.03	70.3	25.9	34.7	188	210	20