2020 Annual Groundwater Monitoring and Corrective Action Report

Sutherland Generating Station
3001 E Main Street Road
Marshalltown, Iowa 50158

Prepared for:

Interstate Power and Light Company
4902 N. Biltmore Lane
Madison, Wisconsin 53718

SCS ENGINEERS

25221076.00 | June 3, 2021

2830 Dairy Drive
Madison, WI 53718-6751
608-224-2830

OVERVIEW OF CURRENT STATUS

Sutherland Generating Station
2020 Annual Report

In accordance with §257.90(e)(6), this section at the beginning of the annual report provides an overview of the current status of groundwater monitoring and corrective action programs for the coal combustion residual (CCR) unit. The groundwater monitoring system, at the Sutherland Generating Station (SGS), monitors the capped inactive multisystem of impoundments. Supporting information is provided in the text of the annual report.

Category	Rule Requirement	Site Status
Monitoring Status – Start of Year	(i) 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;	Assessment
Monitoring Status – End of Year	(ii) 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;	Assessment
Statistically Significant Increases (SSIs)	(iii) 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	<u>February 2020</u> Boron: MW-303, MW-304, MW-305, MW-306 Calcium: MW-303, MW-304, MW-305, MW-306 Sulfate: MW-303, MW-304, MW-305, MW-306 Total Dissolved Solids: MW-303, MW-304, MW-305, MW-306 <u>April 2020</u> Boron: MW-303, MW-304, MW-305, MW-306

Category	Rule Requirement	Site Status
SSIs (continued)		Calcium: MW-303, MW-304, MW-305, MW-306 Fluoride: MW-303, MW-305 Sulfate: MW-303, MW-304, MW-305, MW-306 Total Dissolved Solids: MW-303, MW-304, MW-305, MW-306 <u>October 2020</u> Boron: MW-303, MW-304, MW-305, MW-306 Calcium: MW-303, MW-304, MW-305, MW-306 Fluoride: MW-306 Sulfate: MW-303, MW-304, MW-305, MW-306 Total Dissolved Solids: MW-303, MW-304, MW-305, MW-306 Note: See Table 5 for complete results from 2020.
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	January 13, 2020

Category	Rule Requirement	Site Status
Statistically Significant Levels (SSL) Above Groundwater Protection Standard	(iv) 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 – No SSL above Groundwater Protection Standard (GPS).
	(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	Not Applicable – Assessment of Corrective Measures (ACM) not required.
	(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	Not Applicable – ACM not required.
	(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.	Not Applicable – ACM not required.
Selection of Remedy	(v) 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 – Selection of remedy not required.
Corrective Action	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable – remedial activities not required.

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1.0 INTRODUCTION

This 2020 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" published by the U.S. 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 amendments. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.100 and 40 CFR 257.90(e) for inactive CCR surface impoundments. The applicable sections of the Rule are provided below in *italics*, followed by applicable information relative to the 2020 Annual Groundwater Monitoring and Corrective Action Report for the CCR unit.

This report covers the period of groundwater monitoring from January 1, 2020, through December 31, 2020.

The groundwater monitoring network at Sutherland Generating Station (SGS) is a multiunit system for the closure area that includes the following inactive CCR units:

- SGS North Primary Pond (inactive surface impoundment – closed June 2020)
- SGS South Primary Pond (inactive surface impoundment– closed June 2020)
- SGS Main Pond (inactive surface impoundment– closed June 2020)
- SGS Polishing Pond (inactive surface impoundment– closed June 2020)

The system is designed to detect monitored constituents at the waste boundary of the SGS CCR units as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two upgradient and four downgradient monitoring wells (**Table 1**, **Figure 1**, and **Figure 2**).

2.0 BACKGROUND

To provide context for the annual report, the following background information is provided in this section of the report, prior to the annual requirement sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

2.1 GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial alluvium aquifer, composed of glacial drift, sand, and gravel, is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at SGS. Immediately underlying the surficial alluvium aquifer is the Mississippian Limestone unit. Devonian aged units underlie the Mississippian limestone and are composed of shale, dolomite, and limestone. Silurian dolomite underlies the Devonian shale, dolomite, and limestone (**Appendix A**).

The Iowa River and associated alluvial aquifers are a major source of surface water and shallow groundwater in the area.

Unconsolidated deposits at the site consist of clays overlain by loess, which are not productive sources of groundwater (U.S. Department of Agriculture and Soil Conservation Service [USDA], 1981). The uppermost Pennsylvanian bedrock unit is considered to be a regional aquitard.

Regional information indicates that groundwater flow within the Mississippian limestone is to the south-southeast.

2.1.2 Site Information

During drilling of CCR wells MW-301 through MW-306 the unconsolidated materials were identified as consisting primarily of sand, lean clay, and silty sand. The boring logs for the SGS monitoring wells are provided in **Appendix B**. All CCR monitoring wells are screened within interbedded sands, lean clays, and silty sand units.

The shallow groundwater flow at the water table is generally to the east, as shown on the April and October 2020 shallow water table maps (**Figure 3** and **Figure 4**). This flow direction is consistent with previous water table maps, and the regional groundwater flow. The groundwater monitoring well network summary is provided in **Table 1**. The sampling event summary is provided in **Table 2**, and the groundwater elevation data for the CCR monitoring wells are provided in **Table 3**. Estimated horizontal gradients and flow velocities for flow at the shallow and deep levels within the aquifer are provided in **Table 4**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and four downgradient monitoring wells (**Table 1** and **Figure 2**). The background wells include MW-301 and MW-302. The downgradient wells include MW-303, MW-304, MW-305, and MW-306. The CCR Rule wells are installed in the primarily poorly graded sands, clays, and silty sands. Well depths range from approximately 18 to 19 feet, measured from the top of the well casing.

3.0 257.100(E)(5) GROUNDWATER MONITORING AND CORRECTIVE ACTION FOR INACTIVE CCR SURFACE IMPOUNDMENTS

The owner or operator of the inactive CCR surface impoundment must: (i) No later than April 17, 2019, comply with groundwater monitoring requirements set forth in §§ 257.90(b) and 257.94(b); and (ii) No later than August 1, 2019, prepare the initial groundwater monitoring and corrective action report as set forth in § 257.90(e).

This report is submitted to fulfill the report requirement.

4.0 §257.90(E) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. *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:

4.1 §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 map of the location of the site is provided as **Figure 1**. A map showing the site layout and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 2**.

4.2 §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 groundwater monitoring program for the CCR units in 2020.

4.3 §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;

Four groundwater sampling events were completed for the SGS CCR units in 2020. In February 2020, the second round of assessment monitoring was completed. The first round of assessment monitoring was completed in December 2019.

Assessment monitoring continued in 2020 with assessment monitoring sampling events in April and October as well as a supplemental sampling event that occurred in May 2020 at MW-305 and MW-306. 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 or assessment monitoring program is included in **Table 2**.

Groundwater samples collected in the February, April, and October sampling events were analyzed for both Appendix III and Appendix IV constituents. The sample collected at MW-305 in the May event was analyzed for field pH and radium. The sample collected at MW-306 in the May event was analyzed for field pH and lithium. The May samples were supplemental samples collected as a follow-up to the April event to further characterize radium and lithium concentrations at these wells.

The sampling results for Appendix III and Appendix IV parameters in 2020 are summarized in **Table 5**. Field parameter results for the 2020 sampling events are provided in **Table 6**. The analytical laboratory reports for 2020 are provided in **Appendix C**. Historical results for each monitoring well are summarized in **Appendix D**.

4.4 §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);

Assessment monitoring for the site was initiated in January 2020. The statistical evaluation of the October 2019 assessment monitoring results was completed in January 2020. The initial evaluation of assessment groundwater monitoring performed at SGS includes December 2019, February and April 2020, and was completed in July 2020. Evaluation of the May 2020 resampling results was also completed in July 2020.

In accordance with the Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (USEPA, 2009), the comparison of assessment monitoring results to the Groundwater Protection Standard (GPS) was based on the lower confidence limit (LCL) for the arithmetic mean. The LCL evaluation was completed for lithium, which is the only Appendix IV parameter that has been detected at a concentration exceeding the GPS in at least one sample result since assessment monitoring was initiated. The LCLs were calculated with Sanitas™ using historical concentrations measured since assessment monitoring began in December 2019. The most recent LCL evaluation, completed for the October 2020 event, is provided in **Appendix E**.

Lithium was not determined to be at a statistically significant level above the GPS at any of the compliance monitoring wells. Monitoring well MW-306 had individual results above the GPS in 2020 but the LCL is below the GPS.

4.5 §257.90(E)(5) OTHER REQUIREMENTS

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

Additional potentially applicable requirements for the annual report, and the location of the requirement within the Rule, are provided in the following sections. For each cited section of the Rule, the portion referencing the annual report requirement is provided below in *italics*, followed by applicable information relative to the 2020 Annual Groundwater Monitoring and Corrective Action Report for the CCR units.

4.5.1 §257.90(e) General Requirements

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.

Status of Groundwater Monitoring and Corrective Action Program. The groundwater monitoring and corrective action program is currently in assessment monitoring.

Summary of Key Actions Completed.

- Establishment of assessment monitoring program (January 13, 2020).
- Statistical evaluation for the October 2019 assessment monitoring event, completed on January 13, 2020.
- Second round of initial assessment monitoring (February 2020).
- Two semiannual groundwater sampling and analysis events (April and October 2020).
- One supplemental sampling event for radium at MW-305 and lithium at MW-306 (May 2020).
- Initial statistical evaluation of assessment groundwater monitoring, including sampling events in December 2019, February 2020, April 2020, and May 2020 (completed July 13, 2020).

Description of Any Problems Encountered. No problems were encountered in 2020.

Discussion of Actions to Resolve the Problems. Not applicable.

Projection of Key Activities for the Upcoming Year (2021):

- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the October 2020 monitoring event (by January 15, 2021).
- Two semiannual groundwater sampling and analysis events (April and October 2021).
- Statistical evaluation and determination of any statistically significant levels exceeding the GPS for the April 2021 monitoring event (by July 15, 2021).
- Supplemental monitoring events and/or installation of additional monitoring wells as needed to further evaluate lithium concentrations at MW-306.

4.5.2 §257.94(d) Alternative Detection Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. SGS is no longer in detection monitoring.

4.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

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.

Not applicable. No alternative source demonstration was completed in 2020.

4.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

The owner or operator must include the demonstration providing the basis for the alternative monitoring frequency and the certification by a qualified professional engineer in the annual groundwater monitoring and corrective action report required by § 257.90(e).

Not applicable. Assessment monitoring has been initiated at the site, but no alternative assessment monitoring frequency is proposed at this time.

4.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards

Include the recorded concentrations required by paragraph (d)(1) of this section, identify the background concentrations established under § 257.94(b), and identify the groundwater protection standards established under paragraph (d)(2) of this section in the annual groundwater monitoring and corrective action report required by § 257.90(e).

The 2020 assessment monitoring results, background upper prediction limits (UPLs), and GPSs established for SGS are provided in Table 5. The laboratory reports are provided in Appendix C. Historical monitoring results are summarized in Appendix D.

4.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

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.

Not applicable. No alternative source demonstration for assessment monitoring was completed in 2020.

4.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment

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 measure 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 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.

Not applicable. Corrective measures assessment has not been initiated.

§257.90(E)(6) OVERVIEW

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.

The specific requirements for the overview under §257.90(e)(6) are listed and the information is provided at the beginning of this report, before the Table of Contents.

5.0 REFERENCES

U.S. Department of Agriculture and Soil Conservation Service, 1981, Soil Survey on Marshall County Iowa.

U.S. Environmental Protection Agency (USEPA), 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

U.S. Environmental Protection Agency, 2015, Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities; Final Rule, April 2015.

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Tables

Table 1. Groundwater Monitoring Well Network
Sutherland Generating Station / SCS Engineers Project #25221076.00

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-301	Upgradient	Background
MW-302	Upgradient	Background
MW-303	Downgradient	Compliance
MW-304	Downgradient	Compliance
MW-305	Downgradient	Compliance
MW-306	Downgradient	Compliance

Created by:	RM	Date:	12/14/2020
Last revision by:	RM	Date:	2/1/2021
Checked by:	NDK	Date:	2/23/2021

Table 2. Groundwater Samples Summary
Sutherland Generating Station / SCS Engineers Project #25221076.00

Sample Dates	Compliance Wells				Background Wells	
	MW-303	MW-304	MW-305	MW-306	MW-301	MW-302
2/3/2020	A	A	A	A	A	A
4/7/2020	A	A	A	A	A	A
5/11/2020	--	--	R-A	R-A	--	--
10/13/2020	A	A	A	A	A	A
Total Samples	3	3	4	4	3	3

Abbreviations:
B = Background Monitoring program sampling event
D = Detection Monitoring Program sampling event
A = Assessment Monitoring Program sampling event
R-A = Assessment Monitoring Program resampling event

Created by: NDK Date: 6/10/2019
Last revision by: RM Date: 2/3/2021
Checked by: NDK Date: 2/23/2021

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Table 3. Groundwater Elevation Summary
Sutherland Generating Station / SCS Engineers Project #25221076.00

	Ground Water Elevation in feet above mean sea level (amsl)					
Well Number	**MW-301**	**MW-302**	**MW-303**	**MW-304**	**MW-305**	**MW-306**
Top of Casing Elevation (feet amsl)	866.61	863.08	859.54	860.79	859.81	861.13
Screen Length (ft)	10.00	10.00	10.00	10.00	10.00	10.00
Total Depth (ft from top of casing)	18.80	18.50	18.65	18.80	19.08	18.71
Top of Well Screen Elevation (ft)	857.81	854.58	850.89	851.99	850.73	852.42
Measurement Date						
November 29, 2017	853.76	853.81	851.98	851.74	851.68	851.36
March 26-27, 2018	855.23	855.97	854.35	853.79	853.64	853.49
May 23, 2018	855.45	855.32	854.07	853.92	853.99	854.11
June 26, 2018	856.24	856.55	854.97	854.64	854.55	854.57
July 26, 2018	855.96	855.75	854.14	853.86	854.00	853.94
September 11, 2018	857.41	857.06	855.96	855.66	855.94	856.48
November 28, 2018	856.99	856.74	855.01	854.79	854.87	854.91
January 9, 2019	856.85	856.82	855.11	854.93	854.94	854.94
February 12, 2019	856.59	856.43	854.58	854.41	854.56	854.75
April 2, 2019	857.33	857.12	855.60	855.47	855.67	855.96
October 16, 2019	856.15	855.30	854.90	854.78	854.99	852.16
December 11-12, 2019	857.05	856.11	854.47	854.29	854.33	854.39
February 3, 2020	856.24	856.59	854.57	854.35	854.28	854.14
April 7, 2020	856.16	856.23	854.63	854.54	854.64	854.70
May 11, 2020	NM	NM	NM	NM	853.78	853.71
October 13, 2020	854.44	854.38	851.70	851.30	851.32	851.13
Bottom of Well Elevation (ft)	847.81	844.58	840.89	841.99	840.73	842.42

Notes:
NM = not measured

Created by: NDK Date: 1/15/2018
Last revision by: ACW Date: 10/21/2020
Checked by: RM Date: 10/22/2020
Proj Mgr QA/QC: TK Date: 4/25/2021

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Table 4. Groundwater Gradients and Average Linear Flow Velocities
Sutherland Generating Station /
SCS Engineers Project #25221076.00
January - December 2020

	East				
Sampling Dates	**h1 (ft)**	**h2 (ft)**	**Δl (ft)**	**Δh/Δl (ft/ft)**	**V (ft/d)**
4/7/2020	855.00	854.64	497	0.0007	0.1
10/13/2020	852.00	851.32	616	0.001	0.2

Well	**K Value (cm/sec)**	**K Value (ft/d)**
MW-301	6.5E-02	184
MW-302	4.0E-02	113
MW-303	1.7E-02	48
MW-304	1.2E-02	34
MW-305	3.9E-02	111
MW-306	2.6E-02	75
Geometric Mean	2.2E-02	61

Note: Geometric Mean calculation does not include the upgradient wells

Assumed Porosity, n
0.40

Groundwater flow velocity equation: V = [K*(Δh/Δl)] / n

ft = feet
ft/d = feet per day
K = hydraulic conductivity
n = effective porosity
V = groundwater flow velocity

h1, h2 = point interpreted groundwater elevation at locations 1 and 2
Δl = distance between location 1 and 2
Δh/Δl = hydraulic gradient

Created by: RM Date: 12/29/2020
Last revision by: NDK Date: 5/6/2021
Checked by: SCC Date: 5/6/2021

Table 5. 2020 Groundwater Analytical Results Summary
Sutherland Generating Station / SCS Engineers Project #25221076.00

Parameter Name	UPL Method	UPL	GPS	Background Wells						Compliance Well		
				MW-301			MW-302			MW-303		
				2/3/2020	4/7/2020	10/13/2020	2/3/2020	4/7/2020	10/13/2020	2/3/2020	4/7/2020	10/13/2020
Appendix III												
Boron, ug/L	P	307		120 J	<100	370	<100	<100	<80	440	530	710
Calcium, mg/L	P	96		82	78	100	56	71	71	160	110	120
Chloride, mg/L	P	63.5		28	21	71	3.8 J	5.2	5.6	12	11	14
Fluoride, mg/L	P	0.32		--	0.41 J	<0.23	--	0.55	0.30 J	--	0.68	0.44 J
Field pH, Std. Units	P	7.8		6.79	6.87	6.66	7.31	7.36	7.43	6.84	7.17	7.12
Sulfate, mg/L	P	95.6		32	17	98	17	14	12	350	210	190
Total Dissolved Solids, mg/L	P	516		380	330	540	250	250	260	830	570	610
Appendix IV												
Antimony, ug/L	P	2.9	6	--	<0.58	--	--	<0.58	--	--	<0.58	--
Arsenic, ug/L	P	40	40	<0.88	<0.88	<0.88	19	5.3	4.6	<0.88	<0.88	1.6 J
Barium, ug/L	NP	1,100	2,000	120	240	110	100	97	100	55	41	65
Beryllium, ug/L	NP	1.3	4	--	0.33 J	<0.27	--	<0.27	<0.27	--	<0.27	<0.27
Cadmium, ug/L	P	0.97	5	0.047 J	0.17	0.077 J	<0.039	<0.039	<0.049	<0.039	0.20	<0.049
Chromium, ug/L	P	3.7	100	--	1.1 J	<1.1	--	<1.1	<1.1	--	<1.1	<1.1
Cobalt, ug/L	P	8.8	8.8	0.75	1.6	0.28 J	3.7	1.7	0.77	1.3	0.53	1.0
Fluoride, mg/L	P	0.32	4	--	0.41 J	<0.23	--	0.55	0.30 J	--	0.68	0.44 J
Lead, ug/L	P	2.9	15	0.34 J	0.50	<0.11	<0.27	<0.27	<0.11	<0.27	0.31 J	<0.11
Lithium, ug/L	NP	13	40	2.7 J	3.4 J	3.2 J	<2.3	<2.3	2.8 J	22	23	26
Mercury, ug/L	DQ	DQ	2	--	<0.10	--	--	<0.10	--	--	<0.10	--
Molybdenum, ug/L	P	18	100	<1.1	<1.1	2.5	<1.1	<1.1	<1.1	11	23	22
Selenium, ug/L	P	16	50	--	<1.0	--	--	<1.0	--	--	<1.0	--
Thallium, ug/L	NP*	0.43	2	--	<0.26	--	--	<0.26	--	--	<0.26	--
Radium 226/228 Combined, pCI/L	P	3.2	5	0.388	0.291	0.463	0.808	0.547	0.580	0.159	1.18	0.531

Blue shaded cell indicates the compliance well result exceeds the UPL and the LOQ

Yellow shaded cell indicates the compliance well result exceeds the GPS.

Table 5. 2020 Groundwater Analytical Results Summary
Sutherland Generating Station / SCS Engineers Project #25221076.00

Parameter Name	UPL Method	UPL	GPS	Compliance Wells										
				MW-304			MW-305				MW-306			
				2/3/2020	4/7/2020	10/13/2020	2/3/2020	4/7/2020	5/11/2020	10/13/2020	2/3/2020	4/7/2020	5/11/2020	10/13/2020
Appendix III														
Boron, ug/L	P	307		560	580	830	930	850	--	1,400	2500	2500	--	3,800
Calcium, mg/L	P	96		150	150	150	140	170	--	140	220	220	--	230
Chloride, mg/L	P	63.5		21	15	11	17	12	--	17	12	14	--	21
Fluoride, mg/L	P	0.32		--	0.49 J	<0.23	--	0.69	--	0.46 J	--	0.75 J	--	0.65
Field pH, Std. Units	P	7.8		6.71	6.68	6.64	6.61	6.70	5.97	7.33	7.61	7.72	7.08	7.62
Sulfate, mg/L	P	95.6		360	350	330	440	450	--	410	550	560	--	400
Total Dissolved Solids, mg/L	P	516		800	750	800	850	900	--	790	1100	1100	--	1,200
Appendix IV														
Antimony, ug/L	P	2.9	6	--	<0.58	--	--	<0.58	--	--	--	<0.58	--	--
Arsenic, ug/L	P	40	40	<0.88	<0.88	<0.88	6.3	8.8	--	11	4.6	3.6	--	4.4
Barium, ug/L	NP	1,100	2,000	24	22	21	32	41	--	52	100	99	--	110
Beryllium, ug/L	NP	1.3	4	--	<0.27	<0.27	--	<0.27	--	<0.27	--	<0.27	--	<0.27
Cadmium, ug/L	P	0.97	5	0.36	0.079 J	0.075 J	<0.039	<0.039	--	<0.049	<0.039	0.045 J	--	<0.049
Chromium, ug/L	P	3.7	100	--	<1.1	<1.1	--	<1.1	--	<1.1	--	<1.1	--	<1.1
Cobalt, ug/L	P	8.8	8.8	0.19 J	0.28 J	0.11 J	1.6	2.1	--	0.60	0.85	0.66	--	0.68
Fluoride, mg/L	P	0.32	4	--	0.49 J	<0.23	--	0.69	--	0.46 J	--	0.75 J	--	0.65
Lead, ug/L	P	2.9	15	<0.27	<0.27	<0.11	<0.27	0.48 J	--	<0.11	<0.27	<0.27	--	<0.11
Lithium, ug/L	NP	13	40	<2.3	<2.3	2.8 J	10	12	--	22	39	40	42	52
Mercury, ug/L	DQ	DQ	2	--	<0.10	--	--	<0.10	--	--	--	<0.10	--	--
Molybdenum, ug/L	P	18	100	1.5 J	<1.1	1.4 J	18	20	--	36	38	36	--	42
Selenium, ug/L	P	16	50	--	<1.0	--	--	<1.0	--	--	--	<1.0	--	--
Thallium, ug/L	NP*	0.43	2	--	<0.26	--	--	<0.26	--	--	--	<0.26	--	--
Radium 226/228 Combined, pCI/L	P	3.2	5	0.0516	0.494	0.606	0.510	3.1	0.557	0.986	0.214	0.36	--	0.510

Blue shaded cell ir

Yellow shaded cel

Table 5. 2020 Groundwater Analytical Results Summary
Sutherland Generating Station / SCS Engineers Project #25221076.00

Abbreviations:

UPL = Upper Prediction Limit	P = Parametric UPL with 1-of-2 retesting	
ug/L= micrograms per Liter	NP= Nonparametric UPL (highest background value)	LOD = Limit of Detection
mg/L = milligrams per Liter	DQ= Double Quantification (not detected in background)	LOQ = Limit of Quantification

Lab Notes/Qualifiers:

F1 = MS and/or MSD Recovery is outside acceptance limits.
J = Result is less than the reporting limit but greater than limits or equal to the method detection limit and the concentration is an approximate value.
* = UPL is below the LOQ for background sampling. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs above background or statistically significant level above GPS.

Notes:

1. An individual result above the UPL or GPS does not constitute a statistically significant increase (SSI) above background or statistically significant level above the GPS. See the accompanying report text for identification of statistically significant results.
2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCL), if established; otherwise, the values from 40 CFR 257.95(h)(2).
3. Interwell UPLs calculated based on results from background wells MW-301 and MW-302.

Created by:	NDK	Date:	7/10/2019
Last revision by:	ZTW	Date:	4/25/2021
Checked by:	NDK	Date:	4/25/2021
Proj Mgr QA/QC:	SCC	Date:	5/4/2021

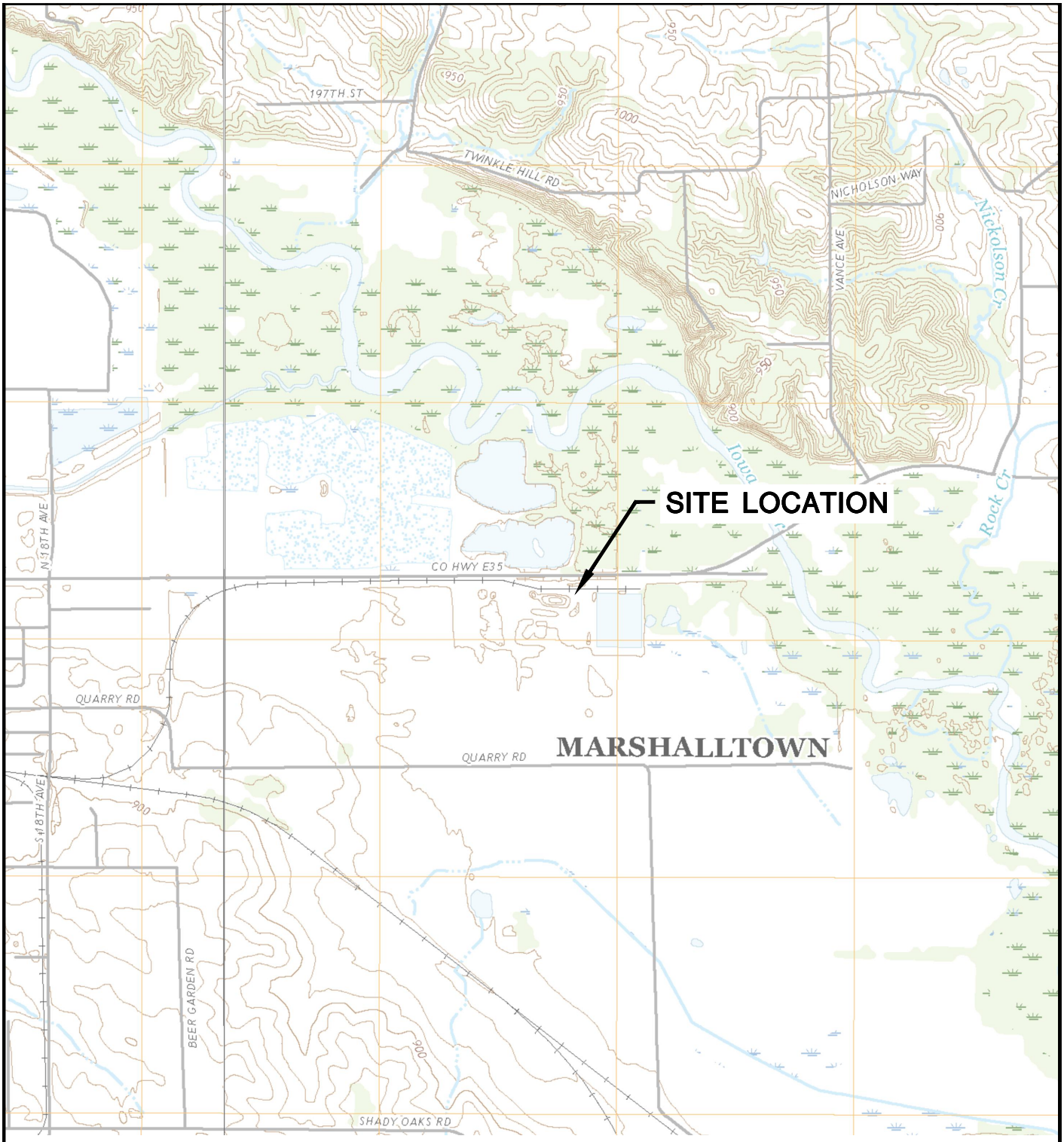
Table 6. 2020 Groundwater Field Data Summary
Sutherland Generating Station / SCS Engineers Project #25221076.00
January - December 2020

Well	Sample Date	Groundwater Elevation (feet)	Field Temperature (deg C)	Field pH (Std. Units)	Oxygen, Dissolved (mg/L)	Field Specific Conductance (umhos/cm)	Field Oxidation Potential (mV)	Turbidity (NTU)
MW-301	2/3/2020	856.24	9.54	6.79	3.24	651.0	61.7	19.10
	4/7/2020	856.16	11.00	6.87	0.13	583.7	143.1	68.50
	10/13/2020	854.44	17.80	6.66	0.11	906.0	30.0	19.10
MW-302	2/3/2020	856.59	9.42	7.31	0.95	464.0	5.6	2.87
	4/7/2020	856.23	11.30	7.36	0.14	456.2	-80.4	6.32
	10/13/2020	854.38	13.20	7.43	0.11	463.6	-103.6	3.70
MW-303	2/3/2020	854.57	7.99	6.84	1.89	1173	60.1	5.25
	4/7/2020	854.63	11.30	7.17	0.13	814.0	124.3	3.58
	10/13/2020	851.70	14.40	7.12	0.20	888.0	-74.2	2.38
MW-304	2/3/2020	854.35	8.09	6.71	1.87	1149	62.5	1.59
	4/7/2020	854.54	10.40	6.68	0.28	1016	95.1	2.12
	10/13/2020	851.30	14.50	6.64	6.20	1033	39.1	1.68
MW-305	2/3/2020	854.28	9.90	6.61	1.09	1200	57.8	4.90
	4/7/2020	854.64	10.20	6.70	0.20	1198	-6.6	8.14
	5/11/2020	853.78	9.10	5.97	0.12	1215	20.2	2.98
	10/13/2020	851.32	14.80	7.33	0.12	1029	-79.3	3.75
MW-306	2/3/2020	854.14	10.86	7.61	1.46	1446	72.7	0.74
	4/7/2020	854.70	11.10	7.72	0.12	1428	209.2	0.58
	5/11/2020	853.71	10.70	7.08	0.10	1557	123.2	1.43
	10/13/2020	851.13	15.00	7.62	0.09	1445	-97.4	0.02

Created by:	RM	Date:	12/22/2020
Last revision by:	RM	Date:	2/2/2021
Checked by:	ZTW	Date:	2/23/2021

I:\25220076.00\Data and Calculations\Tables\Field Data\[Table 6 - SGS_2020 Field Parameters.xlsx]Sheet1

Figures



N

LE GRAND QUADRANGLE
IOWA–MARSHALL COUNTY
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT	ALLIANT ENERGY 4902 N. BILTMORE LANE, #1000 MADISON, WI 53718	SITE	ALLIANT ENERGY SUTHERLAND GENERATING STATION MARSHALLTOWN, IOWA

SITE LOCATION MAP

PROJECT NO.	25219076.00	DRAWN BY:	BSS
DRAWN:	11/15/2019	CHECKED BY:	MDB
REVISED:	01/14/2020	APPROVED BY:	TK 01/28/2021

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

FIGURE
1

I:\25219076.00\Drawings\CCR 2019 Annual Report\Site Location Map.dwg, 1/14/2020 1:50:24 PM

EAST MAIN STREET

MW-301

MW-302

MW-303

MW-304

MW-305

MW-306

FORMER COAL STOCKPILE

FORMER POWER PLANT

C-STONE STOCKPILE

LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNIT

NOTES:

1. 2014 AERIAL PHOTOGRAPH SOURCES: ESRI, DIGITALGLOBE, GEOEYE, I-CUBED, USDA FSA, USGS, AEX, GETMAPPING, AEROGRID, IGN, IGP, SWISSTOPO, AND THE GIS USER COMMUNITY.
2. MONITORING WELLS MW-301 THROUGH MW-306 WERE INSTALLED BY DIRECT PUSH ANALYTICAL NOVEMBER 20-21, 2017.
3. CCR UNIT LIMITS ARE APPROXIMATE.
4. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.

N

200 0 200

SCALE: 1" = 200'

PROJECT NO.	25220076.00	DRAWN BY:	BSS
DRAWN:	11/14/2019	CHECKED BY:	TK/NDK
REVISED:	05/05/2021	APPROVED BY:	SCC 05/06/2021

ENGINEER

SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT

ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718

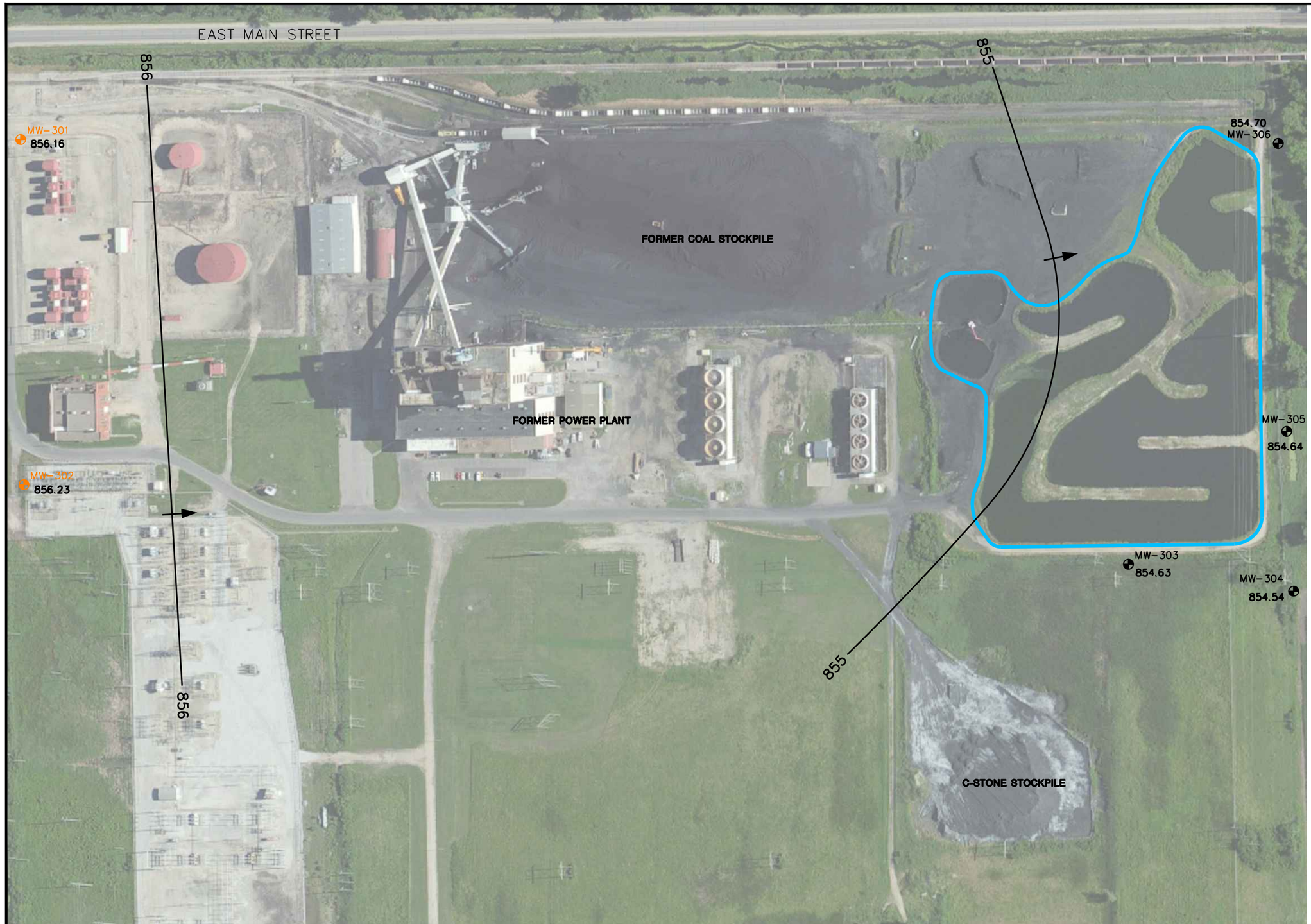
SITE

ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MASHALLTOWN, IOWA

SITE PLAN AND MONITORING WELL LOCATIONS

FIGURE 2

I:\25220076.00\Drawings\Site Plan and Monitoring □ ell Locations.dwg, 5/6/2021 9:□0:□□ AM



LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNITS
- 855.60 WATER TABLE ELEVATION (APRIL 7, 2020)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTE:

1. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.

N

200 0 200

SCALE: 1" = 200'

PROJECT NO.	25220076.00	DRAWN BY:	BSS/JMO/ZTW
DRAWN:	09/12/2020	CHECKED BY:	TK/NDK
REVISED:	05/05/2021	APPROVED BY:	SCC 05/06/2021

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MASHALLTOWN, IOWA

WATER TABLE MAP
APRIL 2020

FIGURE 3

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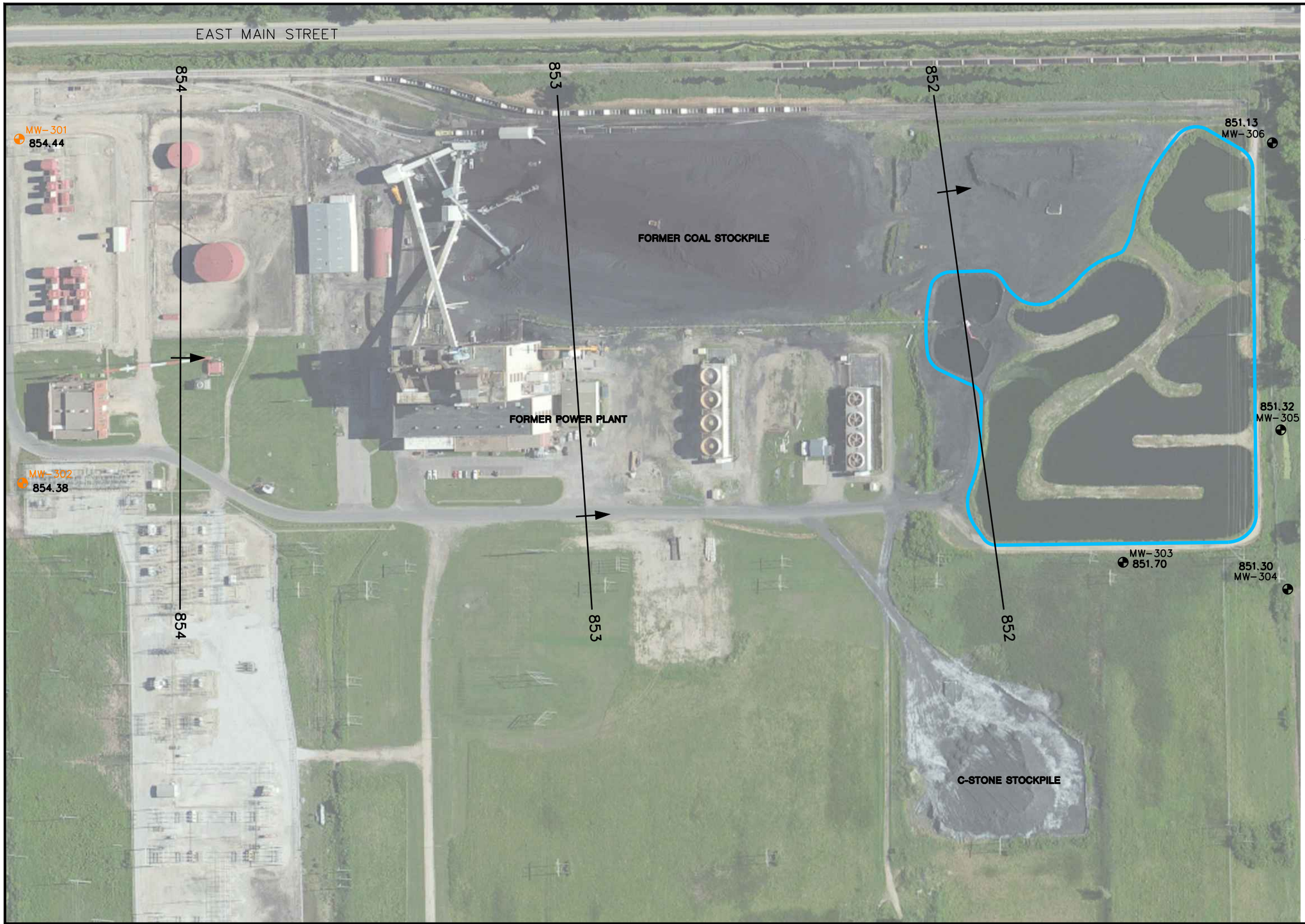


LEGEND

- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNITS
- 855.60 WATER TABLE ELEVATION (OCTOBER 13, 2020)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTE:

1. THE BACKGROUND MONITORING WELLS FOR THE SUTHERLAND GENERATING STATION ARE MW-301 AND MW-302.

N

200 0 200

SCALE: 1" = 200'

PROJECT NO.	25220076.00	DRAWN BY:	BSS/JMO/ZTW
DRAWN:	11/12/2020	CHECKED BY:	TK/NDK
REVISED:	05/05/2021	APPROVED BY:	SCC 05/06/2021

ENGINEER: SCS ENGINEERS
2830 DAIRY DRIVE MADISON, WI 53718-6751
PHONE: (608) 224-2830

CLIENT: ALLIANT ENERGY
4902 N. BILTMORE LANE, #1000
MADISON, WI 53718

SITE: ALLIANT ENERGY
SUTHERLAND GENERATING STATION
MASHALLTOWN, IOWA

WATER TABLE MAP
OCTOBER 2020

FIGURE 4

I:\25220076.00\Drawings\□ □□L Maps.dwg, 5/6/2021 9:□ 7:25 AM

Appendix A

Summary of Regional Hydrogeologic Stratigraphy

The aquifers and rocks in central Iowa

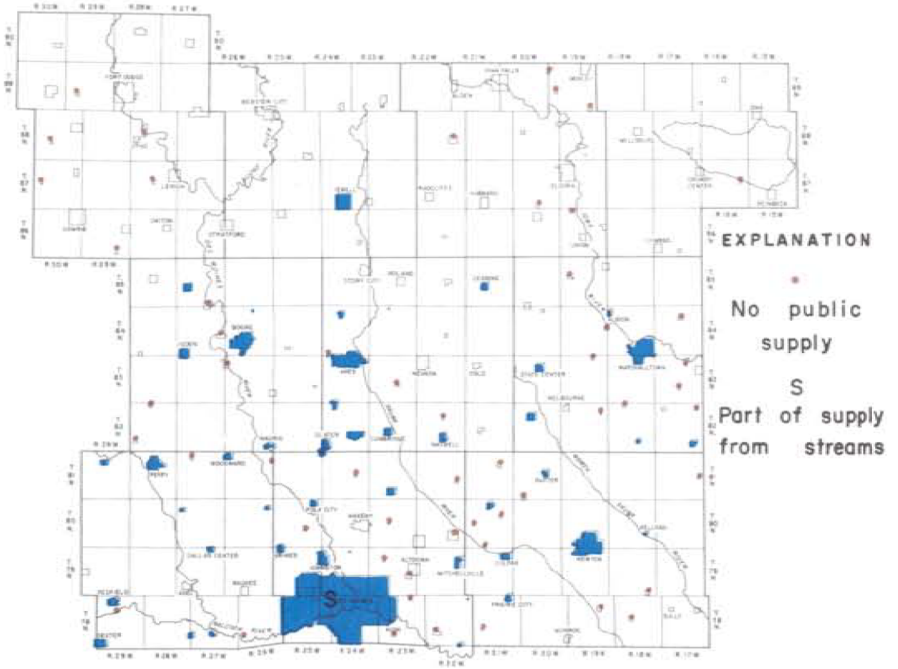
Aquifers	General thickness (feet)	Age of rocks	Name of rock units	General description of rock units
Surficial Alluvial Buried-channel Drift	0-380	Quaternary (0-1 million years old)	Undifferentiated	Primarily alluvium and drift composed of gravel, sand, silt, and clay
	0-900	Cretaceous (63-135 million years old)	Undifferentiated	Shale, limestone, and sandstone; in Webster County only
	0-550	Permian(?) (230-280 million years old)	Fort Dodge beds	Gypsum and shales; in Webster County only
		Pennsylvanian (280-310 million years old)	Undifferentiated	Shale, sandstone, thin limestones, and coal
Upper bedrock	0-475	Mississippian (310-345 million years old)	Ste. Genevieve St. Louis Warsaw Keokuk Burlington Gilmore City Hampton	Shale and limestone Limestone, sandy Shale and dolomite Dolomite and limestone Dolomite and limestone Limestone Limestone and dolomite
	5-200		McCraney English River Maple Mill Aplington Sheffield	Limestone Siltstone Shale Dolomite Shale
Middle bedrock	400-750	Devonian (345-405 million years old)	Lime Creek Cedar Valley Wapsipinicon	Dolomite and shale Limestone and dolomite Limestone, dolomite, and shale
	330-700	Silurian (405-425 million years old)	Undifferentiated	Dolomite and sandy dolomite
		Ordovician (425-500 million years old)	Maquoketa Galena Decorah Platteville	Dolomite and shale Dolomite and chert Limestone and shale Limestone, shale, and sandstone
Lower bedrock	375-560		St. Peter Prairie du Chien	Sandstone Dolomite and sandstone
		Cambrian (500-600 million years old)	Jordan St. Lawrence	Sandstone Dolomite
	350-550		Franconia Galesville Eau Claire Mt. Simon	Sandstone, siltstone, and shale Sandstone Sandstone, shale, and dolomite Sandstone
	-----	Precambrian (600 million to more than 2 billion years old)		Igneous and metamorphic rocks, locally overlain by sedimentary rocks that are chiefly sandstone

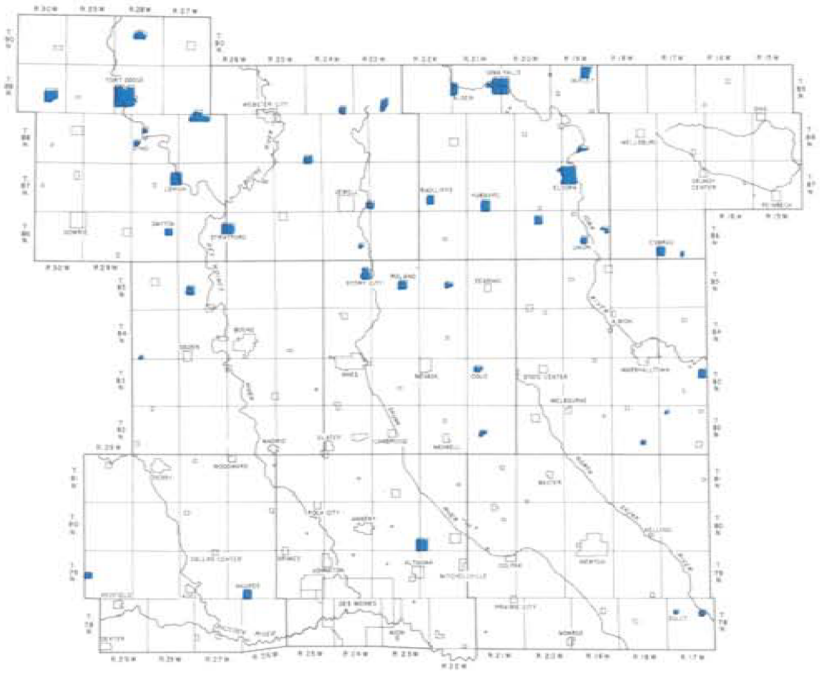
Source: F.R. Twenter and R.W. Coble, "The Water Story in Central Iowa," Iowa Geologic Survey Water Atlas Number 1, 1965.

The aquifers that supply water for cities and communities

Various reasons determine why a city or community will choose one aquifer over the other as a source of water for their municipal supply. In general, however, the aquifer selected will be one that will provide the largest quantity of good water at the lowest cost.

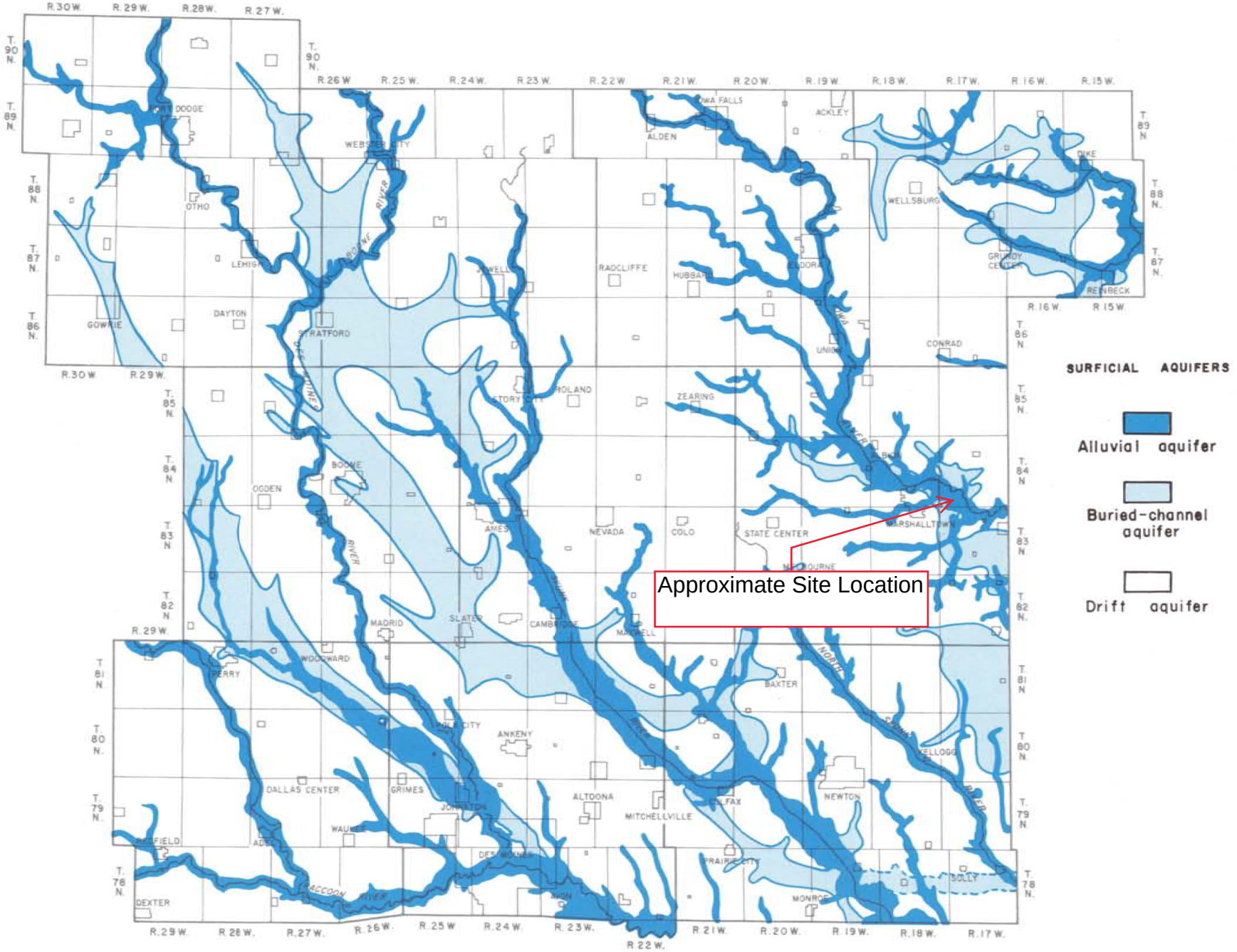
The surficial aquifers are the source of water for municipal supplies in nearly 100 cities and communities in central Iowa. Also, they are the source of water for individual supplies in many of the small communities that have no municipal supply.



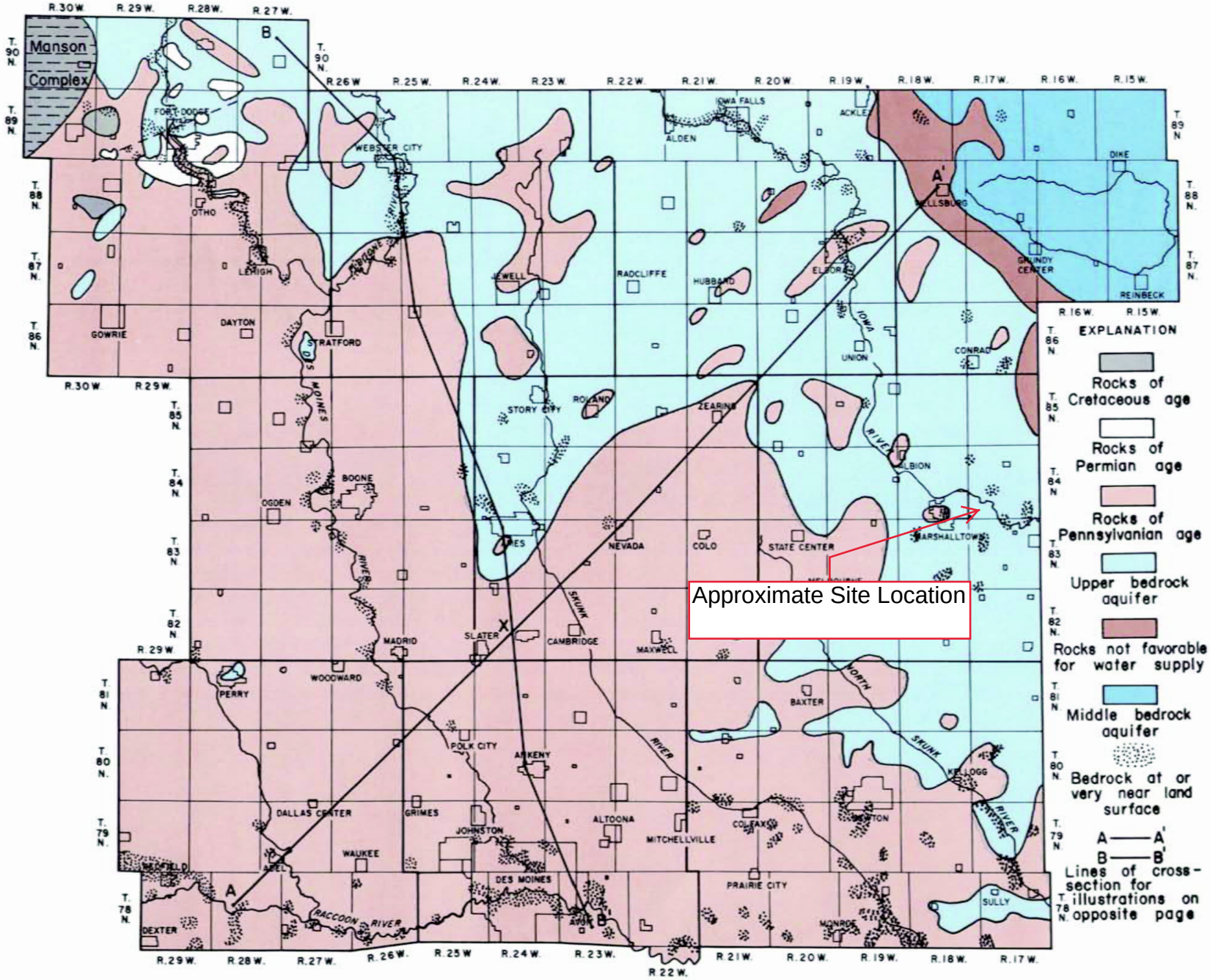


More than 40 cities and communities take all or most of their water from the upper bedrock aquifer.

Source: F.R. Twenter and R.W. Coble, "The Water Story in Central Iowa," Iowa Geologic Survey Water Atlas Number 1, 1965.



Source: F.R. Twenter and R.W. Coble, "The Water Story in Central Iowa," Iowa Geologic Survey Water Atlas Number 1, 1965.



The areal distribution and spatial relations of the upper and middle bedrock aquifers.

Source: F.R. Twenter and R.W. Coble, "The Water Story in Central Iowa," Iowa Geologic Survey Water Atlas Number 1, 1965.

Appendix B

Boring Logs and Well Construction Documentation

SCS ENGINEERS
Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☒
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name		License/Permit/Monitoring Number	Boring Number
IPL-Sutherland Generating Statation SCS#: 25216149.00			MW-301

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Patrick Goetz Direct Push Analytical	11/20/2017	11/20/2017	hollow stem auger

Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-301	Feet	863.5 Feet	8.3 in

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 3,481,478 N, 5,094,231 E S/C/N
NW 1/4 of NW 1/4 of Section 32, T 84 N, R 17 W
Lat ____ ° ____ ' ____ "
Long ____ ° ____ ' ____ "
Local Grid Location: Feet ☐ N ☐ S, Feet ☐ E ☐ W

Facility ID	County	Civil Town/City/ or Village
	Marshall	Marshalltown

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0–8	POORLY GRADED SAND, fine to medium, tan, (10YR 4/6), (construction fill sand to fill in hydrovac hole cleared to 8 ft bgs). Blind drilled to 8 feet.	SP									
			8–16.19	POORLY GRADED SAND, fine to coarse, dark brown, (7.5YR 3/3).	SP									
S1	30		10							M+/W				Depth to water at ~8 feet
S2	30		14							W				
			16.19	End of boring at 16.19 feet.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: [signature] for Nate Harris

Firm SCS Engineers
2830 Dairy Drive Madison, WI 53711
Tel: (608) 224-2830
Fax:

SCS ENGINEERS
Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☒
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
IPL-Sutherland Generating Station SCS#: 25216149.00		MW-302

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Patrick Goetz Direct Push Analytical	11/20/2017	11/20/2017	hollow stem auger

Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-302	Feet	860.1 Feet	8.3 in

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 3,480,768 N, 5,094,238 E S/C/N
NW 1/4 of NW 1/4 of Section 32, T 84 N, R 17 W
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	Civil Town/City/ or Village
	Marshall	Marshalltown

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	POORLY GRADED SAND, fine to coarse, (10YR 4/6), (construction fill sand to fill in hydrovac hole cleared to 8 ft bgs).										
			2	Blind drilled to 8 feet.										
			3											
			4		SP									
			5											
			6											
			7											
			8	LEAN CLAY, gray (10YR 6/1), soft, plastic.	CL									
			9	SILTY SAND, fine to medium sand, brown, (10YR 4/3).	SM									
S1	36		10	POORLY GRADED SAND, fine to coarse, grayish/brown, (10YR 5/2).						M+/W				Depth to water at ~9 feet.
			11											
			12											
			13		SP									
S2	26		14	Same as above but very dark gray (10YR 3/1).						W				
			15											
				End of boring at 15.98 feet.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm	Tel: (608) 224-2830
for Nate Hurvitz	SCS Engineers 2830 Dairy Drive Madison, WI 53711	Fax:

SCS ENGINEERS
Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☒
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
IPL-Sutherland Generating Statation SCS#: 25216149.00		MW-303

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Patrick Goetz Direct Push Analytical	11/20/2017	11/20/2017	hollow stem auger

Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-303	Feet	856.7 Feet	8.3 in

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 3,480,604 N, 5,096,509 E S/C/N
NW 1/4 of NE 1/4 of Section 32, T 84 N, R 17 W
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N Feet ☐ S ☐ E Feet ☐ W

Facility ID	County	Civil Town/City/ or Village
	Marshall	Marshalltown

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	POORLY GRADED SAND, fine to coarse, tan, (10YR 4/6), (construction fill sand to fill in hydrovac hole cleared to 8 ft bgs).										
			2	Blind drilled to 8 feet.										
			3											
			4		SP									
			5											
			6											
			7											
			8	POORLY GRADED SAND with few fine sub-rounded gravel, dark brown, (5YR 3/3).										
			9											
S1	24		10							W				Depth to water at ~8 feet.
			11											
			12		SP									
			13											
S2	30		14							W				
			15											
			16	End of boring at 16.31 feet.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm	Tel: (608) 224-2830
Nicole Harms for Nicole Harms	SCS Engineers 2830 Dairy Drive Madison, WI 53711	Fax:

SCS ENGINEERS
Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☒
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
IPL-Sutherland Generating Statation SCS#: 25216149.00		MW-304

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Patrick Goetz Direct Push Analytical	11/20/2017	11/20/2017	hollow stem auger

Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-304	Feet	857.8 Feet	8.3 in

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 3,480,549 N, 5,096,849 E S/C/N
NW 1/4 of NE 1/4 of Section 32, T 84 N, R 17 W
Lat ___° ___' ___"
Long ___° ___' ___"
Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	Civil Town/City/ or Village
	Marshall	Marshalltown

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0–4	POORLY GRADED SAND, fine to coarse, tan, (construction fill sand to fill in hydrovac hole). Blind drilled to 4 feet.	SP									
			4–12	LEAN CLAY, brown, (7.5YR 4/3), soft, plastic, trace organic fibers.	CL									
S1	30		6							M+/W				Depth to water at ~7 feet.
S2	32		10							W				
			12–13	POORLY GRADED SAND, fine to coarse, dark yellow brown, (10YR 3/6).	SP									
			13–15	SILTY SAND, very dark gray, (10YR 3/1), soft.	SM									
S3	42		14							W				
			15–16.3	POORLY GRADED SAND with fine sub-rounded gravel, fine to coarse, dark yellow brown, (10YR 3/6).	SP									
				End of boring at 16.30 feet.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm	
Kyle [signature] for Nate Harris	SCS Engineers 2830 Dairy Drive Madison, WI 53711	Tel: (608) 224-2830 Fax:

SCS ENGINEERS
Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☒
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
IPL-Sutherland Generating Statation SCS#: 25216149.00		MW-305

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Patrick Goetz Direct Push Analytical	11/21/2017	11/21/2017	hollow stem auger

Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-305	Feet	856.8 Feet	8.3 in

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 3,480,877 N, 5,096,835 E S/C/N
NW 1/4 of NE 1/4 of Section 32, T 84 N, R 17 W
Lat ___ ° ___ ' ___ "
Long ___ ° ___ ' ___ "
Local Grid Location: Feet ☐ N ☐ S; Feet ☐ E ☐ W

Facility ID	County	Civil Town/City/ or Village
	Marshall	Marshalltown

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0–4	POORLY GRADED SAND, fine to coarse, tan, (construction fill sand to fill in hydrovac hole cleared to 7.5 ft bgs). Blind drilled to 4 feet.	SP									
S1	18		4–7.5	POORLY GRADED SAND, fine to coarse, dark yellowish brown, (10YR 4/4), (construction fill sand to fill in hydrovac hole cleared to 7.5 ft bgs).	SP					M+/W				Depth to water at ~7 feet.
			7.5–8	LEAN CLAY with trace medium to coarse sand, very dark gray, (2.5YR 3/1), medium stiffness.	CL									
S2	12		8–16.58	POORLY GRADED SAND with trace fine sub-rounded gravel, fine to coarse, light olive brown, (2.5YR 3/1 and 2.5YR 5/4).	SP					W				
S3	30									W				
			16.58	End of boring at 16.58 feet.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature: *[signature] for Nate Helms*

Firm: SCS Engineers
2830 Dairy Drive Madison, WI 53711
Tel: (608) 224-2830
Fax:

SCS ENGINEERS
Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

Route To: Watershed/Wastewater ☐ Waste Management ☒
Remediation/Redevelopment ☐ Other ☐

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
IPL-Sutherland Generating Station SCS#: 25216149.00		MW-306

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Patrick Goetz Direct Push Analytical	11/21/2017	11/21/2017	hollow stem auger

Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
		MW-306	Feet	858.2 Feet	8.3 in

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 3,481,470 N, 5,096,817 E S/C/N
NW 1/4 of NE 1/4 of Section 32, T 84 N, R 17 W
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	Civil Town/City/ or Village
	Marshall	Marshalltown

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	POORLY GRADED SAND, fine to coarse, tan, (construction fill sand to fill in hydrovac hole cleared to 8 ft bgs). Blind drilled to 4 feet.	SP									
			2											
			3											
			4	POORLY GRADED SAND, fine to coarse, strong brown, (7.5YR 4/6), (construction fill sand to fill in hydrovac hole cleared to 8 ft bgs).										
			5											
S1	12		6							M				
			7											
			8											
			9											
S2	12		10		SP					W				Depth to water at ~8 feet.
			11											
			12											
			13											
S3	36		14	Same as above but dark yellowish brown color (10YR 3/4).						W				
			15											
			16	End of boring at 16.23 feet.										

I hereby certify that the information on this form is true and correct to the best of my knowledge.

Signature	Firm	Tel: (608) 224-2830
Nate Harms for Nate Harms	SCS Engineers 2830 Dairy Drive Madison, WI 53711	Fax:

Print Form

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL-Sutherland Generating Station Permit No.:

Well or Piezometer No: MW-301

Dates Started: 11/20/2017 Date Completed: 11/20/2017

A. SURVEYED LOCATIONS AND ELEVATIONS

Locations (± 0.5 ft): 3481477.68 N, 5094230.68 E

Specify corner of site: NW of parcel 8417-32-126-002

Distance & direction along boundary: 82' E

Distance & direction from boundary to wall: 173' S

Elevations (± 0.01 ft MSL):

Ground Surface: 863.50

Top of protective casing: 866.9

Top of well casing: 866.61

Benchmark elevation: 590.75

Benchmark description: BM-001

B. SOIL BORING INFORMATION

Name & Address of Construction Company:
Direct Push Analytical
4N969 Old Lafox Rd Unit F
St. Charles, IL 60175

Name of Driller: Patrick Goetz

Drilling Method: 4 1/4 Hollow Stem Auger

Drilling Fluid: N/A

Bore Hole Diameter: 8.5"

Soil Sampling Method: 2" Split Spoon

Depth of Boring: 16'

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 5'

Outside casing diameter: 2.38"

Inside casing diameter: 2"

Casing joint type: Flush Threaded

Casing/screen joint type: PVC

Screen material: PVC

Screen opening size: 0.010"

Screen length: 10'

Depth of well: 15'

Filter Pack: 3.5'-15.69' bgs

Material: RW Sidley

Grain size: #5

Volume: 2.1 cu ft

Seal (minimum 3 ft length above filter pack): 0.5'-3.5' bgs

Material: 3/8" Benseal Bentonite Chips

Placement method: Gravity

Volume: 0.66 cu ft

Backfill (if different from seal): N/A

Material: N/A

Placement method: N/A

Volume: N/A

Surface seal design: 0'-0.5' bgs

Material of protective casing: Steel, 4" diameter

Material of grout between protective casing and well casing: Sand

Protective cap: 6" diameter

Material: Steel

Vented: ☑ Yes ☐ No Locking: ☑ Yes ☐ No

Well Cap: 2" diameter

Material: Plastic with rubber gasket

Vented: ☑ Yes ☐ No

D. GROUNDWATER MEASURMENT (± 0.01 ft below top of inner well casing)

Water level: 12.80 Stabilization Time: <5 min

Well development method: surged with bailer and pumped

Average depth of frostline: 4 feet

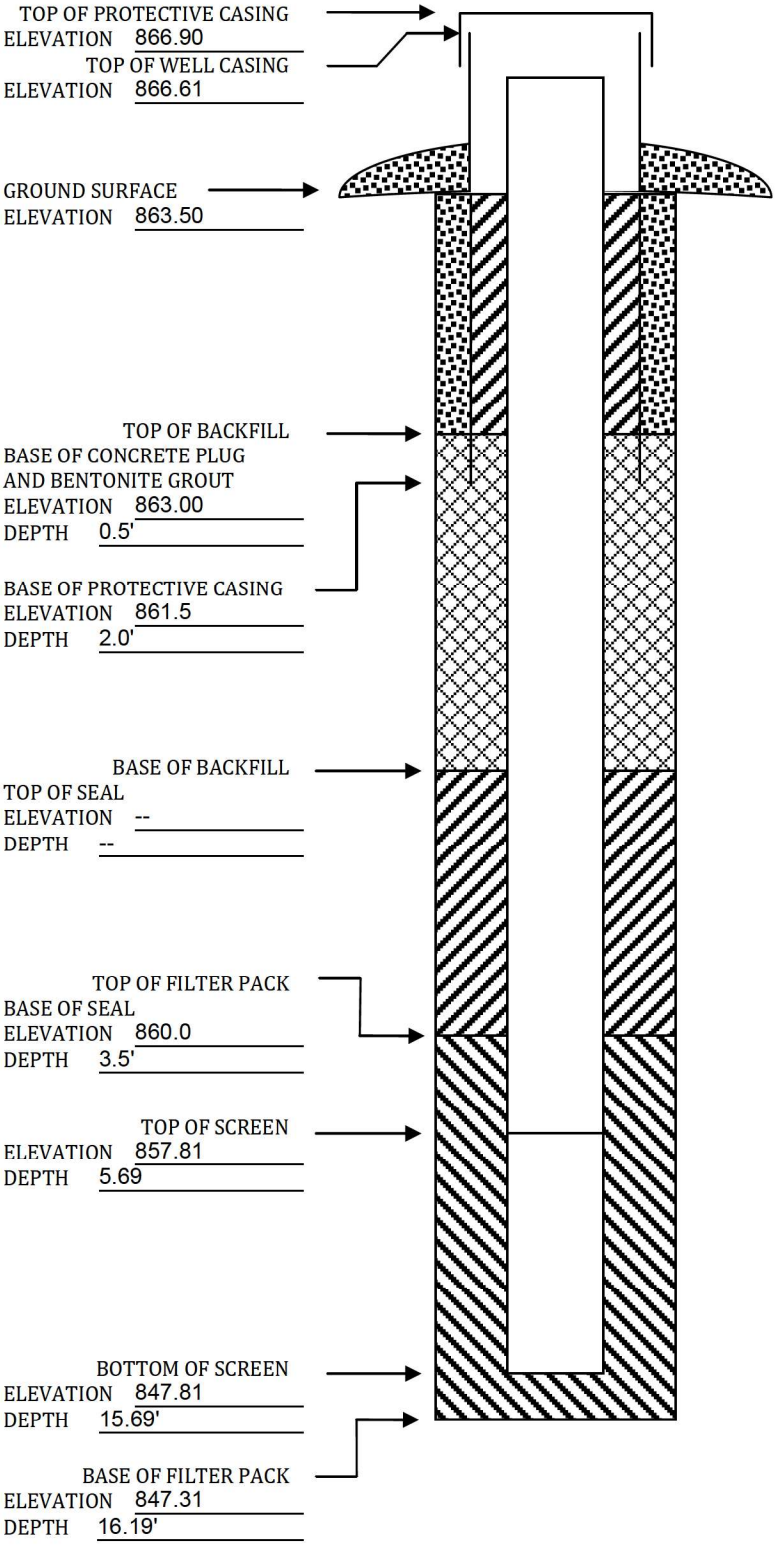
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 ½x11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov

ELEVATIONS: ± 0.01 ft MSL
DEPTHS: ± 0.1 ft FROM GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL.)



Print Form

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL-Sutherland Generating Station Permit No.:

Well or Piezometer No: MW-302

Dates Started: 11/20/2017 Date Completed: 11/20/2017

A. SURVEYED LOCATIONS AND ELEVATIONS

Locations (± 0.5 ft): 3480767.91 N, 5094237.526 E

Specify corner of site: SW of parcel 8417-32-126-002

Distance & direction along boundary: 324' N

Distance & direction from boundary to wall: 42' E

Elevations (± 0.01 ft MSL):

Ground Surface: 860.06

Top of protective casing: 863.32

Top of well casing: 863.08

Benchmark elevation: 590.75

Benchmark description: BM-001

B. SOIL BORING INFORMATION

Name & Address of Construction Company:
Direct Push Analytical
4N969 Old Lafox Rd Unit F
St. Charles, IL 60175

Name of Driller: Patrick Goetz

Drilling Method: 4 1/4 Hollow Stem Auger

Drilling Fluid: N/A

Bore Hole Diameter: 8.5"

Soil Sampling Method: 2" Split Spoon

Depth of Boring: 16'

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 5'

Outside casing diameter: 2.38"

Inside casing diameter: 2"

Casing joint type: Flush Threaded

Casing/screen joint type: PVC

Screen material: PVC

Screen opening size: 0.010"

Screen length: 10'

Depth of well: 15'

Filter Pack: 3.5'-15.48' bgs

Material: RW Sidley

Grain size: #5

Volume: 2.1 cu ft

Seal (minimum 3 ft length above filter pack): 0.5'-3.5' bgs

Material: 3/8" Benseal Bentonite Chips

Placement method: Gravity

Volume: 0.66 cu ft

Backfill (if different from seal): N/A

Material: N/A

Placement method: N/A

Volume: N/A

Surface seal design: 0'-0.5' bgs

Material of protective casing: Steel, 4" diameter

Material of grout between protective casing and well casing: Sand

Protective cap: 6" diameter

Material: Steel

Vented: ☑ Yes ☐ No Locking: ☑ Yes ☐ No

Well Cap: 2" diameter

Material: Plastic with rubber gasket

Vented: ☑ Yes ☐ No

D. GROUNDWATER MEASURMENT (± 0.01 ft below top of inner well casing)

Water level: 9.10 Stabilization Time: <5 min

Well development method: surged with bailer and pumped

Average depth of frostline: 4 feet

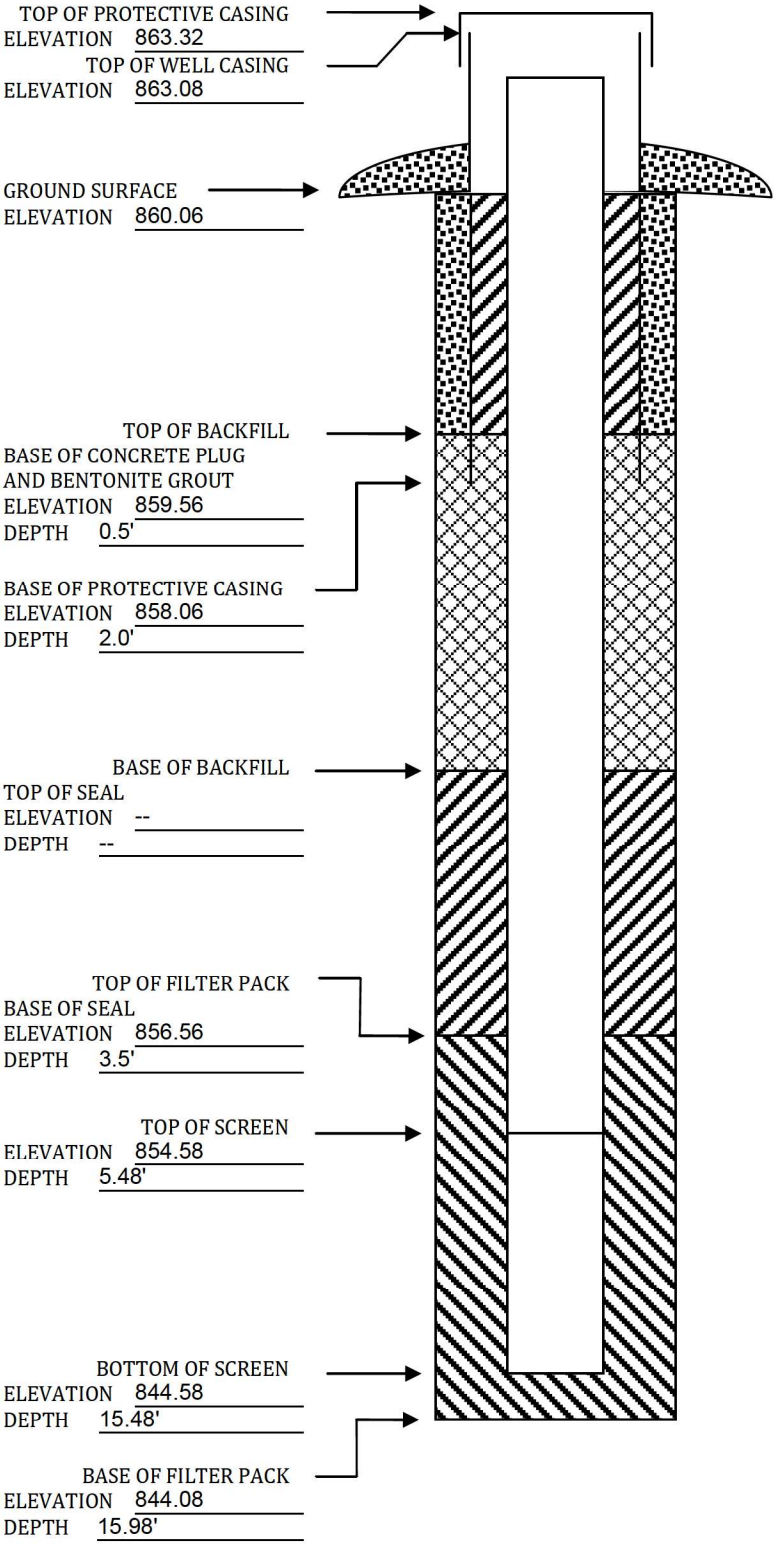
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 ½x11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov

ELEVATIONS: ± 0.01 ft MSL
DEPTHS: ± 0.1 ft FROM GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL.)



Print Form

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL-Sutherland Generating Station Permit No.:

Well or Piezometer No: MW-303

Dates Started: 11/20/2017 Date Completed: 11/20/2017

A. SURVEYED LOCATIONS AND ELEVATIONS

Locations (± 0.5 ft): 3480604.15 N, 5096509.24 E

Specify corner of site: SE of parcel 8417-32-126-002

Distance & direction along boundary: 326' W

Distance & direction from boundary to wall: 200' N

Elevations (± 0.01 ft MSL):

Ground Surface: 856.70

Top of protective casing: 859.74

Top of well casing: 859.54

Benchmark elevation: 590.75

Benchmark description: BM-001

B. SOIL BORING INFORMATION

Name & Address of Construction Company:
Direct Push Analytical
4N969 Old Lafox Rd Unit F
St. Charles, IL 60175

Name of Driller: Patrick Goetz

Drilling Method: 4 1/4 Hollow Stem Auger

Drilling Fluid: N/A

Bore Hole Diameter: 8.5"

Soil Sampling Method: 2" Split Spoon

Depth of Boring: 16'

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 5'

Outside casing diameter: 2.38"

Inside casing diameter: 2"

Casing joint type: Flush Threaded

Casing/screen joint type: PVC

Screen material: PVC

Screen opening size: 0.010"

Screen length: 10'

Depth of well: 15'

Filter Pack: 3.5'- 15.81' bgs

Material: RW Sidley

Grain size: #5

Volume: 2.1 cu ft

Seal (minimum 3 ft length above filter pack): 0.5'-3.5' bgs

Material: 3/8" Benseal Bentonite Chips

Placement method: Gravity

Volume: 0.66 cu ft

Backfill (if different from seal): N/A

Material: N/A

Placement method: N/A

Volume: N/A

Surface seal design: 0'-0.5' bgs

Material of protective casing: Steel, 4" diameter

Material of grout between protective casing and well casing: Sand

Protective cap: 6" diameter

Material: Steel

Vented: ☒ Yes ☐ No Locking: ☒ Yes ☐ No

Well Cap: 2" diameter

Material: Plastic with rubber gasket

Vented: ☒ Yes ☐ No

D. GROUNDWATER MEASURMENT (± 0.01 ft below top of inner well casing)

Water level: 7.35 Stabilization Time: <5 min

Well development method: surged with bailer and pumped

Average depth of frostline: 4 feet

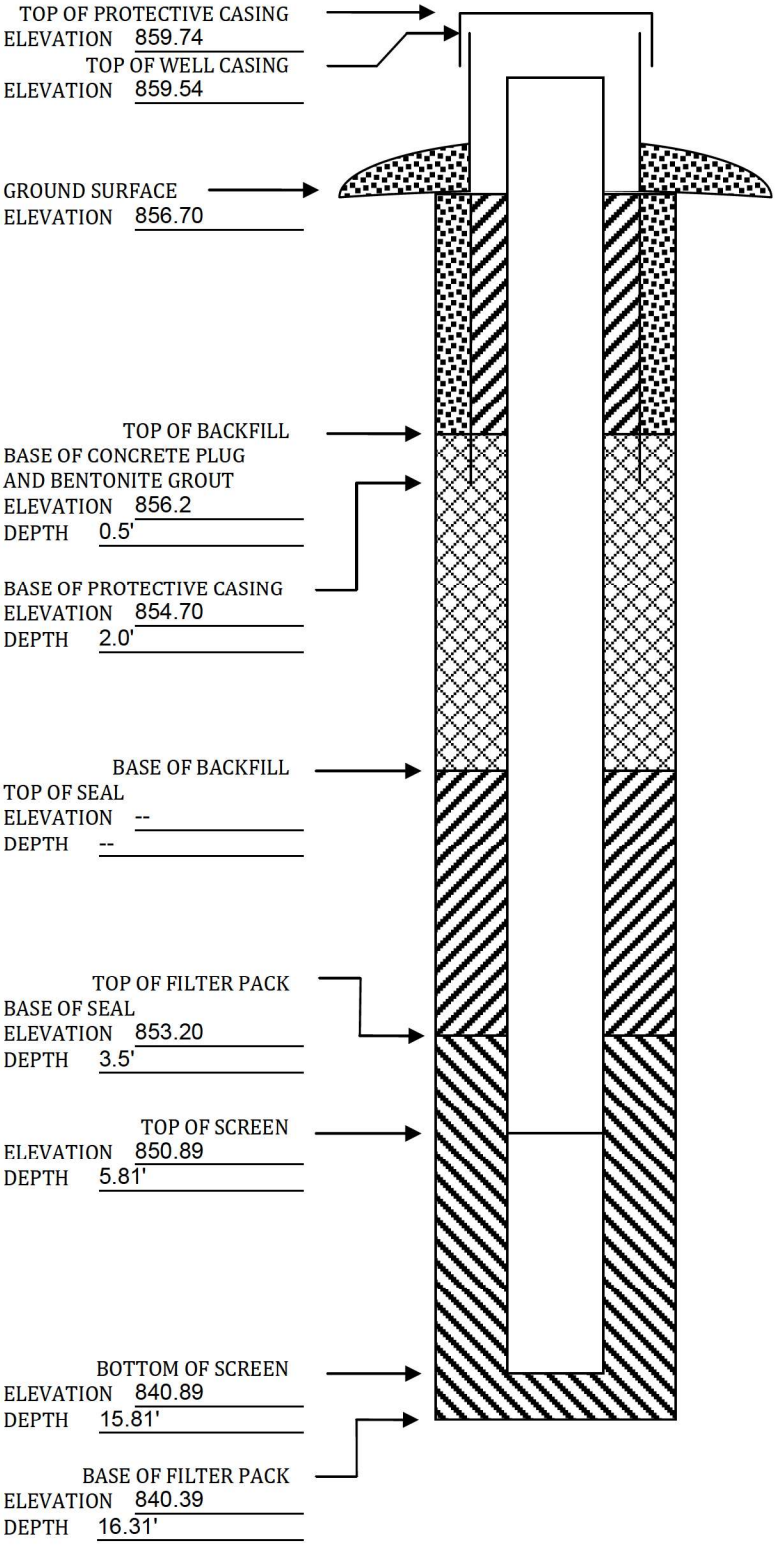
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 ½x11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov

ELEVATIONS: ± 0.01 ft MSL
DEPTHS: ± 0.1 ft FROM GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL.)



Print Form

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL-Sutherland Generating Station Permit No.:

Well or Piezometer No: MW-304

Dates Started: 11/20/2017 Date Completed: 11/20/2017

A. SURVEYED LOCATIONS AND ELEVATIONS

Locations (± 0.5 ft): 3480548.65 N, 5096849.06 E

Specify corner of site: SW of parcel 8417-32-200-002

Distance & direction along boundary: 156' N

Distance & direction from boundary to wall: 10' E

Elevations (± 0.01 ft MSL):

Ground Surface: 857.79

Top of protective casing: 861.06

Top of well casing: 860.79

Benchmark elevation: 590.75

Benchmark description: BM-001

B. SOIL BORING INFORMATION

Name & Address of Construction Company:
Direct Push Analytical
4N969 Old Lafox Rd Unit F
St. Charles, IL 60175

Name of Driller: Patrick Goetz

Drilling Method: 4 1/4 Hollow Stem Auger

Drilling Fluid: N/A

Bore Hole Diameter: 8.5"

Soil Sampling Method: 2" Split Spoon

Depth of Boring: 16'

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 5'

Outside casing diameter: 2.38"

Inside casing diameter: 2"

Casing joint type: Flush Threaded

Casing/screen joint type: PVC

Screen material: PVC

Screen opening size: 0.010"

Screen length: 10'

Depth of well: 15'

Filter Pack: 3.5'-15.80' bgs

Material: RW Sidley

Grain size: #5

Volume: 2.1 cu ft

Seal (minimum 3 ft length above filter pack): 0.5'- 3.5' bgs

Material: 3/8" Benseal Bentonite Chips

Placement method: Gravity

Volume: 0.66 cu ft

Backfill (if different from seal): N/A

Material: N/A

Placement method: N/A

Volume: N/A

Surface seal design: 0'-0.5' bgs

Material of protective casing: Steel, 4" diameter

Material of grout between protective casing and well casing: Sand

Protective cap: 6" diameter

Material: Steel

Vented: ☑ Yes ☐ No Locking: ☑ Yes ☐ No

Well Cap: 2" diameter

Material: Plastic with rubber gasket

Vented: ☑ Yes ☐ No

D. GROUNDWATER MEASURMENT (± 0.01 ft below top of inner well casing)

Water level: 8.91 Stabilization Time: <5 min

Well development method: surged with bailer and pumped

Average depth of frostline: 4 feet

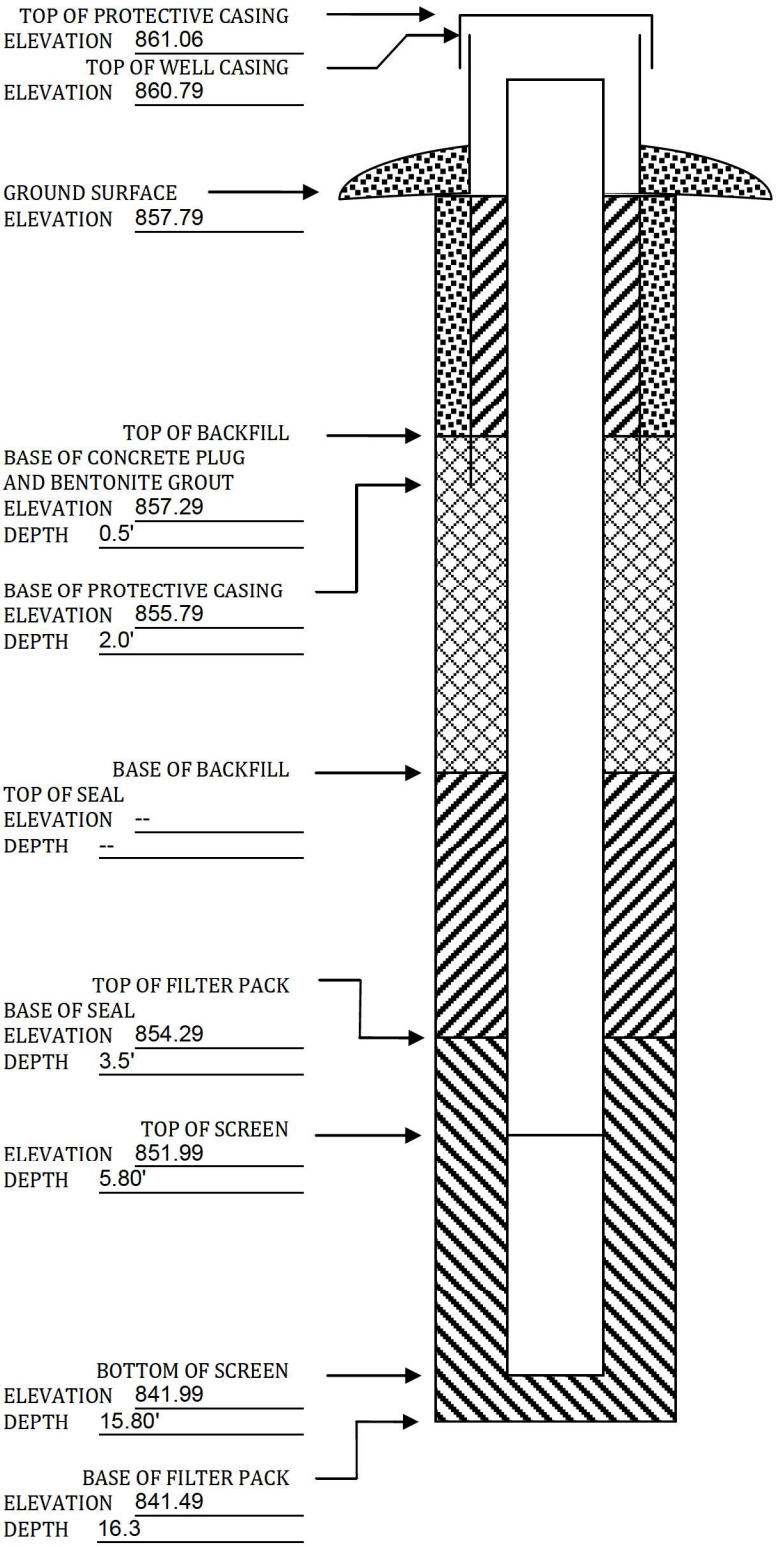
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 ½x11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov

ELEVATIONS: ± 0.01 ft MSL
DEPTHS: ± 0.1 ft FROM GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL.)



Print Form

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL-Sutherland Generating Station Permit No.:

Well or Piezometer No: MW-305

Dates Started: 11/21/2017 Date Completed: 11/21/2017

A. SURVEYED LOCATIONS AND ELEVATIONS

Locations (± 0.5 ft): 3480877.26 N, 5096834.70 E

Specify corner of site: SW of parcel 8417-32-200-002

Distance & direction along boundary: 545' N

Distance & direction from boundary to wall: 12' E

Elevations (± 0.01 ft MSL):

Ground Surface: 856.81

Top of protective casing: 860.12

Top of well casing: 859.81

Benchmark elevation: 590.75

Benchmark description: BM-001

B. SOIL BORING INFORMATION

Name & Address of Construction Company:
Direct Push Analytical
4N969 Old Lafox Rd Unit F
St. Charles, IL 60175

Name of Driller: Patrick Goetz

Drilling Method: 4 1/4 Hollow Stem Auger

Drilling Fluid: N/A

Bore Hole Diameter: 8.5"

Soil Sampling Method: 2" Split Spoon

Depth of Boring: 16'

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 5'

Outside casing diameter: 2.38"

Inside casing diameter: 2"

Casing joint type: Flush Threaded

Casing/screen joint type: PVC

Screen material: PVC

Screen opening size: 0.010"

Screen length: 10'

Depth of well: 15'

Filter Pack: 3.5'-16.08' bgs

Material: RW Sidley

Grain size: #5

Volume: 2.1 cu ft

Seal (minimum 3 ft length above filter pack): 0.5'-3.5' bgs

Material: 3/8" Benseal Bentonite Chips

Placement method: Gravity

Volume: 0.66 cu ft

Backfill (if different from seal): N/A

Material: N/A

Placement method: N/A

Volume: N/A

Surface seal design: 0'-0.5' bgs

Material of protective casing: Steel, 4" diameter

Material of grout between protective casing and well casing: Sand

Protective cap: 6" diameter

Material: Steel

Vented: ☑ Yes ☐ No Locking: ☑ Yes ☐ No

Well Cap: 2" diameter

Material: Plastic with rubber gasket

Vented: ☑ Yes ☐ No

D. GROUNDWATER MEASURMENT (± 0.01 ft below top of inner well casing)

Water level: 8.24 Stabilization Time: <5 min

Well development method: surged with bailer and pumped

Average depth of frostline: 4 feet

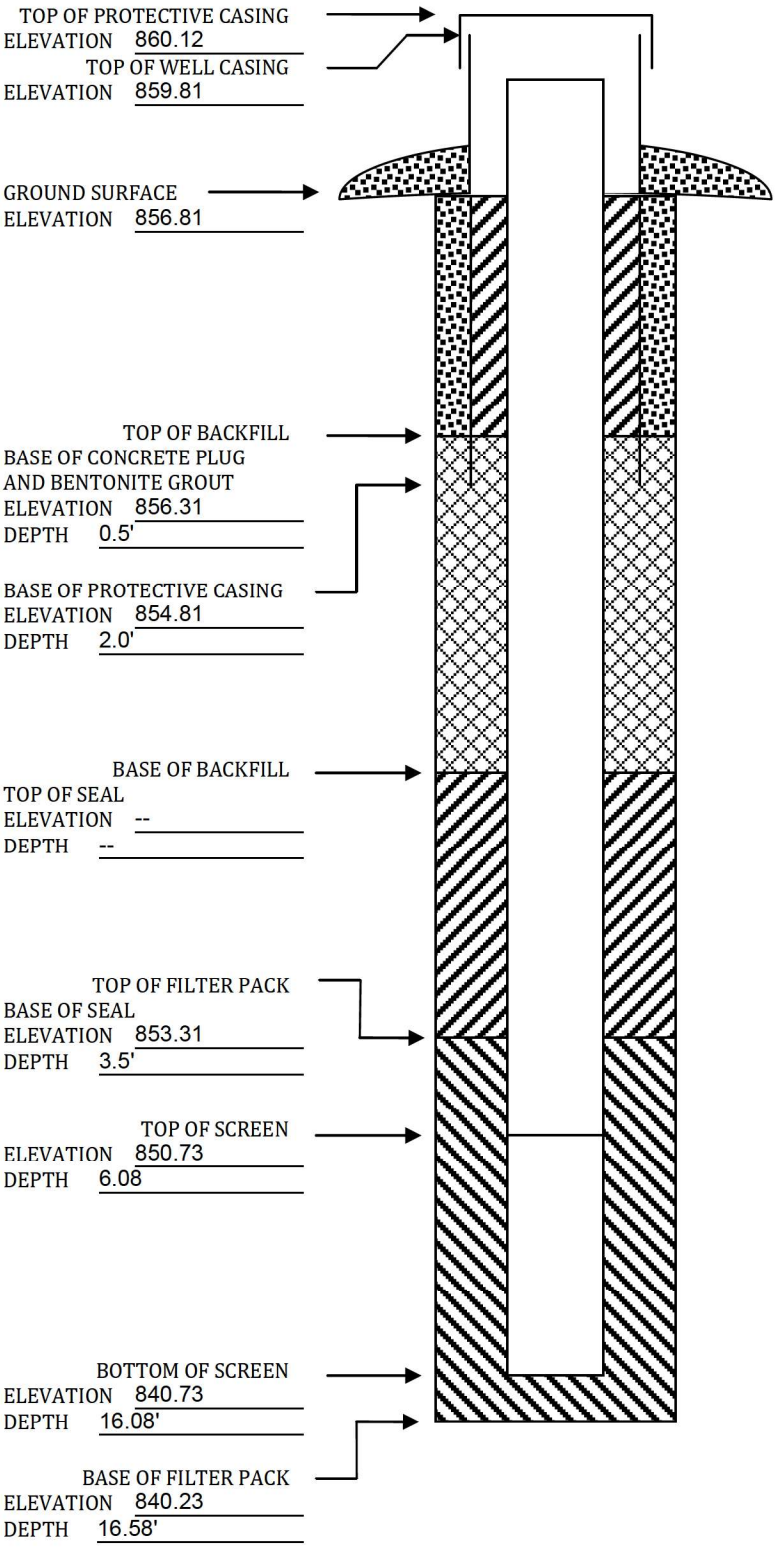
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 ½x11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov

ELEVATIONS: ± 0.01 ft MSL
DEPTHS: ± 0.1 ft FROM GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL.)



Print Form

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL-Sutherland Generating Station Permit No.:

Well or Piezometer No: MW-306

Dates Started: 11/21/2017 Date Completed: 11/21/2017

A. SURVEYED LOCATIONS AND ELEVATIONS

Locations (± 0.5 ft):

Specify corner of site: NW of parcel 8417-32-200-001

Distance & direction along boundary: 222' S

Distance & direction from boundary to wall: 17' E

Elevations (± 0.01 ft MSL):

Ground Surface: 858.15

Top of protective casing: 861.36

Top of well casing: 861.13

Benchmark elevation: 590.75

Benchmark description: BM-001

B. SOIL BORING INFORMATION

Name & Address of Construction Company:
Direct Push Analytical
4N969 Old Lafox Rd Unit F
St. Charles, IL 60175

Name of Driller: Patrick Goetz

Drilling Method: 4 1/4 Hollow Stem Auger

Drilling Fluid: N/A

Bore Hole Diameter: 8.5"

Soil Sampling Method: 2" Split Spoon

Depth of Boring: 16'

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 5'

Outside casing diameter: 2.38"

Inside casing diameter: 2"

Casing joint type: Flush Threaded

Casing/screen joint type: PVC

Screen material: PVC

Screen opening size: 0.010"

Screen length: 10'

Depth of well: 15'

Filter Pack: 3.5'-15.73' bgs

Material: RW Sidley

Grain size: #5

Volume: 2.1 cu ft

Seal (minimum 3 ft length above filter pack): 0.5'-3.5' bgs

Material: 3/8" Benseal Bentonite Chips

Placement method: Gravity

Volume: 0.66 cu ft

Backfill (if different from seal): N/A

Material: N/A

Placement method: N/A

Volume: N/A

Surface seal design: 0'-0.5' bgs

Material of protective casing: Steel, 4" diameter

Material of grout between protective casing and well casing: Sand

Protective cap: 6" diameter

Material: Steel

Vented: ☑ Yes ☐ No Locking: ☑ Yes ☐ No

Well Cap: 2" diameter

Material: Plastic with rubber gasket

Vented: ☑ Yes ☐ No

D. GROUNDWATER MEASURMENT (± 0.01 ft below top of inner well casing)

Water level: 9.77 Stabilization Time: <5 min

Well development method: surged with bailer and pumped

Average depth of frostline: 4 feet

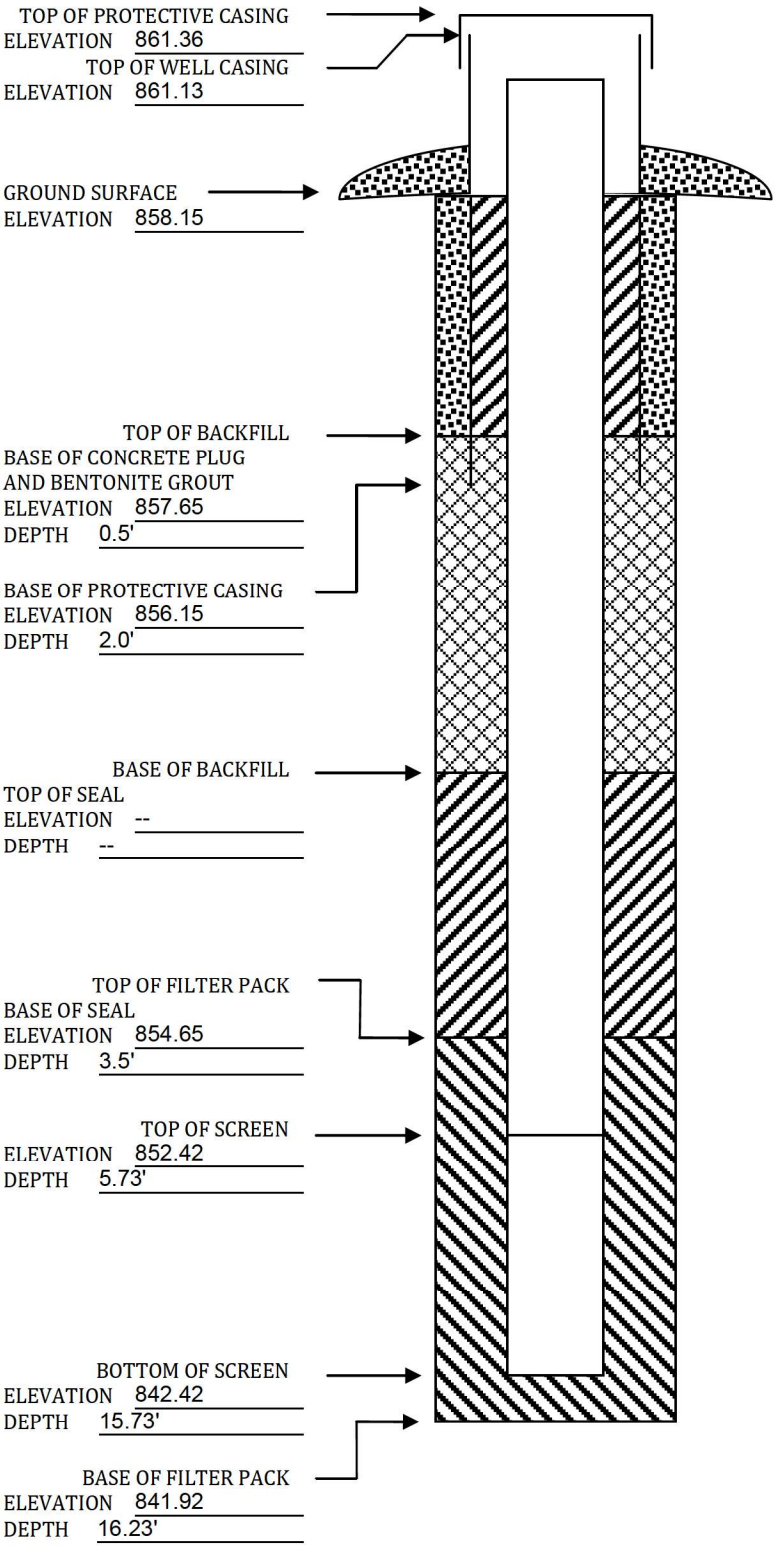
Attachments: Driller's log. Pipe schedules and grouting schedules. 8 ½x11 inch map showing locations of all monitoring wells and piezometers.

Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov

ELEVATIONS: ± 0.01 ft MSL
DEPTHS: ± 0.1 ft FROM GROUND SURFACE

SPACE TO ATTACH ENTIRE SOIL BORING LOG
(SHOW SCREENED INTERVAL AND FILTER PACK INTERVAL.)



Appendix C

Analytical Laboratory Reports

C1 February 2020 Assessment Monitoring

eurofins | Environment Testing TestAmerica

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-175279-1
Client Project/Site: Sutherland GeneratingStation 25219076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
2/18/2020 12:13:57 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Job ID: 310-175279-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-175279-1

Comments
No additional comments.

Receipt
The samples were received on 2/6/2020 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.7º C and 1.1º C.

HPLC/IC
Method 9056A: The following sample was diluted due to the nature of the sample matrix: MW-302 (310-175279-2). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-175279-1	MW-301	Water	02/03/20 09:15	02/06/20 18:40	
310-175279-2	MW-302	Water	02/03/20 15:05	02/06/20 18:40	
310-175279-3	MW-303	Water	02/03/20 13:55	02/06/20 18:40	
310-175279-4	MW-304	Water	02/03/20 11:50	02/06/20 18:40	
310-175279-5	MW-305	Water	02/03/20 12:11	02/06/20 18:40	
310-175279-6	MW-306	Water	02/03/20 10:30	02/06/20 18:40	
310-175279-7	FIELD BLANK	Water	02/03/20 23:59	02/06/20 18:40	

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Client Sample ID: MW-301 — Lab Sample ID: 310-175279-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	28		5.0	2.0	mg/L	5		9056A	Total/NA
Sulfate	32		5.0	3.6	mg/L	5		9056A	Total/NA
Barium	120		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	120	J	200	100	ug/L	1		6020A	Total/NA
Cadmium	0.047	J	0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	82		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.75		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.34	J	0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	2.7	J	10	2.3	ug/L	1		6020A	Total/NA
Total Dissolved Solids	380		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	856.24				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	61.7				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	3.24				mg/L	1		Field Sampling	Total/NA
pH, Field	6.79				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	651				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	9.54				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	19.1				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302 — Lab Sample ID: 310-175279-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	3.8	J	5.0	2.0	mg/L	5		9056A	Total/NA
Sulfate	17		5.0	3.6	mg/L	5		9056A	Total/NA
Arsenic	19		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	100		2.0	0.90	ug/L	1		6020A	Total/NA
Calcium	56		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	3.7		0.50	0.091	ug/L	1		6020A	Total/NA
Total Dissolved Solids	250		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.5	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	856.59				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	5.6				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.95				mg/L	1		Field Sampling	Total/NA
pH, Field	7.31				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	464				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	9.42				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	2.87				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303 — Lab Sample ID: 310-175279-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		10	4.0	mg/L	10		9056A	Total/NA
Sulfate	350		10	7.1	mg/L	10		9056A	Total/NA
Barium	55		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	440		200	100	ug/L	1		6020A	Total/NA
Calcium	160		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	1.3		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	22		10	2.3	ug/L	1		6020A	Total/NA
Molybdenum	11		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	830		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.2	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.57				ft	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-303 (Continued) — Lab Sample ID: 310-175279-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Oxidation Reduction Potential	60.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.89				mg/L	1		Field Sampling	Total/NA
pH, Field	6.84				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1173				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	7.99				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	5.25				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-304 — Lab Sample ID: 310-175279-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	21		10	4.0	mg/L	10		9056A	Total/NA
Sulfate	360		10	7.1	mg/L	10		9056A	Total/NA
Barium	24		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	560		200	100	ug/L	1		6020A	Total/NA
Cadmium	0.36		0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	150		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.19	J	0.50	0.091	ug/L	1		6020A	Total/NA
Molybdenum	1.5	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	800		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.0	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.35				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	62.5				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.87				mg/L	1		Field Sampling	Total/NA
pH, Field	6.71				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1149				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	8.09				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	1.59				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-305 — Lab Sample ID: 310-175279-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17		10	4.0	mg/L	10		9056A	Total/NA
Sulfate	440		10	7.1	mg/L	10		9056A	Total/NA
Arsenic	6.3		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	32		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	930		200	100	ug/L	1		6020A	Total/NA
Calcium	140		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	1.6		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	10		10	2.3	ug/L	1		6020A	Total/NA
Molybdenum	18		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	850		30	26	mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.28				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	57.8				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.09				mg/L	1		Field Sampling	Total/NA
pH, Field	6.61				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1200				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	9.90				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	4.90				NTU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Client Sample ID: MW-306 — Lab Sample ID: 310-175279-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		10	4.0	mg/L	10		9056A	Total/NA
Sulfate	550		20	14	mg/L	20		9056A	Total/NA
Arsenic	4.6		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	100		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	2500		200	100	ug/L	1		6020A	Total/NA
Calcium	220		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.85		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	39		10	2.3	ug/L	1		6020A	Total/NA
Molybdenum	38		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1100		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.14				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	72.7				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	1.46				mg/L	1		Field Sampling	Total/NA
pH, Field	7.61				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1446				mS/cm	1		Field Sampling	Total/NA
Temperature, Field	10.86				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.74				NTU	1		Field Sampling	Total/NA

Client Sample ID: FIELD BLANK — Lab Sample ID: 310-175279-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	1.2		0.50	0.19	mg/L	1		6020A	Total/NA
pH	6.3	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-301
Date Collected: 02/03/20 09:15
Date Received: 02/06/20 18:40

Lab Sample ID: 310-175279-1
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**28**		5.0	2.0	mg/L			02/10/20 14:59	5
Sulfate	**32**		5.0	3.6	mg/L			02/10/20 14:59	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 20:58	1
Barium	**120**		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 20:58	1
Boron	**120**	**J**	200	100	ug/L		02/10/20 08:17	02/11/20 20:58	1
Cadmium	**0.047**	**J**	0.10	0.039	ug/L		02/10/20 08:17	02/11/20 20:58	1
Calcium	**82**		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 20:58	1
Cobalt	**0.75**		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 20:58	1
Lead	**0.34**	**J**	0.50	0.27	ug/L		02/10/20 08:17	02/11/20 20:58	1
Lithium	**2.7**	**J**	10	2.3	ug/L		02/10/20 08:17	02/11/20 20:58	1
Molybdenum	<1.1		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 20:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**380**		30	26	mg/L			02/07/20 14:31	1
pH	**7.3**	**HF**	0.1	0.1	SU			02/06/20 20:57	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**856.24**				ft			02/03/20 09:15	1
Oxidation Reduction Potential	**61.7**				millivolts			02/03/20 09:15	1
Oxygen, Dissolved, Client Supplied	**3.24**				mg/L			02/03/20 09:15	1
pH, Field	**6.79**				SU			02/03/20 09:15	1
Specific Conductance, Field	**651**				uS/cm			02/03/20 09:15	1
Temperature, Field	**9.54**				Degrees C			02/03/20 09:15	1
Turbidity, Field	**19.1**				NTU			02/03/20 09:15	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-302
Lab Sample ID: 310-175279-2
Date Collected: 02/03/20 15:05
Matrix: Water
Date Received: 02/06/20 18:40

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**3.8**	**J**	5.0	2.0	mg/L			02/10/20 15:15	5
Sulfate	**17**		5.0	3.6	mg/L			02/10/20 15:15	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**19**		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 21:00	1
Barium	**100**		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 21:00	1
Boron	<100		200	100	ug/L		02/10/20 08:17	02/11/20 21:00	1
Cadmium	<0.039		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 21:00	1
Calcium	**56**		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 21:00	1
Cobalt	**3.7**		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 21:00	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 21:00	1
Lithium	<2.3		10	2.3	ug/L		02/10/20 08:17	02/11/20 21:00	1
Molybdenum	<1.1		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 21:00	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**250**		30	26	mg/L			02/07/20 14:31	1
pH	**7.5**	**HF**	0.1	0.1	SU			02/06/20 21:42	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**856.59**				ft			02/03/20 15:05	1
Oxidation Reduction Potential	**5.6**				millivolts			02/03/20 15:05	1
Oxygen, Dissolved, Client Supplied	**0.95**				mg/L			02/03/20 15:05	1
pH, Field	**7.31**				SU			02/03/20 15:05	1
Specific Conductance, Field	**464**				uS/cm			02/03/20 15:05	1
Temperature, Field	**9.42**				Degrees C			02/03/20 15:05	1
Turbidity, Field	**2.87**				NTU			02/03/20 15:05	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Client Sample ID: MW-303

Date Collected: 02/03/20 13:55
Date Received: 02/06/20 18:40

Lab Sample ID: 310-175279-3

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12**		10	4.0	mg/L			02/10/20 15:30	10
Sulfate	**350**		10	7.1	mg/L			02/10/20 15:30	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 21:06	1
Barium	**55**		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 21:06	1
Boron	**440**		200	100	ug/L		02/10/20 08:17	02/11/20 21:06	1
Cadmium	<0.039		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 21:06	1
Calcium	**160**		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 21:06	1
Cobalt	**1.3**		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 21:06	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 21:06	1
Lithium	**22**		10	2.3	ug/L		02/10/20 08:17	02/11/20 21:06	1
Molybdenum	**11**		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 21:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**830**		30	26	mg/L			02/07/20 14:31	1
pH	**7.2**	**HF**	0.1	0.1	SU			02/06/20 21:49	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.57**				ft			02/03/20 13:55	1
Oxidation Reduction Potential	**60.1**				millivolts			02/03/20 13:55	1
Oxygen, Dissolved, Client Supplied	**1.89**				mg/L			02/03/20 13:55	1
pH, Field	**6.84**				SU			02/03/20 13:55	1
Specific Conductance, Field	**1173**				uS/cm			02/03/20 13:55	1
Temperature, Field	**7.99**				Degrees C			02/03/20 13:55	1
Turbidity, Field	**5.25**				NTU			02/03/20 13:55	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Client Sample ID: MW-304

Date Collected: 02/03/20 11:50
Date Received: 02/06/20 18:40

Lab Sample ID: 310-175279-4

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21**		10	4.0	mg/L			02/10/20 16:17	10
Sulfate	**360**		10	7.1	mg/L			02/10/20 16:17	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 21:08	1
Barium	**24**		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 21:08	1
Boron	**560**		200	100	ug/L		02/10/20 08:17	02/11/20 21:08	1
Cadmium	**0.36**		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 21:08	1
Calcium	**150**		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 21:08	1
Cobalt	**0.19**	**J**	0.50	0.091	ug/L		02/10/20 08:17	02/11/20 21:08	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 21:08	1
Lithium	<2.3		10	2.3	ug/L		02/10/20 08:17	02/11/20 21:08	1
Molybdenum	**1.5**	**J**	2.0	1.1	ug/L		02/10/20 08:17	02/11/20 21:08	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**800**		30	26	mg/L			02/07/20 14:31	1
pH	**7.0**	**HF**	0.1	0.1	SU			02/06/20 21:52	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.35**				ft			02/03/20 11:50	1
Oxidation Reduction Potential	**62.5**				millivolts			02/03/20 11:50	1
Oxygen, Dissolved, Client Supplied	**1.87**				mg/L			02/03/20 11:50	1
pH, Field	**6.71**				SU			02/03/20 11:50	1
Specific Conductance, Field	**1149**				uS/cm			02/03/20 11:50	1
Temperature, Field	**8.09**				Degrees C			02/03/20 11:50	1
Turbidity, Field	**1.59**				NTU			02/03/20 11:50	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-305
Lab Sample ID: 310-175279-5
Date Collected: 02/03/20 12:11
Matrix: Water
Date Received: 02/06/20 18:40

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17		10	4.0	mg/L			02/10/20 16:32	10
Sulfate	440		10	7.1	mg/L			02/10/20 16:32	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	6.3		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 21:11	1
Barium	32		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 21:11	1
Boron	930		200	100	ug/L		02/10/20 08:17	02/11/20 21:11	1
Cadmium	<0.039		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 21:11	1
Calcium	140		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 21:11	1
Cobalt	1.6		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 21:11	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 21:11	1
Lithium	10		10	2.3	ug/L		02/10/20 08:17	02/11/20 21:11	1
Molybdenum	18		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 21:11	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	850		30	26	mg/L			02/07/20 14:31	1
pH	6.9	HF	0.1	0.1	SU			02/06/20 21:53	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.28				ft			02/03/20 12:11	1
Oxidation Reduction Potential	57.8				millivolts			02/03/20 12:11	1
Oxygen, Dissolved, Client Supplied	1.09				mg/L			02/03/20 12:11	1
pH, Field	6.61				SU			02/03/20 12:11	1
Specific Conductance, Field	1200				uS/cm			02/03/20 12:11	1
Temperature, Field	9.90				Degrees C			02/03/20 12:11	1
Turbidity, Field	4.90				NTU			02/03/20 12:11	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-306
Lab Sample ID: 310-175279-6
Date Collected: 02/03/20 10:30
Matrix: Water
Date Received: 02/06/20 18:40

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	12		10	4.0	mg/L			02/10/20 16:48	10
Sulfate	550		20	14	mg/L			02/11/20 08:41	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.6		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 21:14	1
Barium	100		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 21:14	1
Boron	2500		200	100	ug/L		02/10/20 08:17	02/11/20 21:14	1
Cadmium	<0.039		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 21:14	1
Calcium	220		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 21:14	1
Cobalt	0.85		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 21:14	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 21:14	1
Lithium	39		10	2.3	ug/L		02/10/20 08:17	02/11/20 21:14	1
Molybdenum	38		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 21:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1100		30	26	mg/L			02/07/20 14:31	1
pH	7.8	HF	0.1	0.1	SU			02/06/20 21:54	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.14				ft			02/03/20 10:30	1
Oxidation Reduction Potential	72.7				millivolts			02/03/20 10:30	1
Oxygen, Dissolved, Client Supplied	1.46				mg/L			02/03/20 10:30	1
pH, Field	7.61				SU			02/03/20 10:30	1
Specific Conductance, Field	1446				mS/cm			02/03/20 10:30	1
Temperature, Field	10.86				Degrees C			02/03/20 10:30	1
Turbidity, Field	0.74				NTU			02/03/20 10:30	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: FIELD BLANK
Lab Sample ID: 310-175279-7
Date Collected: 02/03/20 23:59
Matrix: Water
Date Received: 02/06/20 18:40

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.40		1.0	0.40	mg/L			02/10/20 17:04	1
Sulfate	<0.71		1.0	0.71	mg/L			02/10/20 17:04	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 21:16	1
Barium	<0.90		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 21:16	1
Boron	<100		200	100	ug/L		02/10/20 08:17	02/11/20 21:16	1
Cadmium	<0.039		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 21:16	1
Calcium	**1.2**		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 21:16	1
Cobalt	<0.091		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 21:16	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 21:16	1
Lithium	<2.3		10	2.3	ug/L		02/10/20 08:17	02/11/20 21:16	1
Molybdenum	<1.1		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 21:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			02/07/20 14:31	1
pH	**6.3**	**HF**	0.1	0.1	SU			02/06/20 22:00	1

Definitions/Glossary

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
F3	Duplicate RPD exceeds the control limit
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-270329/3
Matrix: Water
Analysis Batch: 270329

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.40		1.0	0.40	mg/L			02/10/20 10:03	1
Sulfate	<0.71		1.0	0.71	mg/L			02/10/20 10:03	1

Lab Sample ID: LCS 310-270329/4
Matrix: Water
Analysis Batch: 270329

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.95		mg/L		99	90 - 110
Sulfate	10.0	10.2		mg/L		102	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-269746/1-A
Matrix: Water
Analysis Batch: 270025

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 269746

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		02/10/20 08:17	02/11/20 20:04	1
Barium	<0.90		2.0	0.90	ug/L		02/10/20 08:17	02/11/20 20:04	1
Boron	<100		200	100	ug/L		02/10/20 08:17	02/11/20 20:04	1
Cadmium	<0.039		0.10	0.039	ug/L		02/10/20 08:17	02/11/20 20:04	1
Calcium	<0.19		0.50	0.19	mg/L		02/10/20 08:17	02/11/20 20:04	1
Cobalt	<0.091		0.50	0.091	ug/L		02/10/20 08:17	02/11/20 20:04	1
Lead	<0.27		0.50	0.27	ug/L		02/10/20 08:17	02/11/20 20:04	1
Lithium	<2.3		10	2.3	ug/L		02/10/20 08:17	02/11/20 20:04	1
Molybdenum	<1.1		2.0	1.1	ug/L		02/10/20 08:17	02/11/20 20:04	1

Lab Sample ID: LCS 310-269746/2-A
Matrix: Water
Analysis Batch: 270025

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 269746

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	80.0	74.1		ug/L		93	80 - 120
Barium	80.0	78.2		ug/L		98	80 - 120
Boron	1760	1710		ug/L		97	80 - 120
Cadmium	40.0	39.7		ug/L		99	80 - 120
Calcium	4.00	3.88		mg/L		97	80 - 120
Cobalt	40.0	40.0		ug/L		100	80 - 120
Lead	40.0	41.0		ug/L		103	80 - 120
Lithium	200	175		ug/L		87	80 - 120
Molybdenum	80.0	66.8		ug/L		84	80 - 120

Lab Sample ID: 310-175279-2 DU
Matrix: Water
Analysis Batch: 270025

Client Sample ID: MW-302
Prep Type: Total/NA
Prep Batch: 269746

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Arsenic	19		22.1		ug/L		17	20
Barium	100		116		ug/L		14	20

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-175279-2 DU
Matrix: Water
Analysis Batch: 270025

Client Sample ID: MW-302
Prep Type: Total/NA
Prep Batch: 269746

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Boron	<100			<100		ug/L				NC	20
Cadmium	<0.039			<0.039		ug/L				NC	20
Calcium	56			63.7		mg/L				14	20
Cobalt	3.7			5.30	F3	ug/L				35	20
Lead	<0.27			<0.27		ug/L				NC	20
Lithium	<2.3			<2.3		ug/L				NC	20
Molybdenum	<1.1			<1.1		ug/L				NC	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-269686/1
Matrix: Water
Analysis Batch: 269686

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			02/07/20 14:31	1

Lab Sample ID: LCS 310-269686/2
Matrix: Water
Analysis Batch: 269686

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1000	972		mg/L		97	90 - 110		

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-269584/1
Matrix: Water
Analysis Batch: 269584

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Lab Sample ID: LCS 310-269585/1
Matrix: Water
Analysis Batch: 269585

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		99	98 - 102		

Lab Sample ID: 310-175279-2 DU
Matrix: Water
Analysis Batch: 269585

Client Sample ID: MW-302
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.5	HF		7.4		SU				0.8	20

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

HPLC/IC

Analysis Batch: 270329

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	9056A	
310-175279-2	MW-302	Total/NA	Water	9056A	
310-175279-3	MW-303	Total/NA	Water	9056A	
310-175279-4	MW-304	Total/NA	Water	9056A	
310-175279-5	MW-305	Total/NA	Water	9056A	
310-175279-6	MW-306	Total/NA	Water	9056A	
310-175279-6	MW-306	Total/NA	Water	9056A	
310-175279-7	FIELD BLANK	Total/NA	Water	9056A	
MB 310-270329/3	Method Blank	Total/NA	Water	9056A	
LCS 310-270329/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 269746

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	3010A	
310-175279-2	MW-302	Total/NA	Water	3010A	
310-175279-3	MW-303	Total/NA	Water	3010A	
310-175279-4	MW-304	Total/NA	Water	3010A	
310-175279-5	MW-305	Total/NA	Water	3010A	
310-175279-6	MW-306	Total/NA	Water	3010A	
310-175279-7	FIELD BLANK	Total/NA	Water	3010A	
MB 310-269746/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-269746/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-175279-2 DU	MW-302	Total/NA	Water	3010A	

Analysis Batch: 270025

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	6020A	269746
310-175279-2	MW-302	Total/NA	Water	6020A	269746
310-175279-3	MW-303	Total/NA	Water	6020A	269746
310-175279-4	MW-304	Total/NA	Water	6020A	269746
310-175279-5	MW-305	Total/NA	Water	6020A	269746
310-175279-6	MW-306	Total/NA	Water	6020A	269746
310-175279-7	FIELD BLANK	Total/NA	Water	6020A	269746
MB 310-269746/1-A	Method Blank	Total/NA	Water	6020A	269746
LCS 310-269746/2-A	Lab Control Sample	Total/NA	Water	6020A	269746
310-175279-2 DU	MW-302	Total/NA	Water	6020A	269746

Analysis Batch: 270043

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-269746/1-A	Method Blank	Total/NA	Water	6020A	269746
LCS 310-269746/2-A	Lab Control Sample	Total/NA	Water	6020A	269746

General Chemistry

Analysis Batch: 269584

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	SM 4500 H+ B	
LCS 310-269584/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-1

General Chemistry

Analysis Batch: 269585

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-175279-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-175279-4	MW-304	Total/NA	Water	SM 4500 H+ B	
310-175279-5	MW-305	Total/NA	Water	SM 4500 H+ B	
310-175279-6	MW-306	Total/NA	Water	SM 4500 H+ B	
310-175279-7	FIELD BLANK	Total/NA	Water	SM 4500 H+ B	
LCS 310-269585/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-175279-2 DU	MW-302	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 269686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	SM 2540C	
310-175279-2	MW-302	Total/NA	Water	SM 2540C	
310-175279-3	MW-303	Total/NA	Water	SM 2540C	
310-175279-4	MW-304	Total/NA	Water	SM 2540C	
310-175279-5	MW-305	Total/NA	Water	SM 2540C	
310-175279-6	MW-306	Total/NA	Water	SM 2540C	
310-175279-7	FIELD BLANK	Total/NA	Water	SM 2540C	
MB 310-269686/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-269686/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 270470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	Field Sampling	
310-175279-2	MW-302	Total/NA	Water	Field Sampling	
310-175279-3	MW-303	Total/NA	Water	Field Sampling	
310-175279-4	MW-304	Total/NA	Water	Field Sampling	
310-175279-5	MW-305	Total/NA	Water	Field Sampling	
310-175279-6	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-301
Lab Sample ID: 310-175279-1
Date Collected: 02/03/20 09:15
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	270329	02/10/20 14:59	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 20:58	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269584	02/06/20 20:57	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	270470	02/03/20 09:15	EAR	TAL CF

Client Sample ID: MW-302
Lab Sample ID: 310-175279-2
Date Collected: 02/03/20 15:05
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	270329	02/10/20 15:15	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 21:00	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269585	02/06/20 21:42	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	270470	02/03/20 15:05	EAR	TAL CF

Client Sample ID: MW-303
Lab Sample ID: 310-175279-3
Date Collected: 02/03/20 13:55
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		10	270329	02/10/20 15:30	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 21:06	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269585	02/06/20 21:49	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	270470	02/03/20 13:55	EAR	TAL CF

Client Sample ID: MW-304
Lab Sample ID: 310-175279-4
Date Collected: 02/03/20 11:50
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		10	270329	02/10/20 16:17	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 21:08	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269585	02/06/20 21:52	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	270470	02/03/20 11:50	EAR	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-305
Lab Sample ID: 310-175279-5
Date Collected: 02/03/20 12:11
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		10	270329	02/10/20 16:32	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 21:11	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269585	02/06/20 21:53	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	270470	02/03/20 12:11	EAR	TAL CF

Client Sample ID: MW-306
Lab Sample ID: 310-175279-6
Date Collected: 02/03/20 10:30
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		10	270329	02/10/20 16:48	ACJ	TAL CF
Total/NA	Analysis	9056A		20	270329	02/11/20 08:41	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 21:14	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269585	02/06/20 21:54	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	270470	02/03/20 10:30	EAR	TAL CF

Client Sample ID: FIELD BLANK
Lab Sample ID: 310-175279-7
Date Collected: 02/03/20 23:59
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	270329	02/10/20 17:04	ACJ	TAL CF
Total/NA	Prep	3010A			269746	02/10/20 08:17	HED	TAL CF
Total/NA	Analysis	6020A		1	270025	02/11/20 21:16	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	269686	02/07/20 14:31	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	269585	02/06/20 22:00	JMH	TAL CF

Laboratory References:
TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Job ID: 310-175279-1
Project/Site: Sutherland GeneratingStation 25219076

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-175279 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Minneapolis STATE MN Project: Sutherland

Receipt Information

Date/Time Received: DATE 2.6.20 TIME 1840 Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? 2/1/20 PM ☒ Yes ☐ No *If yes:* Cooler # 1 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.0 Corrected Temp (°C): 1.1

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

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Place COC scanning label here

214

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 2.6.20 TIME 1840 Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? 2/7/20 ☒ Yes ☐ No *If yes:* Cooler # 2 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M Correction Factor (°C): +0.1

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.6 Corrected Temp (°C): 0.7

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Cooler 1

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

TestAmerica Des Moines SC
214

Chain of Custody Record

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Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-47096-14478.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-301	02.03.2020	0915	G	Water			X	X	X		
MW-302 (cooler 2)		1505		Water							
MW-303 (cooler 2)		1355		Water							
MW-304		1150		Water							
MW-305		1211		Water							
MW-306		1030		Water							
FIELD BLANK (cooler 2)		2359		Water							
				Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Louise Jennings	02/05/2020		Lindsay Bindert	2-6-20 1840	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Cooler 2

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

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Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-47096-14478.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-302	2.3.20	1505	G	Water			X	X	X		
MW-303	"	1355	"	Water			X	X	X		
FIELD BLANK	"	2359	"	Water			X	X	X		
				Water							
				Water							
				Water							
				Water							
				Water							
				Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	2/5/20 500pm	SCS	Lindsay Bindert	2.6.20 1840	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
MW-301	310-175279-A-1	Plastic 250ml - with Nitric Acid	<2			
MW-301	310-175279-C-1	Plastic 1 liter - Nitric Acid	<2			
MW-301	310-175279-D-1	Plastic 1 liter - Nitric Acid	<2			
MW302	310-175279-A-2	Plastic 250ml - with Nitric Acid	<2			
MW302	310-175279-C-2	Plastic 1 liter - Nitric Acid	<2			
MW302	310-175279-D-2	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-175279-A-3	Plastic 250ml - with Nitric Acid	<2			
MW-303	310-175279-C-3	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-175279-D-3	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-175279-A-4	Plastic 250ml - with Nitric Acid	<2			
MW-304	310-175279-C-4	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-175279-D-4	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-175279-A-5	Plastic 250ml - with Nitric Acid	<2			
MW-305	310-175279-C-5	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-175279-D-5	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-175279-A-6	Plastic 250ml - with Nitric Acid	<2			
MW-306	310-175279-C-6	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-175279-D-6	Plastic 1 liter - Nitric Acid	<2			
FIELD BLANK	310-175279-A-7	Plastic 250ml - with Nitric Acid	<2			
FIELD BLANK	310-175279-C-7	Plastic 1 liter - Nitric Acid	<2			
FIELD BLANK	310-175279-D-7	Plastic 1 liter - Nitric Acid	<2			

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25219076

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride								0
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony								0
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium								0
	Cadmium	x	x	x	x	x	x	x	7
	Chromium								0
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride								0
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury								0
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium								0
	Thallium								0
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		6
	Well Depth	x	x	x	x	x	x		6
	pH (field)	x	x	x	x	x	x		6
	Specific Conductance	x	x	x	x	x	x		6
	Dissolved Oxygen	x	x	x	x	x	x		6
	ORP	x	x	x	x	x	x		6
	Temperature	x	x	x	x	x	x		6
	Turbidity	x	x	x	x	x	x		6
	Color	x	x	x	x	x	x		6
	Odor	x	x	x	x	x	x		6

Notes:

I:\25219076.00\Data and Calculations\Field Work Requests\[IPL_Sutherland Generating Station_CCR_Rule_Sampling_2002.xls]Sheet1

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-175279-1

Login Number: 175279
List Number: 1
Creator: Bindert, Lindsay A

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-175279-2
Client Project/Site: Sutherland GeneratingStation 25219076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
3/4/2020 11:36:40 AM
Jim Knapp, Project Manager II
(630)758-0262
jim.knapp@testamericainc.com

Designee for

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland GeneratingStation 25219076

Job ID: 310-175279-2

Job ID: 310-175279-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-175279-2

Comments
No additional comments.

Receipt
The samples were received on 2/6/2020 6:40 PM; the samples arrived in good condition, properly preserved and, where required, on ice.

RAD
Methods 903.0, 9315: Ra-226 Prep Batch 160-459790
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

MW-301 (310-175279-1), MW-302 (310-175279-2), MW-303 (310-175279-3), MW-304 (310-175279-4), MW-305 (310-175279-5), MW-306 (310-175279-6), FIELD BLANK (310-175279-7), (LCS 160-459790/1-A), (LCSD 160-459790/2-A) and (MB 160-459790/23-A)

Methods 904.0, 9320: Ra-228 Prep Batch 160-459791
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date.

MW-301 (310-175279-1), MW-302 (310-175279-2), MW-303 (310-175279-3), MW-304 (310-175279-4), MW-305 (310-175279-5), MW-306 (310-175279-6), FIELD BLANK (310-175279-7), (LCS 160-459791/1-A), (LCSD 160-459791/2-A) and (MB 160-459791/23-A)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-175279-1	MW-301	Water	02/03/20 09:15	02/06/20 18:40	
310-175279-2	MW-302	Water	02/03/20 15:05	02/06/20 18:40	
310-175279-3	MW-303	Water	02/03/20 13:55	02/06/20 18:40	
310-175279-4	MW-304	Water	02/03/20 11:50	02/06/20 18:40	
310-175279-5	MW-305	Water	02/03/20 12:11	02/06/20 18:40	
310-175279-6	MW-306	Water	02/03/20 10:30	02/06/20 18:40	
310-175279-7	FIELD BLANK	Water	02/03/20 23:59	02/06/20 18:40	

Detection Summary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-301 **Lab Sample ID: 310-175279-1**

No Detections.

Client Sample ID: MW-302 **Lab Sample ID: 310-175279-2**

No Detections.

Client Sample ID: MW-303 **Lab Sample ID: 310-175279-3**

No Detections.

Client Sample ID: MW-304 **Lab Sample ID: 310-175279-4**

No Detections.

Client Sample ID: MW-305 **Lab Sample ID: 310-175279-5**

No Detections.

Client Sample ID: MW-306 **Lab Sample ID: 310-175279-6**

No Detections.

Client Sample ID: FIELD BLANK **Lab Sample ID: 310-175279-7**

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-301
Lab Sample ID: 310-175279-1
Date Collected: 02/03/20 09:15
Matrix: Water
Date Received: 02/06/20 18:40

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0951	U	0.0853	0.0858	1.00	0.124	pCi/L	02/10/20 10:38	03/03/20 11:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.4*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:20*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.293	U	0.412	0.413	1.00	0.688	pCi/L	02/10/20 11:00	02/25/20 17:37	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.4*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:37*	*1*
Y Carrier	*86.0*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:37*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.388	U	0.421	0.422	5.00	0.688	pCi/L		03/04/20 10:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-302
Lab Sample ID: 310-175279-2
Date Collected: 02/03/20 15:05
Matrix: Water
Date Received: 02/06/20 18:40

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.299		0.107	0.110	1.00	0.101	pCi/L	02/10/20 10:38	03/03/20 11:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:20*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.509		0.282	0.286	1.00	0.425	pCi/L	02/10/20 11:00	02/25/20 17:37	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:37*	*1*
Y Carrier	*88.6*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:37*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.808		0.302	0.306	5.00	0.425	pCi/L		03/04/20 10:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-303
Date Collected: 02/03/20 13:55
Date Received: 02/06/20 18:40

Lab Sample ID: 310-175279-3
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0473	U	0.0573	0.0575	1.00	0.0935	pCi/L	02/10/20 10:38	03/03/20 11:20	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:20*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.111	U	0.272	0.272	1.00	0.467	pCi/L	02/10/20 11:00	02/25/20 17:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.3*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:38*	*1*
Y Carrier	*89.0*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:38*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.159	U	0.278	0.278	5.00	0.467	pCi/L		03/04/20 10:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-304
Lab Sample ID: 310-175279-4
Date Collected: 02/03/20 11:50
Matrix: Water
Date Received: 02/06/20 18:40

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0430	U	0.0559	0.0561	1.00	0.0930	pCi/L	02/10/20 10:38	03/03/20 11:21	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.8*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:21*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.00857	U	0.203	0.203	1.00	0.365	pCi/L	02/10/20 11:00	02/25/20 17:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*94.8*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:40*	*1*
Y Carrier	*91.6*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:40*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.0516	U	0.211	0.211	5.00	0.365	pCi/L		03/04/20 10:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-305
Lab Sample ID: 310-175279-5
Date Collected: 02/03/20 12:11
Matrix: Water
Date Received: 02/06/20 18:40

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.119**		0.0802	0.0809	1.00	0.107	pCi/L	02/10/20 10:38	03/03/20 11:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.9*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:22*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.390	U	0.278	0.281	1.00	0.433	pCi/L	02/10/20 11:00	02/25/20 17:40	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.9*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:40*	*1*
Y Carrier	*87.1*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:40*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.510**		0.289	0.292	5.00	0.433	pCi/L		03/04/20 10:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-306
Lab Sample ID: 310-175279-6
Date Collected: 02/03/20 10:30
Matrix: Water
Date Received: 02/06/20 18:40

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0568	U	0.0709	0.0711	1.00	0.117	pCi/L	02/10/20 10:38	03/03/20 11:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.5*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:22*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.157	U	0.247	0.247	1.00	0.416	pCi/L	02/10/20 11:00	02/25/20 17:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*89.5*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:41*	*1*
Y Carrier	*89.3*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:41*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.214	U	0.257	0.257	5.00	0.416	pCi/L		03/04/20 10:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: FIELD BLANK
Lab Sample ID: 310-175279-7

Date Collected: 02/03/20 23:59
Matrix: Water
Date Received: 02/06/20 18:40

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00152	U	0.0505	0.0505	1.00	0.105	pCi/L	02/10/20 10:38	03/03/20 11:22	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*02/10/20 10:38*	*03/03/20 11:22*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.236	U	0.316	0.317	1.00	0.525	pCi/L	02/10/20 11:00	02/25/20 17:41	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.2*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:41*	*1*
Y Carrier	*87.1*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:41*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.237	U	0.320	0.321	5.00	0.525	pCi/L		03/04/20 10:45	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-459790/23-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 462630
Prep Batch: 459790

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.01193	U	0.0438	0.0438	1.00	0.0864	pCi/L	02/10/20 10:38	03/03/20 13:07	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*02/10/20 10:38*	*03/03/20 13:07*	*1*

Lab Sample ID: LCS 160-459790/1-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 462630
Prep Batch: 459790

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	9.766		1.03	1.00	0.0863	pCi/L	86	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*98.8*		*40 - 110*

Lab Sample ID: LCSD 160-459790/2-A
Client Sample ID: Lab Control Sample Dup
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 462630
Prep Batch: 459790

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.3	9.634		1.02	1.00	0.135	pCi/L	85	75 - 125	0.06	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-459791/23-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 461694
Prep Batch: 459791

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1138	U	0.204	0.204	1.00	0.347	pCi/L	02/10/20 11:00	02/25/20 17:42	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*104*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:42*	*1*
Y Carrier	*90.5*		*40 - 110*	*02/10/20 11:00*	*02/25/20 17:42*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-459791/1-A
Matrix: Water
Analysis Batch: 461720

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 459791

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			9.08	8.884		1.05	1.00	0.425	pCi/L	98	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*98.8*		*40 - 110*
Y Carrier	*88.2*		*40 - 110*

Lab Sample ID: LCSD 160-459791/2-A
Matrix: Water
Analysis Batch: 461720

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 459791

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			9.08	8.363		0.994	1.00	0.396	pCi/L	92	75 - 125	0.25	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*102*		*40 - 110*
Y Carrier	*88.2*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Rad

Prep Batch: 459790

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	PrecSep-21	
310-175279-2	MW-302	Total/NA	Water	PrecSep-21	
310-175279-3	MW-303	Total/NA	Water	PrecSep-21	
310-175279-4	MW-304	Total/NA	Water	PrecSep-21	
310-175279-5	MW-305	Total/NA	Water	PrecSep-21	
310-175279-6	MW-306	Total/NA	Water	PrecSep-21	
310-175279-7	FIELD BLANK	Total/NA	Water	PrecSep-21	
MB 160-459790/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-459790/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-459790/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 459791

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-175279-1	MW-301	Total/NA	Water	PrecSep_0	
310-175279-2	MW-302	Total/NA	Water	PrecSep_0	
310-175279-3	MW-303	Total/NA	Water	PrecSep_0	
310-175279-4	MW-304	Total/NA	Water	PrecSep_0	
310-175279-5	MW-305	Total/NA	Water	PrecSep_0	
310-175279-6	MW-306	Total/NA	Water	PrecSep_0	
310-175279-7	FIELD BLANK	Total/NA	Water	PrecSep_0	
MB 160-459791/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-459791/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-459791/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-301
Lab Sample ID: 310-175279-1
Date Collected: 02/03/20 09:15
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:20	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461720	02/25/20 17:37	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Client Sample ID: MW-302
Lab Sample ID: 310-175279-2
Date Collected: 02/03/20 15:05
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:20	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461720	02/25/20 17:37	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Client Sample ID: MW-303
Lab Sample ID: 310-175279-3
Date Collected: 02/03/20 13:55
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:20	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461720	02/25/20 17:38	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Client Sample ID: MW-304
Lab Sample ID: 310-175279-4
Date Collected: 02/03/20 11:50
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:21	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461694	02/25/20 17:40	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Lab Chronicle

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Client Sample ID: MW-305
Lab Sample ID: 310-175279-5
Date Collected: 02/03/20 12:11
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:22	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461694	02/25/20 17:40	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Client Sample ID: MW-306
Lab Sample ID: 310-175279-6
Date Collected: 02/03/20 10:30
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:22	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461694	02/25/20 17:41	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Client Sample ID: FIELD BLANK
Lab Sample ID: 310-175279-7
Date Collected: 02/03/20 23:59
Matrix: Water
Date Received: 02/06/20 18:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			459790	02/10/20 10:38	MNH	TAL SL
Total/NA	Analysis	903.0		1	462630	03/03/20 11:22	AJD	TAL SL
Total/NA	Prep	PrecSep_0			459791	02/10/20 11:00	MNH	TAL SL
Total/NA	Analysis	904.0		1	461694	02/25/20 17:41	CJQ	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	463071	03/04/20 10:45	SMP	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-19 *

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-20
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-20 *
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Method Summary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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310-175279 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Minneapolis STATE MN Project: Sutherland

Receipt Information

Date/Time Received: DATE 2.6.20 TIME 1840 Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? 2/1/20 PM ☒ Yes ☒ No *If yes:* Cooler # 1 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.0 Corrected Temp (°C): 1.1

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing TestAmerica

Place COC scanning label here

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Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 2.6.20 TIME 1840 Received By: LAB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? 2/7/20 ☒ Yes ☐ No *If yes:* Cooler # 2 of 2

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☐ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: M Correction Factor (°C): +0.1

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.6 Corrected Temp (°C): 0.7

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Cooler 1

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

TestAmerica Des Moines SC
214

Chain of Custody Record

eurofins | Environment Testing TestAmerica

Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-47096-14478.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	D	N		
MW-301	02.03.2020	0915	G	Water			X	X	X		
MW-302 (cooler 2)		1505		Water							
MW-303 (cooler 2)		1355		Water							
MW-304		1150		Water							
MW-305		1211		Water							
MW-306		1030		Water							
FIELD BLANK (cooler 2)		2359		Water							
				Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by	Date/Time	Company	Received by	Date/Time	Company
1	Louise Jennings	02/05/2020		Lindsay Bindert	2-6-20 1840	
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Cooler 2

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

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Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-47096-14478.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone:	PO #: 25219076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25219076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-302	2.3.20	1505	G	Water			X	X	X		
MW-303	"	1355	"	Water			X	X	X		
FIELD BLANK	"	2359	"	Water			X	X	X		
				Water							
				Water							
				Water							
				Water							
				Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	2/5/20 500pm	SCS	Lindsay Bindert	2.6.20 1840	
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

06/10/2021 - Classification Page 24 of 28 - Internal - ECRM12612985 3/4/2020

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
MW-301	310-175279-A-1	Plastic 250ml - with Nitric Acid	<2			
MW-301	310-175279-C-1	Plastic 1 liter - Nitric Acid	<2			
MW-301	310-175279-D-1	Plastic 1 liter - Nitric Acid	<2			
MW302	310-175279-A-2	Plastic 250ml - with Nitric Acid	<2			
MW302	310-175279-C-2	Plastic 1 liter - Nitric Acid	<2			
MW302	310-175279-D-2	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-175279-A-3	Plastic 250ml - with Nitric Acid	<2			
MW-303	310-175279-C-3	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-175279-D-3	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-175279-A-4	Plastic 250ml - with Nitric Acid	<2			
MW-304	310-175279-C-4	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-175279-D-4	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-175279-A-5	Plastic 250ml - with Nitric Acid	<2			
MW-305	310-175279-C-5	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-175279-D-5	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-175279-A-6	Plastic 250ml - with Nitric Acid	<2			
MW-306	310-175279-C-6	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-175279-D-6	Plastic 1 liter - Nitric Acid	<2			
FIELD BLANK	310-175279-A-7	Plastic 250ml - with Nitric Acid	<2			
FIELD BLANK	310-175279-C-7	Plastic 1 liter - Nitric Acid	<2			
FIELD BLANK	310-175279-D-7	Plastic 1 liter - Nitric Acid	<2			

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-175279-2

Login Number: 175279

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Bindert, Lindsay A

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-175279-2

Login Number: 175279
List Number: 2
Creator: Hellm, Michael

List Source: Eurofins TestAmerica, St. Louis
List Creation: 02/08/20 10:20 AM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	21.0
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	N/A	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Job ID: 310-175279-2
Project/Site: Sutherland GeneratingStation 25219076

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-175279-1	MW-301	83.4
310-175279-2	MW-302	93.2
310-175279-3	MW-303	92.3
310-175279-4	MW-304	94.8
310-175279-5	MW-305	84.9
310-175279-6	MW-306	89.5
310-175279-7	FIELD BLANK	93.2
LCS 160-459790/1-A	Lab Control Sample	98.8
LCSD 160-459790/2-A	Lab Control Sample Dup	102
MB 160-459790/23-A	Method Blank	104

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-175279-1	MW-301	83.4	86.0
310-175279-2	MW-302	93.2	88.6
310-175279-3	MW-303	92.3	89.0
310-175279-4	MW-304	94.8	91.6
310-175279-5	MW-305	84.9	87.1
310-175279-6	MW-306	89.5	89.3
310-175279-7	FIELD BLANK	93.2	87.1
LCS 160-459791/1-A	Lab Control Sample	98.8	88.2
LCSD 160-459791/2-A	Lab Control Sample Dup	102	88.2
MB 160-459791/23-A	Method Blank	104	90.5

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Y Carrier = Y Carrier

C2 April 2020 Assessment Monitoring

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-179309-1
Client Project/Site: Sutherland Generating Station 25220076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
4/21/2020 11:21:12 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-179309-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-179309-1

Comments
No additional comments.

Receipt
The samples were received on 4/8/2020 4:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice.
The temperatures of the 2 coolers at receipt time were 0.4º C and 1.2º C.

HPLC/IC
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-179309-1	MW-301	Water	04/07/20 15:15	04/08/20 16:10	
310-179309-2	MW-302	Water	04/07/20 14:20	04/08/20 16:10	
310-179309-3	MW-303	Water	04/07/20 13:15	04/08/20 16:10	
310-179309-4	MW-304	Water	04/07/20 12:05	04/08/20 16:10	
310-179309-5	MW-305	Water	04/07/20 11:10	04/08/20 16:10	
310-179309-6	MW-306	Water	04/07/20 09:40	04/08/20 16:10	
310-179309-7	Field Blank	Water	04/07/20 23:59	04/08/20 16:10	

Detection Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-179309-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	21		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.41	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	17		5.0	3.6	mg/L	5		9056A	Total/NA
Barium	240		2.0	0.90	ug/L	1		6020A	Total/NA
Beryllium	0.33	J	1.0	0.27	ug/L	1		6020A	Total/NA
Cadmium	0.17		0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	78		0.50	0.19	mg/L	1		6020A	Total/NA
Chromium	1.1	J	5.0	1.1	ug/L	1		6020A	Total/NA
Cobalt	1.6		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.50		0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	3.4	J	10	2.3	ug/L	1		6020A	Total/NA
Total Dissolved Solids	330		30	26	mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	856.16				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	143.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.13				mg/L	1		Field Sampling	Total/NA
pH, Field	6.87				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	583.7				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	11.00				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	68.5				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302
Lab Sample ID: 310-179309-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.2		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.55		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	14		5.0	3.6	mg/L	5		9056A	Total/NA
Arsenic	5.3		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	97		2.0	0.90	ug/L	1		6020A	Total/NA
Calcium	71		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	1.7		0.50	0.091	ug/L	1		6020A	Total/NA
Total Dissolved Solids	250		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	856.23				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-80.4				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.14				mg/L	1		Field Sampling	Total/NA
pH, Field	7.36				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	456.2				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	11.30				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	6.32				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303
Lab Sample ID: 310-179309-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	11		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.68		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	210		5.0	3.6	mg/L	5		9056A	Total/NA
Barium	41		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	530		200	100	ug/L	1		6020A	Total/NA
Cadmium	0.20		0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	110		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.53		0.50	0.091	ug/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-303 (Continued)
Lab Sample ID: 310-179309-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lead	0.31	J	0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	23		10	2.3	ug/L	1		6020A	Total/NA
Molybdenum	23		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	570		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.1	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.63				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	124.3				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.13				mg/L	1		Field Sampling	Total/NA
pH, Field	7.17				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	814				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	11.30				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	3.58				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-304
Lab Sample ID: 310-179309-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	15		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.49	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	350		5.0	3.6	mg/L	5		9056A	Total/NA
Barium	22		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	580		200	100	ug/L	1		6020A	Total/NA
Cadmium	0.079	J	0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	150		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.28	J	0.50	0.091	ug/L	1		6020A	Total/NA
Total Dissolved Solids	750		30	26	mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.54				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	95.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.28				mg/L	1		Field Sampling	Total/NA
pH, Field	6.68				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1016				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	10.40				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	2.12				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-305
Lab Sample ID: 310-179309-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	12		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.69		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	450		5.0	3.6	mg/L	5		9056A	Total/NA
Arsenic	8.8		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	41		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	850		200	100	ug/L	1		6020A	Total/NA
Calcium	170		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	2.1		0.50	0.091	ug/L	1		6020A	Total/NA
Lead	0.48	J	0.50	0.27	ug/L	1		6020A	Total/NA
Lithium	12		10	2.3	ug/L	1		6020A	Total/NA
Molybdenum	20		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	900		30	26	mg/L	1		SM 2540C	Total/NA
pH	6.7	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.64				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-6.6				millivolts	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample ID: MW-305 (Continued)
Lab Sample ID: 310-179309-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Oxygen, Dissolved, Client Supplied	0.20				mg/L	1		Field Sampling	Total/NA
pH, Field	6.70				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1198				uS/cm	1		Field Sampling	Total/NA
Temperature, Field	10.20				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	8.14				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-306
Lab Sample ID: 310-179309-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		10	4.0	mg/L	10		9056A	Total/NA
Fluoride	0.75	J	1.0	0.46	mg/L	10		9056A	Total/NA
Sulfate	560		10	7.1	mg/L	10		9056A	Total/NA
Arsenic	3.6		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	99		2.0	0.90	ug/L	1		6020A	Total/NA
Boron	2500		200	100	ug/L	1		6020A	Total/NA
Cadmium	0.045	J	0.10	0.039	ug/L	1		6020A	Total/NA
Calcium	220		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.66		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	40		10	2.3	ug/L	1		6020A	Total/NA
Molybdenum	36		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1100		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.6	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.70				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	209.2				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.12				mg/L	1		Field Sampling	Total/NA
pH, Field	7.72				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1428				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.10				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.58				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank
Lab Sample ID: 310-179309-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH	6.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-179309-1

Date Collected: 04/07/20 15:15
Matrix: Water

Date Received: 04/08/20 16:10

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**21**		5.0	2.0	mg/L			04/14/20 00:27	5
Fluoride	**0.41**	**J**	0.50	0.23	mg/L			04/14/20 00:27	5
Sulfate	**17**		5.0	3.6	mg/L			04/14/20 00:27	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 17:54	1
Arsenic	<0.88		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 17:54	1
Barium	**240**		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 17:54	1
Beryllium	**0.33**	**J**	1.0	0.27	ug/L		04/10/20 08:14	04/13/20 17:54	1
Boron	<100		200	100	ug/L		04/10/20 08:14	04/13/20 17:54	1
Cadmium	**0.17**		0.10	0.039	ug/L		04/10/20 08:14	04/13/20 17:54	1
Calcium	**78**		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 17:54	1
Chromium	**1.1**	**J**	5.0	1.1	ug/L		04/10/20 08:14	04/13/20 17:54	1
Cobalt	**1.6**		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 17:54	1
Lead	**0.50**		0.50	0.27	ug/L		04/10/20 08:14	04/13/20 17:54	1
Lithium	**3.4**	**J**	10	2.3	ug/L		04/10/20 08:14	04/13/20 17:54	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 17:54	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 17:54	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 17:54	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 15:49	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**330**		30	26	mg/L			04/10/20 14:11	1
pH	**6.8**	**HF**	0.1	0.1	SU			04/08/20 20:26	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**856.16**				ft			04/07/20 15:15	1
Oxidation Reduction Potential	**143.1**				millivolts			04/07/20 15:15	1
Oxygen, Dissolved, Client Supplied	**0.13**				mg/L			04/07/20 15:15	1
pH, Field	**6.87**				SU			04/07/20 15:15	1
Specific Conductance, Field	**583.7**				uS/cm			04/07/20 15:15	1
Temperature, Field	**11.00**				Degrees C			04/07/20 15:15	1
Turbidity, Field	**68.5**				NTU			04/07/20 15:15	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-302
Date Collected: 04/07/20 14:20
Date Received: 04/08/20 16:10

Lab Sample ID: 310-179309-2
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.2**		5.0	2.0	mg/L			04/14/20 00:44	5
Fluoride	**0.55**		0.50	0.23	mg/L			04/14/20 00:44	5
Sulfate	**14**		5.0	3.6	mg/L			04/14/20 00:44	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 17:56	1
Arsenic	**5.3**		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 17:56	1
Barium	**97**		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 17:56	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 17:56	1
Boron	<100		200	100	ug/L		04/10/20 08:14	04/13/20 17:56	1
Cadmium	<0.039		0.10	0.039	ug/L		04/10/20 08:14	04/13/20 17:56	1
Calcium	**71**		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 17:56	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 17:56	1
Cobalt	**1.7**		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 17:56	1
Lead	<0.27		0.50	0.27	ug/L		04/10/20 08:14	04/13/20 17:56	1
Lithium	<2.3		10	2.3	ug/L		04/10/20 08:14	04/13/20 17:56	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 17:56	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 17:56	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 17:56	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 15:51	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**250**		30	26	mg/L			04/10/20 14:11	1
pH	**7.3**	**HF**	0.1	0.1	SU			04/08/20 20:28	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**856.23**				ft			04/07/20 14:20	1
Oxidation Reduction Potential	**-80.4**				millivolts			04/07/20 14:20	1
Oxygen, Dissolved, Client Supplied	**0.14**				mg/L			04/07/20 14:20	1
pH, Field	**7.36**				SU			04/07/20 14:20	1
Specific Conductance, Field	**456.2**				uS/cm			04/07/20 14:20	1
Temperature, Field	**11.30**				Degrees C			04/07/20 14:20	1
Turbidity, Field	**6.32**				NTU			04/07/20 14:20	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-303
Lab Sample ID: 310-179309-3
Date Collected: 04/07/20 13:15
Matrix: Water
Date Received: 04/08/20 16:10

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**11**		5.0	2.0	mg/L			04/14/20 01:00	5
Fluoride	**0.68**		0.50	0.23	mg/L			04/14/20 01:00	5
Sulfate	**210**		5.0	3.6	mg/L			04/14/20 01:00	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 18:07	1
Arsenic	<0.88		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 18:07	1
Barium	**41**		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 18:07	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 18:07	1
Boron	**530**		200	100	ug/L		04/10/20 08:14	04/13/20 18:07	1
Cadmium	**0.20**		0.10	0.039	ug/L		04/10/20 08:14	04/13/20 18:07	1
Calcium	**110**		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 18:07	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:07	1
Cobalt	**0.53**		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 18:07	1
Lead	**0.31**	**J**	0.50	0.27	ug/L		04/10/20 08:14	04/13/20 18:07	1
Lithium	**23**		10	2.3	ug/L		04/10/20 08:14	04/13/20 18:07	1
Molybdenum	**23**		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:07	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 18:07	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 18:07	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 15:53	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**570**		30	26	mg/L			04/10/20 14:11	1
pH	**7.1**	**HF**	0.1	0.1	SU			04/08/20 20:28	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.63**				ft			04/07/20 13:15	1
Oxidation Reduction Potential	**124.3**				millivolts			04/07/20 13:15	1
Oxygen, Dissolved, Client Supplied	**0.13**				mg/L			04/07/20 13:15	1
pH, Field	**7.17**				SU			04/07/20 13:15	1
Specific Conductance, Field	**814**				uS/cm			04/07/20 13:15	1
Temperature, Field	**11.30**				Degrees C			04/07/20 13:15	1
Turbidity, Field	**3.58**				NTU			04/07/20 13:15	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-304
Date Collected: 04/07/20 12:05
Date Received: 04/08/20 16:10

Lab Sample ID: 310-179309-4
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**15**		5.0	2.0	mg/L			04/14/20 01:16	5
Fluoride	**0.49**	**J**	0.50	0.23	mg/L			04/14/20 01:16	5
Sulfate	**350**		5.0	3.6	mg/L			04/14/20 01:16	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 18:09	1
Arsenic	<0.88		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 18:09	1
Barium	**22**		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 18:09	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 18:09	1
Boron	**580**		200	100	ug/L		04/10/20 08:14	04/13/20 18:09	1
Cadmium	**0.079**	**J**	0.10	0.039	ug/L		04/10/20 08:14	04/13/20 18:09	1
Calcium	**150**		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 18:09	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:09	1
Cobalt	**0.28**	**J**	0.50	0.091	ug/L		04/10/20 08:14	04/13/20 18:09	1
Lead	<0.27		0.50	0.27	ug/L		04/10/20 08:14	04/13/20 18:09	1
Lithium	<2.3		10	2.3	ug/L		04/10/20 08:14	04/13/20 18:09	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:09	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 18:09	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 18:09	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 15:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**750**		30	26	mg/L			04/10/20 14:11	1
pH	**6.7**	**HF**	0.1	0.1	SU			04/08/20 20:29	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.54**				ft			04/07/20 12:05	1
Oxidation Reduction Potential	**95.1**				millivolts			04/07/20 12:05	1
Oxygen, Dissolved, Client Supplied	**0.28**				mg/L			04/07/20 12:05	1
pH, Field	**6.68**				SU			04/07/20 12:05	1
Specific Conductance, Field	**1016**				uS/cm			04/07/20 12:05	1
Temperature, Field	**10.40**				Degrees C			04/07/20 12:05	1
Turbidity, Field	**2.12**				NTU			04/07/20 12:05	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-179309-5

Date Collected: 04/07/20 11:10
Matrix: Water
Date Received: 04/08/20 16:10

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**12**		5.0	2.0	mg/L			04/14/20 02:05	5
Fluoride	**0.69**		0.50	0.23	mg/L			04/14/20 02:05	5
Sulfate	**450**		5.0	3.6	mg/L			04/14/20 02:05	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 18:14	1
Arsenic	**8.8**		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 18:14	1
Barium	**41**		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 18:14	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 18:14	1
Boron	**850**		200	100	ug/L		04/10/20 08:14	04/13/20 18:14	1
Cadmium	<0.039		0.10	0.039	ug/L		04/10/20 08:14	04/13/20 18:14	1
Calcium	**170**		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 18:14	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:14	1
Cobalt	**2.1**		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 18:14	1
Lead	**0.48**	**J**	0.50	0.27	ug/L		04/10/20 08:14	04/13/20 18:14	1
Lithium	**12**		10	2.3	ug/L		04/10/20 08:14	04/13/20 18:14	1
Molybdenum	**20**		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:14	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 18:14	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 18:14	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 16:01	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**900**		30	26	mg/L			04/10/20 14:11	1
pH	**6.7**	**HF**	0.1	0.1	SU			04/08/20 20:30	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.64**				ft			04/07/20 11:10	1
Oxidation Reduction Potential	**-6.6**				millivolts			04/07/20 11:10	1
Oxygen, Dissolved, Client Supplied	**0.20**				mg/L			04/07/20 11:10	1
pH, Field	**6.70**				SU			04/07/20 11:10	1
Specific Conductance, Field	**1198**				uS/cm			04/07/20 11:10	1
Temperature, Field	**10.20**				Degrees C			04/07/20 11:10	1
Turbidity, Field	**8.14**				NTU			04/07/20 11:10	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-306
Lab Sample ID: 310-179309-6

Date Collected: 04/07/20 09:40
Matrix: Water

Date Received: 04/08/20 16:10

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		10	4.0	mg/L			04/14/20 02:21	10
Fluoride	0.75	J	1.0	0.46	mg/L			04/14/20 02:21	10
Sulfate	560		10	7.1	mg/L			04/14/20 02:21	10

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 18:17	1
Arsenic	3.6		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 18:17	1
Barium	99		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 18:17	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 18:17	1
Boron	2500		200	100	ug/L		04/10/20 08:14	04/13/20 18:17	1
Cadmium	0.045	J	0.10	0.039	ug/L		04/10/20 08:14	04/13/20 18:17	1
Calcium	220		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 18:17	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:17	1
Cobalt	0.66		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 18:17	1
Lead	<0.27		0.50	0.27	ug/L		04/10/20 08:14	04/13/20 18:17	1
Lithium	40		10	2.3	ug/L		04/10/20 08:14	04/13/20 18:17	1
Molybdenum	36		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:17	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 18:17	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 18:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 16:04	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1100		30	26	mg/L			04/10/20 14:11	1
pH	7.6	HF	0.1	0.1	SU			04/08/20 20:31	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.70				ft			04/07/20 09:40	1
Oxidation Reduction Potential	209.2				millivolts			04/07/20 09:40	1
Oxygen, Dissolved, Client Supplied	0.12				mg/L			04/07/20 09:40	1
pH, Field	7.72				SU			04/07/20 09:40	1
Specific Conductance, Field	1428				umhos/cm			04/07/20 09:40	1
Temperature, Field	11.10				Degrees C			04/07/20 09:40	1
Turbidity, Field	0.58				NTU			04/07/20 09:40	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-179309-7

Date Collected: 04/07/20 23:59
Matrix: Water
Date Received: 04/08/20 16:10

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.40		1.0	0.40	mg/L			04/14/20 02:37	1
Fluoride	<0.046		0.10	0.046	mg/L			04/14/20 02:37	1
Sulfate	<0.71		1.0	0.71	mg/L			04/14/20 02:37	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 18:19	1
Arsenic	<0.88		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 18:19	1
Barium	<0.90		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 18:19	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 18:19	1
Boron	<100		200	100	ug/L		04/10/20 08:14	04/13/20 18:19	1
Cadmium	<0.039		0.10	0.039	ug/L		04/10/20 08:14	04/13/20 18:19	1
Calcium	<0.19		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 18:19	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:19	1
Cobalt	<0.091		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 18:19	1
Lead	<0.27		0.50	0.27	ug/L		04/10/20 08:14	04/13/20 18:19	1
Lithium	<2.3		10	2.3	ug/L		04/10/20 08:14	04/13/20 18:19	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 18:19	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 18:19	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 18:19	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 16:06	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			04/13/20 13:49	1
pH	**6.9**	**HF**	0.1	0.1	SU			04/08/20 20:37	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-275733/3
Matrix: Water
Analysis Batch: 275733

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.40		1.0	0.40	mg/L			04/13/20 22:51	1
Fluoride	<0.046		0.10	0.046	mg/L			04/13/20 22:51	1
Sulfate	<0.71		1.0	0.71	mg/L			04/13/20 22:51	1

Lab Sample ID: LCS 310-275733/4
Matrix: Water
Analysis Batch: 275733

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	10.3		mg/L		103	90 - 110
Fluoride	2.00	2.06		mg/L		103	90 - 110
Sulfate	10.0	10.9		mg/L		109	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-275321/1-A
Matrix: Water
Analysis Batch: 275624

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 275321

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.58		1.0	0.58	ug/L		04/10/20 08:14	04/13/20 17:12	1
Arsenic	<0.88		2.0	0.88	ug/L		04/10/20 08:14	04/13/20 17:12	1
Barium	<0.90		2.0	0.90	ug/L		04/10/20 08:14	04/13/20 17:12	1
Beryllium	<0.27		1.0	0.27	ug/L		04/10/20 08:14	04/13/20 17:12	1
Boron	<100		200	100	ug/L		04/10/20 08:14	04/13/20 17:12	1
Cadmium	<0.039		0.10	0.039	ug/L		04/10/20 08:14	04/13/20 17:12	1
Calcium	<0.19		0.50	0.19	mg/L		04/10/20 08:14	04/13/20 17:12	1
Chromium	<1.1		5.0	1.1	ug/L		04/10/20 08:14	04/13/20 17:12	1
Cobalt	<0.091		0.50	0.091	ug/L		04/10/20 08:14	04/13/20 17:12	1
Lead	<0.27		0.50	0.27	ug/L		04/10/20 08:14	04/13/20 17:12	1
Lithium	<2.3		10	2.3	ug/L		04/10/20 08:14	04/13/20 17:12	1
Molybdenum	<1.1		2.0	1.1	ug/L		04/10/20 08:14	04/13/20 17:12	1
Selenium	<1.0		5.0	1.0	ug/L		04/10/20 08:14	04/13/20 17:12	1
Thallium	<0.26		1.0	0.26	ug/L		04/10/20 08:14	04/13/20 17:12	1

Lab Sample ID: LCS 310-275321/2-A
Matrix: Water
Analysis Batch: 275624

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 275321

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Antimony	40.0	37.9		ug/L		95	80 - 120
Arsenic	80.0	81.3		ug/L		102	80 - 120
Barium	80.0	85.9		ug/L		107	80 - 120
Beryllium	40.0	44.0		ug/L		110	80 - 120
Boron	1760	1870		ug/L		106	80 - 120
Cadmium	40.0	43.5		ug/L		109	80 - 120
Calcium	4.00	4.51		mg/L		113	80 - 120
Chromium	80.0	89.1		ug/L		111	80 - 120
Cobalt	40.0	42.6		ug/L		106	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-275321/2-A
Matrix: Water
Analysis Batch: 275624

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 275321

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Lead	40.0	43.5		ug/L		109	80 - 120
Lithium	200	206		ug/L		103	80 - 120
Molybdenum	80.0	80.6		ug/L		101	80 - 120
Selenium	80.0	85.4		ug/L		107	80 - 120
Thallium	32.0	33.0		ug/L		103	80 - 120

Lab Sample ID: 310-179309-4 DU
Matrix: Water
Analysis Batch: 275624

Client Sample ID: MW-304
Prep Type: Total/NA
Prep Batch: 275321

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Antimony	<0.58		<0.58		ug/L		NC	20
Arsenic	<0.88		<0.88		ug/L		NC	20
Barium	22		22.3		ug/L		0.1	20
Beryllium	<0.27		<0.27		ug/L		NC	20
Boron	580		593		ug/L		3	20
Cadmium	0.079	J	0.0820	J	ug/L		4	20
Calcium	150		154		mg/L		1	20
Chromium	<1.1		<1.1		ug/L		NC	20
Cobalt	0.28	J	0.277	J	ug/L		0.7	20
Lead	<0.27		<0.27		ug/L		NC	20
Lithium	<2.3		<2.3		ug/L		NC	20
Molybdenum	<1.1		<1.1		ug/L		NC	20
Selenium	<1.0		<1.0		ug/L		NC	20
Thallium	<0.26		<0.26		ug/L		NC	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-275147/1-A
Matrix: Water
Analysis Batch: 275430

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 275147

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.10		0.20	0.10	ug/L		04/08/20 17:39	04/10/20 15:10	1

Lab Sample ID: LCS 310-275147/2-A
Matrix: Water
Analysis Batch: 275430

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 275147

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Mercury	1.67	1.52		ug/L		91	80 - 120

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-275412/1
Matrix: Water
Analysis Batch: 275412

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			04/10/20 14:11	1

Method: SM 2540C - Solids, Total Dissolved (TDS) (Continued)

Lab Sample ID: LCS 310-275412/2
Matrix: Water
Analysis Batch: 275412

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1000	972		mg/L		97	90 - 110		

Lab Sample ID: 310-179309-6 DU
Matrix: Water
Analysis Batch: 275412

Client Sample ID: MW-306
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	1100			1110		mg/L				2	24

Lab Sample ID: MB 310-275567/1
Matrix: Water
Analysis Batch: 275567

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			04/13/20 13:49	1

Lab Sample ID: LCS 310-275567/2
Matrix: Water
Analysis Batch: 275567

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1000	988		mg/L		99	90 - 110		

Lab Sample ID: 310-179309-7 DU
Matrix: Water
Analysis Batch: 275567

Client Sample ID: Field Blank
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	<26			<26		mg/L				NC	24

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-275154/27
Matrix: Water
Analysis Batch: 275154

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	6.9		SU		99	98 - 102		

QC Association Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

HPLC/IC

Analysis Batch: 275733

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	9056A	
310-179309-2	MW-302	Total/NA	Water	9056A	
310-179309-3	MW-303	Total/NA	Water	9056A	
310-179309-4	MW-304	Total/NA	Water	9056A	
310-179309-5	MW-305	Total/NA	Water	9056A	
310-179309-6	MW-306	Total/NA	Water	9056A	
310-179309-7	Field Blank	Total/NA	Water	9056A	
MB 310-275733/3	Method Blank	Total/NA	Water	9056A	
LCS 310-275733/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 275147

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	7470A	
310-179309-2	MW-302	Total/NA	Water	7470A	
310-179309-3	MW-303	Total/NA	Water	7470A	
310-179309-4	MW-304	Total/NA	Water	7470A	
310-179309-5	MW-305	Total/NA	Water	7470A	
310-179309-6	MW-306	Total/NA	Water	7470A	
310-179309-7	Field Blank	Total/NA	Water	7470A	
MB 310-275147/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-275147/2-A	Lab Control Sample	Total/NA	Water	7470A	

Prep Batch: 275321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	3010A	
310-179309-2	MW-302	Total/NA	Water	3010A	
310-179309-3	MW-303	Total/NA	Water	3010A	
310-179309-4	MW-304	Total/NA	Water	3010A	
310-179309-5	MW-305	Total/NA	Water	3010A	
310-179309-6	MW-306	Total/NA	Water	3010A	
310-179309-7	Field Blank	Total/NA	Water	3010A	
MB 310-275321/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-275321/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-179309-4 DU	MW-304	Total/NA	Water	3010A	

Analysis Batch: 275430

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	7470A	275147
310-179309-2	MW-302	Total/NA	Water	7470A	275147
310-179309-3	MW-303	Total/NA	Water	7470A	275147
310-179309-4	MW-304	Total/NA	Water	7470A	275147
310-179309-5	MW-305	Total/NA	Water	7470A	275147
310-179309-6	MW-306	Total/NA	Water	7470A	275147
310-179309-7	Field Blank	Total/NA	Water	7470A	275147
MB 310-275147/1-A	Method Blank	Total/NA	Water	7470A	275147
LCS 310-275147/2-A	Lab Control Sample	Total/NA	Water	7470A	275147

QC Association Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Metals

Analysis Batch: 275624

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	6020A	275321
310-179309-2	MW-302	Total/NA	Water	6020A	275321
310-179309-3	MW-303	Total/NA	Water	6020A	275321
310-179309-4	MW-304	Total/NA	Water	6020A	275321
310-179309-5	MW-305	Total/NA	Water	6020A	275321
310-179309-6	MW-306	Total/NA	Water	6020A	275321
310-179309-7	Field Blank	Total/NA	Water	6020A	275321
MB 310-275321/1-A	Method Blank	Total/NA	Water	6020A	275321
LCS 310-275321/2-A	Lab Control Sample	Total/NA	Water	6020A	275321
310-179309-4 DU	MW-304	Total/NA	Water	6020A	275321

General Chemistry

Analysis Batch: 275154

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-179309-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-179309-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-179309-4	MW-304	Total/NA	Water	SM 4500 H+ B	
310-179309-5	MW-305	Total/NA	Water	SM 4500 H+ B	
310-179309-6	MW-306	Total/NA	Water	SM 4500 H+ B	
310-179309-7	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-275154/27	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 275412

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	SM 2540C	
310-179309-2	MW-302	Total/NA	Water	SM 2540C	
310-179309-3	MW-303	Total/NA	Water	SM 2540C	
310-179309-4	MW-304	Total/NA	Water	SM 2540C	
310-179309-5	MW-305	Total/NA	Water	SM 2540C	
310-179309-6	MW-306	Total/NA	Water	SM 2540C	
MB 310-275412/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-275412/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-179309-6 DU	MW-306	Total/NA	Water	SM 2540C	

Analysis Batch: 275567

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-7	Field Blank	Total/NA	Water	SM 2540C	
MB 310-275567/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-275567/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-179309-7 DU	Field Blank	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 276362

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	Field Sampling	
310-179309-2	MW-302	Total/NA	Water	Field Sampling	
310-179309-3	MW-303	Total/NA	Water	Field Sampling	
310-179309-4	MW-304	Total/NA	Water	Field Sampling	
310-179309-5	MW-305	Total/NA	Water	Field Sampling	

QC Association Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Field Service / Mobile Lab (Continued)

Analysis Batch: 276362 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-6	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-179309-1
Date Collected: 04/07/20 15:15
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	275733	04/14/20 00:27	SAD	TAL CF
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 17:54	SAD	TAL CF
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 15:49	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275412	04/10/20 14:11	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:26	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	276362	04/07/20 15:15	ANO	TAL CF

Client Sample ID: MW-302
Lab Sample ID: 310-179309-2
Date Collected: 04/07/20 14:20
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	275733	04/14/20 00:44	SAD	TAL CF
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 17:56	SAD	TAL CF
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 15:51	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275412	04/10/20 14:11	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:28	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	276362	04/07/20 14:20	ANO	TAL CF

Client Sample ID: MW-303
Lab Sample ID: 310-179309-3
Date Collected: 04/07/20 13:15
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	275733	04/14/20 01:00	SAD	TAL CF
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 18:07	SAD	TAL CF
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 15:53	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275412	04/10/20 14:11	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:28	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	276362	04/07/20 13:15	ANO	TAL CF

Client Sample ID: MW-304
Lab Sample ID: 310-179309-4
Date Collected: 04/07/20 12:05
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	275733	04/14/20 01:16	SAD	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-304
Lab Sample ID: 310-179309-4
Date Collected: 04/07/20 12:05
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 18:09	SAD	TAL CF
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 15:59	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275412	04/10/20 14:11	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:29	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	276362	04/07/20 12:05	ANO	TAL CF

Client Sample ID: MW-305
Lab Sample ID: 310-179309-5
Date Collected: 04/07/20 11:10
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	275733	04/14/20 02:05	SAD	TAL CF
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 18:14	SAD	TAL CF
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 16:01	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275412	04/10/20 14:11	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:30	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	276362	04/07/20 11:10	ANO	TAL CF

Client Sample ID: MW-306
Lab Sample ID: 310-179309-6
Date Collected: 04/07/20 09:40
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		10	275733	04/14/20 02:21	SAD	TAL CF
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 18:17	SAD	TAL CF
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 16:04	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275412	04/10/20 14:11	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:31	JMH	TAL CF
Total/NA	Analysis	Field Sampling		1	276362	04/07/20 09:40	ANO	TAL CF

Client Sample ID: Field Blank
Lab Sample ID: 310-179309-7
Date Collected: 04/07/20 23:59
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	275733	04/14/20 02:37	SAD	TAL CF
Total/NA	Prep	3010A			275321	04/10/20 08:14	HED	TAL CF
Total/NA	Analysis	6020A		1	275624	04/13/20 18:19	SAD	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-179309-7

Date Collected: 04/07/20 23:59
Matrix: Water

Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			275147	04/08/20 17:39	HIS	TAL CF
Total/NA	Analysis	7470A		1	275430	04/10/20 16:06	HIS	TAL CF
Total/NA	Analysis	SM 2540C		1	275567	04/13/20 13:49	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	275154	04/08/20 20:37	JMH	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-21

Method Summary

Client: SCS Engineers
Job ID: 310-179309-1
Project/Site: Sutherland Generating Station 25220076

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
7470A	Mercury (CVAA)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
7470A	Preparation, Mercury	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-179309 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland Generating Station

Receipt Information

Date/Time Received: DATE 4-8-20 TIME 1610 Received By: KB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☑ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☐ Yes	☑ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: D Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.3 Corrected Temp (°C): 0.4

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

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Place COC scanning label here

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Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA | Project: Sutherland Generating Station

Receipt Information

Date/Time Received: DATE 4-8-20 TIME 1610 | Received By: KB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☑ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☐ Yes	☑ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: 0 | Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1 | Corrected Temp (°C): 1.2

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

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Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-48727-15058.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days): standard			
State, Zip: IA, 50325				
Phone:	PO #: 25220076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25220076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-301	4/7/20	1515	G	Water							
MW-302		1420		Water							
MW-303		1315		Water							
MW-304		1205		Water							
MW-305		1110		Water							
MW-306		0940		Water							
Field blank	4/7/20	2359	G	Water							
				Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	Louise Jennings	4/7/20 5:30 PM	SCS			
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/8/20 1610	Company
	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/8/20 1000	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
MW-301	310-179309-A-1	Plastic 250ml - with Nitric Acid	<2			
MW-301	310-179309-B-1	Plastic 1 liter - Nitric Acid	<2			
MW-301	310-179309-C-1	Plastic 1 liter - Nitric Acid	<2			
MW-302	310-179309-A-2	Plastic 250ml - with Nitric Acid	<2			
MW-302	310-179309-B-2	Plastic 1 liter - Nitric Acid	<2			
MW-302	310-179309-C-2	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-179309-A-3	Plastic 250ml - with Nitric Acid	<2			
MW-303	310-179309-B-3	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-179309-C-3	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-179309-A-4	Plastic 250ml - with Nitric Acid	<2			
MW-304	310-179309-B-4	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-179309-C-4	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-179309-A-5	Plastic 250ml - with Nitric Acid	<2			
MW-305	310-179309-B-5	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-179309-C-5	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-179309-A-6	Plastic 250ml - with Nitric Acid	<2			
MW-306	310-179309-B-6	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-179309-C-6	Plastic 1 liter - Nitric Acid	<2			
Field Blank	310-179309-A-7	Plastic 250ml - with Nitric Acid	<2			
Field Blank	310-179309-B-7	Plastic 1 liter - Nitric Acid	<2			
Field Blank	310-179309-C-7	Plastic 1 liter - Nitric Acid	<2			

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25219076

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony	x	x	x	x	x	x	x	7
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium	x	x	x	x	x	x	x	7
	Cadmium	x	x	x	x	x	x	x	7
	Chromium	x	x	x	x	x	x	x	7
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury	x	x	x	x	x	x	x	7
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium	x	x	x	x	x	x	x	7
	Thallium	x	x	x	x	x	x	x	7
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		6
	Well Depth	x	x	x	x	x	x		6
	pH (field)	x	x	x	x	x	x		6
	Specific Conductance	x	x	x	x	x	x		6
	Dissolved Oxygen	x	x	x	x	x	x		6
	ORP	x	x	x	x	x	x		6
	Temperature	x	x	x	x	x	x		6
	Turbidity	x	x	x	x	x	x		6
	Color	x	x	x	x	x	x		6
	Odor	x	x	x	x	x	x		6

Notes:

C:\Users\FredrickS\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\CKPNDIU0\[IPL_Sutherland Generati

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-179309-1

Login Number: 179309

List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Groundwater Monitoring Results - Field Parameters
Sutherland Generating Station / SCS Engineers Project #25219076.00
February 2020

Sample	Sample Date/Time	GW Elevation (feet amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µs/cm)	ORP (mV)	Turbidity
MW-301	4.7.2020/1515	856.16	11.00	6.87	0.13	583.7	143.1	68.5
MW-302	4.7.2020/1420	856.23	11.30	7.36	0.14	456.2	-80.4	6.32
MW-303	4.7.2020/1315	854.63	11.30	7.17	0.13	814	124.3	3.58
MW-304	4.7.2020/1205	854.54	10.40	6.68	0.28	1016	95.1	2.12
MW-305	4.7.2020/1030	854.64	10.20	6.70	0.20	1198	-6.6	8.14
MW-306	4.7.2020/0940	854.70	11.10	7.72	0.12	1428	209.2	0.58

Abbreviations:
mg/L = milligrams per liter mV = millivolts amsl = above mean sea level

Notes:
None

Created by: LMH Date: 9/26/2018
Last revision by: LWJ Date: 4/8/2020
Checked by: AJR Date: 4/20/2020

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-179309-2
Client Project/Site: Sutherland Generating Station 25220076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
5/5/2020 8:45:27 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-179309-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-179309-2

Comments
No additional comments.

Receipt
The samples were received on 4/8/2020 4:10 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 0.4º C and 1.2º C.

RAD
Method 903.0: Ra-226 Prep Batch 160-467482
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-179309-1), MW-302 (310-179309-2), MW-303 (310-179309-3), MW-304 (310-179309-4), MW-305 (310-179309-5), MW-306 (310-179309-6), Field Blank (310-179309-7), (LCS 160-467482/1-A), (LCSD 160-467482/2-A) and (MB 160-467482/22-A)

Method 904.0: Ra-228 Prep Batch 160-467497
The detection goal was not met for the following sample due to the presence of matrix interferences: MW-301 (310-179309-1). See Prep NCM 160-193832. Analytical results are reported with the detection limit achieved.

Method 904.0: Ra-228 Prep Batch 160-467497
Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-179309-1), MW-302 (310-179309-2), MW-303 (310-179309-3), MW-304 (310-179309-4), MW-305 (310-179309-5), MW-306 (310-179309-6), Field Blank (310-179309-7), (LCS 160-467497/1-A), (LCSD 160-467497/2-A) and (MB 160-467497/22-A)

Method PrecSep_0: Radium 228 Prep Batch 160-467497:
The following samples were prepared at a reduced aliquot: MW-301 (310-179309-1). Sample 310-179309-1 has a brown cloudy discoloration. Samples 160-37768-1,2,3,7,8 have a yellow discoloration. Sample 160-37768-5 is cloudy.

Method PrecSep_0: Radium 228 Prep Batch 160-467497:
Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-179309-1), MW-302 (310-179309-2), MW-303 (310-179309-3), MW-304 (310-179309-4), MW-305 (310-179309-5), MW-306 (310-179309-6) and Field Blank (310-179309-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium 226 Prep Batch 160-467482:
Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-179309-1), MW-302 (310-179309-2), MW-303 (310-179309-3), MW-304 (310-179309-4), MW-305 (310-179309-5), MW-306 (310-179309-6) and Field Blank (310-179309-7). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium 226 Prep Batch 160-467482:
The following samples were prepared at a reduced aliquot: MW-301 (310-179309-1). Sample 310-179309-1 has a brown cloudy discoloration. Samples 160-37768-1,2,3,7,8 have a yellow discoloration. Sample 160-37768-5 is cloudy.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-179309-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-179309-1	MW-301	Water	04/07/20 15:15	04/08/20 16:10	
310-179309-2	MW-302	Water	04/07/20 14:20	04/08/20 16:10	
310-179309-3	MW-303	Water	04/07/20 13:15	04/08/20 16:10	
310-179309-4	MW-304	Water	04/07/20 12:05	04/08/20 16:10	
310-179309-5	MW-305	Water	04/07/20 11:10	04/08/20 16:10	
310-179309-6	MW-306	Water	04/07/20 09:40	04/08/20 16:10	
310-179309-7	Field Blank	Water	04/07/20 23:59	04/08/20 16:10	

Detection Summary

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301 — Lab Sample ID: 310-179309-1

No Detections.

Client Sample ID: MW-302 — Lab Sample ID: 310-179309-2

No Detections.

Client Sample ID: MW-303 — Lab Sample ID: 310-179309-3

No Detections.

Client Sample ID: MW-304 — Lab Sample ID: 310-179309-4

No Detections.

Client Sample ID: MW-305 — Lab Sample ID: 310-179309-5

No Detections.

Client Sample ID: MW-306 — Lab Sample ID: 310-179309-6

No Detections.

Client Sample ID: Field Blank — Lab Sample ID: 310-179309-7

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Date Collected: 04/07/20 15:15
Date Received: 04/08/20 16:10

Lab Sample ID: 310-179309-1
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.291	U	0.248	0.249	1.00	0.346	pCi/L	04/13/20 05:00	05/05/20 04:30	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*41.2*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:30*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0200	U G	1.13	1.13	1.00	2.00	pCi/L	04/13/20 05:30	04/29/20 13:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*41.2*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:13*	*1*
Y Carrier	*85.2*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:13*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.291	U	1.16	1.16	5.00	2.00	pCi/L		05/05/20 08:07	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-302
Date Collected: 04/07/20 14:20
Date Received: 04/08/20 16:10

Lab Sample ID: 310-179309-2
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.171		0.0851	0.0864	1.00	0.0904	pCi/L	04/13/20 05:00	05/05/20 04:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.0*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.376		0.234	0.236	1.00	0.356	pCi/L	04/13/20 05:30	04/29/20 13:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.0*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:13*	*1*
Y Carrier	*89.0*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:13*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.547		0.249	0.251	5.00	0.356	pCi/L		05/05/20 08:07	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-303
Date Collected: 04/07/20 13:15
Date Received: 04/08/20 16:10

Lab Sample ID: 310-179309-3
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0691	U	0.0878	0.0880	1.00	0.146	pCi/L	04/13/20 05:00	05/05/20 04:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.7*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**1.11**		0.332	0.348	1.00	0.423	pCi/L	04/13/20 05:30	04/29/20 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*85.7*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*
Y Carrier	*83.4*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**1.18**		0.343	0.359	5.00	0.423	pCi/L		05/05/20 08:07	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-304
Date Collected: 04/07/20 12:05
Date Received: 04/08/20 16:10

Lab Sample ID: 310-179309-4
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0606	U	0.0663	0.0665	1.00	0.105	pCi/L	04/13/20 05:00	05/05/20 04:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.9*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.433**		0.257	0.260	1.00	0.389	pCi/L	04/13/20 05:30	04/29/20 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.9*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*
Y Carrier	*85.2*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.494**		0.265	0.268	5.00	0.389	pCi/L		05/05/20 08:07	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-179309-5
Date Collected: 04/07/20 11:10
Matrix: Water
Date Received: 04/08/20 16:10

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.840		0.180	0.195	1.00	0.106	pCi/L	04/13/20 05:00	05/05/20 04:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	2.26		0.422	0.471	1.00	0.456	pCi/L	04/13/20 05:30	04/29/20 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.1*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*
Y Carrier	*84.1*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	3.10		0.459	0.510	5.00	0.456	pCi/L		05/05/20 08:07	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-306
Lab Sample ID: 310-179309-6
Date Collected: 04/07/20 09:40
Matrix: Water
Date Received: 04/08/20 16:10

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.0459	U	0.0583	0.0584	1.00	0.140	pCi/L	04/13/20 05:00	05/05/20 04:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.1*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.360	U	0.263	0.265	1.00	0.412	pCi/L	04/13/20 05:30	04/29/20 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.1*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*
Y Carrier	*84.9*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.360	U	0.269	0.271	5.00	0.412	pCi/L		05/05/20 08:07	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-179309-7
Date Collected: 04/07/20 23:59
Matrix: Water
Date Received: 04/08/20 16:10

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0248	U	0.0495	0.0495	1.00	0.0909	pCi/L	04/13/20 05:00	05/05/20 04:31	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.1*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:31*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.110	U	0.215	0.215	1.00	0.368	pCi/L	04/13/20 05:30	04/29/20 13:14	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*95.1*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*
Y Carrier	*86.4*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:14*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.134	U	0.221	0.221	5.00	0.368	pCi/L		05/05/20 08:07	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Qualifiers

Rad

Qualifier	Qualifier Description
G	The Sample MDC is greater than the requested RL.
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-179309-2

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-467482/22-A
Matrix: Water
Analysis Batch: 469551

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 467482

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	-0.02713	U	0.0511	0.0511	1.00	0.121	pCi/L	04/13/20 05:00	05/05/20 04:32	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*04/13/20 05:00*	*05/05/20 04:32*	*1*

Lab Sample ID: LCS 160-467482/1-A
Matrix: Water
Analysis Batch: 469551

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 467482

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	9.655		1.05	1.00	0.0904	pCi/L	85	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*86.9*		*40 - 110*

Lab Sample ID: LCSD 160-467482/2-A
Matrix: Water
Analysis Batch: 469551

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 467482

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-226			11.3	10.08		1.07	1.00	0.0926	pCi/L	89	75 - 125	0.20	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*95.4*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-467497/22-A
Matrix: Water
Analysis Batch: 469171

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 467497

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.5919		0.301	0.306	1.00	0.444	pCi/L	04/13/20 05:30	04/29/20 13:20	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*97.9*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:20*	*1*
Y Carrier	*74.8*		*40 - 110*	*04/13/20 05:30*	*04/29/20 13:20*	*1*

Method: 904.0 - Radium-228 (GFPC) (Continued)

Lab Sample ID: LCS 160-467497/1-A
Matrix: Water
Analysis Batch: 469160

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 467497

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.89	9.682		1.18	1.00	0.513	pCi/L	109	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*86.9*		*40 - 110*
Y Carrier	*77.4*		*40 - 110*

Lab Sample ID: LCSD 160-467497/2-A
Matrix: Water
Analysis Batch: 469160

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 467497

Analyte			Spike Added	LCSD Result	LCSD Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits	RER	RER Limit
Radium-228			8.89	8.981		1.06	1.00	0.395	pCi/L	101	75 - 125	0.31	1

Carrier	*LCSD %Yield*	*LCSD Qualifier*	*Limits*
Ba Carrier	*95.4*		*40 - 110*
Y Carrier	*85.2*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-179309-2

Rad

Prep Batch: 467482

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	PrecSep-21	
310-179309-2	MW-302	Total/NA	Water	PrecSep-21	
310-179309-3	MW-303	Total/NA	Water	PrecSep-21	
310-179309-4	MW-304	Total/NA	Water	PrecSep-21	
310-179309-5	MW-305	Total/NA	Water	PrecSep-21	
310-179309-6	MW-306	Total/NA	Water	PrecSep-21	
310-179309-7	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-467482/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-467482/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-467482/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 467497

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-179309-1	MW-301	Total/NA	Water	PrecSep_0	
310-179309-2	MW-302	Total/NA	Water	PrecSep_0	
310-179309-3	MW-303	Total/NA	Water	PrecSep_0	
310-179309-4	MW-304	Total/NA	Water	PrecSep_0	
310-179309-5	MW-305	Total/NA	Water	PrecSep_0	
310-179309-6	MW-306	Total/NA	Water	PrecSep_0	
310-179309-7	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-467497/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-467497/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-467497/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-179309-1
Date Collected: 04/07/20 15:15
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:30	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:13	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Client Sample ID: MW-302
Lab Sample ID: 310-179309-2
Date Collected: 04/07/20 14:20
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:31	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:13	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Client Sample ID: MW-303
Lab Sample ID: 310-179309-3
Date Collected: 04/07/20 13:15
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:31	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:14	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Client Sample ID: MW-304
Lab Sample ID: 310-179309-4
Date Collected: 04/07/20 12:05
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:31	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:14	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Lab Chronicle

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-179309-5
Date Collected: 04/07/20 11:10
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:31	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:14	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Client Sample ID: MW-306
Lab Sample ID: 310-179309-6
Date Collected: 04/07/20 09:40
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:31	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:14	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Client Sample ID: Field Blank
Lab Sample ID: 310-179309-7
Date Collected: 04/07/20 23:59
Matrix: Water
Date Received: 04/08/20 16:10

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			467482	04/13/20 05:00	EJQ	TAL SL
Total/NA	Analysis	903.0		1	469551	05/05/20 04:31	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			467497	04/13/20 05:30	EJQ	TAL SL
Total/NA	Analysis	904.0		1	469160	04/29/20 13:14	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	469560	05/05/20 08:07	SMP	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-21

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-21
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-21
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

Method Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-179309-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

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310-179309 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland Generating Station

Receipt Information

Date/Time Received: DATE 4-8-20 TIME 1610 Received By: KB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☑ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☐ Yes	☑ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: D Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.3 Corrected Temp (°C): 0.4

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

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Place COC scanning label here

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Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA | Project: Sutherland Generating Station

Receipt Information

Date/Time Received: DATE 4-8-20 TIME 1610 | Received By: KB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee ☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☑ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☐ Yes	☑ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: 0 | Correction Factor (°C): +0.1

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 1.1 | Corrected Temp (°C): 1.2

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

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Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-48727-15058.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days): standard			
State, Zip: IA, 50325				
Phone:	PO #: 25220076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25220076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A, 7470A	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-301	4/7/20	1515	G	Water							
MW-302		1420		Water							
MW-303		1315		Water							
MW-304		1205		Water							
MW-305		1110		Water							
MW-306		0940		Water							
Field blank	4/7/20	2359	G	Water							
				Water							

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Lou Jennings	4/7/20 5:30 PM	SCS			
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/8/20 1610	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 4/8/20 1000	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
MW-301	310-179309-A-1	Plastic 250ml - with Nitric Acid	<2			
MW-301	310-179309-B-1	Plastic 1 liter - Nitric Acid	<2			
MW-301	310-179309-C-1	Plastic 1 liter - Nitric Acid	<2			
MW-302	310-179309-A-2	Plastic 250ml - with Nitric Acid	<2			
MW-302	310-179309-B-2	Plastic 1 liter - Nitric Acid	<2			
MW-302	310-179309-C-2	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-179309-A-3	Plastic 250ml - with Nitric Acid	<2			
MW-303	310-179309-B-3	Plastic 1 liter - Nitric Acid	<2			
MW-303	310-179309-C-3	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-179309-A-4	Plastic 250ml - with Nitric Acid	<2			
MW-304	310-179309-B-4	Plastic 1 liter - Nitric Acid	<2			
MW-304	310-179309-C-4	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-179309-A-5	Plastic 250ml - with Nitric Acid	<2			
MW-305	310-179309-B-5	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-179309-C-5	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-179309-A-6	Plastic 250ml - with Nitric Acid	<2			
MW-306	310-179309-B-6	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-179309-C-6	Plastic 1 liter - Nitric Acid	<2			
Field Blank	310-179309-A-7	Plastic 250ml - with Nitric Acid	<2			
Field Blank	310-179309-B-7	Plastic 1 liter - Nitric Acid	<2			
Field Blank	310-179309-C-7	Plastic 1 liter - Nitric Acid	<2			

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25219076

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony	x	x	x	x	x	x	x	7
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium	x	x	x	x	x	x	x	7
	Cadmium	x	x	x	x	x	x	x	7
	Chromium	x	x	x	x	x	x	x	7
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury	x	x	x	x	x	x	x	7
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium	x	x	x	x	x	x	x	7
	Thallium	x	x	x	x	x	x	x	7
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		6
	Well Depth	x	x	x	x	x	x		6
	pH (field)	x	x	x	x	x	x		6
	Specific Conductance	x	x	x	x	x	x		6
	Dissolved Oxygen	x	x	x	x	x	x		6
	ORP	x	x	x	x	x	x		6
	Temperature	x	x	x	x	x	x		6
	Turbidity	x	x	x	x	x	x		6
	Color	x	x	x	x	x	x		6
	Odor	x	x	x	x	x	x		6

Notes:

C:\Users\FredrickS\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Outlook\CKPNDIU0\[IPL_Sutherland Generati

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-179309-2

Login Number: 179309
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-179309-2

Login Number: 179309
List Number: 2
Creator: Mazariegos, Leonel A

List Source: Eurofins TestAmerica, St. Louis
List Creation: 04/10/20 05:12 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Job ID: 310-179309-2
Project/Site: Sutherland Generating Station 25220076

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-179309-1	MW-301	41.2
310-179309-2	MW-302	93.0
310-179309-3	MW-303	85.7
310-179309-4	MW-304	93.9
310-179309-5	MW-305	84.1
310-179309-6	MW-306	92.1
310-179309-7	Field Blank	95.1
LCS 160-467482/1-A	Lab Control Sample	86.9
LCSD 160-467482/2-A	Lab Control Sample Dup	95.4
MB 160-467482/22-A	Method Blank	97.9

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-179309-1	MW-301	41.2	85.2
310-179309-2	MW-302	93.0	89.0
310-179309-3	MW-303	85.7	83.4
310-179309-4	MW-304	93.9	85.2
310-179309-5	MW-305	84.1	84.1
310-179309-6	MW-306	92.1	84.9
310-179309-7	Field Blank	95.1	86.4
LCS 160-467497/1-A	Lab Control Sample	86.9	77.4
LCSD 160-467497/2-A	Lab Control Sample Dup	95.4	85.2
MB 160-467497/22-A	Method Blank	97.9	74.8

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

C3 May 2020 Resample

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ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-181510-1
Client Project/Site: Sutherland Generating Station 25220076
Revision: 1

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
5/17/2020 8:44:59 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-1

Job ID: 310-181510-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-181510-1

Comments
No additional comments.

Receipt
The samples were received on 5/11/2020 5:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.2º C.

Receipt Exceptions
The report and EDD have been revised to include field data per client request.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-181510-2	MW-306	Water	05/11/20 10:20	05/11/20 17:00	
310-181510-3	Field Blank	Water	05/11/20 08:00	05/11/20 17:00	

Detection Summary

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-306
Lab Sample ID: 310-181510-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Lithium	42		10	2.3	ug/L	1		6020A	Total/NA
Ground Water Elevation	853.71				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	123.2				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.10				mg/L	1		Field Sampling	Total/NA
pH, Field	7.08				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1557				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	10.70				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	1.43				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank
Lab Sample ID: 310-181510-3

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-306
Lab Sample ID: 310-181510-2
Date Collected: 05/11/20 10:20
Matrix: Water
Date Received: 05/11/20 17:00

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	42		10	2.3	ug/L		05/12/20 08:00	05/13/20 18:03	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	853.71				ft			05/11/20 10:20	1
Oxidation Reduction Potential	123.2				millivolts			05/11/20 10:20	1
Oxygen, Dissolved, Client Supplied	0.10				mg/L			05/11/20 10:20	1
pH, Field	7.08				SU			05/11/20 10:20	1
Specific Conductance, Field	1557				umhos/cm			05/11/20 10:20	1
Temperature, Field	10.70				Degrees C			05/11/20 10:20	1
Turbidity, Field	1.43				NTU			05/11/20 10:20	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-181510-3
Date Collected: 05/11/20 08:00
Matrix: Water
Date Received: 05/11/20 17:00

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<2.3		10	2.3	ug/L		05/12/20 08:00	05/13/20 18:13	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-1

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-278502/1-A
Matrix: Water
Analysis Batch: 278794

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 278502

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Lithium	<2.3		10	2.3	ug/L		05/12/20 08:00	05/13/20 17:15	1

Lab Sample ID: LCS 310-278502/2-A
Matrix: Water
Analysis Batch: 278794

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 278502

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Lithium			200	231		ug/L		116	80 - 120		

Lab Sample ID: 310-181510-3 DU
Matrix: Water
Analysis Batch: 278794

Client Sample ID: Field Blank
Prep Type: Total/NA
Prep Batch: 278502

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Lithium	<2.3			<2.3		ug/L				NC	20

QC Association Summary

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Metals

Prep Batch: 278502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-181510-2	MW-306	Total/NA	Water	3010A	
310-181510-3	Field Blank	Total/NA	Water	3010A	
MB 310-278502/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-278502/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-181510-3 DU	Field Blank	Total/NA	Water	3010A	

Analysis Batch: 278794

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-181510-2	MW-306	Total/NA	Water	6020A	278502
310-181510-3	Field Blank	Total/NA	Water	6020A	278502
MB 310-278502/1-A	Method Blank	Total/NA	Water	6020A	278502
LCS 310-278502/2-A	Lab Control Sample	Total/NA	Water	6020A	278502
310-181510-3 DU	Field Blank	Total/NA	Water	6020A	278502

Field Service / Mobile Lab

Analysis Batch: 278946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-181510-2	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-306
Lab Sample ID: 310-181510-2
Date Collected: 05/11/20 10:20
Matrix: Water
Date Received: 05/11/20 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			278502	05/12/20 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	278794	05/13/20 18:03	SAD	TAL CF
Total/NA	Analysis	Field Sampling		1	278946	05/11/20 10:20	JVB	TAL CF

Client Sample ID: Field Blank
Lab Sample ID: 310-181510-3
Date Collected: 05/11/20 08:00
Matrix: Water
Date Received: 05/11/20 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			278502	05/12/20 08:00	HED	TAL CF
Total/NA	Analysis	6020A		1	278794	05/13/20 18:13	SAD	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-181510-1
Project/Site: Sutherland Generating Station 25220076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-21

Method Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-1

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

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310-181510 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland Generating Station

Receipt Information

Date/Time Received: DATE 5-11-20 TIME 1700 Received By: JB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # _____ of _____
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): 0.0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.2 Corrected Temp (°C): 0.2

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

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Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-49817-15319.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days): Standard			
State, Zip: IA, 50325				
Phone:	PO #: 25220076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25220076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0 - Radium 226 & 228	6020A, 7470A	Total Number of containers	Special Instructions/Note:
Preservation Code:							D	D		
MW-305	5/10/20	1145	G	Water			X			
MW-304	5/10/20	1020	G	Water				X		
Field Blank	5/10/20	900	G	Water			X	X		

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/10/20 1700	SCS		5/12/20 - 13:46	DM
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5-11-20 1700	Company ETA-CF
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
MW-305	310-181510-A-1	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-181510-B-1	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-181510-A-2	Plastic 250ml - with Nitric Acid	<2			
Field Blank	310-181510-A-3	Plastic 250ml - with Nitric Acid	<2			
Field Blank	310-181510-B-3	Plastic 1 liter - Nitric Acid	<2			
Field Blank	310-181510-C-3	Plastic 1 liter - Nitric Acid	<2			

Fredrick, Sandie

From: Blodgett, Meghan <mblodgett@scsengineers.com>
Sent: Monday, May 11, 2020 3:00 PM
To: Fredrick, Sandie; Liechti, Meredith
Cc: Jennings, Louise; Kron, Nicole
Subject: Correction on Sutherland samples dropped off today

EXTERNAL EMAIL*

Sandie,

Louise realized that she accidentally wrote 5/10 (instead of 5/11) as the date on today's bottles and COC. Can this be corrected during log-in?

Thanks,

Meghan Blodgett, PG*
Hydrogeologist
SCS Engineers
2830 Dairy Drive
Madison, WI 53718-6751 USA
608-345-9221 (C)
mblodgett@scsengineers.com
*Licensed in WI

Driven by Client Success
www.scsengineers.com

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-181510-1

Login Number: 181510
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Groundwater Monitoring Results - Field Parameters
Sutherland Generating Station / SCS Engineers Project #25220076.00
May 2020

Sample	Sample Date/Time	GW Elevation (feet amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µs/cm)	ORP (mV)	Turbidity
MW-305	05.11.2020/1145	853.78	9.10	5.97	0.12	1215	20.2	2.98
MW-306	05.11.2020/1020	853.71	10.70	7.08	0.10	1557	123.2	1.43

Abbreviations:
mg/L = milligrams per liter mV = millivolts amsl = above mean sea level

Notes:
None

Created by: LMH Date: 9/26/2018
Last revision by: LWJ Date: 5/11/2020
Checked by: AJR Date: 5/11/2020

I:\25220076.00\Data and Calculations\Tables\Field Data\[2005_Sutherland_CCR_Field.xlsx]GW Field Parameters

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-181510-2
Client Project/Site: Sutherland Generating Station 25220076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:
6/8/2020 8:27:03 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-2

Job ID: 310-181510-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-181510-2

Comments
No additional comments.

Receipt
The samples were received on 5/11/2020 5:00 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.2º C.

RAD
Method 903.0: Ra-226 Prep Batch 160-470485 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-305 (310-181510-1), Field Blank (310-181510-3), (LCS 160-470485/1-A), (MB 160-470485/26-A), (160-38032-A-1-A) and (160-38032-A-1-B DU)

Method 904.0: Ra-228 Prep Batch 160-470487 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative.

Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-305 (310-181510-1), Field Blank (310-181510-3), (LCS 160-470487/1-A), (MB 160-470487/26-A), (160-38032-A-1-C) and (160-38032-A-1-D DU)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-181510-1	MW-305	Water	05/11/20 11:45	05/11/20 17:00	
310-181510-3	Field Blank	Water	05/11/20 08:00	05/11/20 17:00	

Detection Summary

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-181510-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Ground Water Elevation	853.78				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	20.2				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.12				mg/L	1		Field Sampling	Total/NA
pH, Field	5.97				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1215				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	9.10				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	2.98				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank
Lab Sample ID: 310-181510-3

No Detections.

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

Client Sample Results

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-181510-1
Date Collected: 05/11/20 11:45
Matrix: Water
Date Received: 05/11/20 17:00

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.226**		0.139	0.141	1.00	0.186	pCi/L	05/14/20 16:17	06/05/20 10:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.0*		*40 - 110*	*05/14/20 16:17*	*06/05/20 10:38*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.332	U	0.306	0.307	1.00	0.493	pCi/L	05/14/20 17:06	06/02/20 15:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.0*		*40 - 110*	*05/14/20 17:06*	*06/02/20 15:49*	*1*
Y Carrier	*83.0*		*40 - 110*	*05/14/20 17:06*	*06/02/20 15:49*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.557**		0.336	0.338	5.00	0.493	pCi/L		06/08/20 07:40	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**853.78**				ft			05/11/20 11:45	1
Oxidation Reduction Potential	**20.2**				millivolts			05/11/20 11:45	1
Oxygen, Dissolved, Client Supplied	**0.12**				mg/L			05/11/20 11:45	1
pH, Field	**5.97**				SU			05/11/20 11:45	1
Specific Conductance, Field	**1215**				umhos/cm			05/11/20 11:45	1
Temperature, Field	**9.10**				Degrees C			05/11/20 11:45	1
Turbidity, Field	**2.98**				NTU			05/11/20 11:45	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-181510-3
Date Collected: 05/11/20 08:00
Matrix: Water
Date Received: 05/11/20 17:00

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0263	U	0.104	0.104	1.00	0.198	pCi/L	05/14/20 16:17	06/05/20 10:38	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.4*		*40 - 110*	*05/14/20 16:17*	*06/05/20 10:38*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0295	U	0.217	0.217	1.00	0.388	pCi/L	05/14/20 17:06	06/02/20 15:49	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*83.4*		*40 - 110*	*05/14/20 17:06*	*06/02/20 15:49*	*1*
Y Carrier	*83.4*		*40 - 110*	*05/14/20 17:06*	*06/02/20 15:49*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.0558	U	0.241	0.241	5.00	0.388	pCi/L		06/08/20 07:40	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

QC Sample Results

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-2

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-470485/26-A
Matrix: Water
Analysis Batch: 472441

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470485

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.05367	U	0.0868	0.0869	1.00	0.152	pCi/L	05/14/20 16:17	06/05/20 10:39	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.3*		*40 - 110*	*05/14/20 16:17*	*06/05/20 10:39*	*1*

Lab Sample ID: LCS 160-470485/1-A
Matrix: Water
Analysis Batch: 472441

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470485

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	10.11		1.17	1.00	0.195	pCi/L	89	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*78.0*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-470487/26-A
Matrix: Water
Analysis Batch: 471687

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 470487

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.05706	U	0.261	0.261	1.00	0.456	pCi/L	05/14/20 17:06	06/02/20 15:50	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*84.3*		*40 - 110*	*05/14/20 17:06*	*06/02/20 15:50*	*1*
Y Carrier	*85.2*		*40 - 110*	*05/14/20 17:06*	*06/02/20 15:50*	*1*

Lab Sample ID: LCS 160-470487/1-A
Matrix: Water
Analysis Batch: 471668

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 470487

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			8.79	10.36		1.23	1.00	0.438	pCi/L	118	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*78.0*		*40 - 110*
Y Carrier	*83.7*		*40 - 110*

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-181510-2

Rad

Prep Batch: 470485

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-181510-1	MW-305	Total/NA	Water	PrecSep-21	
310-181510-3	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-470485/26-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-470485/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 470487

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-181510-1	MW-305	Total/NA	Water	PrecSep_0	
310-181510-3	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-470487/26-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-470487/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Field Service / Mobile Lab

Analysis Batch: 278946

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-181510-1	MW-305	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-181510-1
Date Collected: 05/11/20 11:45
Matrix: Water
Date Received: 05/11/20 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			470485	05/14/20 16:17	MNH	TAL SL
Total/NA	Analysis	903.0		1	472441	06/05/20 10:38	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			470487	05/14/20 17:06	MNH	TAL SL
Total/NA	Analysis	904.0		1	471687	06/02/20 15:49	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	472601	06/08/20 07:40	SMP	TAL SL
Total/NA	Analysis	Field Sampling		1	278946	05/11/20 11:45	JVB	TAL CF

Client Sample ID: Field Blank
Lab Sample ID: 310-181510-3
Date Collected: 05/11/20 08:00
Matrix: Water
Date Received: 05/11/20 17:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			470485	05/14/20 16:17	MNH	TAL SL
Total/NA	Analysis	903.0		1	472441	06/05/20 10:38	CJQ	TAL SL
Total/NA	Prep	PrecSep_0			470487	05/14/20 17:06	MNH	TAL SL
Total/NA	Analysis	904.0		1	471687	06/02/20 15:49	AJD	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	472601	06/08/20 07:40	SMP	TAL SL

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-21

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-20
California	Los Angeles County Sanitation Districts	10259	06-30-20
California	State	2886	06-30-20
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-20
HI - RadChem Recognition	State	n/a	06-30-20
Illinois	NELAP	004553	11-30-20
Iowa	State	373	09-17-20
Kansas	NELAP	E-10236	10-31-20
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-20
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-20
MI - RadChem Recognition	State	9005	06-30-20
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-20
New Jersey	NELAP	MO002	06-30-20
New York	NELAP	11616	04-01-21
North Dakota	State	R-207	06-30-20
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-20
Pennsylvania	NELAP	68-00540	02-28-21
South Carolina	State	85002001	06-30-20
Texas	NELAP	T104704193-19-13	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-20
Virginia	NELAP	10310	06-14-20
Washington	State	C592	08-30-20
West Virginia DEP	State	381	10-31-20

Method Summary

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
Field Sampling	Field Sampling	EPA	TAL CF
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Fredrick, Sandie

From: Blodgett, Meghan <mblodgett@scsengineers.com>
Sent: Monday, May 11, 2020 3:00 PM
To: Fredrick, Sandie; Liechti, Meredith
Cc: Jennings, Louise; Kron, Nicole
Subject: Correction on Sutherland samples dropped off today

EXTERNAL EMAIL*

Sandie,

Louise realized that she accidentally wrote 5/10 (instead of 5/11) as the date on today's bottles and COC. Can this be corrected during log-in?

Thanks,

Meghan Blodgett, PG*
Hydrogeologist
SCS Engineers
2830 Dairy Drive
Madison, WI 53718-6751 USA
608-345-9221 (C)
mblodgett@scsengineers.com
*Licensed in WI

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310-181510 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS Engineers

City/State: CITY Clive STATE IA Project: Sutherland Generating Station

Receipt Information

Date/Time Received: DATE 5-11-20 TIME 1700 Received By: ZB

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☒ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # _____ of _____
Cooler Custody Seals Present?	☐ Yes	☒ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☒ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☒ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): 0.0

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.2 Corrected Temp (°C): 0.2

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

Chain of Custody Record

TestAmerica Des Moines SC
214

eurofins | Environment Testing America

Client Information	Sampler: Louise Jennings	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-49817-15319.1
Client Contact: Louise Jennings	Phone: 608-509-8245	E-Mail: sandie.fredrick@testamericainc.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 20	Due Date Requested:			
City: Clive	TAT Requested (days): Standard			
State, Zip: IA, 50325				
Phone:	PO #: 25220076			
Email: ljennings@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25220076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0 - Radium 226 & 228	6020A, 7470A	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D		
MW-305	5/10/20	1145	G	Water			X			
MW-304	5/10/20	1020	G	Water				X		
Field Blank	5/10/20	900	G	Water			X	X		

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/10/20 1700	SCS		5/12/20 - 13:46	DM
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5-11-20 1700	Company ETA-CF
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Login Container Summary Report

Temperature readings: _____

Client Sample ID	Lab ID	Container Type	Container pH	Container Temp	Preservative Added (mls)	Lot #
MW-305	310-181510-A-1	Plastic 1 liter - Nitric Acid	<2			
MW-305	310-181510-B-1	Plastic 1 liter - Nitric Acid	<2			
MW-306	310-181510-A-2	Plastic 250ml - with Nitric Acid	<2			
Field Blank	310-181510-A-3	Plastic 250ml - with Nitric Acid	<2			
Field Blank	310-181510-B-3	Plastic 1 liter - Nitric Acid	<2			
Field Blank	310-181510-C-3	Plastic 1 liter - Nitric Acid	<2			

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-181510-2

Login Number: 181510
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-181510-2

Login Number: 181510
List Number: 2
Creator: Korrinhizer, Micha L

List Source: Eurofins TestAmerica, St. Louis
List Creation: 05/13/20 06:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Job ID: 310-181510-2
Project/Site: Sutherland Generating Station 25220076

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)
310-181510-1	MW-305	81.0
310-181510-3	Field Blank	83.4
LCS 160-470485/1-A	Lab Control Sample	78.0
MB 160-470485/26-A	Method Blank	84.3

Tracer/Carrier Legend

Ba Carrier = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
Lab Sample ID	Client Sample ID	Ba Carrier (40-110)	Y Carrier (40-110)
310-181510-1	MW-305	81.0	83.0
310-181510-3	Field Blank	83.4	83.4
LCS 160-470487/1-A	Lab Control Sample	78.0	83.7
MB 160-470487/26-A	Method Blank	84.3	85.2

Tracer/Carrier Legend

Ba Carrier = Ba Carrier
Y Carrier = Y Carrier

Groundwater Monitoring Results - Field Parameters
Sutherland Generating Station / SCS Engineers Project #25220076.00
May 2020

Sample	Sample Date/Time	GW Elevation (feet amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µs/cm)	ORP (mV)	Turbidity
MW-305	05.11.2020/1145	853.78	9.10	5.97	0.12	1215	20.2	2.98
MW-306	05.11.2020/1020	853.71	10.70	7.08	0.10	1557	123.2	1.43

Abbreviations:
mg/L = milligrams per liter mV = millivolts amsl = above mean sea level

Notes:
None

Created by: LMH Date: 9/26/2018
Last revision by: LWJ Date: 5/11/2020
Checked by: AJR Date: 5/11/2020

I:\25220076.00\Data and Calculations\Tables\Field Data\[2005_Sutherland_CCR_Field.xlsx]GW Field Parameters

C4 October 2020 Assessment Monitoring

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-193066-1
Client Project/Site: Sutherland Generating Station 25220076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Sandra Fredrick

Authorized for release by:
10/23/2020 11:31:56 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

Job ID: 310-193066-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-193066-1

Comments
No additional comments.

Receipt
The samples were received on 10/14/2020 5:05 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9º C.

HPLC/IC
Method 9056A: The following samples were diluted due to the nature of the sample matrix: MW-301 (310-193066-1) and MW-304 (310-193066-4). Elevated reporting limits (RLs) are provided.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Metals
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

General Chemistry
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-193066-1	MW-301	Water	10/13/20 11:23	10/14/20 17:05	
310-193066-2	MW-302	Water	10/13/20 12:50	10/14/20 17:05	
310-193066-3	MW-303	Water	10/13/20 08:30	10/14/20 17:05	
310-193066-4	MW-304	Water	10/13/20 14:25	10/14/20 17:05	
310-193066-5	MW-305	Water	10/13/20 15:27	10/14/20 17:05	
310-193066-6	MW-306	Water	10/13/20 09:52	10/14/20 17:05	
310-193066-7	Field Blank	Water	10/13/20 15:30	10/14/20 17:05	

Detection Summary

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301 — Lab Sample ID: 310-193066-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	71		5.0	2.0	mg/L	5		9056A	Total/NA
Sulfate	98		5.0	3.6	mg/L	5		9056A	Total/NA
Barium	110		2.0	0.28	ug/L	1		6020A	Total/NA
Boron	370		100	80	ug/L	1		6020A	Total/NA
Cadmium	0.077	J	0.10	0.049	ug/L	1		6020A	Total/NA
Calcium	100		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.28	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	3.2	J	10	2.5	ug/L	1		6020A	Total/NA
Molybdenum	2.5		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	540		30	26	mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.44				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	30.0				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.11				mg/L	1		Field Sampling	Total/NA
pH, Field	6.66				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	906.0				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	17.80				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	19.1				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-302 — Lab Sample ID: 310-193066-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	5.6		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.30	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	12		5.0	3.6	mg/L	5		9056A	Total/NA
Arsenic	4.6		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	100		2.0	0.28	ug/L	1		6020A	Total/NA
Calcium	71		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.77		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	2.8	J	10	2.5	ug/L	1		6020A	Total/NA
Total Dissolved Solids	260		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	854.38				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-103.6				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.11				mg/L	1		Field Sampling	Total/NA
pH, Field	7.43				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	463.6				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.20				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	3.70				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-303 — Lab Sample ID: 310-193066-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	14		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.44	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	190		5.0	3.6	mg/L	5		9056A	Total/NA
Arsenic	1.6	J	2.0	0.88	ug/L	1		6020A	Total/NA
Barium	65		2.0	0.28	ug/L	1		6020A	Total/NA
Boron	710		100	80	ug/L	1		6020A	Total/NA
Calcium	120		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	1.0		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	26		10	2.5	ug/L	1		6020A	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

Client Sample ID: MW-303 (Continued) — Lab Sample ID: 310-193066-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Molybdenum	22		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	610		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.3	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	851.7				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-74.2				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.20				mg/L	1		Field Sampling	Total/NA
pH, Field	7.12				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	888				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	14.40				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	2.38				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-304 — Lab Sample ID: 310-193066-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	11		5.0	2.0	mg/L	5		9056A	Total/NA
Sulfate	330		5.0	3.6	mg/L	5		9056A	Total/NA
Barium	21		2.0	0.28	ug/L	1		6020A	Total/NA
Boron	830		100	80	ug/L	1		6020A	Total/NA
Cadmium	0.075	J	0.10	0.049	ug/L	1		6020A	Total/NA
Calcium	150		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.11	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	2.8	J	10	2.5	ug/L	1		6020A	Total/NA
Molybdenum	1.4	J	2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	800		30	26	mg/L	1		SM 2540C	Total/NA
pH	6.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	851.3				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	39.1				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	6.20				mg/L	1		Field Sampling	Total/NA
pH, Field	6.64				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1033				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	14.50				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	1.68				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-305 — Lab Sample ID: 310-193066-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	17		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.46	J	0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	410		20	14	mg/L	20		9056A	Total/NA
Arsenic	11		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	52		2.0	0.28	ug/L	1		6020A	Total/NA
Boron	1400		100	80	ug/L	1		6020A	Total/NA
Calcium	140		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.60		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	22		10	2.5	ug/L	1		6020A	Total/NA
Molybdenum	36		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	790		30	26	mg/L	1		SM 2540C	Total/NA
pH	7.4	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	851.32				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-79.3				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.12				mg/L	1		Field Sampling	Total/NA
pH, Field	7.33				SU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305 (Continued) — Lab Sample ID: 310-193066-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Specific Conductance, Field	1029				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	14.80				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	3.75				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-306 — Lab Sample ID: 310-193066-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	21		5.0	2.0	mg/L	5		9056A	Total/NA
Fluoride	0.65		0.50	0.23	mg/L	5		9056A	Total/NA
Sulfate	400		5.0	3.6	mg/L	5		9056A	Total/NA
Arsenic	4.4		2.0	0.88	ug/L	1		6020A	Total/NA
Barium	110		2.0	0.28	ug/L	1		6020A	Total/NA
Boron	3800		100	80	ug/L	1		6020A	Total/NA
Calcium	230		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.68		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	52		10	2.5	ug/L	1		6020A	Total/NA
Molybdenum	42		2.0	1.1	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1200		60	52	mg/L	1		SM 2540C	Total/NA
pH	7.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	851.13				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-97.4				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.09				mg/L	1		Field Sampling	Total/NA
pH, Field	7.62				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1445				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	15.00				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	0.02				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank — Lab Sample ID: 310-193066-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Calcium	0.26	J	0.50	0.19	mg/L	1		6020A	Total/NA
pH	4.1	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Date Collected: 10/13/20 11:23
Date Received: 10/14/20 17:05

Lab Sample ID: 310-193066-1
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	71		5.0	2.0	mg/L			10/18/20 19:06	5
Fluoride	<0.23		0.50	0.23	mg/L			10/18/20 19:06	5
Sulfate	98		5.0	3.6	mg/L			10/18/20 19:06	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:15	1
Barium	110		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:15	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:15	1
Boron	370		100	80	ug/L		10/15/20 08:35	10/17/20 20:15	1
Cadmium	0.077	J	0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:15	1
Calcium	100		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:15	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:15	1
Cobalt	0.28	J	0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:15	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:15	1
Lithium	3.2	J	10	2.5	ug/L		10/15/20 08:35	10/17/20 20:15	1
Molybdenum	2.5		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:15	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	540		30	26	mg/L			10/16/20 15:03	1
pH	6.8	HF	0.1	0.1	SU			10/14/20 19:34	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	854.44				ft			10/13/20 11:23	1
Oxidation Reduction Potential	30.0				millivolts			10/13/20 11:23	1
Oxygen, Dissolved, Client Supplied	0.11				mg/L			10/13/20 11:23	1
pH, Field	6.66				SU			10/13/20 11:23	1
Specific Conductance, Field	906.0				umhos/cm			10/13/20 11:23	1
Temperature, Field	17.80				Degrees C			10/13/20 11:23	1
Turbidity, Field	19.1				NTU			10/13/20 11:23	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-302
Date Collected: 10/13/20 12:50
Date Received: 10/14/20 17:05

Lab Sample ID: 310-193066-2
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**5.6**		5.0	2.0	mg/L			10/18/20 19:21	5
Fluoride	**0.30**	**J**	0.50	0.23	mg/L			10/18/20 19:21	5
Sulfate	**12**		5.0	3.6	mg/L			10/18/20 19:21	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	**4.6**		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:18	1
Barium	**100**		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:18	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:18	1
Boron	<80		100	80	ug/L		10/15/20 08:35	10/17/20 20:18	1
Cadmium	<0.049		0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:18	1
Calcium	**71**		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:18	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:18	1
Cobalt	**0.77**		0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:18	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:18	1
Lithium	**2.8**	**J**	10	2.5	ug/L		10/15/20 08:35	10/17/20 20:18	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	**260**		30	26	mg/L			10/16/20 15:03	1
pH	**7.4**	**HF**	0.1	0.1	SU			10/14/20 19:33	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	**854.38**				ft			10/13/20 12:50	1
Oxidation Reduction Potential	**-103.6**				millivolts			10/13/20 12:50	1
Oxygen, Dissolved, Client Supplied	**0.11**				mg/L			10/13/20 12:50	1
pH, Field	**7.43**				SU			10/13/20 12:50	1
Specific Conductance, Field	**463.6**				umhos/cm			10/13/20 12:50	1
Temperature, Field	**13.20**				Degrees C			10/13/20 12:50	1
Turbidity, Field	**3.70**				NTU			10/13/20 12:50	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-303
Lab Sample ID: 310-193066-3
Date Collected: 10/13/20 08:30
Matrix: Water
Date Received: 10/14/20 17:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		5.0	2.0	mg/L			10/18/20 19:37	5
Fluoride	0.44	J	0.50	0.23	mg/L			10/18/20 19:37	5
Sulfate	190		5.0	3.6	mg/L			10/18/20 19:37	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.6	J	2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:20	1
Barium	65		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:20	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:20	1
Boron	710		100	80	ug/L		10/15/20 08:35	10/17/20 20:20	1
Cadmium	<0.049		0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:20	1
Calcium	120		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:20	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:20	1
Cobalt	1.0		0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:20	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:20	1
Lithium	26		10	2.5	ug/L		10/15/20 08:35	10/17/20 20:20	1
Molybdenum	22		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:20	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	610		30	26	mg/L			10/16/20 15:03	1
pH	7.3	HF	0.1	0.1	SU			10/14/20 19:29	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	851.7				ft			10/13/20 08:30	1
Oxidation Reduction Potential	-74.2				millivolts			10/13/20 08:30	1
Oxygen, Dissolved, Client Supplied	0.20				mg/L			10/13/20 08:30	1
pH, Field	7.12				SU			10/13/20 08:30	1
Specific Conductance, Field	888				umhos/cm			10/13/20 08:30	1
Temperature, Field	14.40				Degrees C			10/13/20 08:30	1
Turbidity, Field	2.38				NTU			10/13/20 08:30	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-304
Date Collected: 10/13/20 14:25
Date Received: 10/14/20 17:05

Lab Sample ID: 310-193066-4
Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	11		5.0	2.0	mg/L			10/18/20 19:53	5
Fluoride	<0.23		0.50	0.23	mg/L			10/18/20 19:53	5
Sulfate	330		5.0	3.6	mg/L			10/18/20 19:53	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:23	1
Barium	21		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:23	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:23	1
Boron	830		100	80	ug/L		10/15/20 08:35	10/17/20 20:23	1
Cadmium	0.075	J	0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:23	1
Calcium	150		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:23	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:23	1
Cobalt	0.11	J	0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:23	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:23	1
Lithium	2.8	J	10	2.5	ug/L		10/15/20 08:35	10/17/20 20:23	1
Molybdenum	1.4	J	2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:23	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	800		30	26	mg/L			10/16/20 15:03	1
pH	6.8	HF	0.1	0.1	SU			10/14/20 19:35	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	851.3				ft			10/13/20 14:25	1
Oxidation Reduction Potential	39.1				millivolts			10/13/20 14:25	1
Oxygen, Dissolved, Client Supplied	6.20				mg/L			10/13/20 14:25	1
pH, Field	6.64				SU			10/13/20 14:25	1
Specific Conductance, Field	1033				umhos/cm			10/13/20 14:25	1
Temperature, Field	14.50				Degrees C			10/13/20 14:25	1
Turbidity, Field	1.68				NTU			10/13/20 14:25	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-193066-5
Date Collected: 10/13/20 15:27
Matrix: Water
Date Received: 10/14/20 17:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17		5.0	2.0	mg/L			10/18/20 20:39	5
Fluoride	0.46	J	0.50	0.23	mg/L			10/18/20 20:39	5
Sulfate	410		20	14	mg/L			10/21/20 00:14	20

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	11		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:25	1
Barium	52		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:25	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:25	1
Boron	1400		100	80	ug/L		10/15/20 08:35	10/17/20 20:25	1
Cadmium	<0.049		0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:25	1
Calcium	140		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:25	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:25	1
Cobalt	0.60		0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:25	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:25	1
Lithium	22		10	2.5	ug/L		10/15/20 08:35	10/17/20 20:25	1
Molybdenum	36		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:25	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	790		30	26	mg/L			10/16/20 15:03	1
pH	7.4	HF	0.1	0.1	SU			10/14/20 19:30	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	851.32				ft			10/13/20 15:27	1
Oxidation Reduction Potential	-79.3				millivolts			10/13/20 15:27	1
Oxygen, Dissolved, Client Supplied	0.12				mg/L			10/13/20 15:27	1
pH, Field	7.33				SU			10/13/20 15:27	1
Specific Conductance, Field	1029				umhos/cm			10/13/20 15:27	1
Temperature, Field	14.80				Degrees C			10/13/20 15:27	1
Turbidity, Field	3.75				NTU			10/13/20 15:27	1

Client Sample Results

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

Client Sample ID: MW-306

Date Collected: 10/13/20 09:52
Date Received: 10/14/20 17:05

Lab Sample ID: 310-193066-6

Matrix: Water

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	21		5.0	2.0	mg/L			10/18/20 20:56	5
Fluoride	0.65		0.50	0.23	mg/L			10/18/20 20:56	5
Sulfate	400		5.0	3.6	mg/L			10/18/20 20:56	5

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	4.4		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:41	1
Barium	110		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:41	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:41	1
Boron	3800		100	80	ug/L		10/15/20 08:35	10/17/20 20:41	1
Cadmium	<0.049		0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:41	1
Calcium	230		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:41	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:41	1
Cobalt	0.68		0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:41	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:41	1
Lithium	52		10	2.5	ug/L		10/15/20 08:35	10/17/20 20:41	1
Molybdenum	42		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:41	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1200		60	52	mg/L			10/16/20 15:03	1
pH	7.8	HF	0.1	0.1	SU			10/14/20 19:27	1

Method: Field Sampling - Field Sampling

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	851.13				ft			10/13/20 09:52	1
Oxidation Reduction Potential	-97.4				millivolts			10/13/20 09:52	1
Oxygen, Dissolved, Client Supplied	0.09				mg/L			10/13/20 09:52	1
pH, Field	7.62				SU			10/13/20 09:52	1
Specific Conductance, Field	1445				umhos/cm			10/13/20 09:52	1
Temperature, Field	15.00				Degrees C			10/13/20 09:52	1
Turbidity, Field	0.02				NTU			10/13/20 09:52	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-193066-7
Date Collected: 10/13/20 15:30
Matrix: Water
Date Received: 10/14/20 17:05

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.40		1.0	0.40	mg/L			10/18/20 21:12	1
Fluoride	<0.046		0.10	0.046	mg/L			10/18/20 21:12	1
Sulfate	<0.71		1.0	0.71	mg/L			10/18/20 21:12	1

Method: 6020A - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 20:43	1
Barium	<0.28		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 20:43	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 20:43	1
Boron	<80		100	80	ug/L		10/15/20 08:35	10/17/20 20:43	1
Cadmium	<0.049		0.10	0.049	ug/L		10/15/20 08:35	10/17/20 20:43	1
Calcium	**0.26**	**J**	0.50	0.19	mg/L		10/15/20 08:35	10/17/20 20:43	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:43	1
Cobalt	<0.091		0.50	0.091	ug/L		10/15/20 08:35	10/17/20 20:43	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 20:43	1
Lithium	<2.5		10	2.5	ug/L		10/15/20 08:35	10/17/20 20:43	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 20:43	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			10/16/20 15:03	1
pH	**4.1**	**HF**	0.1	0.1	SU			10/14/20 19:31	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
HF	Field parameter with a holding time of 15 minutes. Test performed by laboratory at client's request.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-296338/3
Matrix: Water
Analysis Batch: 296338

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.40		1.0	0.40	mg/L			10/18/20 16:14	1
Fluoride	<0.046		0.10	0.046	mg/L			10/18/20 16:14	1
Sulfate	<0.71		1.0	0.71	mg/L			10/18/20 16:14	1

Lab Sample ID: LCS 310-296338/4
Matrix: Water
Analysis Batch: 296338

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	10.0	9.60		mg/L		96	90 - 110
Fluoride	2.00	1.94		mg/L		97	90 - 110
Sulfate	10.0	9.95		mg/L		99	90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-295530/1-A
Matrix: Water
Analysis Batch: 296006

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 295530

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	<0.88		2.0	0.88	ug/L		10/15/20 08:35	10/17/20 19:34	1
Barium	<0.28		2.0	0.28	ug/L		10/15/20 08:35	10/17/20 19:34	1
Beryllium	<0.27		1.0	0.27	ug/L		10/15/20 08:35	10/17/20 19:34	1
Boron	<80		100	80	ug/L		10/15/20 08:35	10/17/20 19:34	1
Cadmium	<0.049		0.10	0.049	ug/L		10/15/20 08:35	10/17/20 19:34	1
Calcium	<0.19		0.50	0.19	mg/L		10/15/20 08:35	10/17/20 19:34	1
Chromium	<1.1		5.0	1.1	ug/L		10/15/20 08:35	10/17/20 19:34	1
Cobalt	<0.091		0.50	0.091	ug/L		10/15/20 08:35	10/17/20 19:34	1
Lead	<0.11		0.50	0.11	ug/L		10/15/20 08:35	10/17/20 19:34	1
Lithium	<2.5		10	2.5	ug/L		10/15/20 08:35	10/17/20 19:34	1
Molybdenum	<1.1		2.0	1.1	ug/L		10/15/20 08:35	10/17/20 19:34	1

Lab Sample ID: LCS 310-295530/2-A
Matrix: Water
Analysis Batch: 296006

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 295530

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Arsenic	200	204		ug/L		102	80 - 120
Barium	100	110		ug/L		110	80 - 120
Beryllium	100	95.7		ug/L		96	80 - 120
Boron	200	183		ug/L		91	80 - 120
Cadmium	100	110		ug/L		110	80 - 120
Calcium	2.00	1.87		mg/L		94	80 - 120
Chromium	100	95.4		ug/L		95	80 - 120
Cobalt	100	102		ug/L		102	80 - 120
Lead	200	214		ug/L		107	80 - 120
Lithium	200	196		ug/L		98	80 - 120
Molybdenum	200	201		ug/L		101	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-193066-5 DU
Matrix: Water
Analysis Batch: 296006

Client Sample ID: MW-305
Prep Type: Total/NA
Prep Batch: 295530

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Arsenic	11			11.5		ug/L				7	20
Barium	52			53.5		ug/L				3	20
Beryllium	<0.27			<0.27		ug/L				NC	20
Boron	1400			1430		ug/L				4	20
Cadmium	<0.049			0.0660	J	ug/L				NC	20
Calcium	140			139		mg/L				3	20
Chromium	<1.1			<1.1		ug/L				NC	20
Cobalt	0.60			0.673		ug/L				12	20
Lead	<0.11			<0.11		ug/L				NC	20
Lithium	22			22.1		ug/L				2	20
Molybdenum	36			38.3		ug/L				5	20

Method: SM 2540C - Solids, Total Dissolved (TDS)

Lab Sample ID: MB 310-295849/1
Matrix: Water
Analysis Batch: 295849

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			10/16/20 15:03	1

Lab Sample ID: LCS 310-295849/2
Matrix: Water
Analysis Batch: 295849

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Total Dissolved Solids			1000	996		mg/L		100	90 - 110		

Lab Sample ID: 310-193066-4 DU
Matrix: Water
Analysis Batch: 295849

Client Sample ID: MW-304
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Total Dissolved Solids	800			778		mg/L				2	24

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-295477/1
Matrix: Water
Analysis Batch: 295477

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
pH			7.00	7.0		SU		100	98 - 102		

Lab Sample ID: 310-193066-6 DU
Matrix: Water
Analysis Batch: 295477

Client Sample ID: MW-306
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.8	HF		7.8		SU				0.1	20

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

HPLC/IC

Analysis Batch: 296338

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	9056A	
310-193066-2	MW-302	Total/NA	Water	9056A	
310-193066-3	MW-303	Total/NA	Water	9056A	
310-193066-4	MW-304	Total/NA	Water	9056A	
310-193066-5	MW-305	Total/NA	Water	9056A	
310-193066-5	MW-305	Total/NA	Water	9056A	
310-193066-6	MW-306	Total/NA	Water	9056A	
310-193066-7	Field Blank	Total/NA	Water	9056A	
MB 310-296338/3	Method Blank	Total/NA	Water	9056A	
LCS 310-296338/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 295530

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	3010A	
310-193066-2	MW-302	Total/NA	Water	3010A	
310-193066-3	MW-303	Total/NA	Water	3010A	
310-193066-4	MW-304	Total/NA	Water	3010A	
310-193066-5	MW-305	Total/NA	Water	3010A	
310-193066-6	MW-306	Total/NA	Water	3010A	
310-193066-7	Field Blank	Total/NA	Water	3010A	
MB 310-295530/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-295530/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-193066-5 DU	MW-305	Total/NA	Water	3010A	

Analysis Batch: 296006

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	6020A	295530
310-193066-2	MW-302	Total/NA	Water	6020A	295530
310-193066-3	MW-303	Total/NA	Water	6020A	295530
310-193066-4	MW-304	Total/NA	Water	6020A	295530
310-193066-5	MW-305	Total/NA	Water	6020A	295530
310-193066-6	MW-306	Total/NA	Water	6020A	295530
310-193066-7	Field Blank	Total/NA	Water	6020A	295530
MB 310-295530/1-A	Method Blank	Total/NA	Water	6020A	295530
LCS 310-295530/2-A	Lab Control Sample	Total/NA	Water	6020A	295530
310-193066-5 DU	MW-305	Total/NA	Water	6020A	295530

General Chemistry

Analysis Batch: 295477

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-193066-2	MW-302	Total/NA	Water	SM 4500 H+ B	
310-193066-3	MW-303	Total/NA	Water	SM 4500 H+ B	
310-193066-4	MW-304	Total/NA	Water	SM 4500 H+ B	
310-193066-5	MW-305	Total/NA	Water	SM 4500 H+ B	
310-193066-6	MW-306	Total/NA	Water	SM 4500 H+ B	
310-193066-7	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-295477/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	
310-193066-6 DU	MW-306	Total/NA	Water	SM 4500 H+ B	

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

General Chemistry

Analysis Batch: 295849

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	SM 2540C	
310-193066-2	MW-302	Total/NA	Water	SM 2540C	
310-193066-3	MW-303	Total/NA	Water	SM 2540C	
310-193066-4	MW-304	Total/NA	Water	SM 2540C	
310-193066-5	MW-305	Total/NA	Water	SM 2540C	
310-193066-6	MW-306	Total/NA	Water	SM 2540C	
310-193066-7	Field Blank	Total/NA	Water	SM 2540C	
MB 310-295849/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-295849/2	Lab Control Sample	Total/NA	Water	SM 2540C	
310-193066-4 DU	MW-304	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 296776

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	Field Sampling	
310-193066-2	MW-302	Total/NA	Water	Field Sampling	
310-193066-3	MW-303	Total/NA	Water	Field Sampling	
310-193066-4	MW-304	Total/NA	Water	Field Sampling	
310-193066-5	MW-305	Total/NA	Water	Field Sampling	
310-193066-6	MW-306	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-193066-1
Date Collected: 10/13/20 11:23
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	296338	10/18/20 19:06	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:15	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:34	JNR	TAL CF
Total/NA	Analysis	Field Sampling		1	296776	10/13/20 11:23	SLD	TAL CF

Client Sample ID: MW-302
Lab Sample ID: 310-193066-2
Date Collected: 10/13/20 12:50
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	296338	10/18/20 19:21	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:18	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:33	JNR	TAL CF
Total/NA	Analysis	Field Sampling		1	296776	10/13/20 12:50	SLD	TAL CF

Client Sample ID: MW-303
Lab Sample ID: 310-193066-3
Date Collected: 10/13/20 08:30
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	296338	10/18/20 19:37	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:20	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:29	JNR	TAL CF
Total/NA	Analysis	Field Sampling		1	296776	10/13/20 08:30	SLD	TAL CF

Client Sample ID: MW-304
Lab Sample ID: 310-193066-4
Date Collected: 10/13/20 14:25
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	296338	10/18/20 19:53	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:23	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:35	JNR	TAL CF
Total/NA	Analysis	Field Sampling		1	296776	10/13/20 14:25	SLD	TAL CF

Lab Chronicle

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-193066-5
Date Collected: 10/13/20 15:27
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	296338	10/18/20 20:39	ACJ	TAL CF
Total/NA	Analysis	9056A		20	296338	10/21/20 00:14	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:25	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:30	JNR	TAL CF
Total/NA	Analysis	Field Sampling		1	296776	10/13/20 15:27	SLD	TAL CF

Client Sample ID: MW-306
Lab Sample ID: 310-193066-6
Date Collected: 10/13/20 09:52
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	296338	10/18/20 20:56	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:41	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:27	JNR	TAL CF
Total/NA	Analysis	Field Sampling		1	296776	10/13/20 09:52	SLD	TAL CF

Client Sample ID: Field Blank
Lab Sample ID: 310-193066-7
Date Collected: 10/13/20 15:30
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	296338	10/18/20 21:12	ACJ	TAL CF
Total/NA	Prep	3010A			295530	10/15/20 08:35	HED	TAL CF
Total/NA	Analysis	6020A		1	296006	10/17/20 20:43	SAD	TAL CF
Total/NA	Analysis	SM 2540C		1	295849	10/16/20 15:03	SAS	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	295477	10/14/20 19:31	JNR	TAL CF

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-193066-1
Project/Site: Sutherland Generating Station 25220076

Laboratory: Eurofins TestAmerica, Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-21

Method Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-1

Method	Method Description	Protocol	Laboratory
9056A	Anions, Ion Chromatography	SW846	TAL CF
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2540C	Solids, Total Dissolved (TDS)	SM	TAL CF
SM 4500 H+ B	pH	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

EPA = US Environmental Protection Agency

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL CF = Eurofins TestAmerica, Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

eurofins | Environment Testing TestAmerica

310-193066 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 10.14.20 TIME 1705 Received By: BKM

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☐ Yes	☐ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☐ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☐ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): TD, J

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): Corrected Temp (°C):

• **Sample Container Temperature**

	CONTAINER 1	CONTAINER 2
Container(s) used:	P125D HNO3	
Uncorrected Temp (°C):	1.9	
Corrected Temp (°C):	1.9	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing TestAmerica

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 10.14.20 TIME 1705 Received By: BKM

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☐ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☑ Yes	☐ No	*If yes:* Cooler custody seals intact? ☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): TD, J

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): Corrected Temp (°C):

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:	pl 250 HNO3	
Uncorrected Temp (°C):	4.1	
Corrected Temp (°C):	4.1	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

TestAmerica Des Moines SC
214

Chain of Custody Record

eurofins | Environment Testing America

Client Information	Sampler: Tanten Buszka	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-54737-15058.1
Client Contact: Tanten Buszka	Phone: 269-993-0855	E-Mail: sandra.fredrick@eurofinset.com		Page: Page 1 of 1
Company: SCS Engineers		Analysis Requested		Job #:
Address: 8450 Hickman Road Suite 2027	Due Date Requested:			Preservation Codes: A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone: 269-993-0855	PO #: 25220076			Other:
Email: tbuszka@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25220076	Project #: 31011020			
Site:	SSOW#:			

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A - Metals (11)	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:		N	N	D	D	N		
MW-301	10.13.20	11:23	G	Water	N	N	X	X	X	3	See attached
MW-302	10.13.20	12:50	G	Water	N	N	X	X	X	3	sampling points
MW-303	10.13.20	8:30	G	Water	N	N	X	X	X	3	+ parameters table
MW-304	10.13.20	14:25	G	Water	N	N	X	X	X	3	for requested
MW-305	10.13.20	15:27	G	Water	N	N	X	X	X	3	analyses
MW-306	10.13.20	9:52	G	Water	N	N	X	X	X	3	
Field Blank	10.13.20	15:30	G	Water	N	N	X	X	X	3	
				Water							* Two coolers
											associated with
											this COC (one
											small + one big cooler) *

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Matthew Cahalan	10/14/20 1030	SCS	[signature]	10.14.20 1105	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25220076

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony								0
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium	x	x	x	x	x	x	x	7
	Cadmium	x	x	x	x	x	x	x	7
	Chromium	x	x	x	x	x	x	x	7
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury								0
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium								0
	Thallium								0
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		6
	Well Depth	x	x	x	x	x	x		6
	pH (field)	x	x	x	x	x	x		6
	Specific Conductance	x	x	x	x	x	x		6
	Dissolved Oxygen	x	x	x	x	x	x		6
	ORP	x	x	x	x	x	x		6
	Temperature	x	x	x	x	x	x		6
	Turbidity	x	x	x	x	x	x		6
	Color	x	x	x	x	x	x		6
	Odor	x	x	x	x	x	x		6

Notes:

I:\25220076.00\Data and Calculations\Field Work Requests\[IPL_Sutherland Generating Station_CCR_Rule_Sampling_2010.xls]Sheet1

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-193066-1

Login Number: 193066
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Groundwater Monitoring Results - Field Parameters
Sutherland Generating Station / SCS Engineers Project #25220076.00
October 2020

Sample	Sample Date/Time	GW Elevation (feet amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µs/cm)	ORP (mV)	Turbidity
MW-301	10.13.2020/1123	854.44	17.80	6.66	0.11	906.0	30.0	19.1
MW-302	10.13.2020/1250	854.38	13.20	7.43	0.11	463.6	-103.6	3.70
MW-303	10.13.2020/0830	851.7	14.40	7.12	0.20	888	-74.2	2.38
MW-304	10.13.2020/1425	851.3	14.50	6.64	6.20	1033	39.1	1.68
MW-305	10.13.2020/1527	851.32	14.80	7.33	0.12	1029	-79.3	3.75
MW-306	10.13.2020/0952	851.13	15.00	7.62	0.09	1445	-97.4	0.02

Abbreviations:
mg/L = milligrams per liter mV = millivolts amsl = above mean sea level

Notes:
None

Created by: LMH Date: 9/26/2018
Last revision by: ACW Date: 10/21/2020
Checked by: RM Date: 10/22/2020

C:\Users\FredrickS\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\NYDS7C58\[2010_Sutherland_CCR_Field.xlsx]GW Field Parameters

eurofins | Environment Testing America

ANALYTICAL REPORT

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Tel: (319)277-2401

Laboratory Job ID: 310-193066-2
Client Project/Site: Sutherland Generating Station 25220076

For:
SCS Engineers
2830 Dairy Drive
Madison, Wisconsin 53718

Attn: Meghan Blodgett

Sandra Fredrick

Authorized for release by:
12/10/2020 9:49:18 AM

Sandie Fredrick, Project Manager II
(920)261-1660
sandra.fredrick@eurofinset.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

Table of Contents

Case Narrative

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-2

Job ID: 310-193066-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative
310-193066-2

Comments
No additional comments.

Receipt
The samples were received on 10/14/2020 5:05 PM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.9º C.

RAD
Methods 903.0, 9315: 9315/903 prep batch 160-486635 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-193066-1), MW-302 (310-193066-2), MW-303 (310-193066-3), MW-304 (310-193066-4), MW-305 (310-193066-5), (280-141378-A-7-A) and (280-141378-A-7-B DU)

Method 903.0: 903 prep batch 160-486732 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-306 (310-193066-6), Field Blank (310-193066-7), (680-189912-A-1-A), (680-189912-A-1-B MS) and (680-189912-B-1-A MSD)

Methods 904.0, 9320: 9320/904 prep batch 160-486639 Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-301 (310-193066-1), MW-302 (310-193066-2), MW-303 (310-193066-3), MW-304 (310-193066-4), MW-305 (310-193066-5), (280-141378-A-7-C) and (280-141378-A-7-D DU)

Method 904.0: Radium-228 prep batch 160-486741: Any minimum detectable concentration (MDC), critical value (DLC), or Safe Drinking Water Act detection limit (SDWA DL) is sample-specific unless otherwise stated elsewhere in this narrative. Radiochemistry sample results are reported with the count date/time applied as the Activity Reference Date. MW-306 (310-193066-6), Field Blank (310-193066-7), (LCS 160-486741/1-A), (MB 160-486741/22-A), (680-189912-A-1-C), (680-189912-A-1-D MS) and (680-189912-B-1-B MSD)

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Sample Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-193066-1	MW-301	Water	10/13/20 11:23	10/14/20 17:05	
310-193066-2	MW-302	Water	10/13/20 12:50	10/14/20 17:05	
310-193066-3	MW-303	Water	10/13/20 08:30	10/14/20 17:05	
310-193066-4	MW-304	Water	10/13/20 14:25	10/14/20 17:05	
310-193066-5	MW-305	Water	10/13/20 15:27	10/14/20 17:05	
310-193066-6	MW-306	Water	10/13/20 09:52	10/14/20 17:05	
310-193066-7	Field Blank	Water	10/13/20 15:30	10/14/20 17:05	

Detection Summary

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301 — Lab Sample ID: 310-193066-1

No Detections.

Client Sample ID: MW-302 — Lab Sample ID: 310-193066-2

No Detections.

Client Sample ID: MW-303 — Lab Sample ID: 310-193066-3

No Detections.

Client Sample ID: MW-304 — Lab Sample ID: 310-193066-4

No Detections.

Client Sample ID: MW-305 — Lab Sample ID: 310-193066-5

No Detections.

Client Sample ID: MW-306 — Lab Sample ID: 310-193066-6

No Detections.

Client Sample ID: Field Blank — Lab Sample ID: 310-193066-7

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-193066-1
Date Collected: 10/13/20 11:23
Matrix: Water
Date Received: 10/14/20 17:05

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0851	U	0.151	0.152	1.00	0.268	pCi/L	10/23/20 11:35	11/24/20 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.5*		*40 - 110*	*10/23/20 11:35*	*11/24/20 14:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.378	U	0.348	0.350	1.00	0.561	pCi/L	10/23/20 11:59	11/23/20 12:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*76.5*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:34*	*1*
Y Carrier	*79.3*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:34*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.463	U	0.379	0.382	5.00	0.561	pCi/L		12/10/20 09:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-302
Lab Sample ID: 310-193066-2
Date Collected: 10/13/20 12:50
Matrix: Water
Date Received: 10/14/20 17:05

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.214**		0.154	0.155	1.00	0.212	pCi/L	10/23/20 11:35	11/24/20 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.0*		*40 - 110*	*10/23/20 11:35*	*11/24/20 14:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.365	U	0.244	0.246	1.00	0.371	pCi/L	10/23/20 11:59	11/23/20 12:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.0*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:34*	*1*
Y Carrier	*80.7*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:34*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.580**		0.289	0.291	5.00	0.371	pCi/L		12/10/20 09:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-303
Lab Sample ID: 310-193066-3
Date Collected: 10/13/20 08:30
Matrix: Water
Date Received: 10/14/20 17:05

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.190	U	0.203	0.204	1.00	0.325	pCi/L	10/23/20 11:35	11/24/20 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*63.9*		*40 - 110*	*10/23/20 11:35*	*11/24/20 14:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.342	U	0.388	0.390	1.00	0.638	pCi/L	10/23/20 11:59	11/23/20 12:34	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*63.9*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:34*	*1*
Y Carrier	*72.5*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:34*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.531	U	0.438	0.440	5.00	0.638	pCi/L		12/10/20 09:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-304
Date Collected: 10/13/20 14:25
Date Received: 10/14/20 17:05

Lab Sample ID: 310-193066-4
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.0947	U	0.152	0.153	1.00	0.264	pCi/L	10/23/20 11:35	11/24/20 14:13	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.5*		*40 - 110*	*10/23/20 11:35*	*11/24/20 14:13*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	**0.511**		0.308	0.312	1.00	0.465	pCi/L	10/23/20 11:59	11/23/20 12:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*81.5*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:35*	*1*
Y Carrier	*79.3*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:35*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.606**		0.343	0.347	5.00	0.465	pCi/L		12/10/20 09:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Date Collected: 10/13/20 15:27
Date Received: 10/14/20 17:05

Lab Sample ID: 310-193066-5
Matrix: Water

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.420		0.202	0.205	1.00	0.242	pCi/L	10/23/20 11:35	11/24/20 14:12	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.3*		*40 - 110*	*10/23/20 11:35*	*11/24/20 14:12*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.567		0.259	0.265	1.00	0.368	pCi/L	10/23/20 11:59	11/23/20 12:35	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*93.3*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:35*	*1*
Y Carrier	*87.5*		*40 - 110*	*10/23/20 11:59*	*11/23/20 12:35*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.986		0.328	0.335	5.00	0.368	pCi/L		12/10/20 09:16	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-306
Lab Sample ID: 310-193066-6
Date Collected: 10/13/20 09:52
Matrix: Water
Date Received: 10/14/20 17:05

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	**0.224**		0.161	0.162	1.00	0.220	pCi/L	10/26/20 11:40	12/03/20 10:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.7*		*40 - 110*	*10/26/20 11:40*	*12/03/20 10:45*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.286	U	0.296	0.297	1.00	0.483	pCi/L	10/26/20 12:29	12/02/20 11:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*87.7*		*40 - 110*	*10/26/20 12:29*	*12/02/20 11:39*	*1*
Y Carrier	*78.9*		*40 - 110*	*10/26/20 12:29*	*12/02/20 11:39*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	**0.510**		0.337	0.338	5.00	0.483	pCi/L		12/10/20 09:11	1

Client Sample Results

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: Field Blank
Lab Sample ID: 310-193066-7
Date Collected: 10/13/20 15:30
Matrix: Water
Date Received: 10/14/20 17:05

Method: 903.0 - Radium-226 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.288	U	0.236	0.238	1.00	0.357	pCi/L	10/26/20 11:40	12/03/20 10:45	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*71.0*		*40 - 110*	*10/26/20 11:40*	*12/03/20 10:45*	*1*

Method: 904.0 - Radium-228 (GFPC)

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	-0.0952	U	0.356	0.356	1.00	0.649	pCi/L	10/26/20 12:29	12/02/20 11:39	1

Carrier	*%Yield*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*71.0*		*40 - 110*	*10/26/20 12:29*	*12/02/20 11:39*	*1*
Y Carrier	*73.3*		*40 - 110*	*10/26/20 12:29*	*12/02/20 11:39*	*1*

Method: Ra226_Ra228 Pos - Combined Radium-226 and Radium-228

Analyte	Result	Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.288	U	0.427	0.428	5.00	0.649	pCi/L		12/10/20 09:11	1

Definitions/Glossary

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Qualifiers

Rad

Qualifier	Qualifier Description
U	Result is less than the sample detection limit.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

QC Sample Results

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-2

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-486635/23-A
Matrix: Water
Analysis Batch: 490118

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486635

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.001601	U	0.111	0.111	1.00	0.230	pCi/L	10/23/20 11:35	11/24/20 14:13	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*92.7*		*40 - 110*	*10/23/20 11:35*	*11/24/20 14:13*	*1*

Lab Sample ID: LCS 160-486635/1-A
Matrix: Water
Analysis Batch: 490466

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486635

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	12.88		1.40	1.00	0.199	pCi/L	113	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*83.3*		*40 - 110*

Lab Sample ID: MB 160-486732/22-A
Matrix: Water
Analysis Batch: 490805

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486732

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.008935	U	0.124	0.124	1.00	0.253	pCi/L	10/26/20 11:40	12/03/20 12:53	1

Carrier	*MB %Yield*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Ba Carrier	*80.4*		*40 - 110*	*10/26/20 11:40*	*12/03/20 12:53*	*1*

Lab Sample ID: LCS 160-486732/1-A
Matrix: Water
Analysis Batch: 490805

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486732

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-226			11.3	9.820		1.22	1.00	0.258	pCi/L	87	75 - 125		

Carrier	*LCS %Yield*	*LCS Qualifier*	*Limits*
Ba Carrier	*83.9*		*40 - 110*

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-486639/23-A
Matrix: Water
Analysis Batch: 490005

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486639

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.2651	U	0.259	0.260	1.00	0.420	pCi/L	10/23/20 11:59	11/23/20 12:35	1

Method: 904.0 - Radium-228 (GFPC) (Continued)

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	92.7		40 - 110	10/23/20 11:59	11/23/20 12:35	1
Y Carrier	83.7		40 - 110	10/23/20 11:59	11/23/20 12:35	1

Lab Sample ID: LCS 160-486639/1-A
Matrix: Water
Analysis Batch: 490006

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486639

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			7.63	7.711		0.981	1.00	0.446	pCi/L	101	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	83.3		40 - 110
Y Carrier	85.2		40 - 110

Lab Sample ID: MB 160-486741/22-A
Matrix: Water
Analysis Batch: 490777

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 486741

Analyte	MB Result	MB Qualifier	Count Uncert. (2σ+/-)	Total Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.1169	U	0.271	0.271	1.00	0.466	pCi/L	10/26/20 12:29	12/02/20 11:46	1

Carrier	MB %Yield	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Ba Carrier	80.4		40 - 110	10/26/20 12:29	12/02/20 11:46	1
Y Carrier	81.9		40 - 110	10/26/20 12:29	12/02/20 11:46	1

Lab Sample ID: LCS 160-486741/1-A
Matrix: Water
Analysis Batch: 490776

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 486741

Analyte			Spike Added	LCS Result	LCS Qual	Total Uncert. (2σ+/-)	RL	MDC	Unit	%Rec	%Rec. Limits		
Radium-228			7.61	7.432		0.961	1.00	0.503	pCi/L	98	75 - 125		

Carrier	LCS %Yield	LCS Qualifier	Limits
Ba Carrier	83.9		40 - 110
Y Carrier	80.7		40 - 110

QC Association Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-2

Rad

Prep Batch: 486635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	PrecSep-21	
310-193066-2	MW-302	Total/NA	Water	PrecSep-21	
310-193066-3	MW-303	Total/NA	Water	PrecSep-21	
310-193066-4	MW-304	Total/NA	Water	PrecSep-21	
310-193066-5	MW-305	Total/NA	Water	PrecSep-21	
MB 160-486635/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-486635/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 486639

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-1	MW-301	Total/NA	Water	PrecSep_0	
310-193066-2	MW-302	Total/NA	Water	PrecSep_0	
310-193066-3	MW-303	Total/NA	Water	PrecSep_0	
310-193066-4	MW-304	Total/NA	Water	PrecSep_0	
310-193066-5	MW-305	Total/NA	Water	PrecSep_0	
MB 160-486639/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-486639/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Prep Batch: 486732

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-6	MW-306	Total/NA	Water	PrecSep-21	
310-193066-7	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-486732/22-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-486732/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	

Prep Batch: 486741

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-193066-6	MW-306	Total/NA	Water	PrecSep_0	
310-193066-7	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-486741/22-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-486741/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	

Lab Chronicle

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-301
Lab Sample ID: 310-193066-1
Date Collected: 10/13/20 11:23
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486635	10/23/20 11:35	AVB	TAL SL
Total/NA	Analysis	903.0		1	490118	11/24/20 14:12	FLC	TAL SL
Total/NA	Prep	PrecSep_0			486639	10/23/20 11:59	AVB	TAL SL
Total/NA	Analysis	904.0		1	490005	11/23/20 12:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491374	12/10/20 09:16	SCB	TAL SL

Client Sample ID: MW-302
Lab Sample ID: 310-193066-2
Date Collected: 10/13/20 12:50
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486635	10/23/20 11:35	AVB	TAL SL
Total/NA	Analysis	903.0		1	490118	11/24/20 14:12	FLC	TAL SL
Total/NA	Prep	PrecSep_0			486639	10/23/20 11:59	AVB	TAL SL
Total/NA	Analysis	904.0		1	490005	11/23/20 12:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491374	12/10/20 09:16	SCB	TAL SL

Client Sample ID: MW-303
Lab Sample ID: 310-193066-3
Date Collected: 10/13/20 08:30
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486635	10/23/20 11:35	AVB	TAL SL
Total/NA	Analysis	903.0		1	490118	11/24/20 14:12	FLC	TAL SL
Total/NA	Prep	PrecSep_0			486639	10/23/20 11:59	AVB	TAL SL
Total/NA	Analysis	904.0		1	490005	11/23/20 12:34	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491374	12/10/20 09:16	SCB	TAL SL

Client Sample ID: MW-304
Lab Sample ID: 310-193066-4
Date Collected: 10/13/20 14:25
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486635	10/23/20 11:35	AVB	TAL SL
Total/NA	Analysis	903.0		1	490118	11/24/20 14:13	FLC	TAL SL
Total/NA	Prep	PrecSep_0			486639	10/23/20 11:59	AVB	TAL SL
Total/NA	Analysis	904.0		1	490005	11/23/20 12:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491374	12/10/20 09:16	SCB	TAL SL

Lab Chronicle

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Client Sample ID: MW-305
Lab Sample ID: 310-193066-5
Date Collected: 10/13/20 15:27
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486635	10/23/20 11:35	AVB	TAL SL
Total/NA	Analysis	903.0		1	490118	11/24/20 14:12	FLC	TAL SL
Total/NA	Prep	PrecSep_0			486639	10/23/20 11:59	AVB	TAL SL
Total/NA	Analysis	904.0		1	490005	11/23/20 12:35	FLC	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491374	12/10/20 09:16	SCB	TAL SL

Client Sample ID: MW-306
Lab Sample ID: 310-193066-6
Date Collected: 10/13/20 09:52
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486732	10/26/20 11:40	AVB	TAL SL
Total/NA	Analysis	903.0		1	490805	12/03/20 10:45	SCB	TAL SL
Total/NA	Prep	PrecSep_0			486741	10/26/20 12:29	AVB	TAL SL
Total/NA	Analysis	904.0		1	490776	12/02/20 11:39	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491372	12/10/20 09:11	SCB	TAL SL

Client Sample ID: Field Blank
Lab Sample ID: 310-193066-7
Date Collected: 10/13/20 15:30
Matrix: Water
Date Received: 10/14/20 17:05

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			486732	10/26/20 11:40	AVB	TAL SL
Total/NA	Analysis	903.0		1	490805	12/03/20 10:45	SCB	TAL SL
Total/NA	Prep	PrecSep_0			486741	10/26/20 12:29	AVB	TAL SL
Total/NA	Analysis	904.0		1	490776	12/02/20 11:39	SCB	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	491372	12/10/20 09:11	SCB	TAL SL

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

Accreditation/Certification Summary

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Laboratory: Eurofins TestAmerica, St. Louis

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	20-001	05-06-22
ANAB	Dept. of Defense ELAP	L2305	04-06-22
ANAB	Dept. of Energy	L2305.01	04-06-22
ANAB	ISO/IEC 17025	L2305	04-06-22
Arizona	State	AZ0813	12-08-21
California	Los Angeles County Sanitation Districts	10259	06-30-21
California	State	2886	06-30-21
Connecticut	State	PH-0241	03-31-21
Florida	NELAP	E87689	06-30-21
HI - RadChem Recognition	State	n/a	06-30-21
Illinois	NELAP	004553	11-30-21
Iowa	State	373	12-01-22
Kentucky (DW)	State	KY90125	12-31-20
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-20
Maryland	State	310	09-30-21
MI - RadChem Recognition	State	9005	06-30-21
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-21
New Jersey	NELAP	MO002	06-30-21
New York	NELAP	11616	04-01-21
North Dakota	State	R-207	06-30-21
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-21
Oregon	NELAP	4157	09-01-21
Pennsylvania	NELAP	68-00540	02-28-21
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193-19-13	07-31-21
US Fish & Wildlife	US Federal Programs	058448	07-31-21
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542019-11	07-31-21
Virginia	NELAP	10310	06-14-21
Washington	State	C592	08-30-21
West Virginia DEP	State	381	10-31-21

Method Summary

Client: SCS Engineers
Project/Site: Sutherland Generating Station 25220076

Job ID: 310-193066-2

Method	Method Description	Protocol	Laboratory
903.0	Radium-226 (GFPC)	EPA	TAL SL
904.0	Radium-228 (GFPC)	EPA	TAL SL
Ra226_Ra228 Pos	Combined Radium-226 and Radium-228	TAL-STL	TAL SL
PrecSep_0	Preparation, Precipitate Separation	None	TAL SL
PrecSep-21	Preparation, Precipitate Separation (21-Day In-Growth)	None	TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

TAL-STL = TestAmerica Laboratories, St. Louis, Facility Standard Operating Procedure.

Laboratory References:

TAL SL = Eurofins TestAmerica, St. Louis, 13715 Rider Trail North, Earth City, MO 63045, TEL (314)298-8566

eurofins | Environment Testing TestAmerica

310-193066 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 10.14.20 TIME 1705 Received By: BKM

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other: _____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☐ Yes	☒ No	*If yes:* Cooler # 1 of 2
Cooler Custody Seals Present?	☐ Yes	☐ No	*If yes:* Cooler custody seals intact? ☐ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☐ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☐ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other: _____ ☐ NONE

Thermometer ID: N Correction Factor (°C): TD, D

• Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): Corrected Temp (°C):

• Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:	P125D HNO3	
Uncorrected Temp (°C):	1.9	
Corrected Temp (°C):	1.9	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

eurofins | Environment Testing TestAmerica

Place COC scanning label here

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: SCS

City/State: CITY Clive STATE IA Project: Sutherland

Receipt Information

Date/Time Received: DATE 10.14.20 TIME 1705 Received By: BKM

Delivery Type: ☐ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:_____

Condition of Cooler/Containers

Sample(s) received in Cooler?	☑ Yes	☐ No	*If yes:* Cooler ID:
Multiple Coolers?	☑ Yes	☐ No	*If yes:* Cooler # 2 of 2
Cooler Custody Seals Present?	☑ Yes	☐ No	*If yes:* Cooler custody seals intact? ☑ Yes ☐ No
Sample Custody Seals Present?	☐ Yes	☑ No	*If yes:* Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	☐ Yes	☑ No	*If yes:* Which VOA samples are in cooler? ↓

Temperature Record

Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:_____ ☐ NONE

Thermometer ID: N Correction Factor (°C): TD, J

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): Corrected Temp (°C):

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:	pl 250 HNO3	
Uncorrected Temp (°C):	4.1	
Corrected Temp (°C):	4.1	

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE: If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

Eurofins TestAmerica, Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Fax (319) 277-2425

TestAmerica Des Moines SC
214

Chain of Custody Record

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Client Information	Sampler: Tanten Buszka	Lab PM: Fredrick, Sandie	Carrier Tracking No(s):	COC No: 310-54737-15058.1
Client Contact: Tanten Buszka	Phone: 269-993-0855	E-Mail: sandra.fredrick@eurofinset.com		Page: Page 1 of 1
Company: SCS Engineers				Job #:
Address: 8450 Hickman Road Suite 2027	Due Date Requested:			
City: Clive	TAT Requested (days):			
State, Zip: IA, 50325				
Phone: 269-993-0855	PO #: 25220076			
Email: tbuszka@scsengineers.com	WO #:			
Project Name: Sutherland Generating Station 25220076	Project #: 31011020			
Site:	SSOW#:			

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	903.0, 904.0	6020A - Metals (11)	2540C_Calcd, 9056A_ORGFM_28D, SM4500_H+	Total Number of containers	Special Instructions/Note:
			Preservation Code:				D	D	N		
MW-301	10.13.20	11:23	G	Water	N	N	X	X	X	3	See attached
MW-302	10.13.20	12:50	G	Water	N	N	X	X	X	3	sampling points
MW-303	10.13.20	8:30	G	Water	N	N	X	X	X	3	+ parameters table
MW-304	10.13.20	14:25	G	Water	N	N	X	X	X	3	for requested
MW-305	10.13.20	15:27	G	Water	N	N	X	X	X	3	analyses
MW-306	10.13.20	9:52	G	Water	N	N	X	X	X	3	
Field Blank	10.13.20	15:30	G	Water	N	N	X	X	X	3	
				Water							*Two coolers
											associated with
											this COC (one
											small + one big cooler)*

Preservation Codes:

A - HCL	M - Hexane
B - NaOH	N - None
C - Zn Acetate	O - AsNaO2
D - Nitric Acid	P - Na2O4S
E - NaHSO4	Q - Na2SO3
F - MeOH	R - Na2S2O3
G - Amchlor	S - H2SO4
H - Ascorbic Acid	T - TSP Dodecahydrate
I - Ice	U - Acetone
J - DI Water	V - MCAA
K - EDTA	W - pH 4-5
L - EDA	Z - other (specify)

Other:

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Matthew Cahalan	10/14/20 1030	SCS	[signature]	10.14.20 1105	ETA
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No | Custody Seal No.: | Cooler Temperature(s) °C and Other Remarks:

Ver: 01/16/2019

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Sutherland Generating Station/ SCS Engineers Project #25220076

	Parameter	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	Field Blank	TOTAL
Appendix III Parameters	Boron	x	x	x	x	x	x	x	7
	Calcium	x	x	x	x	x	x	x	7
	Chloride	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	pH	x	x	x	x	x	x	x	7
	Sulfate	x	x	x	x	x	x	x	7
	TDS	x	x	x	x	x	x	x	7
Appendix IV Parameters	Antimony								0
	Arsenic	x	x	x	x	x	x	x	7
	Barium	x	x	x	x	x	x	x	7
	Beryllium	x	x	x	x	x	x	x	7
	Cadmium	x	x	x	x	x	x	x	7
	Chromium	x	x	x	x	x	x	x	7
	Cobalt	x	x	x	x	x	x	x	7
	Fluoride	x	x	x	x	x	x	x	7
	Lead	x	x	x	x	x	x	x	7
	Lithium	x	x	x	x	x	x	x	7
	Mercury								0
	Molybdenum	x	x	x	x	x	x	x	7
	Selenium								0
	Thallium								0
	Radium	x	x	x	x	x	x	x	7
Field Parameters	Groundwater Elevation	x	x	x	x	x	x		6
	Well Depth	x	x	x	x	x	x		6
	pH (field)	x	x	x	x	x	x		6
	Specific Conductance	x	x	x	x	x	x		6
	Dissolved Oxygen	x	x	x	x	x	x		6
	ORP	x	x	x	x	x	x		6
	Temperature	x	x	x	x	x	x		6
	Turbidity	x	x	x	x	x	x		6
	Color	x	x	x	x	x	x		6
	Odor	x	x	x	x	x	x		6

Notes:

I:\25220076.00\Data and Calculations\Field Work Requests\[IPL_Sutherland Generating Station_CCR_Rule_Sampling_2010.xls]Sheet1

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-193066-2

Login Number: 193066
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins TestAmerica, Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: SCS Engineers

Job Number: 310-193066-2

Login Number: 193066
List Number: 2
Creator: Boyd, Jacob C

List Source: Eurofins TestAmerica, St. Louis
List Creation: 10/17/20 12:39 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	N/A	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Tracer/Carrier Summary

Client: SCS Engineers
Job ID: 310-193066-2
Project/Site: Sutherland Generating Station 25220076

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)
		Ba
Lab Sample ID	Client Sample ID	(40-110)
310-193066-1	MW-301	76.5
310-193066-2	MW-302	93.0
310-193066-3	MW-303	63.9
310-193066-4	MW-304	81.5
310-193066-5	MW-305	93.3
310-193066-6	MW-306	87.7
310-193066-7	Field Blank	71.0
LCS 160-486635/1-A	Lab Control Sample	83.3
LCS 160-486732/1-A	Lab Control Sample	83.9
MB 160-486635/23-A	Method Blank	92.7
MB 160-486732/22-A	Method Blank	80.4

Tracer/Carrier Legend

Ba = Ba Carrier

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water **Prep Type: Total/NA**

		Percent Yield (Acceptance Limits)	
		Ba	Y
Lab Sample ID	Client Sample ID	(40-110)	(40-110)
310-193066-1	MW-301	76.5	79.3
310-193066-2	MW-302	93.0	80.7
310-193066-3	MW-303	63.9	72.5
310-193066-4	MW-304	81.5	79.3
310-193066-5	MW-305	93.3	87.5
310-193066-6	MW-306	87.7	78.9
310-193066-7	Field Blank	71.0	73.3
LCS 160-486639/1-A	Lab Control Sample	83.3	85.2
LCS 160-486741/1-A	Lab Control Sample	83.9	80.7
MB 160-486639/23-A	Method Blank	92.7	83.7
MB 160-486741/22-A	Method Blank	80.4	81.9

Tracer/Carrier Legend

Ba = Ba Carrier
Y = Y Carrier

Appendix D

Historical Monitoring Results

Single Location

Name: IPL - Sutherland Generating Station

Location ID:	MW-301														
Number of Sampling Dates:	14														
Parameter Name	**Units**	**3/27/2018**	**5/23/2018**	**6/26/2018**	**7/26/2018**	**9/11/2018**	**11/28/2018**	**1/9/2019**	**2/12/2019**	**4/2/2019**	**10/16/2019**	**12/11/2019**	**2/3/2020**	**4/7/2020**	**10/13/2020**
Boron	ug/L	246	189	274	212	234	188	82.7	97.3	<110	170	<110	120	<100	370
Calcium	mg/L	71.2	85.9	59.5	83.1	89.8	78.8	88.7	84.2	82	82	75	82	78	100
Chloride	mg/L	15.5	46.2	6	58.6	38.2	37.5	51.4	42.1	39	37	16	28	21	71
Field pH	Std. Units	6.84	7.62	7.5	6.46	6.82	6.6	6.83	6.85	7.16	6.97	6.69	6.79	6.87	6.66
Fluoride	mg/L	0.15	0.22	0.26	0.27	0.2	0.2	<0.19	<0.19	0.5	0.27	<0.23	--	0.41	<0.23
Sulfate	mg/L	79	78.1	46.9	73.4	71.9	61.9	60.9	63	46	28	29	32	17	98
Total Dissolved Solids	mg/L	399	489	326	433	439	426	418	420	400	340	360	380	330	540
Antimony	ug/L	0.13	0.18	0.27	<0.15	0.78	<0.078	0.33	0.2	--	--	<0.53	--	<0.58	--
Arsenic	ug/L	0.45	2.4	1.6	1.4	16.2	0.84	0.95	1.6	--	--	<0.75	<0.88	<0.88	<0.88
Barium	ug/L	98	254	137	324	1110	140	135	132	--	--	130	120	240	110
Beryllium	ug/L	0.014	0.3	<0.12	0.48	1.3	<0.089	0.17	0.16	--	--	<0.27	--	0.33	<0.27
Cadmium	ug/L	0.037	0.11	<0.07	0.28	0.6	0.053	0.11	0.11	--	--	0.086	0.047	0.17	0.077
Chromium	ug/L	2.2	3.5	2.6	1.7	20.8	0.5	0.9	2	--	--	<0.98	--	1.1	<1.1
Cobalt	ug/L	0.43	3.8	1.6	3.5	21.7	1.1	0.93	2.6	--	--	0.99	0.75	1.6	0.28
Lead	ug/L	0.33	2.5	1.5	1.6	19.1	0.58	0.73	2	--	--	0.46	0.34	0.5	<0.11
Lithium	ug/L	6.5	<4.6	6.2	11.4	12.6	<4.6	<4.6	7.7	--	--	3.5	2.7	3.4	3.2
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--
Molybdenum	ug/L	4.4	1.4	8.5	0.44	13.6	<0.57	0.99	3.6	--	--	<1.1	<1.1	<1.1	2.5
Selenium	ug/L	2.7	3.3	2.3	5.8	8.3	1.8	1.2	0.81	--	--	<1	--	<1	--
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	0.43	<0.099	<0.099	0.11	--	--	<0.27	--	<0.26	--
Total Radium	pCi/L	0.18	0.429	0.637	3.32	2.53	0.875	1.79	1.1	--	--	1.06	0.388	0.291	0.463
Radium-226	pCi/L	-0.171	0	0.342	0.713	1.58	0.51	0.915	0.462	--	--	0.083	0.0951	0.291	0.0851
Radium-228	pCi/L	0.18	0.429	0.295	2.61	0.949	0.365	0.876	0.638	--	--	0.973	0.293	-0.02	0.378
pH at 25 Degrees C	Std. Units	7	6.8	7.4	6.8	6.7	7	6.9	7.2	7.1	7.2	7	7.3	6.8	6.8
Field Specific Conductance	umhos/cm	645.7	738	518	673	688	459	417	601	618	642	550	651	583.7	906
Field Temperature	deg C	7.1	10.8	14.6	14.9	19.2	13.61	8.88	5.8	4.89	17.84	12.4	9.54	11	17.8
Oxygen, Dissolved	mg/L	0.32	0.57	3.07	0.29	0.24	0.37	0.48	0.37	1.48	0.16	0.34	3.24	0.13	0.11
Field Oxidation Potential	millivolts	62.7	185	227	159	117.4	-76.2	74.1	75.8	58.7	34.7	84.1	61.7	143.1	30
Groundwater Elevation	ft	855.23	855.45	856.24	855.96	857.41	856.99	856.85	856.59	857.33	856.15	857.05	856.24	856.16	854.44
Turbidity	NTU	11.6	73.98	35.03	240.2	410.3	112	172	56.09	65	11.4	51.94	19.1	68.5	19.1

Single Location

Name: IPL - Sutherland Generating Station

Location ID:	MW-302														
Number of Sampling Dates:	14														
Parameter Name	**Units**	**3/27/2018**	**5/23/2018**	**6/26/2018**	**7/26/2018**	**9/11/2018**	**11/28/2018**	**1/9/2019**	**2/12/2019**	**4/2/2019**	**10/16/2019**	**12/12/2019**	**2/3/2020**	**4/7/2020**	**10/13/2020**
Boron	ug/L	58.4	53.7	65.3	53.8	22.4	36.6	36.7	31.5	<110	<110	<110	<100	<100	<80
Calcium	mg/L	67.4	67.3	69.9	80.3	77.9	65	65.4	61.7	63	57	58	56	71	71
Chloride	mg/L	14	9.4	12.4	10.7	10.1	5.5	4.5	5.3	5.6	5.5	4.7	3.8	5.2	5.6
Field pH	Std. Units	7.2	7.31	7.3	6.99	7.3	7.2	7.34	7.21	7.5	7.22	6.98	7.31	7.36	7.43
Fluoride	mg/L	0.24	0.24	0.21	0.24	0.24	0.22	0.2	0.21	0.6	0.28	<0.23	--	0.55	0.3
Sulfate	mg/L	68.5	41.3	56	58.7	52.5	25.5	21.9	21.2	20	19	14	17	14	12
Total Dissolved Solids	mg/L	309	322	352	360	356	272	255	256	270	200	240	250	250	260
Antimony	ug/L	0.41	2.8	0.68	0.29	0.31	0.26	0.59	0.22	--	--	<0.53	--	<0.58	--
Arsenic	ug/L	1.4	5.8	8.5	10.2	8.5	5.9	10.8	2.8	--	--	6.1	19	5.3	4.6
Barium	ug/L	93.6	105	124	132	117	112	108	83.7	--	--	81	100	97	100
Beryllium	ug/L	<0.012	<0.12	0.19	<0.12	<0.12	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	<0.27
Cadmium	ug/L	0.028	<0.07	<0.07	<0.07	<0.07	<0.033	0.054	<0.033	--	--	<0.039	<0.039	<0.039	<0.049
Chromium	ug/L	0.35	<0.19	0.26	0.25	0.26	0.22	0.45	0.14	--	--	<0.98	--	<1.1	<1.1
Cobalt	ug/L	1.8	3.5	5.7	3.4	4.2	8.4	5	6.2	--	--	1.3	3.7	1.7	0.77
Lead	ug/L	0.19	<0.12	<0.12	0.15	<0.12	0.34	0.17	<0.13	--	--	<0.27	<0.27	<0.27	<0.11
Lithium	ug/L	5.2	<4.6	<4.6	7.8	<4.6	<4.6	<4.6	7.5	--	--	2.8	<2.3	<2.3	2.8
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--
Molybdenum	ug/L	1.2	1.2	0.68	1	1.2	<0.57	1.3	0.76	--	--	<1.1	<1.1	<1.1	<1.1
Selenium	ug/L	8	1	3.9	0.56	0.58	0.73	0.88	0.67	--	--	<1	--	<1	--
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--
Total Radium	pCi/L	0.304	0.926	0.68	0.856	1.59	1.47	1.96	0.943	--	--	0.828	0.808	0.547	0.58
Radium-226	pCi/L	0	0.392	-0.084	0.341	0.758	1.03	0.926	0.196	--	--	0.294	0.299	0.171	0.214
Radium-228	pCi/L	0.304	0.534	0.68	0.515	0.829	0.436	1.03	0.747	--	--	0.534	0.509	0.376	0.365
pH at 25 Degrees C	Std. Units	7.4	7.5	7.5	7.1	6.9	7.6	7.3	7.4	7.5	7.6	7.5	7.5	7.3	7.4
Field Specific Conductance	umhos/cm	546.5	527	603	623	593	319	302	393.6	437	431	394	464	456.2	463.6
Field Temperature	deg C	7.4	9.9	11.8	12.4	13.9	11.96	10.73	9.7	9.53	12.8	11	9.42	11.3	13.2
Oxygen, Dissolved	mg/L	2.39	0.1	0.3	0.16	0.26	0.21	0.17	0.13	0.79	0.24	0.46	0.95	0.14	0.11
Field Oxidation Potential	millivolts	79.3	-89	-51	-102	-58.3	-98	5.8	-42.7	10	-32.9	-45.9	5.6	-80.4	-103.6
Groundwater Elevation	ft	855.97	855.32	856.55	855.75	857.06	856.74	856.82	856.43	857.12	855.3	856.11	856.59	856.23	854.38
Turbidity	NTU	5.9	17.12	2.85	10.83	3.03	31.7	22.5	4.7	12.9	4.9	5.12	2.87	6.32	3.7

Single Location

Name: IPL - Sutherland Generating Station

Location ID:	MW-303														
Number of Sampling Dates:	14														
Parameter Name	**Units**	**3/27/2018**	**5/23/2018**	**6/26/2018**	**7/26/2018**	**9/11/2018**	**11/28/2018**	**1/9/2019**	**2/12/2019**	**4/2/2019**	**10/16/2019**	**12/12/2019**	**2/3/2020**	**4/7/2020**	**10/13/2020**
Boron	ug/L	619	799	989	852	597	696	609	737	730	740	570	440	530	710
Calcium	mg/L	265	116	106	113	109	134	206	160	140	120	130	160	110	120
Chloride	mg/L	22.8	25.5	24	29.6	32.9	29.2	25.8	28	28	12	15	12	11	14
Field pH	Std. Units	7.19	8.92	7.89	7.33	7.82	7.2	6.96	7.02	7.29	6.97	6.82	6.84	7.17	7.12
Fluoride	mg/L	0.49	0.54	0.46	0.56	0.51	0.56	0.41	0.5	0.85	0.55	<0.23	--	0.68	0.44
Sulfate	mg/L	745	208	185	474	195	348	482	377	330	310	270	350	210	190
Total Dissolved Solids	mg/L	1360	658	658	597	628	797	1080	852	800	660	740	830	570	610
Antimony	ug/L	0.072	<0.15	<0.15	<0.15	0.18	<0.078	0.16	0.1	--	--	<0.53	--	<0.58	--
Arsenic	ug/L	0.11	1.3	2.5	2	2.2	1.3	0.91	1.1	--	--	0.82	<0.88	<0.88	1.6
Barium	ug/L	66.9	31.7	32.6	37.4	33.9	48.4	63.4	57.7	--	--	47	55	41	65
Beryllium	ug/L	<0.012	<0.12	0.83	<0.12	<0.12	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	<0.27
Cadmium	ug/L	0.14	<0.07	0.073	<0.07	0.093	<0.033	0.084	0.037	--	--	<0.039	<0.039	0.2	<0.049
Chromium	ug/L	0.086	<0.19	0.23	<0.19	0.29	<0.078	0.36	0.62	--	--	<0.98	--	<1.1	<1.1
Cobalt	ug/L	0.54	0.42	0.48	0.65	0.58	0.89	1.2	1.4	--	--	0.95	1.3	0.53	1
Lead	ug/L	0.1	<0.12	0.13	<0.12	0.22	<0.13	0.32	0.35	--	--	<0.27	<0.27	0.31	<0.11
Lithium	ug/L	38.4	35.9	37.9	37.3	35.3	30.7	28.2	36.5	--	--	27	22	23	26
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--
Molybdenum	ug/L	12.9	32.7	22.6	30.8	26.3	32.6	18.4	20.9	--	--	19	11	23	22
Selenium	ug/L	1.6	<0.16	0.61	<0.16	0.18	<0.085	0.18	0.097	--	--	<1	--	<1	--
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--
Total Radium	pCi/L	0.618	0.699	0.941	0.744	0.317	0.921	1.25	1.19	--	--	0.931	0.159	1.18	0.531
Radium-226	pCi/L	0.0803	0.115	0.381	0.316	0.0751	0.389	0.459	0.12	--	--	0.078	0.0473	0.0691	0.19
Radium-228	pCi/L	0.538	0.584	0.56	0.428	0.242	0.532	0.788	1.07	--	--	0.852	0.111	1.11	0.342
pH at 25 Degrees C	Std. Units	7.1	7.7	8.1	7.7	7.7	6.8	7	7.2	7.3	7.2	7.2	7.2	7.1	7.3
Field Specific Conductance	umhos/cm	1806	923	921	914	921	710	835	1087	1077	1037	1004	1173	814	888
Field Temperature	deg C	7.2	11.9	13.1	13.8	16	11.38	8.11	8.9	10.57	15.23	10.4	7.99	11.3	14.4
Oxygen, Dissolved	mg/L	0.39	0.05	0.24	0.21	0.24	0.28	0.61	0.11	0.78	0.24	1.02	1.89	0.13	0.2
Field Oxidation Potential	millivolts	81.4	24	74	15	106.5	12.9	66.1	39.2	61	35	52.8	60.1	124.3	-74.2
Groundwater Elevation	ft	854.35	854.07	854.97	854.14	855.96	855.01	855.11	854.58	855.6	854.9	854.47	854.57	854.63	851.7
Turbidity	NTU	3.27	3.19	3.04	0.51	1.77	1.16	14.6	5.96	2.44	3.16	15.07	5.25	3.58	2.38

Single Location

Name: IPL - Sutherland Generating Station

Location ID:	MW-304														
Number of Sampling Dates:	14														
Parameter Name	**Units**	**3/26/2018**	**5/23/2018**	**6/26/2018**	**7/26/2018**	**9/11/2018**	**11/28/2018**	**1/9/2019**	**2/12/2019**	**4/2/2019**	**10/16/2019**	**12/12/2019**	**2/3/2020**	**4/7/2020**	**10/13/2020**
Boron	ug/L	575	604	736	795	715	751	665	649	590	840	660	560	580	830
Calcium	mg/L	155	145	121	138	151	149	164	174	180	170	150	150	150	150
Chloride	mg/L	30.8	35.1	32.1	31.2	29.7	27.4	24.6	28.3	29	23	17	21	15	11
Field pH	Std. Units	7.08	7.64	7.24	7.6	7.04	6.6	6.71	6.27	6.85	6.72	6.47	6.71	6.68	6.64
Fluoride	mg/L	0.33	0.46	0.62	0.56	0.55	0.31	0.22	0.26	0.67	0.6	<0.23	--	0.49	<0.23
Sulfate	mg/L	371	366	339	363	405	375	372	442	450	400	360	360	350	330
Total Dissolved Solids	mg/L	820	785	782	791	860	853	841	902	910	840	840	800	750	800
Antimony	ug/L	0.041	<0.15	<0.15	<0.15	0.28	<0.078	0.13	0.11	--	--	<0.53	--	<0.58	--
Arsenic	ug/L	<0.052	0.23	0.37	0.39	0.64	0.46	0.45	0.26	--	--	<0.75	<0.88	<0.88	<0.88
Barium	ug/L	21.3	18.7	24.3	24.5	24.1	29	24.6	23	--	--	28	24	22	21
Beryllium	ug/L	<0.012	<0.12	0.69	<0.12	0.19	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	<0.27
Cadmium	ug/L	0.08	0.14	0.19	0.1	0.3	0.085	0.12	0.078	--	--	<0.039	0.36	0.079	0.075
Chromium	ug/L	0.28	<0.19	0.6	<0.19	0.36	0.11	0.44	0.24	--	--	<0.98	--	<1.1	<1.1
Cobalt	ug/L	0.093	<0.15	0.22	<0.15	0.35	0.45	0.27	0.23	--	--	0.41	0.19	0.28	0.11
Lead	ug/L	0.094	<0.12	0.35	<0.12	0.32	0.17	0.2	<0.13	--	--	<0.27	<0.27	<0.27	<0.11
Lithium	ug/L	10.1	6.9	15.6	11	10.9	<4.6	<4.6	5.7	--	--	2.9	<2.3	<2.3	2.8
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--
Molybdenum	ug/L	1.6	2	17.2	7.8	6.6	1.2	1	0.82	--	--	1.3	1.5	<1.1	1.4
Selenium	ug/L	0.18	<0.16	0.5	<0.16	0.32	<0.085	0.21	0.12	--	--	<1	--	<1	--
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	0.26	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--
Total Radium	pCi/L	0.48	0.523	0.466	0.556	0.201	1.56	1.17	0.404	--	--	0.373	0.0516	0.494	0.606
Radium-226	pCi/L	0	0.174	0.0806	0.165	0.125	0.57	0.461	0.225	--	--	0.0285	0.043	0.0606	0.0947
Radium-228	pCi/L	0.48	0.349	0.385	0.391	0.0761	0.993	0.706	0.179	--	--	0.344	0.00857	0.433	0.511
pH at 25 Degrees C	Std. Units	7.1	7.2	7.5	7.1	6.9	7.7	6.7	6.8	6.8	7.1	6.7	7	6.7	6.8
Field Specific Conductance	umhos/cm	1166	1084	1076	1131	1175	731	690	1057	1170	1158	1083	1149	1016	1033
Field Temperature	deg C	8.5	10.5	11.2	14	16.3	11.28	8.65	8.2	7.59	14.12	10.5	8.09	10.4	14.5
Oxygen, Dissolved	mg/L	0.47	0.1	0.17	0.15	0.08	0.37	0.43	0.14	1.35	0.87	0.37	1.87	0.28	6.2
Field Oxidation Potential	millivolts	114.3	107	121	98	53.4	-39.3	76	59.5	57.1	39.1	75.1	62.5	95.1	39.1
Groundwater Elevation	ft	853.79	853.92	854.64	853.86	855.66	854.79	854.93	854.41	855.47	854.78	854.29	854.35	854.54	851.3
Turbidity	NTU	6.71	0.6	3.68	3.62	1.35	22.7	15.5	6.27	1.18	1.58	0.19	1.59	2.12	1.68

Single Location

Name: IPL - Sutherland Generating Station

Location ID:	MW-305															
Number of Sampling Dates:	15															
Parameter Name	**Units**	**3/26/2018**	**5/23/2018**	**6/26/2018**	**7/26/2018**	**9/11/2018**	**11/28/2018**	**1/9/2019**	**2/12/2019**	**4/2/2019**	**10/16/2019**	**12/12/2019**	**2/3/2020**	**4/7/2020**	**5/11/2020**	**10/13/2020**
Boron	ug/L	815	741	1110	1200	992	920	847	809	660	1100	760	930	850	--	1400
Calcium	mg/L	173	124	96.4	108	124	152	166	139	160	140	160	140	170	--	140
Chloride	mg/L	21.9	31.5	29.5	26.9	25.3	17.4	17.5	19.9	15	23	15	17	12	--	17
Field pH	Std. Units	6.99	7.93	7.61	7.22	7.1	6.63	6.71	6.82	6.9	6.94	6.52	6.61	6.7	5.97	7.33
Fluoride	mg/L	0.54	0.63	0.64	0.74	0.72	0.53	0.44	0.6	1.4	0.77	<0.23	--	0.69	--	0.46
Sulfate	mg/L	495	365	317	315	407	445	482	387	490	410	450	440	450	--	410
Total Dissolved Solids	mg/L	893	742	667	647	734	935	965	777	990	790	960	850	900	--	790
Antimony	ug/L	0.075	<0.15	<0.15	<0.15	<0.15	0.27	0.13	0.092	--	--	<0.53	--	<0.58	--	--
Arsenic	ug/L	5.9	8.6	6.9	8.6	9.1	65.9	12.9	6.9	--	--	7.6	6.3	8.8	--	11
Barium	ug/L	34.8	32.2	36.1	35.7	42.2	167	49	27.9	--	--	45	32	41	--	52
Beryllium	ug/L	0.012	<0.12	0.78	<0.12	<0.12	0.1	<0.089	<0.089	--	--	<0.27	--	<0.27	--	<0.27
Cadmium	ug/L	0.071	<0.07	<0.07	<0.07	<0.07	0.1	0.07	0.043	--	--	<0.039	<0.039	<0.039	--	<0.049
Chromium	ug/L	0.69	0.62	0.45	<0.19	1.3	0.25	0.32	0.52	--	--	<0.98	--	<1.1	--	<1.1
Cobalt	ug/L	2.7	1.4	0.74	0.83	1.6	2.8	2.2	2	--	--	1.5	1.6	2.1	--	0.6
Lead	ug/L	0.39	0.43	0.19	0.16	0.76	0.58	0.17	0.35	--	--	0.38	<0.27	0.48	--	<0.11
Lithium	ug/L	21.3	14.2	21.8	17.8	16.2	16.9	8.3	18.6	--	--	16	10	12	--	22
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	--
Molybdenum	ug/L	25.8	32.5	29.3	38	35.3	21.5	23.8	27.3	--	--	24	18	20	--	36
Selenium	ug/L	0.34	0.3	0.59	<0.16	1.1	0.44	0.24	0.31	--	--	<1	--	<1	--	--
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	--
Total Radium	pCi/L	0.0087	1.05	0	1.27	1.15	2.23	1.33	0.852	--	--	1.54	0.51	3.1	0.557	0.986
Radium-226	pCi/L	-0.344	0.59	0	0.942	0.638	1.08	0.564	0.459	--	--	0.167	0.119	0.84	0.226	0.42
Radium-228	pCi/L	0.0087	0.458	-0.116	0.33	0.516	1.15	0.764	0.393	--	--	1.37	0.39	2.26	0.332	0.567
pH at 25 Degrees C	Std. Units	7	7.4	7.7	7.3	6.9	7	6.9	7	6.9	7.2	6.9	6.9	6.7	--	7.4
Field Specific Conductance	umhos/cm	1262	1012	939	935	1029	773	817	939	1168	1061	1178	1200	1198	1215	1029
Field Temperature	deg C	9.7	11	12.1	13.3	17.9	12.24	10.3	9.4	8.49	13.81	11.4	9.9	10.2	9.1	14.8
Oxygen, Dissolved	mg/L	0.1	0.08	0.21	0.12	0.08	0.23	0.17	0.08	0.96	0.4	0.27	1.09	0.2	0.12	0.12
Field Oxidation Potential	millivolts	11.9	-134	-102	-116	-77.2	-117.7	60.9	23.6	47	24.7	50.5	57.8	-6.6	20.2	-79.3
Groundwater Elevation	ft	853.64	853.99	854.55	854	855.94	854.87	854.94	854.56	855.67	854.99	854.33	854.28	854.64	853.78	851.32
Turbidity	NTU	11.12	14.96	4.69	8.39	15.83	119	3.64	12.33	6.46	2.17	78.41	4.9	8.14	2.98	3.75

Single Location

Name: IPL - Sutherland Generating Station

Location ID:	MW-306															
Number of Sampling Dates:	15															
Parameter Name	**Units**	**3/27/2018**	**5/23/2018**	**6/26/2018**	**7/26/2018**	**9/11/2018**	**11/28/2018**	**1/9/2019**	**2/12/2019**	**4/2/2019**	**10/16/2019**	**12/12/2019**	**2/3/2020**	**4/7/2020**	**5/11/2020**	**10/13/2020**
Boron	ug/L	1100	1790	2090	2120	2160	2990	3260	3350	3200	2500	2400	2500	2500	--	3800
Calcium	mg/L	213	201	172	199	201	166	194	183	130	200	210	220	220	--	230
Chloride	mg/L	30.8	35.1	30.2	32	29.7	14.1	18.9	18	16	13	11	12	14	--	21
Field pH	Std. Units	7.94	9.46	7.74	7.38	7.68	7.41	7.44	7.61	7.81	7.38	7.5	7.61	7.72	7.08	7.62
Fluoride	mg/L	0.46	0.5	0.5	0.56	0.63	0.53	0.44	0.48	0.93	0.38	<0.23	--	0.75	--	0.65
Sulfate	mg/L	622	709	639	824	736	87.4	533	597	220	460	480	550	560	--	400
Total Dissolved Solids	mg/L	1160	1160	1110	1160	1170	955	1090	1020	750	1000	1100	1100	1100	--	1200
Antimony	ug/L	0.056	<0.15	<0.15	<0.15	<0.15	<0.078	0.11	0.09	--	--	<0.53	--	<0.58	--	--
Arsenic	ug/L	3.6	3.1	3.3	3.4	3.8	5.2	4.7	3.9	--	--	4.3	4.6	3.6	--	4.4
Barium	ug/L	91.7	93.4	88.6	95.9	87.4	78.3	88	75	--	--	98	100	99	--	110
Beryllium	ug/L	<0.012	<0.12	0.49	<0.12	<0.12	<0.089	<0.089	<0.089	--	--	<0.27	--	<0.27	--	<0.27
Cadmium	ug/L	0.027	<0.07	<0.07	<0.07	<0.07	0.041	0.056	0.036	--	--	<0.039	<0.039	0.045	--	<0.049
Chromium	ug/L	0.1	<0.19	<0.19	<0.19	<0.19	<0.078	0.26	0.23	--	--	<0.98	--	<1.1	--	<1.1
Cobalt	ug/L	0.66	0.81	0.6	0.64	0.57	0.57	0.68	0.72	--	--	0.75	0.85	0.66	--	0.68
Lead	ug/L	0.063	<0.12	<0.12	<0.12	<0.12	<0.13	<0.13	<0.13	--	--	<0.27	<0.27	<0.27	--	<0.11
Lithium	ug/L	37.1	28.6	29.9	32.2	31.5	36.8	35.6	43.7	--	--	40	39	40	42	52
Mercury	ug/L	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.09	<0.037	--	--	<0.1	--	<0.1	--	--
Molybdenum	ug/L	35.8	36.4	36.1	44.5	38.2	45.6	39.6	40.6	--	--	40	38	36	--	42
Selenium	ug/L	<0.086	<0.16	0.38	<0.16	<0.16	<0.085	0.13	<0.085	--	--	<1	--	<1	--	--
Thallium	ug/L	<0.036	<0.14	<0.14	<0.14	<0.14	<0.099	<0.099	<0.099	--	--	<0.27	--	<0.26	--	--
Total Radium	pCi/L	0.996	0.0586	0.86	0	0.982	1.12	1.4	0.966	--	--	1.58	0.214	0.36	--	0.51
Radium-226	pCi/L	-0.074	0.0586	0.351	0	0.361	0.515	0.324	0.376	--	--	0.0272	0.0568	-0.0459	--	0.224
Radium-228	pCi/L	0.996	-0.195	0.509	-0.435	0.621	0.605	1.08	0.59	--	--	1.56	0.157	0.36	--	0.286
pH at 25 Degrees C	Std. Units	7.7	7.8	7.8	7.6	7.4	6.7	7.7	7.7	7.9	7.9	7.8	7.8	7.6	--	7.8
Field Specific Conductance	umhos/cm	1509	1432	1395	1468	1469	814	871	1140	907	1294	1329	1446	1428	1557	1445
Field Temperature	deg C	10.3	11.9	12.9	14	15.7	12.53	10.73	10.7	10.79	13.09	11.6	10.86	11.1	10.7	15
Oxygen, Dissolved	mg/L	0.1	0.06	0.08	0.05	0.03	0.32	0.29	0.08	1.37	0.28	0.32	1.46	0.12	0.1	0.09
Field Oxidation Potential	millivolts	0.3	-17	5	12	-172.7	2.1	39.8	-113.1	25.7	43.4	30.8	72.7	209.2	123.2	-97.4
Groundwater Elevation	ft	853.49	854.11	854.57	853.94	856.48	854.91	854.94	854.75	855.96	852.16	854.39	854.14	854.7	853.71	851.13
Turbidity	NTU	1.09	1.82	0.72	3.29	1	1.75	0.64	4.78	0.78	1.81	0.78	0.74	0.58	1.43	0.02

Appendix E

Statistical Evaluation

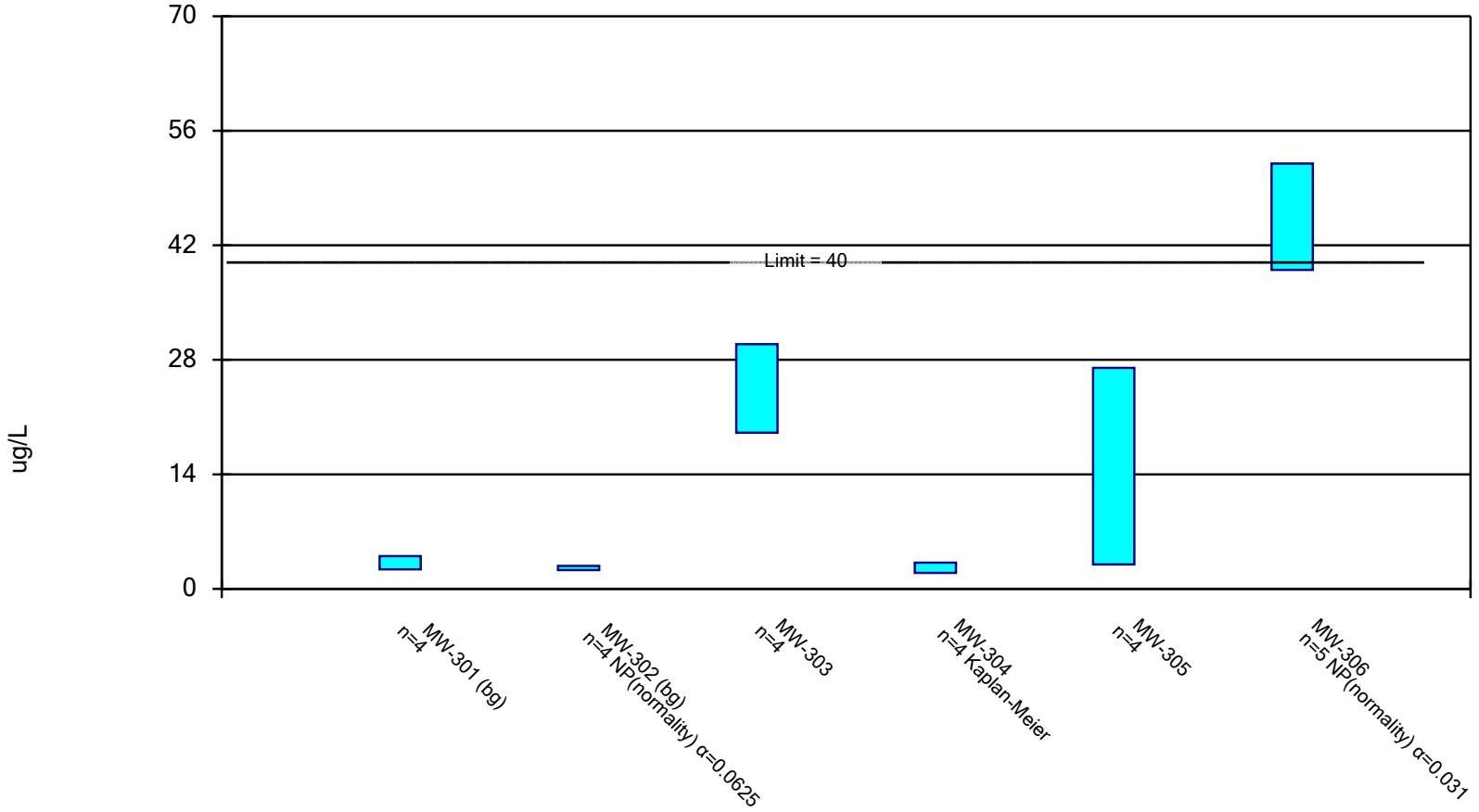
Confidence Interval

Sutherland Generating Station Client: SCS Engineers Data: SUT- Chempoint- export-Dec2020 Printed 2/11/2021, 5:38 PM

Constituent	Well	Upper Lim.	Lower Lim.	Compliance	Sig.	N	%NDs	ND Adj.	Transform	Alpha	Method
Lithium (ug/L)	MW-301 (bg)	4.008	2.392	40	No	4	0	None	No	0.01	Param.
Lithium (ug/L)	MW-302 (bg)	2.8	2.3	40	No	4	50	None	No	0.0625	NP (normality)
Lithium (ug/L)	MW-303	29.9	19.1	40	No	4	0	None	No	0.01	Param.
Lithium (ug/L)	MW-304	3.204	1.946	40	No	4	50	Kapla...	No	0.01	Param.
Lithium (ug/L)	MW-305	27.01	2.986	40	No	4	0	None	No	0.01	Param.
Lithium (ug/L)	MW-306	52	39	40	No	5	0	None	No	0.031	NP (normality)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Lithium Analysis Run 2/11/2021 5:36 PM

Sutherland Generating Station Client: SCS Engineers Data: SUT- Chempoint- export-Dec2020

Confidence Interval

Constituent: Lithium (ug/L) Analysis Run 2/11/2021 5:38 PM

Sutherland Generating Station Client: SCS Engineers Data: SUT- Chempoint- export-Dec2020

	MW-301 (bg)	MW-302 (bg)	MW-303	MW-304	MW-305	MW-306
12/11/2019	3.5 (J)					
12/12/2019		2.8 (J)	27	2.9 (J)	16	40
2/3/2020	2.7 (J)	<2.3 (U)	22	<2.3 (U)	10	39
4/7/2020	3.4 (J)	<2.3 (U)	23	<2.3 (U)	12	40
5/11/2020						42
10/13/2020	3.2 (J)	2.8 (J)	26	2.8 (J)	22	52
Mean	3.2	2.55	24.5	2.575	15	42.6
Std. Dev.	0.3559	0.2887	2.38	0.3202	5.292	5.367
Upper Lim.	4.008	2.8	29.9	3.204	27.01	52
Lower Lim.	2.392	2.3	19.1	1.946	2.986	39