2021 Annual Groundwater Monitoring and Corrective Action Report

Zero Liquid Discharge Pond Ottumwa Generating Station 20775 Power Plant Road Ottumwa, Iowa

Prepared for:



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

SCS ENGINEERS

25221072.00 | July 29, 2022

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OVERVIEW OF CURRENT STATUS

Ottumwa Generating Station, Zero Liquid Discharge Pond 2021 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 for the Zero Liquid Discharge Pond at the Ottumwa Generating Station (OGS) monitors a single existing CCR unit. 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 an SSI 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	<u>April 2021</u>			
	Appendix III to this part and the names of the monitoring wells associated with such	Boron: MW-309			
	an increase; and	Calcium: MW-307, MW-308, MW-309			
		Chloride: MW-307, MW-308			
		Field pH: MW-309			
		Sulfate: MW-308, MW-309			
		Total Dissolved Solids: MW-307, MW-308, MW-309			
		<u>July 2021</u>			
		Field pH: MW-307			

Category	Rule Requirement	Site Status
		October 2021
		Boron: MW-309
		Calcium: MW-307, MW-308, MW-309
		Chloride: MW-307, MW-308
		Field pH: MW-309
		Sulfate: MW-308, MW-309
		Total Dissolved Solids: MW-307, MW-308, MW-309
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	January 13, 2020
Statistically Significant Levels (SSL) Above Groundwater	(iv) If it was determined that there was an SSL above the GPS for one or more constituents listed in Appendix IV to this part pursuant to §257.95(g) include all of the following:	
Protection	(A) Identify those constituents listed in	February 2021
Standard (GPS)	Appendix IV to this part and the names of the monitoring wells associated with such	Cobalt: MW-307
	an increase;	<u>April 2021</u>
		Cobalt: MW-307
		July 2021
		Cobalt: MW-307
		October 2021
		Cobalt: MW-307
	(B) Provide the date when the Assessment of Corrective Measures (ACM) was initiated for the CCR unit;	Not Applicable in 2021, Alternative Source Demonstration completed August 30, 2021. ACM initiated May 9, 2022
	(C) Provide the date when the public meeting was held for the ACM for the CCR unit; and	Not Applicable – ACM in progress
	(D) Provide the date when the ACM was completed for the CCR unit.	Not Applicable – ACM in progress

Category	Rule Requirement	Site Status
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 – ACM in progress in 2022
Corrective Action	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable – ACM in progress in 2022



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1.0 INTRODUCTION

This 2021 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the "Coal Combustion Residuals (CCR) Final Rule" published by the U.S. Environmental Protection Agency (U.S. EPA) in the *Hazardous and Solid Waste Management System; Disposal of Coal Combustion Residuals from Electric Utilities;* Final Rule, dated April 17, 2015 (U.S. EPA, 2015) and subsequent amendments. Specifically, this report was prepared to fulfill the requirements of 40 Code of Federal Regulations (CFR) 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 2021 Annual Groundwater Monitoring and Corrective Action Report for the CCR unit.

This report covers the period of groundwater monitoring from January 1, 2021, through December 31, 2021.

The groundwater monitoring system for the Zero Liquid Discharge Pond (ZLDP) at the Ottumwa Generating Station (OGS) monitors a single inactive CCR unit:

• OGS ZLDP (inactive CCR surface impoundment)

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

The OGS Ash Pond is a separate CCR unit at the OGS facility. The annual groundwater monitoring and corrective action report for this existing CCR unit is submitted separately by January 31 of each year in accordance with 40 CFR 257.90(e).

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 report requirement sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Geologic Information

The uppermost aquifer unit at the site, as defined under 40 CFR 257.53, is the Mississippian bedrock aquifer and hydraulically connected overlying unconsolidated deposits. Regionally, unconsolidated alluvial aquifers near the Des Moines River and deeper bedrock aquifers are both used for water supply. The thickness and water-producing capacity of the unconsolidated material in the area is variable. A summary of the regional hydrogeologic stratigraphy is included in **Appendix A**.

The bedrock surface elevation is highly variable due to erosion. A map showing regional bedrock surface topography is included in **Appendix A**.

Although not encountered in drilling at the OGS site, the uppermost bedrock unit in the surrounding region consists of Pennsylvanian shales with minor siltstone, sandstone, limestone, and coal intervals. The continuity of these minor beds is highly variable. The Pennsylvanian bedrock unit is considered to be a regional aquitard. The thickness of the Pennsylvanian shale is variable; in some areas of Wapello County it is over 100 feet thick, while in other areas it is absent. The variation in thickness is due to erosion of the bedrock surface. Based on the available boring logs from the OGS site, it appears that the Pennsylvanian shale is absent at the site.

Underlying the Pennsylvanian shales are Mississippian limestone and dolomite, with some shale and sandstone. A map showing the elevation of the top of the Mississippian limestone in Southeastern lowa is included in **Appendix A**. The Mississippian unit is the shallowest regional bedrock aquifer.

The Devonian units underlying the Mississippian are composed of shale, dolomite, and limestone, and are in turn underlain by Silurian dolomite and Cambrian-Ordovician dolomite and sandstone. The Cambrian-Ordovician aquifer is commonly the source of municipal and industrial high-capacity wells in the region (Coble, 1971).

Groundwater flow within the Mississippian limestone is generally to the east. A map showing the regional potentiometric surface in the Mississippian limestone is included with the hydrogeologic background information presented in **Appendix A**.

2.1.2 Site Information

Site boring logs indicate that the unconsolidated material at the site is thin (approximately 7 to 20 feet in thickness) and consists of overlying clay and sand. The unconsolidated material at these well locations is generally clay, silt, and sand, and the uppermost bedrock appears to be weathered. During excavation of CCR as part of the 2021 site closure activities, organic material such as buried trees and other vegetation were observed and removed from the southeast corner of the site. The total boring depths were between 15 and 28 feet and weathered bedrock was encountered at depths between 19 and 21 feet below ground surface at the downgradient monitoring wells, bedrock was encountered at 7 feet below ground surface at the upgradient/background monitoring well MW-301. Boring logs, well construction and development documentation for MW-301 and MW-307 through MW-309 are included in Appendix B.

IPL issued a Notification of Intent to Close for the OGS ZLD Pond in November 2020, and the OGS ZLD Pond was closed by removal in accordance with 40 CFR 257.102(c). The OGS ZLD Pond was dewatered and CCR material was removed and relocated to the OGS Ash Pond (completed in October 2021). A new low volume wastewater treatment pond was constructed in the former OGS ZLD Pond footprint, with a new geosynthetic pond liner. The new low volume wastewater treatment pond is not a CCR unit. Closure activities for the OGS ZLD Pond were completed in December 2021 and are documented in the April 14, 2022 Construction Documentation Report ZLDP Closure and Low Volume Wastewater Treatment Pond (LVWTP) Construction (SCS Engineers, 2022).

The shallow and deep potentiometric surfaces and groundwater flow patterns based on April 2021 water level measurements are shown on **Figures 3** and **4**. The shallow and deep potentiometric surfaces and groundwater flow patterns for the October 2021 water level measurements are shown on **Figures 5** and **6**. These maps are based on water levels measured at all OGS monitoring wells, including the ZLDP compliance wells, Ash Pond compliance wells, and additional delineation wells installed for the Assessment of Corrective Measures (ACM) and selection of remedy for the Ash Pond CCR unit. All four potentiometric surface maps show groundwater flow moving to the east, following the same flow patterns observed in regional flow maps of the area. All of water level measurements

were collected from piezometer wells installed in the uppermost aquifer and reflect the potentiometric surface of the aquifer. The groundwater elevations do not necessarily reflect the water table elevations because measurements were not collected from water table wells.

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 is 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** and the horizontal gradient measurement locations are provided in **Appendix C**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of one upgradient (background) monitoring well and three downgradient monitoring for the OGS ZLDP (**Table 1** and **Figure 2**). The background well is MW-301 and the three downgradient compliance wells include MW-307, MW-308, and MW-309. The CCR Rule wells are installed in the Mississippian aquifer and/or hydraulically connected overlying unconsolidated deposits, which comprise the uppermost aquifer unit at the site. Well depths range from approximately 15 to 28 feet.

The background well (MW-301) is located west of the Ash Pond and is also used as a background well for the OGS Ash Pond CCR unit. The downgradient wells (MW-307 through MW-309) are located along the northeastern edge of the OGS Zero Liquid Discharge Pond and parallel to the Des Moines River.

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 showing the site location of the OGS 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**. The location of the OGS Ash Pond CCR unit, which is monitored by a separate network and is discussed in a separate groundwater monitoring report, is also shown on **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 OGS ZLDP in 2021.

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 inactive OGS ZLDP CCR unit in 2021. Two semiannual sampling events occurred in April 2021 and October 2021. Two assessment monitoring resampling events occurred in February 2021 and July 2021 for select parameters. As described in **Section 4.4**, the first round of assessment monitoring samples in December 2019 and an assessment monitoring program was established on January 13, 2020.

The sampling results for Appendix III and Appendix IV parameters in 2021 are summarized in **Table 5.** Field parameter results for the 2021 sampling events are provided in **Table 6**. The analytical laboratory reports for 2021 are provided in **Appendix D**. Historical results for each monitoring well are summarized in **Appendix E**.

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);

Transition to assessment monitoring was triggered by statistical evaluation of the April 2019 detection monitoring results, completed on July 16, 2019, which identified statistically significant increases (SSIs) in boron, calcium, chloride, field pH, and total dissolved solids (TDS) at one or more of the ZLDP compliance wells. Interstate Power and Light Company (IPL) collected the first round of assessment monitoring samples in December 2019 and established an assessment monitoring program on January 13, 2020, in accordance with §257.95(b).

U.S. EPA's Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (EPA 530-R-09-007, March 2009) recommends the use of confidence intervals for comparison of assessment monitoring data to fixed Groundwater Protection Standard (GPS) values. Specifically, the suggested approach for comparing assessment groundwater monitoring data to GPS values based on long-term chronic health risk, such as drinking water Maximum Contaminant Levels (MCLs), is to compare the lower confidence limit around the arithmetic mean with the fixed GPS. A confidence interval approach was used once the four samples required for this method were obtained, starting in October of 2020.

Since the beginning of the assessment monitoring program in January 2020, the only assessment monitoring parameter for which a monitoring result exceeded the GPS was cobalt in the samples from MW-307. Cobalt exceeded the GPS in the samples from MW-307 for all four round assessment monitoring events in 2021. The most recent Lower Confidence Level (LCL) evaluation was completed for cobalt for the October 2021 event, evaluated in January 2022. The LCLs were calculated with Sanitas™ using historical concentrations measured since assessment monitoring began in December 2019, the October 2021 LCL evaluation is provided in **Appendix F**.

Cobalt was initially determined to be at a statistically significant level (SSL) above the GPS on June 1, 2021, based on the evaluation of the February 2021 monitoring results. On August 30, 2021, an ASD was completed for the cobalt (SSL) exceeding the GPS for samples collected in February, April, and July (August 30, 2021). The ASD attributed the cobalt in groundwater samples from MW-307 to the OGS Ash Pond CCR unit. Cobalt SSLs had previously been identified for the Ash Pond and the selection of a remedy is in progress. Based on the ASD, the OGS ZLPD CCR Unit remained in assessment monitoring in 2021.

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 2021 Annual Groundwater Monitoring and Corrective Action Report for the CCR Unit.

4.5.1 §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.

4.5.2 §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 remained in assessment monitoring in 2021.

Summary of Key Actions Completed.

- Monitoring results review and statistical evaluation for the October 2020 monitoring event (January 15, 2021).
- Completion of the 2020 Annual Groundwater Monitoring and Corrective Action Report (May 26, 2021).
- Two groundwater sampling and analysis events for select parameters (February and July 2021).
- Two semiannual groundwater sampling and analysis events (April and October 2021).
- Monitoring results review and statistical evaluation for the February 2021 monitoring event (June 1, 2021).
- Monitoring results review and statistical evaluation for the April 2021 monitoring event (July 15, 2021).
- Completion of an Alternative Source Demonstration (ASD) for cobalt SSLs exceeding the GPS for samples collected in February, April, and July (August 30, 2021).
- Closure and removal of the ZLDP:
 - Dewatering of the ZLDP began in May 2021.
 - CCR removal from the ZLDP started in June 2021.
 - Organic material such as buried trees and other vegetation were observed and removed from the southeast corner of the site between June and October 2021.
 - CCR removal from ZLDP was substantially complete by October 9, 2021.
 - Dewatering pumping was completed on December 16, 2021.
 - New pond liner geosynthetics were effectively installed by December 16, 2021.

Description of Any Problems Encountered: No problems were encountered during the groundwater sampling events in 2021.

Discussion of Actions to Resolve the Problems: Not Applicable.

Projection of Key Activities for the Upcoming Year (2022):

- Statistical evaluation and determination of any SSLs exceeding the GPS for the October 2021 monitoring event (February 8, 2022).
- The existing groundwater monitoring network is being evaluated in light of the ZLDP closure and anticipated initiation of Corrective Action. As a result, additional monitoring wells may be installed during 2022.
- Initiation of ACM (May 9, 2022).

- Completion of ACM (August 2022, unless extension of up to 60 days is warranted)
- Two Semiannual Groundwater Sampling and Analysis Events (April and October 2022).
- Statistical evaluation and determination of any SSLs exceeding the GPS for the April 2022 monitoring event.

4.5.3 §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. OGS ZLDP is no longer in detection monitoring program.

4.5.4 §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. OGS ZLDP is no longer in detection monitoring program.

4.5.5 §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.

4.5.6 §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 2021 assessment monitoring results, background upper prediction limits (UPLs), and GPSs established for the ZLDP are provided in **Table 5**. The laboratory reports are provided in **Appendix D**. Historical monitoring results are summarized in **Appendix E**.

Supplemental groundwater quality parameters were included in the monitoring program in 2021 to support the selection of remedy process for the OGS Ash Pond CCR unit. The results for the supplemental parameters are included in **Table 5** and in the laboratory reports in **Appendix D**.

4.5.7 §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.

On August 30, 2021, an ASD was completed for cobalt at MW-307 (**Appendix G**). The ASD addressed the observed cobalt concentrations above the GPS for monitoring events in February, April, and July 2021. The ASD concluded that, based on the available data, the most likely source of the GPS exceedance for cobalt at MW-307 was the adjacent Ash Pond, and not the OGS ZLDP. The ASD was produced prior to the discovery and subsequent evaluation of organic debris later in 2021 that is anticipated to result in a re-evaluation of the need for Corrective Action.

The OGS Ash Pond is currently in the corrective action process in response to the cobalt concentrations observed at the Ash Pond downgradient wells.

4.5.8 §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 was not initiated in 2021.

5.0 REFERENCES

Coble, R.W., 1971, The Water Resources of Southeast Iowa, Iowa Geological Survey Water Atlas Number 4, 1971.

U.S. Environmental Protection Agency (U.S. EPA), 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.

Tables

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Table 1. Groundwater Monitoring Well Network Ottumwa Generating Station - Zero Liquid Discharge Pond / SCS Engineers Project #25221072.00

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-301	Upgradient	Background
MW-307	Downgradient	Compliance
MW-308	Downgradient	Compliance
MW-309	Downgradient	Compliance

 Created by: RM
 Date: 12/14/2020

 Last revision by: RM
 Date: 2/2/2021

 Checked by: NDK
 Date: 2/9/2021

Table 2. Groundwater Samples Summary Ottumwa Generating Station Zero Liquid Discharge Pond/ SCS Engineers Project #25221072.00

Sample Dates	Co	Background Well		
	MW-307	MW-308	MW-309	MW-301
2/23/2021	R-A			
4/14/2021	Α	Α	Α	Α
7/6/2021	R-A			
10/7/2021	Α	Α	A	A
Total Samples	4	2	2	2

Abbreviations:

A = Required by Assessment Monitoring Program

R-A = Resample for the Assessment Monitoring Program

 Created by:
 NDK
 Date: 3/9/2021

 Last revision by:
 RM
 Date: 12/28/2021

 Checked by:
 JAO
 Date: 2/17/2022

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Table 3. Groundwater Elevations - CCR Rule Monitoring Well Networks IPL - Ottumwa Generating Station / SCS Engineers Project #25221072.00

Ground Water or Surface Water Elevation in feet above mean sea level (amsl)																	
Well Number	MW-301	MW-302	MW-303	MW-304	MW-305	MW-305A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-310A	MW-311	MW-311A	MW-312	MW-313	River at Intake
Top of Well Casing Elevation /																	
Surface Water Reference Elevation	686.63	673.90	661.07	682.84	683.91	684.03	683.47	657.56	655.39	654.94	658.63	657.93	654.18	653.54	655.36	655.84	656.31
(feet amsl)																	
Screen Length (ft)	10.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	NA
Total Depth (ft from top of casing)	17.0	25.8	17.5	52.3	51.5	81.91	36.6	28.0	25.0	27.5	25.9	55.55	17.9	47.68	29.87	23.82	NA
Top of Well Screen Elevation (ft)	679.63	653.10	648.57	635.54	637.41	607.12	651.87	634.56	635.39	632.44	637.76	607.38	641.24	610.86	NS	NS	NA
Measurement Date																	
April 26, 2016	682.80	655.63	652.42	655.37	661.67	NI	670.86	NI	NI	NI	NI	Z	Z	NI	Z	NI	NI
June 23, 2016	682.58	655.65	652.89	656.53	662.36	NI	670.64	NI	NI	NI	NI	NI	NI	NI	N	NI	NI
August 9, 2016	682.27	655.52	651.76	653.79	660.78	NI	670.35	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
October 26-27, 2016	682.04	655.67	652.17	655.03	661.37	NI	670.21	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
January 18-19, 2017	681.67	655.46	651.74	654.50	660.87	NI	669.89	648.81	647.42	646.66	NI	NI	NI	NI	NI	NI	NI
April 19-20, 2017	682.15	656.35	654.57	657.48	663.27	NI	670.69	653.62	651.09	650.16	NI	NI	NI	NI	NI	NI	NI
June 20-21, 2017	681.91	655.65	652.42	654.75	661.26	NI	669.94	649.85	648.26	647.60	NI	NI	NI	NI	NI	NI	NI
August 21-23, 2017	681.28	655.13	650.58	652.39	659.00	NI	668.77	645.78	643.12	641.82	NI	NI	NI	NI	NI	NI	NI
November 8, 2017	681.54	655.40	651.34	653.03	659.76	NI	669.04	647.37	644.99	644.20	NI	NI	NI	NI	NI	NI	NI
April 18, 2018	681.53	655.71	652.47	655.55	660.99	NI	668.92	649.66	647.91	647.65	NI	NI	NI	NI	NI	NI	NI
May 30, 2018	NM	NM	NM	NM	NM	NI	NM	652.45	651.05	650.98	NI	NI	NI	NI	NI	NI	NI
June 28, 2018	NM	NM	NM	NM	NM	NI	NM	652.87	651.43	651.47	NI	NI	NI	NI	NI	NI	NI
July 18, 2018	NM	NM	NM	NM	NM	NI	NM	652.27	650.67	650.69	NI	NI	NI	NI	NI	NI	NI
August 14-15, 2018	680.91	656.05	652.57	656.35	661.56	NI	668.66	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI
August 29, 2018	681.09	655.89	655.07	657.82	NM	NI	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI
October 16, 2018	682.50	656.91	656.17	658.20	663.37	NI	670.24	654.13	NM	651.61	NI	NI	NI	NI	NI	NI	NI
January 8, 2019	682.22	656.03	654.65	656.28	662.13	NI	669.84	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI
April 8, 2019	682.69	657.23	655.55	659.33	664.01	NI	670.96	654.90	653.70	653.55	NI	NI	NI	NI	NI	NI	NI
August 28, 2019	NM	NM	NM	NM	NM	NI	NM	NM	NM	NM	640.98	NI	642.10	NI	NI	NI	NI
October 23-24, 2019	683.07	660.14	653.86	657.71	663.21	NI	671.28	651.89	651.31	651.28	649.31	NI	647.80	NI	NI	NI	NI
December 11, 2019	NM	NM	NM	NM	NM	NI	NM	649.59	647.39	647.24	NM	NI	NM	NI	NI	NI	NI
February 5, 2020	683.30	NM	NM	NM	NM	NI	NM	649.88	650.12	648.34	644.71	NI	645.00	NI	NI	NI	NI
March 12-13, 2020	682.82	NM	NM	NM	661.41	651.64	NM	NM	NM	NM	645.45	617.84	644.18	624.11	NI	NI	NI
April 1, 2020	683.27	657.00	655.89	658.57	660.59	655.05	671.13	653.76	651.88	651.23	651.09	649.16	649.35	648.27	NI	NI	649.71
April 13-14, 2020	683.25	656.45	654.08	656.42	662.44	653.69	670.71	650.66	650.09	649.19	645.91	647.50	646.79	648.42	NI	NI	645.71
May 4, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NM
June 30, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	647.73	NI	NI	NM
October 5-12, 2020	682.34	655.80	650.37	652.95	659.81	648.01	670.18	646.18	642.85	641.50	638.46	640.20	638.73	641.09	NI	NI	638.16
February 23, 2020	NM	NM	NM	NM	NM	NM	669.86	646.80	NM	NM	638.77	NM	NM	641.16	NI	NI	NM
April 12 - 16, 2021	682.94	656.05	653.82	654.34	661.15	651.16	670.27	649.53	647.66	646.46	642.70	644.88	643.02	644.16	NI	NI	640.91
July 6, 2021	NM	NM	NM	NM	NM	NM	661.87	647.03	NM	NM	639.32	NM	NM	642.38	NI	NI	NM
October 6-8, 2021	681.95	654.86	649.80	649.53	654.83	645.57	662.27	644.49	641.81	640.71	638.19	639.57	Dry	640.58	NI	NI	NM
Bottom of Well Elevation (ft)	669.63	648.10	643.57	630.54	632.41	602.12	646.87	629.56	630.39	627.44	632.76	602.38	636.24	605.86	NS	NS	

 Notes:
 Created by: NDK
 Date: 1/15/2018

 NM = not measured
 Last rev. by: NDK
 Date: 2/25/2022

 NI = not installed
 Checked by: JAO
 Date: 2/25/2022

 ND = Not surveyed
 Date: 2/25/2022

I:\25221072.00\Deliverables\2021 Federal Annual Report - OGS ZLDP\Tables\[Table 3_GW Elevation Summary.xls]levels

Table 4. Groundwater Gradients and Average Linear Velocity Ottumwa Generating Station - Zero Liquid Discharge Pond / SCS Engineers Project #25221072.00 January - December 2021

	Northeast								
Sampling Dates	h1 (ft)	h2 (ft)	ΔI (ft)	Δh/Δl (ft/ft)	V (ft/d)				
April 12-16, 2021	660.00	647.66	362.96	0.03	0.3				
April 12-16, 2021	660.00	645.00	549.73	0.03	0.2				
October 6-8, 2021	655.00	640.71	1020.11	0.01	0.1				
October 6-8, 2021	650.00	640.00	515.20	0.02	0.2				

Well	K Value (cm/sec)	K Value (ft/d)		
MW-301	4.6E-03	13		
MW-307	5.0E-04	1.4		
MW-308	2.0E-03	5.8		
MW-309	1.5E-03	4.4		
Geometric Mean	1.2E-03	3.3		

Assumed Porosity, n	
0.40	

Notes:

1. The two sets of data for each sampling date represent separate measurement locations along the northeast flow path.

Groundwater flow velocity equation: $V = [K^*(\Delta h/\Delta I)] / n$

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

 ΔI = distance between location 1 and 2

 $\Delta h/\Delta l = hydraulic gradient$

 Created by:
 RM
 Date: 12/29/2020

 Last revision by:
 NDK
 Date: 2/28/2022

 Checked by:
 JAO
 Date: 2/28/2022

Table 5. Groundwater Analytical Results Summary - 2021 Ottumwa Generating Station - Zero Liquid Discharge Pond (ZLDP) / SCS Engineers Project #25221072.00

				Backgro	und Well	Compliance Wells								
Days and Alexander Marine UPL				MW-301		MW-307				MW	-308	MW	7-309	
Parameter Name	Method	UPL	GPS	4/14/2021	10/7/2021	2/23/2021	4/14/2021	7/6/2021	10/7/2021	4/14/2021	10/7/2021	4/14/2021	10/7/2021	
Appendix III										T				
Boron, ug/L	Р	820		690	800		200		230	220	200	1,400	1,300	
Calcium, mg/L	Р	78.7		96	100		250		240	230	230	130	120	
Chloride, mg/L	Р	86.8		150	180		210		240	150	170	57	67	
Fluoride, mg/L	Р	0.484		<0.28	<0.28		- <0.28		<0.28	<0.28	<0.28	<0.28	<0.28	
Field pH, Std. Units	Р	6.87		6.26	6.26	6.50	6.59	7.05	6.71	6.70	6.83	7.00	7.18	
Sulfate, mg/L	Р	199		140	180		92 F1		110	270	290	360	400	
Total Dissolved Solids, mg/L	Р	628		620	670		1,000		1,000	1,100	1,000	940	950	
Appendix IV													•	
Antimony, ug/L	P*	0.22	6	<1.1	<1.1		<1.1		<1.1	<1.1	<1.1	<1.1	<1.1	
Arsenic, ug/L	P*	0.53	10	<0.75	<0.75		<0.75		<0.75	<0.75	<0.75	<0.75	<0.75	
Barium, ug/L	Р	68.8	2,000	52	61		160		140	140	130	52	47	
Beryllium, ug/L	DQ	DQ	4	<0.27	<0.27		<0.27		<0.27	<0.27	<0.27	<0.27	<0.27	
Cadmium, ug/L	NP*	0.12	5	<0.051	0.057 J		<0.051		<0.051	<0.051	<0.051	<0.051	<0.051	
Chromium, ug/L	Р	1.07	100	<1.1	<1.1		<1.1		<1.1	<1.1	<1.1	<1.1	1.3 J	
Cobalt, ug/L	NP	4.10	6	0.29 J	0.48 J	64	46	60	48	0.16 J	0.22 J	2.3	2.0	
Fluoride, mg/L	P*	0.484	4	<0.28	<0.28		<0.28		<0.28	<0.28	<0.28	<0.28	<0.28	
Lead, ug/L	NP*	0.10	15	<0.21	<0.21		<0.21		<0.21	<0.21	<0.21	<0.21	<0.21	
Lithium, ug/L	Р	34.2	40	23	26		14		14	16	16	8.9 J	7.5 J	
Mercury, ug/L	DQ	DQ	2	<0.15	<0.15		<0.15		<0.15	<0.15	<0.15	<0.15	<0.15	
Molybdenum, ug/L	Р	1.74	100	<1.3	<1.3		<1.3		<1.3	<1.3	<1.3	<1.3	<1.3	
Selenium, ug/L	Р	8.55	50	6.5	7.5		<0.96		<0.96	<0.96	<0.96	<0.96	<0.96	
Thallium, ug/L	NP*	0.14	2	<0.26	<0.26		<0.26		<0.26	<0.26	<0.26	<0.26	<0.26	
Radium 226/228 Combined, pCI/L	Р	2.15	5	0.598	1.04		3.08		3.90	2.87	3.22	1.05	1.60	
Additional Parameters Collec	ted for Asl	n Pond Sel	lection of	Remedy										
Cobalt - dissolved, ug/L							49		59		300			
Iron, dissolved, ug/L Iron, ug/L				<36 49 J	<36 <36		3,400 3,700		3,400 3,900	3,900 3,900	4,700	660 900	680 950	
Magnesium ug/L				34,000	36,000		30,000		28,000	26,000	24,000	19,000	18,000	
Manganese, dissolved, ug/L	UPL and GPS not		10	15		360		410	1,300	950	640	600		
Manganese, ug/L	applicable		14	18		330		440	1,300	1,100	630	650		
Potassium, ug/L Sodium, ug/L	Sppess.s			1,200 78,000	1,300 88,000		2,000 98,000		2,000 100,000	4,400 100,000	4,300 110,000	750 180,000	740 180,000	
Bicarbonate Alkalinity, mg/L	-							-						
Cabonate Alkalinity, mg/L				170 <4.6	210 <4.6		490 <4.6		550 <4.6	370 <4.6	410 <4.6	280 <4.6	300 <4.6	
Total Alkalinity, mg/L				170	210		490		550	370	410	280	300	

4.4
30.8
17

Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ. Yellow highlighted cell indicates the compliance well result exceeds the GPS.

Grayscale indicates Additional Parameters sampled for selection of remedy and evaluation of Monitored Natural Attenuation.

Abbreviations:

UPL = Upper Prediction Limit
-- = Not Analyzed
P = Parametric UPL with 1-of-2 retesting
GPS = Groundwater Protection Standard
mg/L = milligrams per liter
LOQ = Limit of Quantitation

DQ = Double Quantification Rule (not detected in background)
NP = Nonparametric UPL (highest background value)
LOD = Limit of Detection
MNA = Monitored Natural Attenuation
ug/L = micrograms per liter

J = Result is less than the RL but greater than or equal to the MDL 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 abovebackground 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 well MW-301.

 Created by: NDK
 Date:
 5/21/2021

 Last revision by: RM
 Date:
 2/17/2022

 Checked by: JAO
 Date:
 2/17/2022

 Proj Mgr QA/QC: TK
 Date:
 3/19/2022

I:\25221072.00\Deliverables\2021 Federal Annual Report - OGS ZLDP\Tables\[Table 5 - GW Screening Summary_OGS ZLDP.xlsx]Table 5 - Samples Summary

Table 6. 2021 Groundwater Field Data Summary Ottumwa Generating Station - Zero Liquid Discharge Pond / SCS Engineers Project #25221072.00

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	4/14/2021	682.94	9.1	6.26	5.99	1,062	232.5	1.61
	10/7/2021	681.95	17.90	6.26	4.17	1062	207.3	8.90
MW-307	2/23/2021	646.80	12.20	6.50	0.20	1632	0.8	2.41
	4/14/2021	649.53	11.5	6.59	0.41	1,675	-39.9	21.2
	7/6/2021	647.03	13.2	7.05	0.21	1,705	14.7	17.91
	10/7/2021	644.49	14.40	6.71	0.19	1552	-23.8	10.00
MW-308	4/15/2021	647.66	11.5	6.70	0.44	1,598	-49.3	4.47
	10/7/2021	641.81	13.00	6.83	0.17	1453	-26.1	12.80
MW-309	4/14/2021	646.46	11.7	7.00	0.36	1,411	-40.6	9.32
	10/7/2021	640.71	13.10	7.18	0.21	1297	-8.1	19.60

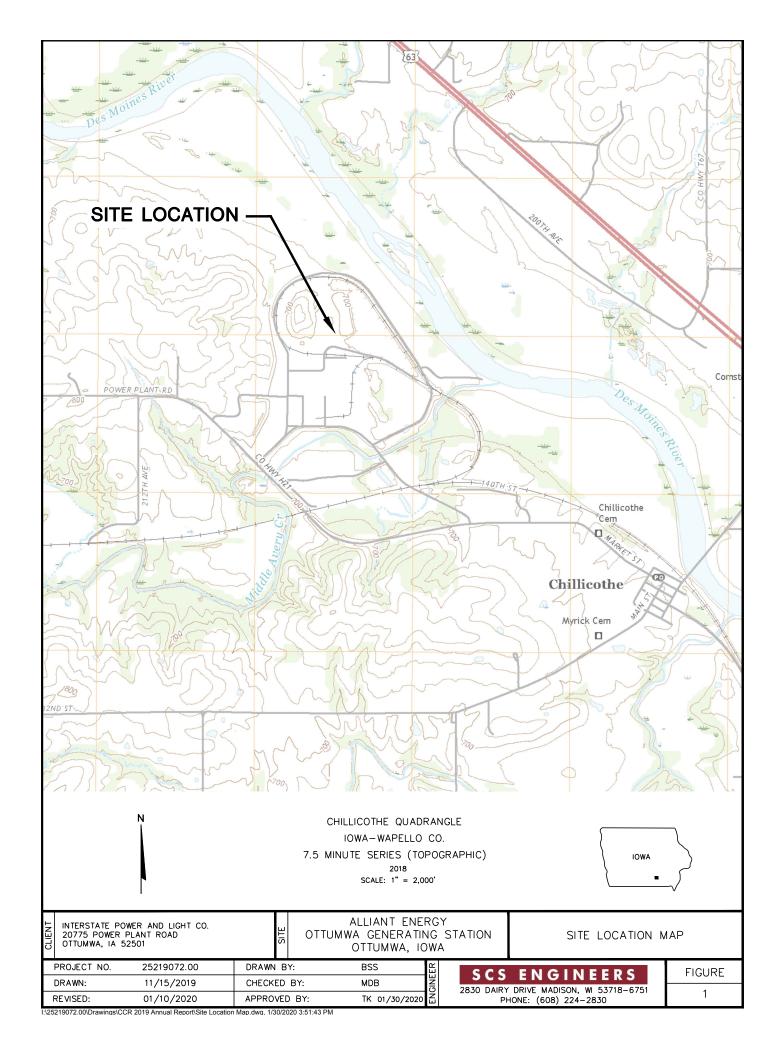
 Created by: NDK
 Date:
 3/9/2021

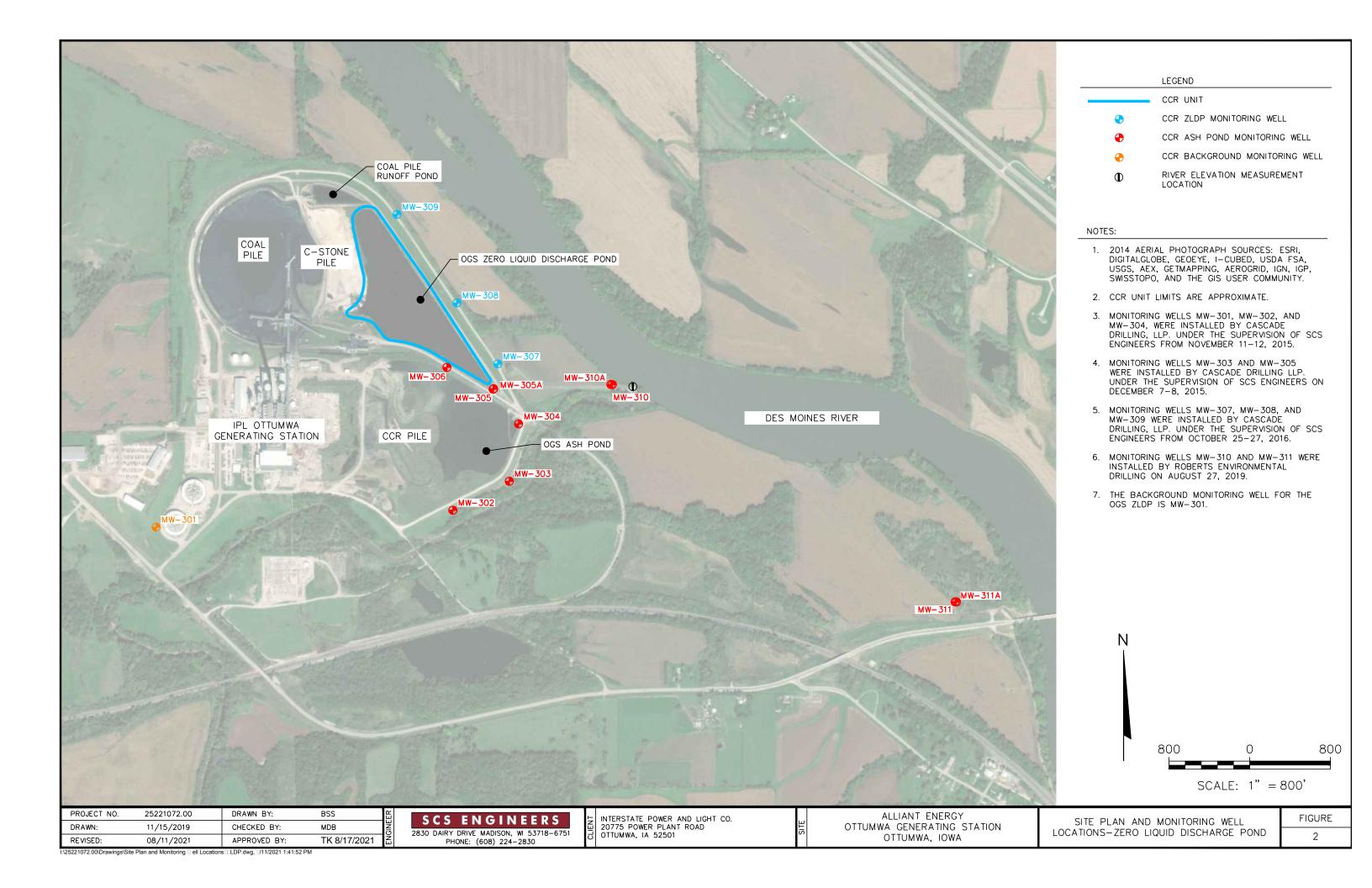
 Last revision by: RM
 Date:
 12/28/2021

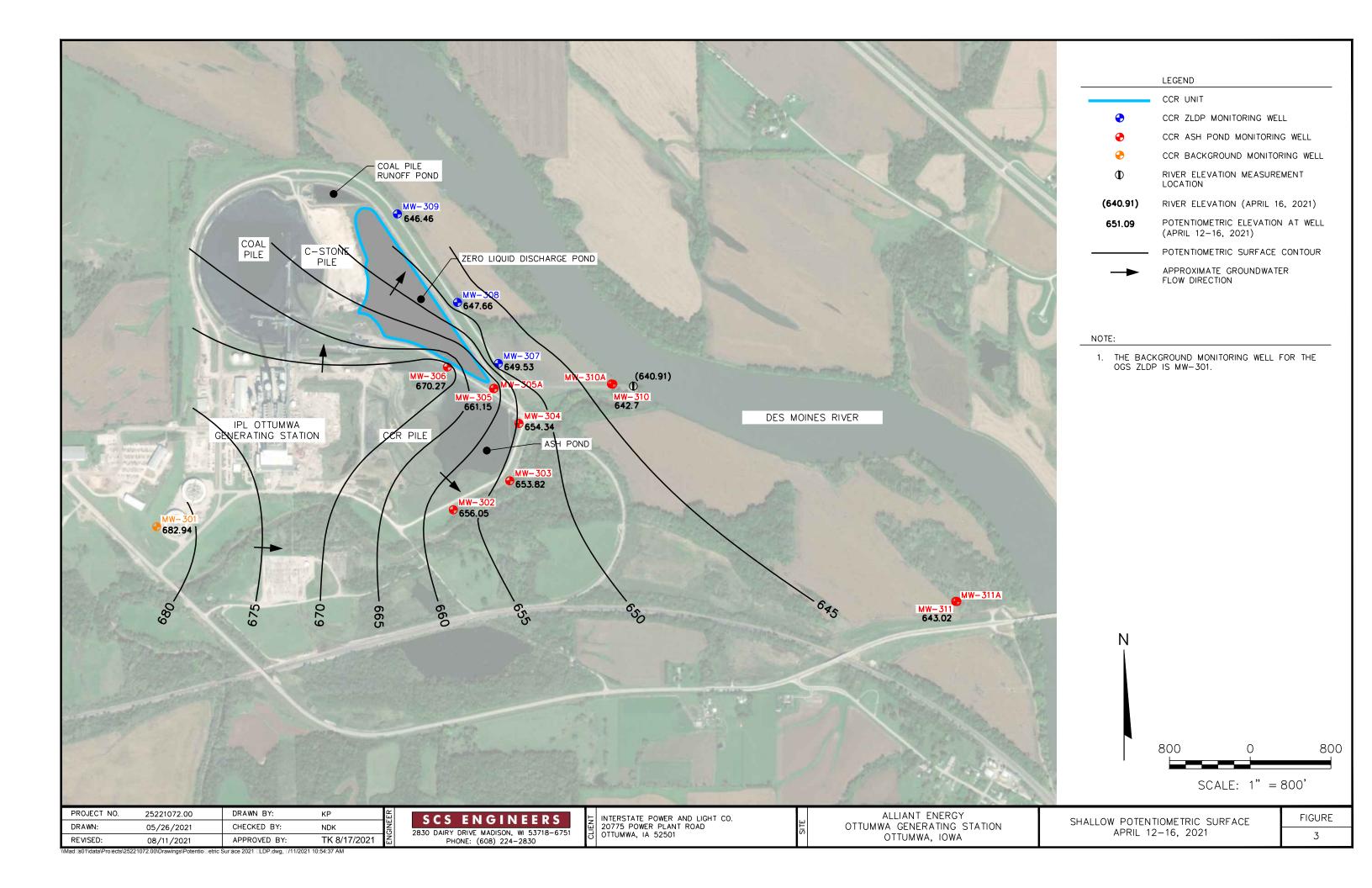
 Checked by: JAO
 Date:
 2/18/2022

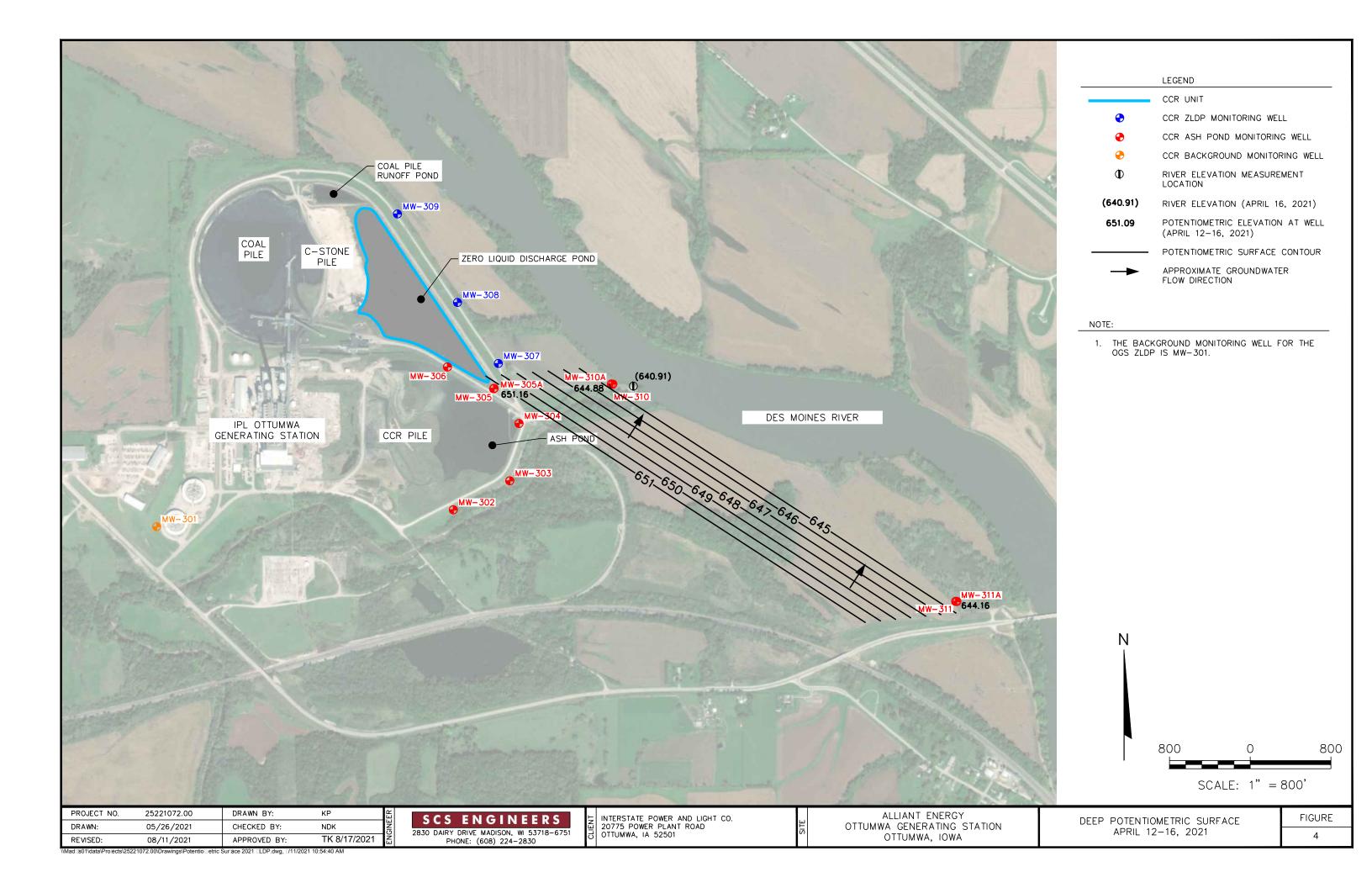
Figures

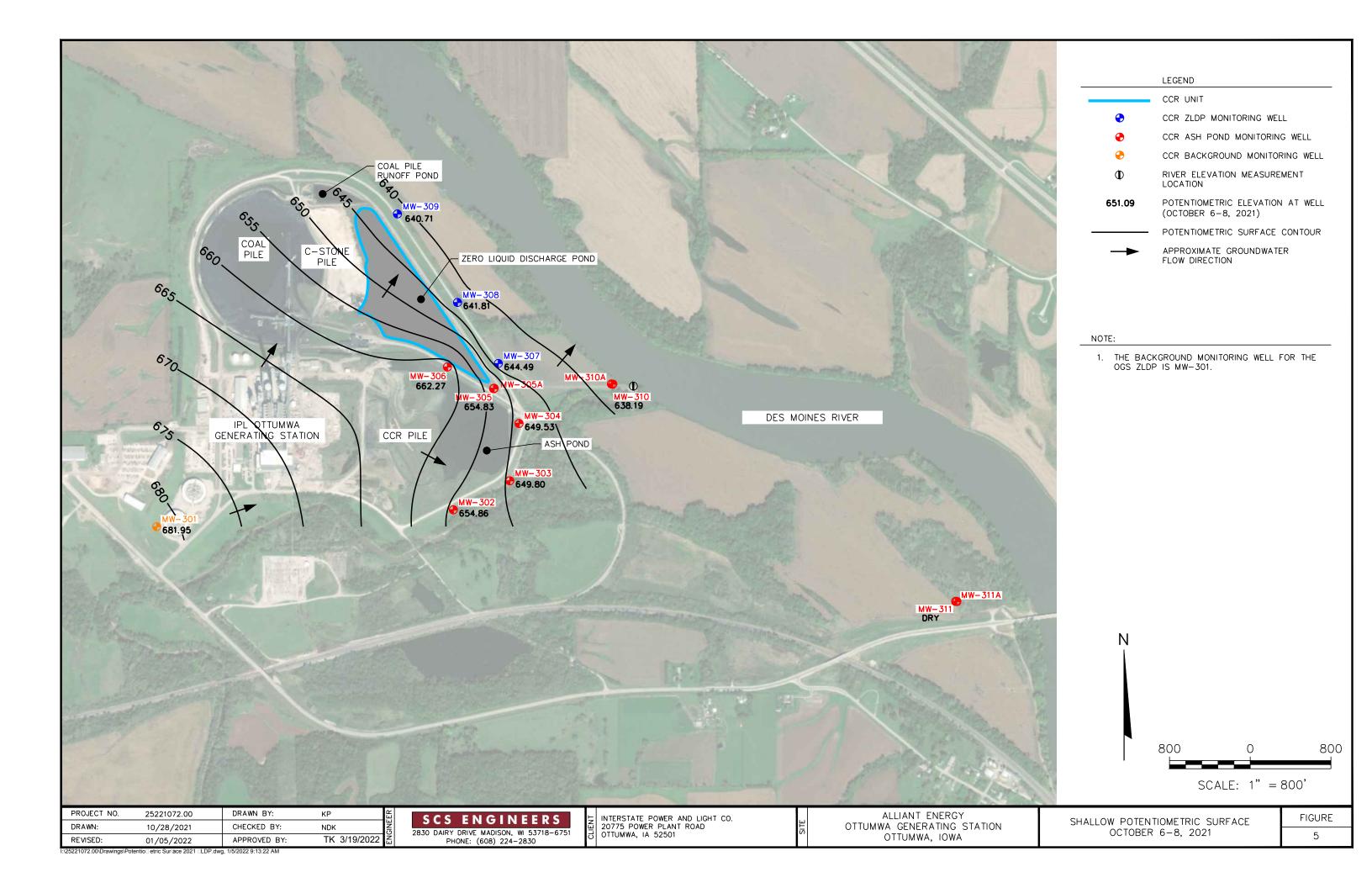
- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations–Zero Liquid Discharge Pond
- 3 Shallow Potentiometric Surface, April 12-16, 2021
- 4 Deep Potentiometric Surface, April 12-16, 2021
- 5 Shallow Potentiometric Surface, October 6-8, 2021
- 6 Deep Potentiometric Surface, October 6-8, 2021

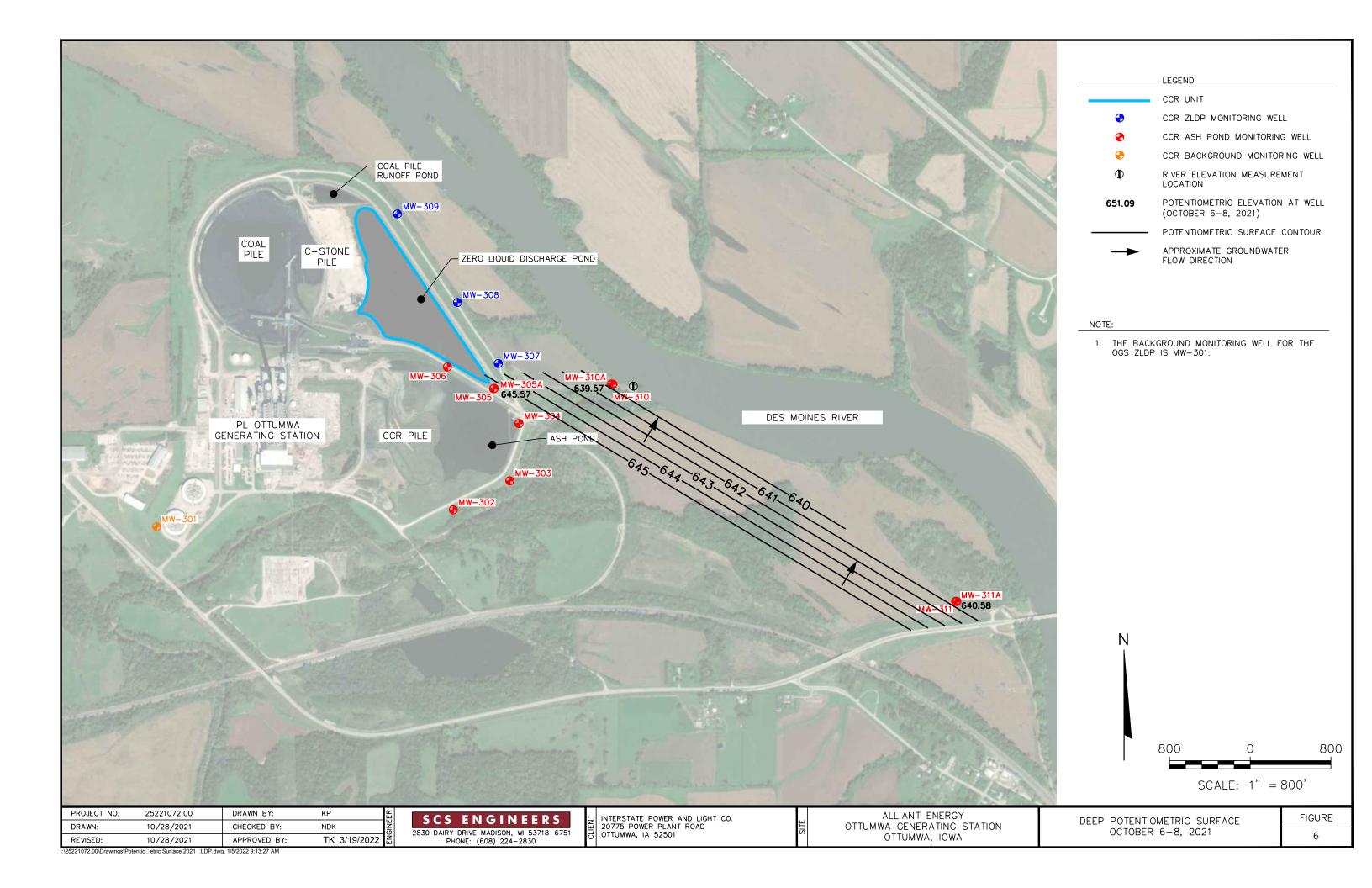












Appendix A

Summary of Regional Hydrogeologic Stratigraphy

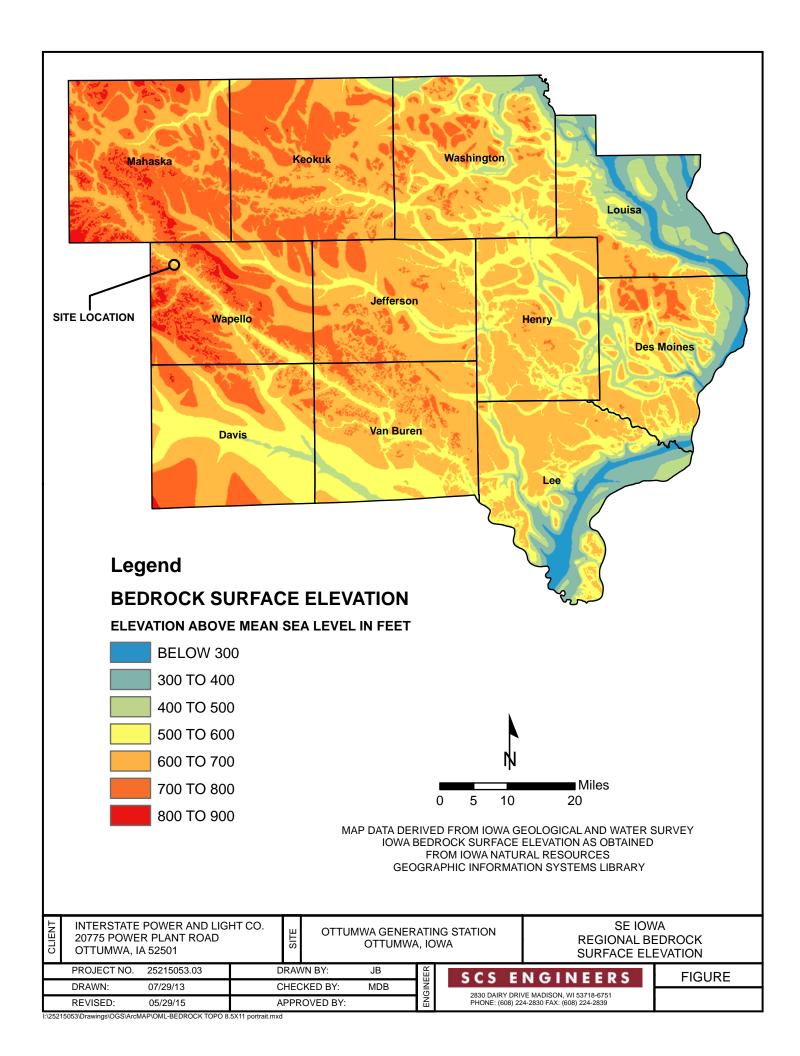
Table OGS-2. Regional Hydrogeologic Stratigraphy Ottumwa Midland Landfill / SCS Engineers Project #25215053.01

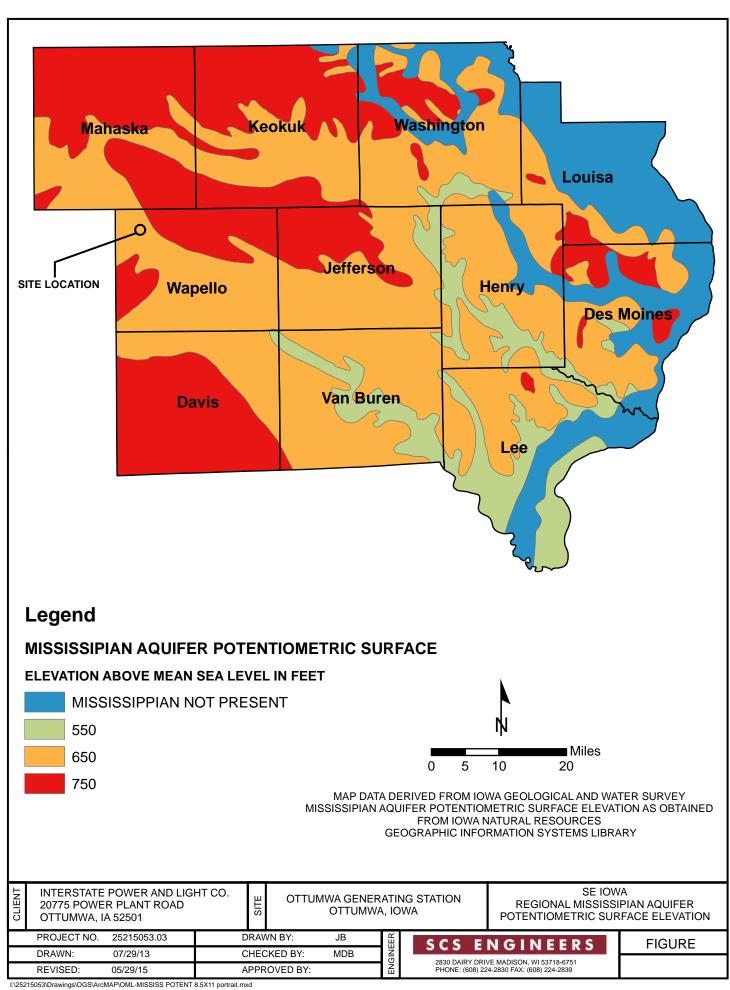
Age of Rocks	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Type of Rock					
Quaternary (0-1 million years old)	Surficial Aquifers • Alluvial • Buried-Channel • Drift	0 to 320	Undifferentiated	 Sand, gravel, silt, and clay Sand, gravel, silt, and clay Till (sandy, pebbly clay), sand, and silt 					
Pennsylvanian (180 to 310 million years old)	Aquiclude	0 to 370	Undifferentiated	Shale, sandstone, limestone, and coal					
	Mississippian Aquifer • Upper		St. Louis Spergen	Limestone and sandstone Limestone					
Mississippian (310 to 345 million years old	• Lower	0 to 600	Warsaw Keokuk Burlington Hampton Starrs Cave	 Shale and dolomite Dolomite, limestone, and shale Dolomite and limestone Limestone and dolomite Limestone 					
Devonian	Aquiclude	0 to 425	Prospect Hill McCraney Yellow Spring Lime Creek	Siltstone Limestone Shale, dolomite, and siltstone Dolomite and shale					
(345 to 400 million years old)	Devonian Aquifer	110 to 420	Cedar Valley Wapsipinicon	Limestone and dolomite Dolomite, limestone, shale, and gypsum					
Silurian (400 to 425 million years old)	- Devolitali Aquitei	0 to 105	Undifferentiated	• Dolomite					
Ordovician (425 to 500 million years old)	Aquiclude	150 to 600	Maquoketa Galena Decorah Platteville	 Dolomite and shale Dolomite and chert Limestone and shale Limestone, shale, and sandstone 					
years ora;	Cambrian-Ordovician	750 to	St. Peter Prairie du Chien	Sandstone Dolomite and sandstone					
	aquifer	1,110	Jordan St. Lawrence	Sandstone Dolomite					
Cambrian (500 to 600 million years old)	Not considered an aquifer in southeast	450 to 750+	Franconia Galesville Eau Claire Mt. Simon	 Shale, siltstone, and sandstone Sandstone Sandstone, shale, and dolomite Sandstone 					
Precambrian (600 million to 2 billion + years old)	lowa			Sandstone, igneous rocks, and metamorphic rocks					

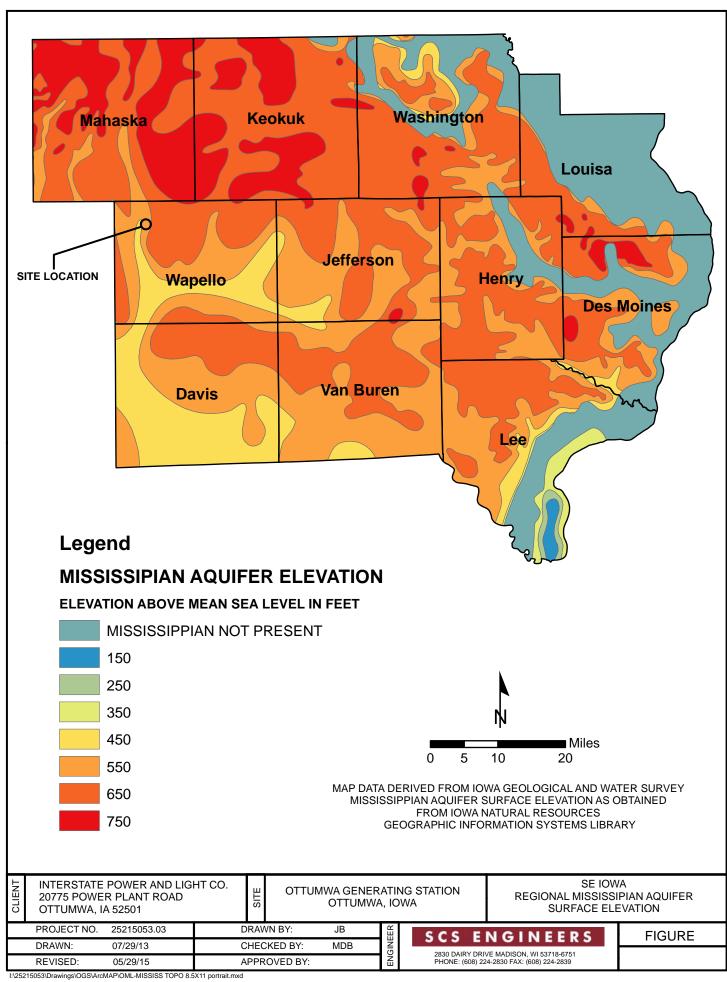
^{*}This nomenclature and classification of rock units in this report are those of the lowa Geological Survey and do not necessarily coincide with those accepted by the U.S. Geological Survey.

Source: "Water Resources of Southeast Iowa," <u>Iowa Geologic Survey Water Atlas No. 4</u>.

 $I:\25215053\Reports\Report\ 1\ -\ OML\Table_Regional_Hydrogeologic_Stratigraphy.doc$







Appendix B

Boring Logs and Well Construction Documentation

SCS ENGINEERS

Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION

			Ro	oute To:	Watershed/W	astewater Redevelopment		aste Manag	ement									
					remediation/	redevelopment .	0.	iner 🗀						Pag	ze 1	of	1	
Facilit	y/Proje	ect Nan	ne				Lice	ense/Permit	/Monitor	ring Nu	mber		Boring		er			
IPL- Ottumwa Generating Station SCS#: 25215135.40 Boring Drilled By: Name of crew chief (first, last) and Firm								Date Drilling Started Date									W-301	
Todd Schmalfeld							Date	Date Drilling Started				Date Drilling Completed				Drilling Method 4-1/4 hollow		
Cascade Drilling								11/10/2015				11/10/2015					stem auger	
								Final Static Water Level S Feet				Surface Elevation Box 684.3 Feet					orehole Diameter 8.5 in	
Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒												Local Grid Location						
State Plane 400,077 N, 1,899,709 E S/C/N								Lat				N					□ E	
NW Facilit		of S	W 1	/4 of Sec	ction 26,	T 73 N, R 15 V	N	Long				Feet S				Feet W		
raciii	y ID				Wapello			Civil Town/City/ or Village Ottumwa										
San	nple												Soil	Prop	erties			
	& (in)	र्घ	get			ock Description												
er /pe	Length Att. & Recovered (in)	Blow Counts	Depth In Feet			ologic Origin For		S	.ల	E	0	Standard Penetration	ıre		ity		RQD/ Comments	
Number and Type	ecov	low (epth		Eac	h Major Unit		SC	Graphic Log	Well Diagram	PID/FID	anda	Moisture Content	Liquid Limit	Plasticity Index	P 200	QD/ omm	
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1	n	8		for	Kyle Kra	and 28		y Drive Ma	adison, V	WI 5371	.8						Fax:	

Tel: (608) 224-2830

Fax:

T	C 1	1 0
Hazaronmental	Concultante	and Contractors

			Ro	ute To:		Vastewater /Redevelopment	Waste l		ement								
														Pag	e 1	of	2.
	y/Proje				522		License/	Permit/	Monito	ring Nu	ımber		Boring		er		
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Cas	cade l	Drilli	ng				10/25/2016						10/25/2016				SA
Uniqu	e Well	No.		DNR W	Vell ID No.	Common Well Name	Final Sta			el	Surfa	e Elevat			Bo		Diameter
Local	Grid Oı	rigin	☐ (es	timated:	Or Bo	MW-307 ring Location ⊠	١	Fe	et			655 Local C	.1 Fee			8	.5 in
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Facilit	y ID			1	County						ty/ or	Village					
San	nle		T		Wapello	NI N			Ottur	nwa	Ι	Т	Soil	Prope	rtios		T
San					Co:1/r	Pools Description							3011	Гторе	ines		
	tt. &	unts	Feet			Rock Description eologic Origin For						l u					23
lber Гуре	th A	/ Co	h In			ch Major Unit		CS	hic	ram	FID	dard	ture	t id	icity	0	men.
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet			.,-		n S (Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			3	coarse sa	Y GRADED SA and and gravel, (c hole cleared to	ND WITH GRAVEL, tan, f construction fill sand to fill 8.5 ft bgs).	ine to	SP									
S1 S2	24	2232	-10 -11 -12 -13 -14 -15	dense.		owish brown (10YR 4/4), sli		CL					W				water level 6.5 ft bgs.

Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711

SOIL BORING LOG INFORMATION SUPPLEMENT Form 4400-122A

	g Num nple		141	<i>N</i> -307						Soil	Pag Prope		of	
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	PID/FID	Standard Penetration			Plasticity Index	P 200	RQD; Comments
			-	LEAN CLAY, dark yellowish brown (10YR 4/4), slightly dense. (continued)	CL		23							
S3	24	1224	-16 -17	SILT, dark yellowish brown (10YR 3/4), fine to medium sand.	ML					W				
54	17	3 3	-18 -19		MIL					W				Bedrock @19.5 ft bgs.
П		50/0	= 20	SANDSTONE, dark brown (10YR 3/3),										
55	5	50/0.	-21 -22							W				More competent @20.5' -24.5' bgs.
			-23 -24	,										
			-25 -26	more weathered.										
s6 =	1	100	-27 -28	Same as above except, gray (10YR 6/1).										
0	1		20	End of boring at 28 ft bgs.										
						2								

Environmental	Concultante an	d Contractors
Environmental	L onsultants and	a Contractors

			Ro	oute To:	Watershed/W		Waste	_	ement]							
					Remediation	Redevelopment	Other											
Facility/	/Drois	ot Mar	no.				License/	Domnit/	Monit	o min	~ Ni	nala au		Danina	Pag Numbe		of	2
				ating St	ation	SCS#: 25216148.00	License	Permio	IVIOIII	lorin	g Nu	moer		Богіпд	Numbe		W-3 0	08
Boring 1	Drille	d By:			ief (first, last) a		Date Drilling Started Date I					te Drilli	ng Con	npleted		Drilling Method		
Mike Casc			no					10/25	5/201	6			1	10/25/2016				SA
Unique			ing	DNR W	Vell ID No.	Common Well Name	Final Sta				- ;	Surface	e Elevat		2010	Во		Diameter
T 10	:10					MW-308		Fe	et					.9 Fee			8	.5 in
Local G State P		ngın			1,902,665	ring Location 🖂 E S/C/N	La	ıt	°				Local C	irid Loc	cation	r		□Е
NE	1/4	of S		/4 of Sect		T 73 N, R 15 W	Long		o					Feet				Feet W
Facility	ID				County							ty/ or \	/illage					
Sam	nle		1		Wapello				Ottı	ımv	va			Soil	Prope	ortios		
		207202			Soil/R	Rock Description								3011	Порс	lucs		
	Att. & ed (in)	unts	Fee			eologic Origin For							uo					str
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet			ch Major Unit		CS	Graphic	_	Diagram	PID/FID	Standard Penetration	Moisture Content	bid it	Plasticity Index	0	RQD/ Comments
Nur and	Len Rec	Blo	Dep					n s	Gra	Well	Dia	PID	Star Pen	Moi	Liquid Limit	Plastic Index	P 200	RQJ Con
			Ė	coarse sa	and and gravel, (ND WITH GRAVEL, tan, to construction fill sand to fill												
			-1	hydrovad	c hole cleared to	9.5 ft bgs).												
			<u>-</u> 2															
			Ē _															
			<u>-</u> 3															
			<u>-</u> 4	20														
			Ē					SP										
			<u>-</u> 5					SF			7,							
			<u>-</u> 6															
-			Ę															water @ 6.5
			- 7															ft bgs.
			E_8															
			E															
			-9															
			E -10	LEAN C	CLAY, brown (10	YR 4/3), dense.												
- II			= 10															
S1	24	194	-11					CL						W				
Ш		22						CL			-							
			<u>-12</u>															
			13	SILT. bro	own (10YR 4/3),	some clay												
S2	13	1 2 2 2	F .,	, 51.										W	-			
Ц		_	<u> </u>					ML			137							
			E ₁₅															
		37 103			11.0													

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

Signature MM

Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711

Tel: (608) 224-2830

Fax:

Environmental Consultants and Contractors

SOIL BORING LOG INFORMATION SUPPLEMENT Form 4400-122A

Boring	g Num	ber	MV	V-308					_			NAME AND ADDRESS OF TAXABLE PARTY.	e 2	oſ	2
San	nple										Soil	Prope	rties		
	& (iii	100	1 43	Soil/Rock Description											
	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	And Geologic Origin For						uc					ts s
er	h A ere	CO	In		S	10		E	10	Standard Penetration	are nt		ity		RQD/ Comments
	ngtl cov	30	pth	Each Major Unit	SC	aph	0.0	agra	PID/FID	Standard Penetration	nisn nte	luic	Plastic Index	P 200	RQD/ Comm
Number and Type	Leg	BIG	De		n	Graphic	Log	Well Diagram	PII	Sta Per	Moisture Content	Liquid Limit	Plasticity Index	P 2	C R
			-	SILT, brown (10YR 4/3), some clay. (continued)	2.07										
		1.0	=		ML							1			
S3	18	12	-16	SILTY SAND, brown (10YR 4/3).	SM						W				
		13	E	POORLY GRADED SAND, brown (10YR 4/3), fine											
			-17	grained.	SP		Ī								
			E		J.										
			18	WELL GRADED SAND AND GRAVEL, dark gravish		0.00	000								
S4	13	4 12	F	WELL GRADED SAND AND GRAVEL, dark grayish brown (10YR 3/2), fine to coarse grained, (weathered	SW		000				W				
		13 3	- 19	bedrock). SANDSTONE, dark grayish brown (10YR 4/2), weathered	_	0000	۰ ۰	H							
Ц			=	bedrock.											
П		12.26	-20	Same as above except, brown (10YR 4/3).											
S5 L	6	12 26 50/0.4	E	Same as above except, brown (10 f k 4/3).							W				
		30,0.	-21												
			E												
			-22				1	Ħ							
			=					H				1			
			-23					H							
			F 25												
			24								6		1		
			-24	Same as above except, dark grayish brown (10YR 4/2).							-		9		
66	4	50/0.4	F								W				
			-25	End of boring at 25 ft bgs.			1				**				
											8	1			
													20		
					9										
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Environmental	Concultante a	nd Contractors

			Ī	Route '			Waste l		ement									
					Remediation/	Redevelopment	Other											
														Pag	ge 1	of	2	
	y/Proje						License/I	Permit/	Monito	ring N	umb	er	Boring		er	** * * *		
IPL	-Ottur	nwa	Gene	ratin	g Station w chief (first, last) ar	SCS#: 25216148.00	D + D	11' C	. 1			D . D .		1 . 1	M۱	W-30		
	e Mu			or cre	w chief (first, fast) ar	ia rirm	Date Dri	lling Si	arted			Date Drill	ing Con	npleted		Drill	ing Method	
	cade l							10/27	7/2016	5			10/27/	2016		HSA		
Uniqu	e Well 1	No.		D	NR Well ID No.	Common Well Name	Final Sta				Sur	face Eleva			Bo		Diameter	
	a					MW-309		Fe	et				2.5 Fee			8	.5 in	
State 1	Grid Or	ngın	40	estima 3 190	tted:) or Bori	ing Location ⊠ E S/C/N	La	t	0	1		" Local	Grid Lo					
NE		of S				T 73 N, R 15 W	Long		0	,			Foot	□ N □ S		1	☐ E Feet ☐ W	
Facility		OI L		174 0	County	1 /3 N, K 13 W	LONE		Civil T	own/C	ity/ (<u>− </u> or Village		Цв			reet 🗆 w	
					Wapello				Ottur		,							
San	nple												Soil	Prope	erties			
	& (in)	S	ts		Soil/Re	ock Description												
. e	Att.	ount	ı Fe		And Geo	ologic Origin For						io	0		^		ıts	
nber Typ	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		Eacl	h Major Unit		CS	phic	1 gran	PID/FID	idarc etrat	sture	it it	ticit	0)/ Imei	
Number and Type	Len Rec	Blo	Dep					SO	Graphic Log	Well Diagram	PID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments	
			=	Ну	drovac borehole to 10 f	t bgs.					1							
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			E ₁₀															
			E	LE sar	AN CLAY, very dark g	rayish brown (10YR 3/2),	trace											
S1		3 3 6 7	-11										w					
		67	E										.,					
Ц			-12															
			E -13					CL										
S2		22	= 13										W					
32		$\frac{2}{2}$	E-14										W					
Ц			E															
			-15						238244									

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

Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711

Tel: (608) 224-2830

Fax:

Form 4400-122A

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y nts
Plasticity Index P 200 P 200 RQD/

SCS ENG Environmenta			and Contractors						SOII	L BOR	ING	LOG	INFO)RM	ATION
		<u>Ro</u>		Wastewater □ n/Redevelopment □	Waste Mother		ement								
												Pag	ge 1	of	2
Facility/Proje					License/F	Permit	Monito	oring N	lumber		Boring	Numb	er		_
IPL-Ottu	mwa	Gener	rating Station	SCS#: 25216148.00	Date Drilling Started Date Drilling Completed							309X			
		Name o	of crew chief (first, last)	and Firm	Date Dril	ling S	tarted			ate Drilli	ing Con	npleted		Drill	ling Method
Mike Mu Cascade	Drilli	ng					5/201				10/26/	2016			SA
Unique Well	No.		DNR Well ID No.	Common Well Name	Final Stat			el	Surfa	ce Eleva			Bo		Diameter
Local Grid O	rigin	□ (e	stimated: or Bo	ring Location 🖂	<u> </u>	Fe	eı			Local C	Feet	ration		8	3.5 in
State Plane			N,	E S/C/N	La	t	°		"	Local	Jila Lo		r		□Е
NE 1/4	of S	E i	1/4 of Section 26,	T 73 N, R 15 W	Long		0	1	**		Feet	\Box s			Feet W
Facility ID			County			,	Civil T	own/C	city/ or	Village					
			Wapello				Ottu	mwa							
Sample											Soil	Prope	erties		
s (ii)	ιςς.	t	Soil/I	Rock Description											
Att.	ouni	n Fe	And G	eologic Origin For				_		d ion	0		8		nts
Number and Type Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Ea	ch Major Unit		CS	ohic	_ I	PID/FID	dare	stur	pi t	ticit	0	
Number and Type Length At Recovered	Blo	Dep				S O	Graphic	Well	E E	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
		-1 -2 -3 -4 -5 -6 -7 -8 -9		ND WITH GRAVEL, tan, fi (construction fill sand to fill 9 ft bgs).		SP									Water at 6.5 ft bgs
S1 12 S2 18	1 3 3 4	11 12 13	SILT, dark brown (10YF	R 3/3), some clay.		CL					w				

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

Signature

SCS Engineers 2830 Dairy Drive Madison, WI 53711

Tel: (608) 224-2830

Fax:

-	g Num nple	Dei	D-3	09X						Soil	Prope	AND DESCRIPTION OF THE PERSON NAMED IN	of	
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic	Well	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
		2.2	E	SILT, dark brown (10YR 3/3), some clay. (continued)	ML									
S3	20	3 3 3 2	—16 =	POORLY GRADED SAND, very dark grayish brown (10YR 3/2), fine grained.	SP					W				
			—17 =	SILT, dark brown (10YR 3/3).	ML									
		1.17	-18	POORLY GRADED SAND, brown (10YR 4/3).	SP									
S4 -	15	1 17 50/0.2	_ 19	WEATHERED SANDSTONE, grayish brown (10YR 5/2).						W				Bedrock at18.5 ft bgs
S5 L	6	50/0.3		End of boring at 26.5 ft bgs.						W				

IOWA DEPARTMENT OF NATURAL RESOURCES

MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

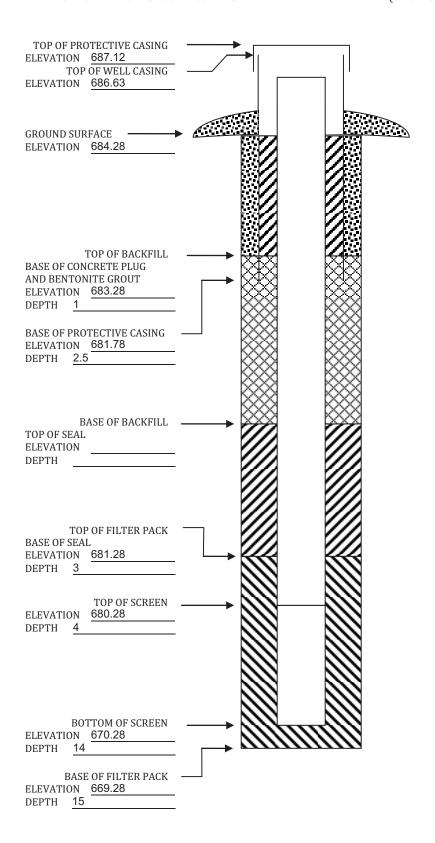
Disposal Site Name: IPL - Ottumwa Generating Station	Permit No.:
Well or Piezometer No: MW-301	<u></u>
Dates Started: 11/10/15	Date Completed: 11/10/15
A. SURVEYED LOCATIONS AND ELEVATIONS	B. SOIL BORING INFORMATION
Locations (± 0.5 ft):	Name & Address of Construction Company:
Specify corner of site: SE of Parcel 003052640340000	Cascade Drilling, LP
Distance & direction along boundary:106' W	301 Alderson St
Distance & direction from boundary to wall:306' N	Schofield, WI 54476
Elevations (± 0.01 ft MSL):	Name of Driller: Todd Schmalfeld
Ground Surface: 684.28	Drilling Method: HSA
Top of protective casing: 687.12	Drilling Fluid: NA
Top of well casing: 686.63	Bore Hole Diameter: 8 inch
Benchmark elevation:	Soil Sampling Method: Spoon
Benchmark description:	Depth of Boring: 15 ft
C. MONITORING WELL INSTALLATION	
Casing material: PVC sch 40	Placement method: Gravity
Length of casing: 4 ft	Volume: 8 cu. ft.
Outside casing diameter: 2.38"	Backfill (if different from seal):
Inside casing diameter: 2"	Material:
Casing joint type: threaded	Placement method:
Casing/screen joint type:threaded	Volume:
Screen material: PVC	Surface seal design:
Screen opening size: 0.010"	Material of protective casing: Steel 6 inch
Screen length: 10 ft	Material of grout between protective casing and well casing: sand
Depth of well: 14 ft	Protective cap:
Filter Pack:	Material: Steel, vented
Material: Red Flint	Vented: ☐ Yes ☐ No Locking: ■ Yes ☐ No
Grain size: #40	Well Cap:
Volume: 4 cu. ft.	Material: PVC
Seal (minimum 3 ft length above filter pack):	Vented: ☐ Yes ■ No
Material: 3/8 inch bentonite chips	
D. GROUNDWATER MEASURMENT (± 0.01 ft below top of	inner well casing)
Water level: 3.09 ft	Stabilization Time: <5 minutes
Well development method: Surged with block and pumped	to reduce turbidity. 435 gallons pumped.
Average depth of frostline: $3.5'$	

Attachments: Driller's log. Pipe schedules and grouting schedules. $8 \frac{1}{2} x 11$ 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

06/2011 cmz DNR Form 542-1277



06/2011 cmz DNR Form 542-1277

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IOWA DEPARTMENT OF NATURAL RESOURCES

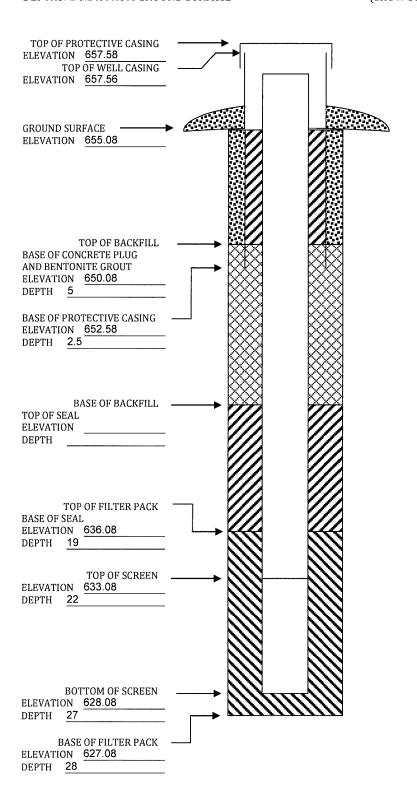
MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL - Ottumwa Generating Station	Permit No.:
Well or Piezometer No: MW-307	
Dates Started: 10/25/16	Date Completed: 10/25/16
A. SURVEYED LOCATIONS AND ELEVATIONS	B. SOIL BORING INFORMATION
Locations (± 0.5 ft):	Name & Address of Construction Company:
Specify corner of site:NE of Parcel 003052620200000	Cascade Drilling, LP
Distance & direction along boundary:683' W	301 Alderson St
Distance & direction from boundary to wall:296' S	Schofield, WI 54476
Elevations (± 0.01 ft MSL):	Name of Driller: Mike Mueller
Ground Surface: 655.08	Drilling Method: HSA
Top of protective casing: 657.58	Drilling Fluid: NA
Top of well casing: 657.56	Bore Hole Diameter: 8 inch
Benchmark elevation:	Soil Sampling Method: Spoon
Benchmark description:	Depth of Boring: 28 ft
C. MONITORING WELL INSTALLATION	
Casing material: PVC sch 40	Placement method: Gravity
Length of casing: 22 ft	Volume: 250 lbs
Outside casing diameter: 2.38"	Backfill (if different from seal):
Inside casing diameter: 2"	Material:
Casing joint type: threaded	Placement method:
Casing/screen joint type:threaded	Volume:
Screen material: PVC	Surface seal design:
Screen opening size: 0.010"	Material of protective casing: Steel 6 inch
Screen length: 5 ft	Material of grout between protective casing and well casing: sand
Depth of well: 27 ft	Protective cap:
Filter Pack:	Material: Steel, vented
Material: Red Flint	Vented: ■ Yes ☐ No Locking: ☐ Yes ☐ No
Grain size: #40	Well Cap:
Volume: 200 lbs	Material: PVC
Seal (minimum 3 ft length above filter pack):	Vented: ☐ Yes ■ No
Material: 3/8 inch bentonite chips	
D. GROUNDWATER MEASURMENT (± 0.01 ft below top of in	ner well casing)
Water level: 8.12	Stabilization Time: 5 minutes
Well development method: surged with bailer and pumped	
Average depth of frostline: 3.5'	

Attachments: Driller's log. Pipe schedules and grouting schedules. $8\frac{1}{2}x11$ 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



06/2011 cmz DNR Form 542-1277

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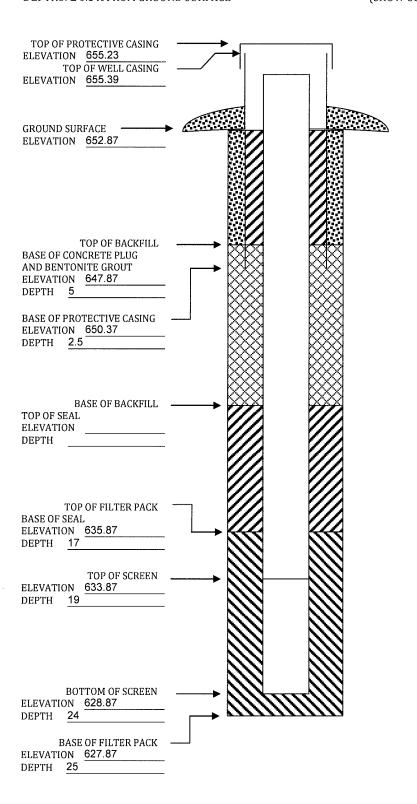
MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL - Ottumwa Generating Station	Permit No.:
Well or Piezometer No: MW-308	
Dates Started: 10/26/16	Date Completed: 10/26/16
A. SURVEYED LOCATIONS AND ELEVATIONS	B. SOIL BORING INFORMATION
Locations (± 0.5 ft):	Name & Address of Construction Company:
Specify corner of site:SW of Parcel 0030502620203000	Cascade Drilling, LP
Distance & direction along boundary:158' E	301 Alderson St
Distance & direction from boundary to wall:417' N	Schofield, WI 54476
Elevations (± 0.01 ft MSL):	Name of Driller: Mike Mueller
Ground Surface: 652.87	Drilling Method: HSA
Top of protective casing: 655.23	Drilling Fluid: NA
Top of well casing: 655.39	Bore Hole Diameter: 8 inch
Benchmark elevation:	Soil Sampling Method: Spoon
Benchmark description:	Depth of Boring: 25 ft
C. MONITORING WELL INSTALLATION	
Casing material: PVC sch 40	Placement method: Gravity
Length of casing: 19 ft	Volume: 200 lbs
Outside casing diameter: 2.38"	Backfill (if different from seal):
Inside casing diameter: 2"	Material:
Casing joint type: threaded	Placement method:
Casing/screen joint type:threaded	Volume:
Screen material: PVC	Surface seal design:
Screen opening size: 0.010"	Material of protective casing: Steel 6 inch
Screen length: 5 ft	Material of grout between protective casing and well casing: sand
Depth of well: 24 ft	Protective cap:
Filter Pack:	Material: Steel, vented
Material: Red Flint	Vented: ■ Yes □ No Locking: □ Yes □ No
Grain size: #40	Well Cap:
Volume: 200 lbs	Material: PVC
Seal (minimum 3 ft length above filter pack): Material: 3/8 inch bentonite chips	Vented: ☐ Yes ■ No
D. GROUNDWATER MEASURMENT (± 0.01 ft below top of in	ner well casing)
Water level: 9.85	Stabilization Time: 5 minutes
Well development method: surged with bailer and pumped	
Average depth of frostline: 3.5'	

Attachments: Driller's log. Pipe schedules and grouting schedules. $8 \frac{1}{2} \times 11$ 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



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IOWA DEPARTMENT OF NATURAL RESOURCES

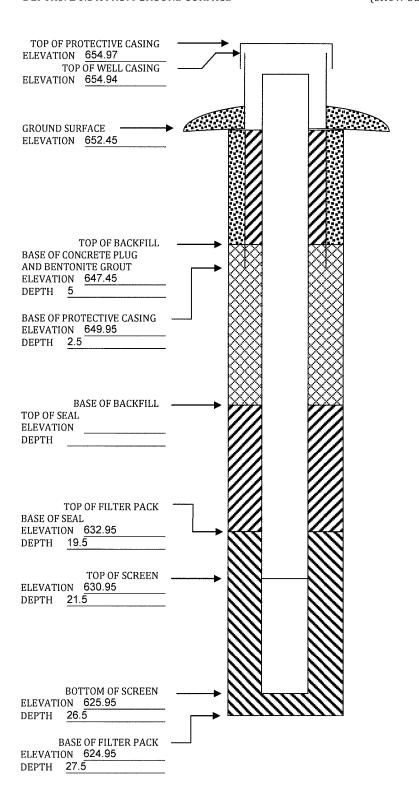
MONITORING WELL/PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: IPL - Ottumwa Generating Station	Permit No.:
Well or Piezometer No: MW-309	
Dates Started: 10/27/16	Date Completed: 10/27/16
A. SURVEYED LOCATIONS AND ELEVATIONS	B. SOIL BORING INFORMATION
Locations (± 0.5 ft):	Name & Address of Construction Company:
Specify corner of site: NE of Parcel 003052620204000	Cascade Drilling, LP
Distance & direction along boundary:480' W	301 Alderson St
Distance & direction from boundary to wall:438' S	Schofield, WI 54476
Elevations (± 0.01 ft MSL):	Name of Driller: Mike Mueller
Ground Surface: 652.45	Drilling Method: HSA
Top of protective casing: 654.97	Drilling Fluid: NA
Top of well casing: 654.94	Bore Hole Diameter: 8 inch
Benchmark elevation:	Soil Sampling Method: Spoon
Benchmark description:	Depth of Boring: 27.5 ft
C. MONITORING WELL INSTALLATION	
Casing material: PVC sch 40	Placement method: Gravity
Length of casing: 21.5 ft	Volume: 600 lbs
Outside casing diameter: 2.38"	Backfill (if different from seal):
Inside casing diameter: 2"	Material:
Casing joint type: threaded	Placement method:
Casing/screen joint type:threaded	Volume:
Screen material: PVC	Surface seal design:
Screen opening size: 0.010"	Material of protective casing: Steel 6 inch
Screen length: 5 ft	Material of grout between protective casing and well casing: sand
Depth of well: 26.5 ft	
Filter Pack:	Protective cap: Material: Steel, vented
Material: Red Flint	Vented: ■ Yes □ No Locking: □ Yes □ No
Grain size: #40	Well Cap:
Volume: 200 lbs	Material: PVC
Seal (minimum 3 ft length above filter pack):	NN 968 ve
Material: 3/8 inch bentonite chips	Announce and the second
D. GROUNDWATER MEASURMENT (± 0.01 ft below top	o of inner well casing)
Water level: 9.87	Stabilization Time: 5 minutes
Well development method: surged with bailer and pump	
Average depth of frostline: 3.5'	
Attachments: Driller's log. Pine schedules and grouti	ng schedules. 8 ½x11 inch man showing locations of all

Attachments: Driller's log. Pipe schedules and grouting schedules. $8 \frac{1}{2} \times 11$ inch map showing locations of all monitoring wells and piezometers.

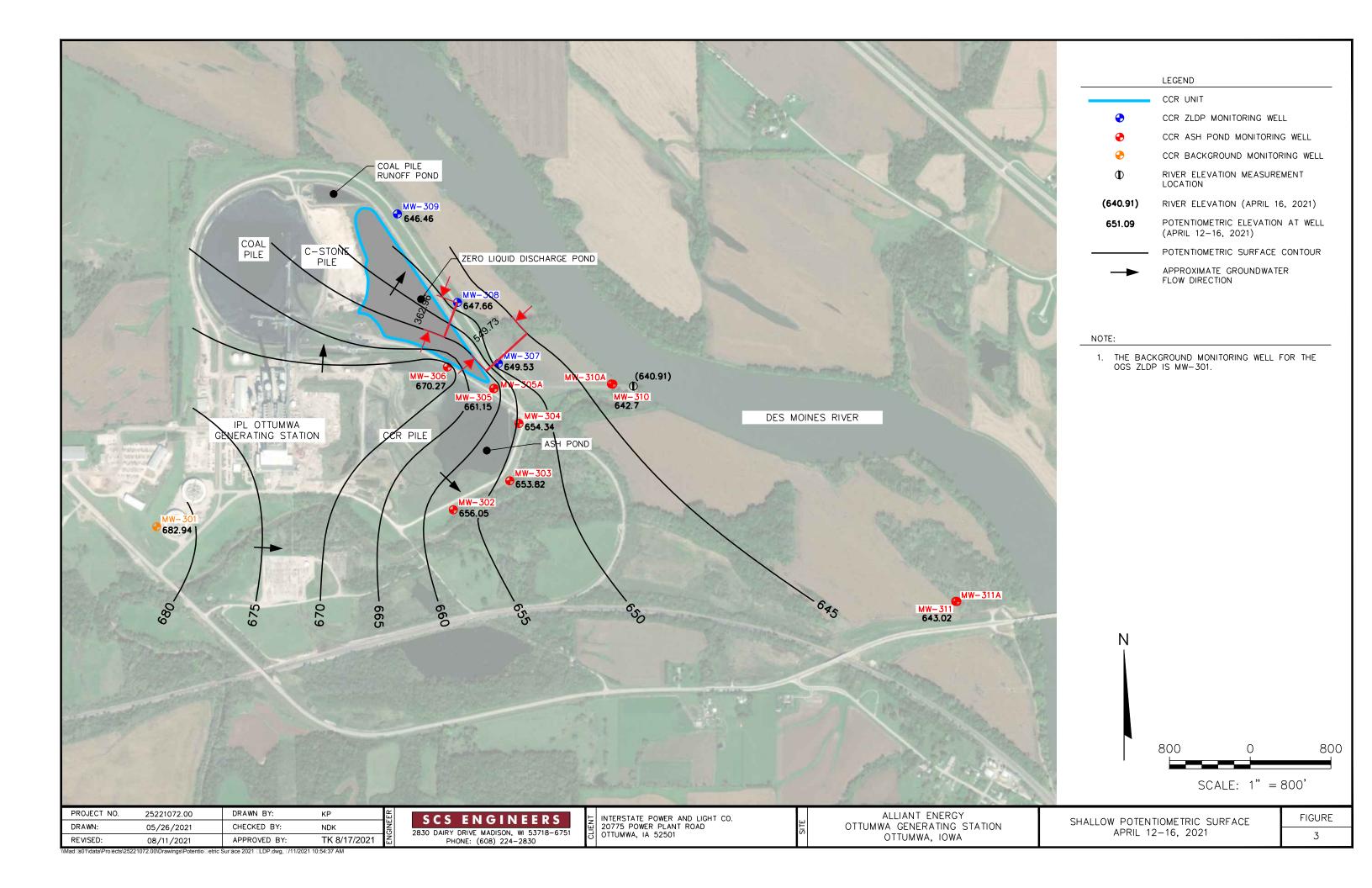
Please mail completed for to: Iowa Department of Natural Resources, Land Quality Bureau, 502 E 9th St, Des Moines IA 50319-0034.

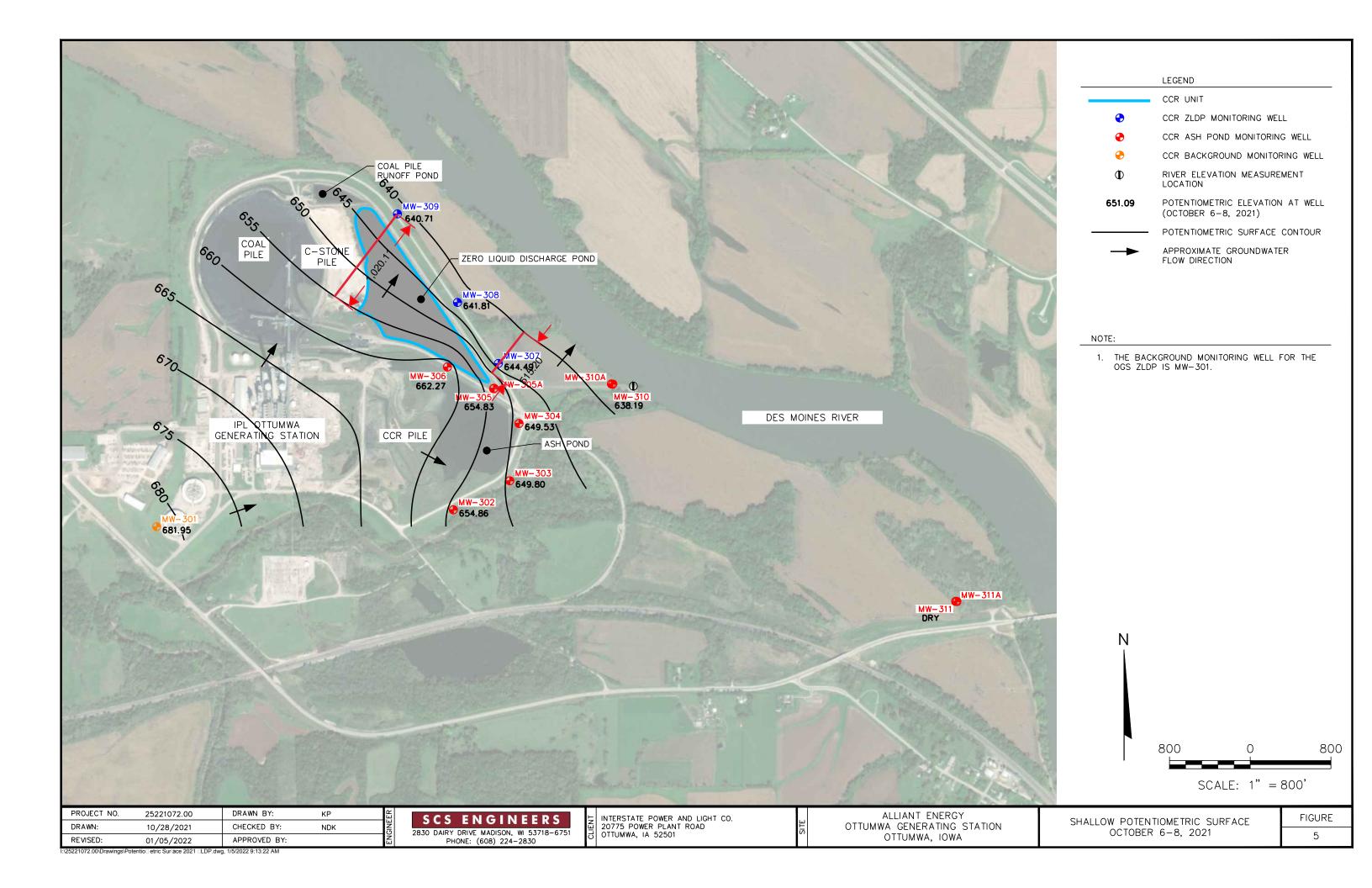
Questions? Call or Email: Nina Koger, Environmental Engineer Sr., 515-281-8986, Nina.Koger@dnr.iowa.gov



Appendix C

Horizontal Gradient Measurement Locations





Appendix D Analytical Laboratory Reports

D1	February 2021 Assessment Monitoring



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-201014-1

Client Project/Site: Ottumwa Generating Station 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 3/5/2021 1:51:21 PM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

.....LINKS

Review your project results through

Total Access

Have a Question?



Visit us at: www.eurofinsus.com/Env 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.

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Case Narrative

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Job ID: 310-201014-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-201014-1

Comments

No additional comments.

Receipt

The sample was received on 2/24/2021 6:00 PM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 3.4° C.

Metals

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

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station 25221072

Job ID: 310-201014-1

	011 10 1 10		0 !!		
Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-201014-1	MW-307	Water	02/23/21 13:02	02/24/21 18:00	

Detection Summary

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-201014-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	64		0.50	0.091	ug/L	1	_	6020A	Total/NA
Ground Water Elevation	646.80				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	0.8				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.20				mg/L	1		Field Sampling	Total/NA
pH, Field	6.50				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1632				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	12.2				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	2.41				NTU	1		Field Sampling	Total/NA

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Client Sample Results

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-201014-1

Matrix: Water

Date Collected: 02/23/	21 13:02
Date Received: 02/24/	21 18:00

Method: 6020A - Metals (ICP/MS)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	64		0.50	0.091	ug/L		03/01/21 09:00	03/02/21 14:21	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	646.80				ft			02/23/21 13:02	1
Oxidation Reduction Potential	0.8				millivolts			02/23/21 13:02	1
Oxygen, Dissolved, Client	0.20				mg/L			02/23/21 13:02	1
Supplied									
pH, Field	6.50				SU			02/23/21 13:02	1
Specific Conductance, Field	1632				umhos/cm			02/23/21 13:02	1
Temperature, Field	12.2				Degrees C			02/23/21 13:02	1
Turbidity, Field	2.41				NTU			02/23/21 13:02	1

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Definitions/Glossary

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)

Too Numerous To Count

Toxicity Equivalent Quotient (Dioxin)

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

Glossary

RER

RPD

TEF

TEQ

TNTC

RL

¤	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

Eurofins TestAmerica, Cedar Falls

3/5/2021

QC Sample Results

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-308150/1-A

MB MB

Matrix: Water

Analysis Batch: 308465

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 308150

Dil Fac Analyte Result Qualifier RL MDL Unit Prepared Analyzed Cobalt <0.091 0.50 0.091 ug/L 03/01/21 09:00 03/02/21 14:14

Lab Sample ID: LCS 310-308150/2-A Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA Analysis Batch: 308465 **Prep Batch: 308150**

Spike LCS LCS %Rec.

Added Analyte Result Qualifier Unit D %Rec Limits Cobalt 200 219 ug/L 109 80 - 120

Lab Sample ID: 310-201014-1 MS Client Sample ID: MW-307

Matrix: Water Prep Type: Total/NA Analysis Batch: 308465 **Prep Batch: 308150**

MS MS Sample Sample Spike %Rec.

Result Qualifier Added Result Qualifier Unit %Rec Limits Cobalt 64 200 277 106 75 _ 125 ug/L

Lab Sample ID: 310-201014-1 MSD Client Sample ID: MW-307

Matrix: Water Prep Type: Total/NA

Prep Batch: 308150 Analysis Batch: 308465

Sample Sample MSD MSD RPD Spike %Rec. Analyte Result Qualifier Added Result Qualifier Unit %Rec Limits RPD Limit

200 Cobalt 64 281 108 75 - 125 2 20 ug/L

3/5/2021

QC Association Summary

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Metals

Prep Batch: 308150

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-201014-1	MW-307	Total/NA	Water	3010A	
MB 310-308150/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-308150/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-201014-1 MS	MW-307	Total/NA	Water	3010A	
310-201014-1 MSD	MW-307	Total/NA	Water	3010A	

Analysis Batch: 308465

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-201014-1	MW-307	Total/NA	Water	6020A	308150
MB 310-308150/1-A	Method Blank	Total/NA	Water	6020A	308150
LCS 310-308150/2-A	Lab Control Sample	Total/NA	Water	6020A	308150
310-201014-1 MS	MW-307	Total/NA	Water	6020A	308150
310-201014-1 MSD	MW-307	Total/NA	Water	6020A	308150

Field Service / Mobile Lab

Analysis Batch: 308123

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-201014-1	MW-307	Total/NA	Water	Field Sampling	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-201014-1

Matrix: Water

Date Collected: 02/23/21 13:02 Date Received: 02/24/21 18:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			308150	03/01/21 09:00	JNR	TAL CF
Total/NA	Analysis	6020A		1	308465	03/02/21 14:21	SAD	TAL CF
Total/NA	Analysis	Field Sampling		1	308123	02/23/21 13:02	SLD	TAL CF

Laboratory References:

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

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3/5/2021

Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

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Method Summary

Client: SCS Engineers Job ID: 310-201014-1

Project/Site: Ottumwa Generating Station 25221072

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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Environment Testing TestAmerica



310-201014 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client information				
Client: SCS Enine	يمرا			
City/State: CITY		STATE	Project: Office of Consection St	66
Receipt information		UZ	Project: Offmus Generally St	7
Date/Time Received: DATE 2-24	ય	TIME	Received By:	
Delivery Type: UPS	FedEx		☐ FedEx Ground ☐ US Mail ☐	Spee-Dee
tab Courier	Lab Fiel	d Services	☐ Client Drop-off ☐ Other:	10 P
Condition of Cooler/Containers			AMERICAN STREET, STREE	g Jedra or a
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	(SNO	If yes: Which VOA samples are in cooler? 1	
				1
				-
Temperature Record		- 145		जिल्हामा ३ -४५०
	lue ice	☐ Dry ice	☐ Other:	
Thermometer ID:	Ó		Correction Factor (°C):	
• Temp Blank Temperature – If no tel	mp blank, or te	mp blank tem	perature above criteria, proceed to Sample Container Tem	perature
Uncorrected Temp (°C):	3.4		Corrected Temp (°C): 3.4	.1
Sample Container Temperature			在1964年,1964年,1965年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,1964年,	
Container(s) used:	NER 1		CONTAINER 2	
Uncorrected Temp (°C):				
Corrected Temp (°C):				
Exceptions Noted		o Nei e		
If temperature exceeds criteria a) If yes: Is there evidence the				
2) If temperature is <0°C, are the (e.g., bulging septa, broken/cra			ne integrity of sample containers is compromise Dlid?)	
Note: If yes, contact PM before p	roceeding. I	f no, proceed	with login	
Additional Comments		1 14 2 7 80		
				en e

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019 General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

0 - AsNaO2
P - Na2O45
Q - Na2SO3
R - Na2SSO3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA Special Instructions/Note: Ver. 11/01/2020 Z - other (specify) Months Sompany Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mon Preservation Codes A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
F - ManSO4
F - MacOH
G - Amchlor
H - Ascorbic Acid (\$000 J - Ice J - DI Water K - EDTA I. - EDA Total Number of containers Method of Shipment: Analysis Requested Cooler Temperature(s) °C and Other Remarks: Special Instructions/QC Requirements: Received by. 6020A - Cobait 5 × Perform MS/MSD (Yes or No) (Wnwater, Sayolid, Matrix Preservation Code: Water 55 Company Company Radiological Type (C≕comp, G=grab) Sample S compliance Project: A Yes A No 20 13:02 Sample Time 7 Date: TAT Requested (days): Unknown Due Date Requested: Date/Time:
2-24-7
Date/Time: Sample Date 12-57-2 Project # 31011020 SSOW#. PO# 25221072 X Jate/Time. Poison B Skin Irntant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seal No. Ottumwa Generating Station 25221072 Flammable 269-993-0855 Possible Hazard Identification mblodgett@scsengineers.com Liviten Empty Kit Relinquished by Custody Seals Intact: Sample Identification A Yes A No Non-Hazard 2830 Dairy Drive SCS Engineers nquished by. elinquished by State, Zip: Wil, 53718 City: Madison MW-307 hone:

Environment Testing

👺 eurofins

Eurofins TestAmerica, Cedar Falls

TestAmerica Des Moines SC

Chain of Custody Record

Phoge: 319-277-2401 Fax: 319-277-2425

Client Information

Meghan Blodgett

COC No. 310-58024-17087.1

Page: Page 1 of 1

State of Origin:

E-Mail sandra.fredrick@eurofinset.com

Lab PM: Fredrick, Sandie

Bustka

Sinter

55-80-565-692

Job Number: 310-201014-1

Client: SCS Engineers

Login Number: 201014 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1 Creator: Homolar, Dana J

oreator. Homolar, Bana o	
Question	Answer Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td>	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

Eurofins TestAmerica, Cedar Falls

D2 April 2021 Assessment Monitoring



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-204547-1

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 4/28/2021 3:09:03 PM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

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

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Case Narrative

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-204547-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-204547-1

Comments

No additional comments.

Receipt

The samples were received on 4/16/2021 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.6° C.

HPLC/IC

Method 9056A: The following samples were diluted due to the nature of the sample matrix: MW-307 (310-204547-1), MW-308 (310-204547-2) and MW-309 (310-204547-3). 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.

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
10-204547-1	MW-307	Water	04/14/21 12:30	04/16/21 17:00	
10-204547-2	MW-308	Water	04/14/21 13:55	04/16/21 17:00	
10-204547-3	MW-309	Water	04/14/21 13:25	04/16/21 17:00	

Job ID: 310-204547-1

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Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-204547-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac D	Method	Prep Type
Chloride	210		5.0	2.2	mg/L	5	9056A	Total/NA
Sulfate	92	F1	5.0	2.5	mg/L	5	9056A	Total/NA
Barium	160		2.0	0.30	ug/L	1	6020A	Total/NA
Boron	200		100	58	ug/L	1	6020A	Total/NA
Calcium	250		0.50	0.19	mg/L	1	6020A	Total/NA
Cobalt	46		0.50	0.091	ug/L	1	6020A	Total/NA
Lithium	14		10	2.5	ug/L	1	6020A	Total/NA
Total Dissolved Solids	1000		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	649.53				ft	1	Field Sampling	Total/NA
Oxidation Reduction Potential	-39.9				millivolts	1	Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.41				mg/L	1	Field Sampling	Total/NA
pH, Field	6.59				SU	1	Field Sampling	Total/NA
Specific Conductance, Field	1675				umhos/cm	1	Field Sampling	Total/NA
Temperature, Field	11.5				Degrees C	1	Field Sampling	Total/NA
Turbidity, Field	21.2				NTU	1	Field Sampling	Total/NA

Client Sample ID: MW-308

Lab Sample ID: 310-204547-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	150		5.0	2.2	mg/L	5	_	9056A	Total/NA
Sulfate	270		5.0	2.5	mg/L	5		9056A	Total/NA
Barium	140		2.0	0.30	ug/L	1		6020A	Total/NA
Boron	220		100	58	ug/L	1		6020A	Total/NA
Calcium	230		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.16	J	0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	16		10	2.5	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1100		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	647.66				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-49.3				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.44				mg/L	1		Field Sampling	Total/NA
pH, Field	6.70				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1598				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.5				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	4.47				NTU	1		Field Sampling	Total/NA

Client Sample ID: MW-309

Lab Sample ID: 310-204547-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	57		5.0	2.2	mg/L	5	_	9056A	Total/NA
Sulfate	360		5.0	2.5	mg/L	5		9056A	Total/NA
Barium	52		2.0	0.30	ug/L	1		6020A	Total/NA
Boron	1400		100	58	ug/L	1		6020A	Total/NA
Calcium	130		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	2.3		0.50	0.091	ug/L	1		6020A	Total/NA
Lithium	8.9	J	10	2.5	ug/L	1		6020A	Total/NA
Total Dissolved Solids	940		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	646.46				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-40.6				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.36				mg/L	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

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4/28/2021

Detection Summary

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-309 (Continued)

Lab Sample ID: 310-204547-3

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
pH, Field	7.00			SU	1	_	Field Sampling	Total/NA
Specific Conductance, Field	1411			umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	11.7			Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	9.32			NTU	1		Field Sampling	Total/NA

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14

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Selenium

Thallium

Client Sample ID: MW-307

Date Collected: 04/14/21 12:30

Lab Sample ID: 310-204547-1

Matrix: Water

Date Collected: 04/14/21 12:30
Date Received: 04/16/21 17:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	210		5.0	2.2	mg/L			04/23/21 13:39	5
Fluoride	<0.28		0.50	0.28	mg/L			04/23/21 13:39	5
Sulfate	92	F1	5.0	2.5	mg/L			04/23/21 13:39	5
Method: 6020A - Metal	s (ICP/MS)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		04/19/21 08:26	04/20/21 19:43	1
Arsenic	<0.75		2.0	0.75	ug/L		04/19/21 08:26	04/20/21 19:43	1
Barium	160		2.0	0.30	ug/L		04/19/21 08:26	04/20/21 19:43	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/21 08:26	04/20/21 19:43	1
Boron	200		100	58	ug/L		04/19/21 08:26	04/21/21 15:36	1
Cadmium	<0.051		0.10	0.051	ug/L		04/19/21 08:26	04/20/21 19:43	1
Calcium	250		0.50	0.19	mg/L		04/19/21 08:26	04/20/21 19:43	1
Chromium	<1.1		5.0	1.1	ug/L		04/19/21 08:26	04/20/21 19:43	1
Cobalt	46		0.50	0.091	ug/L		04/19/21 08:26	04/20/21 19:43	1
Lead	<0.21		0.50	0.21	ug/L		04/19/21 08:26	04/20/21 19:43	1
Lithium	14		10	2.5	ug/L		04/19/21 08:26	04/20/21 19:43	1
Molybdenum	<1.3		2.0	1.3	ug/L		04/19/21 08:26	04/20/21 19:43	1

	Method: 7470A - Mercury (CVAA) Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
l	Mercury	<0.15		0.20		ug/L		04/22/21 14:28	04/23/21 14:04	1
ſ	General Chemistry									

5.0

1.0

0.96 ug/L

0.26 ug/L

< 0.96

<0.26

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1000		30	26	mg/L			04/19/21 13:42	1
pH	6.8	HF	0.1	0.1	SU			04/16/21 20:02	1

Method: Field Sampling - Field						_			
Analyte	Result (Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	649.53				ft			04/14/21 12:30	1
Oxidation Reduction Potential	-39.9				millivolts			04/14/21 12:30	1
Oxygen, Dissolved, Client Supplied	0.41				mg/L			04/14/21 12:30	1
pH, Field	6.59				SU			04/14/21 12:30	1
Specific Conductance, Field	1675				umhos/cm			04/14/21 12:30	1
Temperature, Field	11.5				Degrees C			04/14/21 12:30	1
Turbidity, Field	21.2				NTU			04/14/21 12:30	1

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04/19/21 08:26 04/20/21 19:43

04/19/21 08:26 04/21/21 15:36

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-204547-2 Client Sample ID: MW-308

Date Collected: 04/14/21 13:55 **Matrix: Water**

Date Received: 04/16/21 17:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chloride	150		5.0	2.2	mg/L			04/23/21 14:26	:
Fluoride	<0.28		0.50	0.28	mg/L			04/23/21 14:26	:
Sulfate	270		5.0	2.5	mg/L			04/23/21 14:26	;
Method: 6020A - Metals (ICP/M	•								
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Antimony	<1.1		2.0		ug/L		04/19/21 08:26	04/20/21 19:46	
Arsenic	<0.75		2.0	0.75	ug/L		04/19/21 08:26	04/20/21 19:46	
Barium	140		2.0		ug/L		04/19/21 08:26	04/20/21 19:46	
Beryllium	<0.27		1.0	0.27	ug/L		04/19/21 08:26	04/20/21 19:46	
Boron	220		100	58	ug/L		04/19/21 08:26	04/21/21 15:38	
Cadmium	<0.051		0.10	0.051	ug/L		04/19/21 08:26	04/20/21 19:46	
Calcium	230		0.50	0.19	mg/L		04/19/21 08:26	04/20/21 19:46	
Chromium	<1.1		5.0	1.1	ug/L		04/19/21 08:26	04/20/21 19:46	
Cobalt	0.16	J	0.50	0.091	ug/L		04/19/21 08:26	04/20/21 19:46	
Lead	<0.21		0.50	0.21	ug/L		04/19/21 08:26	04/20/21 19:46	
Lithium	16		10	2.5	ug/L		04/19/21 08:26	04/20/21 19:46	
Molybdenum	<1.3		2.0	1.3	ug/L		04/19/21 08:26	04/20/21 19:46	
Selenium	<0.96		5.0	0.96	ug/L		04/19/21 08:26	04/20/21 19:46	
Thallium	<0.26		1.0	0.26	ug/L		04/19/21 08:26	04/21/21 15:38	
Method: 7470A - Mercury (CVA	A)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Mercury	<0.15		0.20	0.15	ug/L		04/22/21 14:28	04/23/21 14:06	
General Chemistry									
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Total Dissolved Solids	1100		30	26	mg/L			04/19/21 13:42	
pH	7.1	HF	0.1	0.1	SU			04/16/21 19:59	
Method: Field Sampling - Field									
Analyte		Qualifier	RL	MDL		_ D	Prepared	Analyzed	Dil Fa
Ground Water Elevation	647.66				ft			04/14/21 13:55	
Oxidation Reduction Potential	-49.3				millivolts			04/14/21 13:55	
Oxygen, Dissolved, Client Supplied	0.44				mg/L			04/14/21 13:55	
pH, Field	6.70				SU			04/14/21 13:55	
Specific Conductance, Field	1598				umhos/cm			04/14/21 13:55	
Temperature, Field	11.5				Degrees C			04/14/21 13:55	
Turbidity, Field	4.47				NTU			04/14/21 13:55	

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-309 Lab Sample ID: 310-204547-3

Date Collected: 04/14/21 13:25 Matrix: Water Date Received: 04/16/21 17:00

Date Received: 04/10/21	7.00						
Method: 9056A - Anions	, Ion Chromatography						
Analyte	Result Qualifier	RL	MDL Unit	D	Prepared	Analyzed	Dil Fac
Chloride	57	5.0	2.2 mg/L			04/23/21 14:41	5

Analyte	Result Qualifier	KL	MDL Unit	ט	Prepared	Analyzeu	DII Fac
Chloride	57	5.0	2.2 mg/L			04/23/21 14:41	5
Fluoride	<0.28	0.50	0.28 mg/L			04/23/21 14:41	5
Sulfate	360	5.0	2.5 mg/L			04/23/21 14:41	5

Analyzed 04/20/21 19:48 04/20/21 19:48	Dil Fac
04/20/21 19:48	
04/20/21 19:48	
04/20/21 19:48	
04/21/21 15:41	
04/20/21 19:48	
04/20/21 19:48	
04/20/21 19:48	
04/20/21 19:48	•
04/20/21 19:48	
04/20/21 19:48	
04/20/21 19:48	
04/20/21 19:48	
04/21/21 15:41	
0 0 0 0 0 0 0 0 0 0	4/21/21 15:41 4/20/21 19:48 4/20/21 19:48 4/20/21 19:48 4/20/21 19:48 4/20/21 19:48 4/20/21 19:48 4/20/21 19:48 4/20/21 19:48

Method: 7470A - Mercury (CVAA)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		04/22/21 14:28	04/23/21 14:08	1

General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	940		30	26	mg/L			04/19/21 13:42	1
pH	7.3	HF	0.1	0.1	SU			04/16/21 17:04	1

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	646.46				ft			04/14/21 13:25	1
Oxidation Reduction Potential	-40.6				millivolts			04/14/21 13:25	1
Oxygen, Dissolved, Client Supplied	0.36				mg/L			04/14/21 13:25	1
pH, Field	7.00				SU			04/14/21 13:25	1
Specific Conductance, Field	1411				umhos/cm			04/14/21 13:25	1
Temperature, Field	11.7				Degrees C			04/14/21 13:25	1
Turbidity, Field	9.32				NTU			04/14/21 13:25	1

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Definitions/Glossary

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Qualifiers

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Qualifier **Qualifier Description**

MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not

applicable.

F1 MS and/or MSD recovery exceeds control limits.

Metals

Qualifier **Qualifier Description**

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 commo	ly used abbreviations may or may not be present in this report.
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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

Decision Level Concentration (Radiochemistry) DLC

Estimated Detection Limit (Dioxin) **EDL** 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 Minimum Level (Dioxin) ML 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 Positive / Present POS

Practical Quantitation Limit PQL

PRES Presumptive QC **Quality Control**

Relative Error Ratio (Radiochemistry) **RER**

Reporting Limit or Requested Limit (Radiochemistry) RI

RPD Relative Percent Difference, a measure of the relative difference between two points

Toxicity Equivalent Factor (Dioxin) **TEF TEQ** Toxicity Equivalent Quotient (Dioxin)

TNTC Too Numerous To Count

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4/28/2021

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-314219/3

Matrix: Water

Analysis Batch: 314219

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

MB MB MDL Unit Analyte Result Qualifier RL Prepared Analyzed Dil Fac 0.43 mg/L Chloride < 0.43 1.0 04/23/21 12:37 Fluoride <0.055 0.10 0.055 mg/L 04/23/21 12:37 Sulfate < 0.49 1.0 0.49 mg/L 04/23/21 12:37

Lab Sample ID: LCS 310-314219/4

Matrix: Water

Analysis Batch: 314219

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

Client Sample ID: MW-307

Client Sample ID: MW-307

Prep Type: Total/NA

Prep Type: Total/NA

•	Spike	LCS	LCS			%Rec.	
Analyte	Added	Result	Qualifier	Unit	D %Red	Limits	
Chloride	10.0	9.26		mg/L	93	90 - 110	
Fluoride	2.00	2.11		mg/L	106	90 - 110	
Sulfate	10.0	10.1		mg/L	101	90 - 110	

Lab Sample ID: 310-204547-1 MS

Matrix: Water

Analysis Batch: 314219

	Sample	Sample	Spike	MS	MS				%Rec.	
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Chloride	210		25.0	219	4	mg/L		28	80 - 120	
Fluoride	<0.28		5.00	4.67		mg/L		93	80 - 120	
Sulfate	92	F1	25.0	111	F1	mg/L		78	80 - 120	

Lab Sample ID: 310-204547-1 MSD

Matrix: Water

Analysis Batch: 314219

7, 6.6 6 7 1_ 16	Sample	Sample	Spike	MSD	MSD				%Rec.		RPD
Analyte	Result	Qualifier	Added	Result	Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Chloride	210		25.0	221	4	mg/L		37	80 - 120	1	15
Fluoride	<0.28		5.00	5.03		mg/L		101	80 - 120	7	15
Sulfate	92	F1	25.0	113		mg/L		84	80 - 120	1	15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-313149/1-A

Matrix: Water

Analysis Batch: 313453

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 313149

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		04/19/21 08:26	04/20/21 18:14	1
Arsenic	<0.75		2.0	0.75	ug/L		04/19/21 08:26	04/20/21 18:14	1
Barium	<0.30		2.0	0.30	ug/L		04/19/21 08:26	04/20/21 18:14	1
Beryllium	<0.27		1.0	0.27	ug/L		04/19/21 08:26	04/20/21 18:14	1
Cadmium	<0.051		0.10	0.051	ug/L		04/19/21 08:26	04/20/21 18:14	1
Calcium	<0.19		0.50	0.19	mg/L		04/19/21 08:26	04/20/21 18:14	1
Chromium	<1.1		5.0	1.1	ug/L		04/19/21 08:26	04/20/21 18:14	1
Cobalt	<0.091		0.50	0.091	ug/L		04/19/21 08:26	04/20/21 18:14	1
Lead	<0.21		0.50	0.21	ug/L		04/19/21 08:26	04/20/21 18:14	1
Lithium	<2.5		10	2.5	ug/L		04/19/21 08:26	04/20/21 18:14	1
Molybdenum	<1.3		2.0	1.3	ug/L		04/19/21 08:26	04/20/21 18:14	1
Selenium	<0.96		5.0	0.96	ug/L		04/19/21 08:26	04/20/21 18:14	1

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Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

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

<0.26

Lab Sample ID: MB 310-313149/1-A **Matrix: Water**

Analysis Batch: 313453

Prep Batch: 313149 MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac

10

Lab Sample ID: MB 310-313149/1-A

Matrix: Water

Thallium

Analysis Batch: 313546

MB MB Analyte

Boron

Lab Sample ID: LCS 310-313149/2-A

Analysis Batch: 313453

Matrix: Water

Calcium

Selenium

Thallium

Analyte

Analyte Antimony

Arsenic Barium Beryllium Cadmium

Chromium Cobalt Lead Lithium Molybdenum

Lab Sample ID: LCS 310-313149/2-A **Matrix: Water**

Analysis Batch: 313546

Analyte Boron

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-313631/1-A **Matrix: Water**

Analysis Batch: 313806

Mercury Lab Sample ID: LCS 310-313631/2-A

Matrix: Water Analysis Batch: 313806

Analyte Mercury

Result Qualifier RL **MDL** Unit 100 <58

Spike

Added

200

200

100

100

100

2.00

100

100

200

200

200

400

200

Spike

Added

MB MB

<0.15

Result Qualifier

200

Spike

Added

1.67

LCS LCS

202

208

108

101

104

1.71

104

102

204

197

204

403

216

LCS LCS

198

Result Qualifier

MDL Unit

0.15 ug/L

LCS LCS

1.53

Result Qualifier

Result Qualifier

0.26 ug/L

58 ug/L

Unit

ug/L

ug/L

ug/L

ug/L

ug/L

mg/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

ug/L

Unit

ug/L

ug/L

D

04/19/21 08:26 04/21/21 14:53

D %Rec

D

Client Sample ID: Lab Control Sample

Prepared

101

104

04/19/21 08:26 04/20/21 18:14

Prep Type: Total/NA **Prep Batch: 313149**

%Rec.

Analyzed

Limits 80 - 120 80 - 120 80 - 120

Client Sample ID: Method Blank

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 313149

108 101 80 - 120 104 80 - 120 86 80 - 120

104 80 - 120 102 80 - 120 102 80 - 120

98 80 - 120 102 80 - 120 101 80 - 120 108 80 - 120

Client Sample ID: Lab Control Sample

Prep Type: Total/NA **Prep Batch: 313149**

%Rec.

%Rec Limits 99 80 - 120

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 313631

Prepared Analyzed 04/22/21 14:28 04/23/21 13:49

Client Sample ID: Lab Control Sample Prep Type: Total/NA **Prep Batch: 313631** %Rec. Unit %Rec Limits

92

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80 - 120

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RL

0.20

Dil Fac

4/28/2021

QC Sample Results

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

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

MB MB

Lab Sample ID: MB 310-313222/1

Matrix: Water

Analysis Batch: 313222

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

Result Qualifier RL **MDL** Unit Analyzed Dil Fac Analyte D **Prepared** Total Dissolved Solids 30 26 mg/L 04/19/21 13:42 <26

Lab Sample ID: LCS 310-313222/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 313222

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits **Total Dissolved Solids** 1000 940 mg/L 94 90 - 110

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-313064/59 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA Analysis Batch: 313064

Spike LCS LCS %Rec. Analyte Added Result Qualifier Limits Unit %Rec рН 7.00 7.1 SU 101 98 - 102

Lab Sample ID: LCS 310-313078/1 **Client Sample ID: Lab Control Sample**

Matrix: Water

Analysis Batch: 313078

Spike LCS LCS %Rec. Added Result Qualifier Limits Analyte Unit D %Rec pН 7.00 7.0 SU 101 98 - 102

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Prep Type: Total/NA

QC Association Summary

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

HPLC/IC

Analysis Batch: 314219

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	9056A	
310-204547-2	MW-308	Total/NA	Water	9056A	
310-204547-3	MW-309	Total/NA	Water	9056A	
MB 310-314219/3	Method Blank	Total/NA	Water	9056A	
LCS 310-314219/4	Lab Control Sample	Total/NA	Water	9056A	
310-204547-1 MS	MW-307	Total/NA	Water	9056A	
310-204547-1 MSD	MW-307	Total/NA	Water	9056A	

Metals

Prep Batch: 313149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	3010A	
310-204547-2	MW-308	Total/NA	Water	3010A	
310-204547-3	MW-309	Total/NA	Water	3010A	
MB 310-313149/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-313149/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 313453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	6020A	313149
310-204547-2	MW-308	Total/NA	Water	6020A	313149
310-204547-3	MW-309	Total/NA	Water	6020A	313149
MB 310-313149/1-A	Method Blank	Total/NA	Water	6020A	313149
LCS 310-313149/2-A	Lab Control Sample	Total/NA	Water	6020A	313149

Analysis Batch: 313546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	6020A	313149
310-204547-2	MW-308	Total/NA	Water	6020A	313149
310-204547-3	MW-309	Total/NA	Water	6020A	313149
MB 310-313149/1-A	Method Blank	Total/NA	Water	6020A	313149
LCS 310-313149/2-A	Lab Control Sample	Total/NA	Water	6020A	313149

Prep Batch: 313631

Lab Sample ID 310-204547-1	Client Sample ID MW-307	Prep Type Total/NA	Matrix Water	Method 7470A	Prep Batch
310-204547-2	MW-308	Total/NA	Water	7470A	
310-204547-3	MW-309	Total/NA	Water	7470A	
MB 310-313631/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-313631/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 313806

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	7470A	313631
310-204547-2	MW-308	Total/NA	Water	7470A	313631
310-204547-3	MW-309	Total/NA	Water	7470A	313631
MB 310-313631/1-A	Method Blank	Total/NA	Water	7470A	313631
LCS 310-313631/2-A	Lab Control Sample	Total/NA	Water	7470A	313631

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QC Association Summary

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

General Chemistry

Analysis Batch: 313064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-3	MW-309	Total/NA	Water	SM 4500 H+ B	
LCS 310-313064/59	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 313078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	SM 4500 H+ B	
310-204547-2	MW-308	Total/NA	Water	SM 4500 H+ B	
LCS 310-313078/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 313222

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	SM 2540C	
310-204547-2	MW-308	Total/NA	Water	SM 2540C	
310-204547-3	MW-309	Total/NA	Water	SM 2540C	
MB 310-313222/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-313222/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 313742

Lab Sample ID 310-204547-1	Client Sample ID MW-307	Prep Type Total/NA	Matrix Water	Method Field Sampling	Prep Batch
310-204547-2	MW-308	Total/NA	Water	Field Sampling	
310-204547-3	MW-309	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Date Collected: 04/14/21 12:30 Date Received: 04/16/21 17:00

Lab Sample ID: 310-204547-1

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	314219	04/23/21 13:39	JNR	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313453	04/20/21 19:43	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313546	04/21/21 15:36	SAD	TAL CF
Total/NA	Prep	7470A			313631	04/22/21 14:28	HED	TAL CF
Total/NA	Analysis	7470A		1	313806	04/23/21 14:04	HED	TAL CF
Total/NA	Analysis	SM 2540C		1	313222	04/19/21 13:42	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	313078	04/16/21 20:02	GRS	TAL CF
Total/NA	Analysis	Field Sampling		1	313742	04/14/21 12:30	SLD	TAL CF

Lab Sample ID: 310-204547-2 **Client Sample ID: MW-308 Matrix: Water**

Date Collected: 04/14/21 13:55

Date Received: 04/16/21 17:00

-	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	314219	04/23/21 14:26	JNR	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313453	04/20/21 19:46	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313546	04/21/21 15:38	SAD	TAL CF
Total/NA	Prep	7470A			313631	04/22/21 14:28	HED	TAL CF
Total/NA	Analysis	7470A		1	313806	04/23/21 14:06	HED	TAL CF
Total/NA	Analysis	SM 2540C		1	313222	04/19/21 13:42	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	313078	04/16/21 19:59	GRS	TAL CF
Total/NA	Analysis	Field Sampling		1	313742	04/14/21 13:55	SLD	TAL CF

Lab Sample ID: 310-204547-3 **Client Sample ID: MW-309** Date Collected: 04/14/21 13:25 **Matrix: Water**

Date Received: 04/16/21 17:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	314219	04/23/21 14:41	JNR	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313453	04/20/21 19:48	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313546	04/21/21 15:41	SAD	TAL CF
Total/NA	Prep	7470A			313631	04/22/21 14:28	HED	TAL CF
Total/NA	Analysis	7470A		1	313806	04/23/21 14:08	HED	TAL CF
Total/NA	Analysis	SM 2540C		1	313222	04/19/21 13:42	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	313064	04/16/21 17:04	AJW	TAL CF
Total/NA	Analysis	Field Sampling		1	313742	04/14/21 13:25	SLD	TAL CF

Eurofins TestAmerica, Cedar Falls

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Lab Chronicle

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Topostolio. Ottalima Contrating Station 2022 for 2

Laboratory References:

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

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Job ID: 310-204547-1

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Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

Eurofins TestAmerica, Cedar Falls

Method Summary

Client: SCS Engineers Job ID: 310-204547-1

Project/Site: Ottumwa Generating Station - 25221072

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	рН	SM	TAL CF
Field Sampling	Field Sampling	EPA	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF
'470A	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



Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature L.

Client Information				PRESERVE A LEASE	
Client:	Engineer	15			_
City/State: CITY ad	BM	STATE	Project: Othul	mwa ben	Statom
Receipt Information					
Date/Time Received:	9-16-21	Go[∏	Received By:	EN	
Delivery Type: UPS	☐ FedEx	[FedEx Ground	US Mail	Spee-Dee
	Courier 🔲 Lab Fie	ld Services [Client Drop-off	Other:	
Condition of Cooler/Cont	ainers				
Sample(s) received in Co	ooler? Yes	☐ No	If yes: Cooler ID:	AB-74	
Multiple Coolers?	Styl Yes	No	If yes: Cooler # _	of	
Cooler Custody Seals Pr	resent? Yes	□No	If yes: Cooler custo	ody seals intact? 🛚	Yes 🗌 No
Sample Custody Seals F	Present? Yes	V ZPNo	If yes: Sample cus	tody seals intact?	Yes No
Trip Blank Present?	☐ Yes	No	If yes: Which VOA	samples are in cool	er? ↓
MW-207	MW- 35	M, E	W 309		
Temperature Record					No. 25 feet also have
Coolant:	☐ Blue ice	☐ Dry ice	Other:	No	NE
Thermometer ID:	ට		Correction Factor (
 Temp Blank Temperature 	e – If no temp blank, or	temp blank tem	perature above criteria, pi	roceed to Sample Contain	ner Temperature
Uncorrected Temp (°C):			Corrected Temp (°0	C):	
 Sample Container Temper 	erature	21 10 10 10 10 10 10 10 10 10 10 10 10 10			建筑 。 第二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十二十
Container(s) used:	CONTAINER 1	250ml	CONTA	MNER 2	
Uncorrected Temp (°C):	1	مارد			
Corrected Temp (°C):		2.4			
Exceptions Noted					
If temperature exceed a) If yes: Is there even				pling? ☐ Yes ☐ Yes	☐ No ☐ No
2) If temperature is <0°C (e.g., bulging septa, bul				e containers is comp	oromised?
NOTE: If yes, contact Pl Additional Comments	M before proceeding.	If no, procee	d with login		SATE AND SAME AND A SAME
		TARREST TO A			

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

4/28/2021

Prof. Prof		Complex			21 - L. Child.	autorious diministration	configuration and a second	CONTROL OF THE PROPERTY.	NATIONAL PROPERTY AND ADDRESS OF THE PERSONS ASSESSED.			TO THE OWNER OF THE OWNER OWNER OF THE OWNER OWNE	OR OTHER DESIGNATION OF THE PERSON OF THE PE	
Prince 2 & C4 + C4 (3 - C 85 \$ C4 C4 (3 - C 8 C4 C4 C4 C4 C4 C4 C4	Client Information	Tens	Bust	ક	Lab PM: Fredrick, S	andie				Carrier Trac	king No(s):	COC No 310-59	No: 59843-1748	9.1
March 10	Client Contact. Meghan Blodgett	Phone 264-9	8	\$	E-Mail sandra.fre	Irick@eu	ırofinset	Com		State of On	in:	Page	1 of 1	
Particular Par	Company: SCS Engineers	A NATION AND ASSESSMENT OF THE PROPERTY OF THE	SMd					Analy	sis Red	uested		Joh #		grant and the state of the stat
CAT - CAT	Address. 2830 Dairy Drive	Due Date Requested:										Prese	ervation Coc	65.
	ary. Madison	TAT Requested (days.					Đ)					A - A - A - K - K - K - K - K - K - K -	St. aOH n Acetate	M - Hexane N - None O - AsNaO2
Sample Date Sample Carpon Carpo	state, z.p. WI, 53718	Compliance Project:	Yes				eliu2					О Ш I	tric Acid aHSO4	P - Na204S Q - Na2SO3
Sample Date Time Carpon Time Time Carpon Time Tim	1592	Po#: 25221072			(<		& sbin					- G 1	achtor mehlor	R - Na2S2O3 S - H2SO4 T TSB Dodgast
Sample Date Sample Matrix Sample Matrix Sample Coordination Sa	dgett@scsen	WO#					oui3 e						Water	U - Acetone
Sample Date Sample Matrix Sample Matrix Matrix Type Encoded Matrix Type Encoded Matrix Type Encoded Time Graph Coronam C	Project Name Ottumwa Generating Station - 25221072	Project #: 31011020						÷H				***************************************	DTA DA	W - pH 4-5 Z - other (specify)
Sample Date Time Company Sample Water Water Company Sample Company	site: OUS	SSOW#:		EPINIONE OF PROPORTIES FREE SERVICES				_008÷N				*************		
High 18.30 High	Samnle Identification				2 barafli Pblai		026A_ORGFM_					otal Mumber o	TENENTAL CONTRACTOR CO	CENTRAL BURGET CONTROL
4.14.21 12.30 4 Waste 24 24 24 24 24 24 24 2		The second secon	1	1 (11)	X		5 2	0	***************************************			1	Special In	structions/Nc
中・1中・21 15:25 4 Water 24 24 25 25 35 35 35 35 35 35	MW-307				3	٨	λ	1	-			The second secon	A TOTAL OF THE PARTY OF THE PAR	
# 14-14-21 \$1.2\$ \$ \$ Water \$1.2	MVV-308		:55		3	λ	4	1					randology tripulation of the present of	
ant Deoison B Williams Date:	WW-309		5		5	х		_						
Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Special Instructions/GC Requirements: Date:														· · · · · · · · · · · · · · · · · · ·
Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Special Instructions/QC Requirements. Method of Shipment Date:		THE THE PROPERTY OF THE PROPER	***************************************	unidas successivas de publicanas		1000								
Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Radiological Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Received by Lab														
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Special Instructions/QC Requirements: Date/Time: Company Received by. Condor Temperature(s) "C and Other Remarks: C and Other	Possible Hazard Identification				S	mole Di	Sposal	(A fee	may be a	098898	Samolas	ro retained for	ner than f	month)
Date/Time:	Non-Hazard Fiammable Skin irritant Colingrahla Boungsted: 11 III IV Other reagain.	- 3		ological		Retu	rri To C	lient	X D	isposal B	/ Lab	Archive Fo	y and and	Months
Substitute Date/Time: Company Received by: Date/Time: Date	perioration requested: 1, 11, 11, 17, Orien (specify) Forty Kit Ration richard hv.		oto.		0.00		III UCIIOII	S/CC PS	daniemen		d of Shioment	<u> </u>		***************************************
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						T. C.		0000						

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program Groundwater Monitoring - Ottumwa Generating Station / SCS Engineers Project #25216072

		cocs	#1	l													
		(Backg					C	DC Set #2	/Ach Don	.dl					Set #3 (Z	ı DD)	
	Parameter	MW-301	Field	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	TOTAL
	Doron	Х	Blank x	302 X	303 X	304 x	305 X	305A ×	306 ×	310 ×	310A X	311 x	311A ×	307 ×	308 ×	309 X	15
_	Boron Calcium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
≡ s	Chloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
idi)	Fluoride	X	X	×	X	X	X	×	X	X	×	X	X	X	X	X	15
per	pH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Appendix III Parameters	Sulfate	X	X	X	×	X	×	X	×	X	X	X	X	×	×	X	15
,	TDS	X	X	×	×	X	×	X	X	X	X	X	X	×	×	X	15
	100			^	~						~						-13
	Antimony	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	X	Х	15
	Arsenic	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Barium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	15
	Beryllium	Х	Х	Х	Х	Х	Х	х	Х	Х	х	х	Х	Х	Х	Х	15
) tel	Cadmium	Х	Х	Х	Х	х	х	х	Х	х	х	х	х	Х	Х	х	15
Appendix IV Parameters	Chromium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
ara	Cobalt	Х	Х	Х	Х	х	х	Х	Х	Х	Х	х	Х	Х	Х	х	15
_ A	Fluoride	Х	Х	Х	Х	х	х	Х	Х	Х	Х	х	х	Х	Х	Х	15
×	Lead	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
펼	Lithium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
De .	Mercury	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
₽	Molybdenum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Selenium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Thallium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Radium	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
<u>,</u> 0	Bicarbonate (total)	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Si O	Carbonate (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ag 円	Iron (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
rar Y-	Magnesium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Pa	Manganese (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ab SEF	Potassium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
I I	Sodium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
S E	Cobalt (filtered)						Х		Х					Х			3
# 2	Iron (filtered)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Additional Lab Parameters REQUIRES SEPARATE COO	Lithium (filtered)									Х	Х		Х				3
	Manganese (filtered)	Х		Х	Х	X	X	Х	Х	Х	Х	X	Х	Х	Х	X	14
	E (OUEN.)		.,			.,				.,		.,				.,	45
	Ferrous Iron (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Sulfide (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ıρ	Groundwater Elevation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Field Parameters	Well Depth	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
i ii	pH (field)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ara	Specific Conductance	X X	X	X	X	X X	X	X X	X	X X	X X	X X	X	X	X	X X	15 15
Ä	Dissolved Oxygen ORP	X	X X		X	X	X	X	X	X	X		X	X	X	X	15
le le		X	X	X	X	X		X	X	X	X	X X	X	X		X	15
Œ	Temperature	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Turbidity Color	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Odor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	JOUOI	_ ^	^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^		^	_ ^	13

Notes: All samples are unfiltered (total).

 $C: Users Fredrick SApp Data Local Microsoft Windows IN et Cache Content. Outlook Z396 DTG3 \\ [OGS_CCR_Rule_Sampling_2104.xls] Sheet 1. Content SAPP DESCRIPTION OF THE PROPERTY OF THE PROPE$

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Client: SCS Engineers Job Number: 310-204547-1

Login Number: 204547 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Ramos, Eric F

Creator. Rainos, Eric F		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Eurofins TestAmerica, Cedar Falls

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Sample	Date/Sample Time	Groundwater Elevation (amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity
MW-301	4/14/2021 - 10:10	682.94	9.1	6.26	5.99	1,062	232.5	1.61
MW-302	4/13/2021 - 18:15	656.05	11.9	6.44	0.37	2,087	198.2	22.9
MW-303	4/13/2021 - 16:50	653.82	9.7	6.67	2.83	1,118	184.7	4.31
MW-304	4/14/2021 - 16:50	654.34	13.1	6.94	0.20	1,797	-97.5	16.9
MW-305	4/16/2021 - 10:15	661.15	12.9	6.92	0.16	1,799	43.6	8.17
MW-305A	4/15/2021 - 13:45	651.16	12.4	7.05	0.88	1,224	158.3	1.02
MW-306	4/13/2021 - 15:00	670.27	12.7	6.42	0.14	1,339	92.0	8.99
MW-307	4/14/2021 - 12:30	649.53	11.5	6.59	0.41	1,675	-39.9	21.2
MW-308	4/15/2021 - 13:55	647.66	11.5	6.70	0.44	1,598	-49.3	4.47
MW-309	4/14/2021 - 15:25	646.46	11.7	7.00	0.36	1,411	-40.6	9.32
MW-310	4/13/2021 - 13:25	642.70	12.6	7.07	0.46	2,362	161.0	2.38
MW-310A	4/15/2021 - 14:20	644.88	12.5	7.47	0.98	3,106	160.2	2.25
MW-311	4/14/2021 - 08:55	643.02	9.3	6.66	1.18	945	179.8	0.78
MW-311A	4/16/2021 - 11:30	644.16	12.3	7.76	0.77	3,332	146.9	0.02

Abbreviations:

mg/L = milligrams per liter amsl = above mean sea level

NA = Not Analyzed NM= Not Measured

Notes: none

 Created by: NDK
 Date: 4/21/2021

 Last revision by: JR
 Date: 4/22/2021

 Checked by: NDK
 Date: 4/22/2021

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Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-204547-2

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 5/18/2021 7:38:06 AM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

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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.

Laboratory Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

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Case Narrative

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-204547-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-204547-2

Comments

No additional comments.

Receipt

The samples were received on 4/16/2021 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.6° C.

RAD

Methods 903.0, 9315: Radium-226 Batch 506413 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. (LCS 160-506413/1-A) and (LCSD 160-506413/2-A)

Methods 904.0, 9320: Radium-228 Batch 506418 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-307 (310-204547-1), MW-308 (310-204547-2), MW-309 (310-204547-3), (LCS 160-506418/1-A), (LCSD 160-506418/2-A) and (MB 160-506418/23-A)

Method PrecSep_0: Radium 228 Prep Batch 160-506418: Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-307 (310-204547-1), MW-308 (310-204547-2) and MW-309 (310-204547-3). A laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium 226 Prep Batch 160-506413: Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-307 (310-204547-1), MW-308 (310-204547-2) and MW-309 (310-204547-3). A laboratory control sample/laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-204547-1	MW-307	Water	04/14/21 12:30	04/16/21 17:00	
310-204547-2	MW-308	Water	04/14/21 13:55	04/16/21 17:00	
310-204547-3	MW-309	Water	04/14/21 13:25	04/16/21 17:00	

Job ID: 310-204547-2

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Detection Summary

Client: SCS Engineers

Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307	Lab Sample ID: 310-204547-1
No Detections.	
Client Sample ID: MW-308	Lab Sample ID: 310-204547-2
No Detections.	
Client Sample ID: MW-309	Lab Sample ID: 310-204547-3

No Detections.

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Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-204547-1 **Client Sample ID: MW-307**

Date Collected: 04/14/21 12:30 **Matrix: Water** Date Received: 04/16/21 17:00

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.99		0.268	0.323	1.00	0.124	pCi/L	04/21/21 10:34	05/15/21 10:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
			10 110					04/21/21 10:34	05/15/21 10:53	
Ba Carrier Method: 904.0 -	77.9 Radium-228	(GFPC)	40 - 110 Count	Total				04/21/21 10.34	05/15/21 10.53	7
Method: 904.0 -	Radium-228	, ,	Count Uncert.	Uncert.	DI.	MDC	II.a.i4			Dil Foo
- -	Radium-228	(GFPC) Qualifier	Count		RL 1.00	MDC 0.458	Unit pCi/L	Prepared 04/21/21 10:55	Analyzed 05/06/21 20:32	Dil Fac
Method: 904.0 -	Radium-228 Result 1.09	, ,	Count Uncert. (2σ+/-)	Uncert. (2σ+/-)				Prepared	Analyzed	Dil Fac
Method: 904.0 - Analyte	Radium-228 Result 1.09	Qualifier	Count Uncert. (2σ+/-) 0.356	Uncert. (2σ+/-)				Prepared 04/21/21 10:55	Analyzed 05/06/21 20:32 Analyzed	1

_ Method: Ra226 Ra2	228 Pos -	Combined	d Radium-2	226 and Ra	adium-228					
_			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	3.08		0.446	0.490	5.00	0.458	pCi/L	_	05/17/21 21:22	1

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-308

Date Collected: 04/14/21 13:55 Date Received: 04/16/21 17:00

Lab Sample ID: 310-204547-2

Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	1.36		0.293	0.317	1.00	0.215	pCi/L	04/21/21 10:34	05/15/21 10:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	45.2		40 - 110					04/21/21 10:34	05/15/21 10:53	1

Method: 904.0 -	Radium-228	(GFPC)								
			Count Uncert.	Total						
Analyte	Result	Qualifier	oncert. (2σ+/-)	Uncert. (2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
		Qualifier								Diriac
Radium-228	1.51		0.584	0.600	1.00	0.797	pCi/L	04/21/21 10:55	05/06/21 20:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	45.2		40 - 110					04/21/21 10:55	05/06/21 20:32	1
Y Carrier	84.1		40 - 110					04/21/21 10:55	05/06/21 20:32	1

Method: Ra226_Ra	228 Pos -	Combine	d Radium-2	226 and Ra	dium-228	3				
_			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	2.87		0.653	0.679	5.00	0.797	pCi/L		05/17/21 21:22	1

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-309

Date Collected: 04/14/21 13:25 Date Received: 04/16/21 17:00

Lab Sample ID: 310-204547-3

Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.604		0.165	0.174	1.00	0.151	pCi/L	04/21/21 10:34	05/15/21 10:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	73.6		40 - 110					04/21/21 10:34	05/15/21 10:53	1

Method: 904.0 -	Radium-228	(GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.448	U	0.335	0.338	1.00	0.527	pCi/L	04/21/21 10:55	05/06/21 20:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	73.6		40 - 110					04/21/21 10:55	05/06/21 20:32	1
Y Carrier	84.9		40 - 110					04/21/21 10:55	05/06/21 20:32	1

Method: Ra226_Ra2	228 Pos -	Combined	d Radium-2	26 and Ra	dium-228	3				
_			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.05		0.373	0.380	5.00	0.527	pCi/L	 _	05/17/21 21:22	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

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

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Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-506413/23-A

Lab Sample ID: LCS 160-506413/1-A

Matrix: Water

Matrix: Water

Analysis Batch: 509911

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 506413

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.03455 U 0.0669 0.0670 1.00 0.120 pCi/L 04/21/21 10:34 05/15/21 11:00

Total

Count

MB MB

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac Ba Carrier 71.5 40 - 110 04/21/21 10:34 05/15/21 11:00

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 506413

Analysis Batch: 509912

Spike

Total

%Rec. Uncert.

Analyte Added Result Qual $(2\sigma + / -)$ RL %Rec Limits MDC Unit Radium-226 11.3 10.23 1.00 0.132 pCi/L 90 75 - 125 1 11

LCS LCS

LCS LCS

Carrier %Yield Qualifier Limits Ba Carrier 69.7 40 - 110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 506413

Lab Sample ID: LCSD 160-506413/2-A **Matrix: Water**

Analysis Batch: 509912

Total

LCSD LCSD %Rec. **RER** Spike Uncert. %Rec Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit Limits RER Limit Radium-226 11.3 1.15 1.00 0.136 pCi/L 95 75 - 125 0.23 10.75

LCSD LCSD

Carrier %Yield Qualifier Limits Ba Carrier 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-506418/23-A

Matrix: Water

Analysis Batch: 508606

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 506418

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 Ū 0.333 0.333 1.00 0.566 pCi/L 04/21/21 10:55 05/06/21 20:29 0.1770

> MB MB

Carrier %Yield Qualifier Limits Prepared Dil Fac Analyzed Ba Carrier 71.5 40 - 110 04/21/21 10:55 05/06/21 20:29 40 - 110 Y Carrier 81.1 04/21/21 10:55 05/06/21 20:29

Eurofins TestAmerica, Cedar Falls

Page 10 of 21

5/18/2021

QC Sample Results

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

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

Lab Sample ID: LCS 160-506418/1-A **Client Sample ID: Lab Control Sample**

Matrix: Water

Analysis Batch: 508605

Prep Type: Total/NA

Prep Batch: 506418

Total LCS LCS %Rec. Spike Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Radium-228 7.23 8.276 1.07 1.00 0.474 pCi/L 114 75 - 125

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 69.7 40 - 110 Y Carrier 84.5 40 - 110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 506418

Lab Sample ID: LCSD 160-506418/2-A **Matrix: Water**

Analysis Batch: 508605

				iotai						
	Spike	LCSD	LCSD	Uncert.				%Rec.		RER
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Uni	t %Rec	Limits	RER	Limit
Radium-228	7.23	8.808		1.12	1.00	0.453 pCi/	L 122	75 - 125	0.24	1

LCSD LCSD Carrier %Yield Qualifier Limits Ba Carrier 71.2 40 - 110 83.0 40 - 110 Y Carrier

QC Association Summary

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Rad

Prep Batch: 506413

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	PrecSep-21	
310-204547-2	MW-308	Total/NA	Water	PrecSep-21	
310-204547-3	MW-309	Total/NA	Water	PrecSep-21	
MB 160-506413/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-506413/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-506413/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 506418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	PrecSep_0	
310-204547-2	MW-308	Total/NA	Water	PrecSep_0	
310-204547-3	MW-309	Total/NA	Water	PrecSep_0	
MB 160-506418/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-506418/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-506418/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Date Received: 04/16/21 17:00

Lab Sample ID: 310-204547-1 Date Collected: 04/14/21 12:30

Matrix: Water

Batch Dilution Batch Batch **Prepared** Method or Analyzed **Prep Type** Type Run **Factor** Number Analyst Lab Total/NA PrecSep-21 506413 04/21/21 10:34 RBR TAL SL Prep Total/NA 903.0 509912 05/15/21 10:53 TAL SL Analysis 1 ANW PrecSep_0 Total/NA Prep 506418 04/21/21 10:55 RBR TAL SL Total/NA Analysis 904.0 1 508605 05/06/21 20:32 ANW TAL SL Total/NA Analysis Ra226 Ra228 Pos 510131 05/17/21 21:22 SCB TAL SL

Client Sample ID: MW-308 Lab Sample ID: 310-204547-2

Date Collected: 04/14/21 13:55 **Matrix: Water** Date Received: 04/16/21 17:00

Dilution Batch Batch **Batch** Prepared Method Number **Prep Type** Type Run Factor or Analyzed Analyst Lab Total/NA Prep PrecSep-21 TAL SL 506413 04/21/21 10:34 RBR Total/NA Analysis 903.0 1 509912 05/15/21 10:53 ANW TAL SL Total/NA TAL SL Prep PrecSep 0 506418 04/21/21 10:55 RBR Total/NA Analysis 904.0 508605 05/06/21 20:32 ANW TAL SL 1 Total/NA Analysis 510131 05/17/21 21:22 SCB TAL SL Ra226_Ra228 Pos 1

Client Sample ID: MW-309 Lab Sample ID: 310-204547-3

Date Collected: 04/14/21 13:25 **Matrix: Water**

Date Received: 04/16/21 17:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			506413	04/21/21 10:34	RBR	TAL SL
Total/NA	Analysis	903.0		1	509912	05/15/21 10:53	ANW	TAL SL
Total/NA	Prep	PrecSep_0			506418	04/21/21 10:55	RBR	TAL SL
Total/NA	Analysis	904.0		1	508605	05/06/21 20:32	ANW	TAL SL
Total/NA	Analysis	Ra226 Ra228 Pos		1	510131	05/17/21 21:22	SCB	TAL SL

Laboratory References:

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

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Eurofins TestAmerica, Cedar Falls

Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

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
lowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-21
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	04-01-22
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	03-01-22
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193	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

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Method Summary

Client: SCS Engineers

Job ID: 310-204547-2 Project/Site: Ottumwa Generating Station - 25221072

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



Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature L

Client Information				978325	
Client:	Engineer	15			
City/State: CITY and	Bon	STATE	Project: Off	umwa bei	1. Staton
Receipt Information					
Date/Time Received:	9-16-21	GOC	Received By:	EN	
Delivery Type: UPS	FedEx	[☐ FedEx Ground	US Mail	Spee-Dee
Lab (Courier 🔲 Lab Fie	ld Services [Client Drop-off	Other:	
Condition of Cooler/Conta	ainers				
Sample(s) received in Co	ooler? Yes	☐ No	If yes: Cooler ID	: AB-70	}
Multiple Coolers?	The Yes	No	If yes: Cooler#	of	
Cooler Custody Seals Pr	resent? Yes	□No	If yes: Cooler cu	ustody seals intact?	Yes No
Sample Custody Seals P	Present? Yes	V ZPNo	If yes: Sample of	ustody seals intact?] Yes 🔲 No
Trip Blank Present?	☐ Yes	No	If yes: Which VO	DA samples are in coo	ler? ↓
MW-207	MW-35	Z, M	W 309		
	- Trivering				
Temperature Record			A A STANKS		Shiring for the sect
Coolant: Wet ice	☐ Blue ice	☐ Dry ice	Other:	NO	NE
Thermometer ID:	O		Correction Factor	or (°C):	
• Temp Blank Temperature	e – If no temp blank, or t	temp blank tem	perature above criteria	, proceed to Sample Conta	iner Temperature
Uncorrected Temp (°C):			Corrected Temp	(°C):	
 Sample Container Tempe 	erature	11.75			
Container(s) used:	CONTAINER 1	250ml	CON	NTAINER 2	
Uncorrected Temp (°C):		مارد			
Corrected Temp (°C):		2.4			
Exceptions Noted				15 图 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 	
If temperature exceed a) If yes: Is there ev			*	ampling?	□ No □ No
2) If temperature is <0°C (e.g., bulging septa, b				nple containers is com	promised?
Note: If yes, contact PN Additional Comments	M before proceeding.	If no, procee	d with login		
		THE PARTY OF TAXABLE			
1					

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

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Eurofins TestAmerica, Cedar Falls

Prione: 319-277-2401 Fax: 319-277-2425

Cedar alls, IA 50613

3019 Venture Way

N · None
O · Ashacoz
O · Ashacoz
P · Na2045
Q · Na2803
R · Na28203
S · H2804
I · TSP Dodecahydrate
U · Acetone
W · PH 4-5
Z · other (specity) Special Instructions/Note: Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont 310-59843-17489.1 Preservation Codes A - HCL
B - NaOH
C - Zn Acetate
D - Nitntc Acid
E - NaHSO4
F - MeCH
G - Amchlor
H - Ascorbic Acid Page: Page 1 of 1 i - Ice J - Di Water Date/Time: (6-2/ Total Number of containers Date/Time. Aethod of Shipmen carrier Tracking No(s) State of Origin Analysis Requested Cooler Temperature(s) °C and Other Remarks. Special Instructions/QC Requirements X X 4 240C_Calcd, SM4500_H+ sandra fredrick@eurofinset.com ¥ X አ A0747, A050 4 λ 1056A_ORGEM_28D - Chlonde, Fluoride & Suffate deceived by. X Lab PM: Fredrick, Sandie λ K Radium-226 (GFPC) 2 1 (on to self) dSM/SM mioties E-Mail SCS Sompany Preservation Code: Water Water Water Matrix Company Radiological (C=comp, G=grab) Sample Type 264-993 - 0855 Busiler 5 5 5 A Yes A No 52:51 13:55 12:30 Sample Time 5:00 Unknown Sampler IAT Requested (days): Sompliance Project: Due Date Requested Sample Date Date/Time: 4.14.2 4.14.21 12.71.7 Project #: 31011020 25221072 Date/Time Date/Time Poison B Skin irritant Deliverable Requested: i, II, III, IV, Other (specify) Custody Seal No. Busche Ottumwa Generating Station - 25221072 5580-265-692 Fiammable Possible Hazard Identification Tanten mblodgett@scsengineers.con Empty Kit Relinquished by Custody Seals Intact: Client Information Sample Identification A Yes A No Non-Hazard Ses Meghan Blodgett Company: SCS Engineers 2830 Dairy Drive inquished by: elinquished by elinquished by State, Zip: Wf, 53718 Madison MW-307 MW-309 WW-308

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program Groundwater Monitoring - Ottumwa Generating Station / SCS Engineers Project #25216072

		cocs	#1	l													
		(Backg					C	DC Set #2	/Ach Don	.dl					Set #3 (Z	ı DD)	
	Parameter	MW-301	Field	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	TOTAL
	Doron	Х	Blank x	302 X	303 X	304 x	305 X	305A ×	306 ×	310 ×	310A X	311 x	311A ×	307 ×	308 ×	309 X	15
_	Boron Calcium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Appendix III Parameters	Chloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Fluoride	X	X	×	X	X	X	×	X	X	×	X	X	X	X	X	15
	pH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Ap	Sulfate	X	X	X	×	X	×	X	×	X	X	X	X	×	×	X	15
,	TDS	X	X	×	×	X	×	X	X	X	X	X	X	×	×	X	15
	100			^	~						~	^					-13
	Antimony	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	15
	Arsenic	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Barium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	15
	Beryllium	Х	Х	Х	Х	Х	Х	х	Х	Х	х	х	Х	Х	Х	Х	15
) tel	Cadmium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
Appendix IV Parameters	Chromium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
ara	Cobalt	Х	Х	Х	Х	х	х	Х	Х	Х	Х	х	Х	Х	Х	х	15
_ A	Fluoride	Х	Х	Х	х	х	х	Х	Х	Х	Х	х	х	Х	Х	х	15
×	Lead	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
펼	Lithium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
De .	Mercury	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
₽	Molybdenum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Selenium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Thallium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Radium	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ູ່ ບ	Bicarbonate (total)	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Si O	Carbonate (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ag 円	Iron (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
rar Y-	Magnesium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Pa	Manganese (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ab SEF	Potassium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
I I	Sodium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
S E	Cobalt (filtered)						Х		Х					Х			3
# 2	Iron (filtered)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Additional Lab Parameters REQUIRES SEPARATE COO	Lithium (filtered)									Х	Х		Х				3
	Manganese (filtered)	Х		Х	Х	X	X	Х	Х	Х	Х	X	Х	Х	Х	X	14
	E (OUEN.)		.,			.,				.,		.,				.,	45
	Ferrous Iron (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Sulfide (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ıρ	Groundwater Elevation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Field Parameters	Well Depth	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
i i	pH (field)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ara	Specific Conductance	X X	X	X	X	X X	X	X X	X	X X	X X	X X	X	X	X	X X	15 15
Ä	Dissolved Oxygen ORP	X	X X		X	X	X	X	X	X	X		X	X	X	X	15
ele		X	X	X	X	X		X	X	X	X	X X	X	X		X	15
Œ	Temperature	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Turbidity Color	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Odor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	JOUOI	_ ^	^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^		^	_ ^	13

Notes: All samples are unfiltered (total).

 $C: Users Fredrick SApp Data Local Microsoft Windows IN et Cache Content. Outlook Z396 DTG3 \\ [OGS_CCR_Rule_Sampling_2104.xls] Sheet 1. Content SAPP DESCRIPTION OF THE PROPERTY OF THE PROPE$

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Client: SCS Engineers Job Number: 310-204547-2

Login Number: 204547 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Ramos, Eric F

Creator. Railios, Eric F		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Eurofins TestAmerica, Cedar Falls
Page 19 of 21

Client: SCS Engineers Job Number: 310-204547-2

Login Number: 204547

List Source: Eurofins TestAmerica, St. Louis List Number: 2 List Creation: 04/20/21 02:51 PM

Creator: Mazariegos, Leonel A

Creator: Mazariegos, Leonei A		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>/ True</td> <td></td>	/ 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: 310-204547-2

Project/Site: Ottumwa Generating Station - 25221072

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

		Ва	Percent Yield (Acceptance Limits)
ab Sample ID	Client Sample ID	(40-110)	
10-204547-1	MW-307	77.9	
10-204547-2	MW-308	45.2	
10-204547-3	MW-309	73.6	
.CS 160-506413/1-A	Lab Control Sample	69.7	
.CSD 160-506413/2-A	Lab Control Sample Dup	71.2	
MB 160-506413/23-A	Method Blank	71.5	
Tracer/Carrier Legend			

Method: 904.0 - Radium-228 (GFPC)

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

				Percent Yield (Acceptance Limits)
		Ва	Y	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
310-204547-1	MW-307	77.9	79.3	
310-204547-2	MW-308	45.2	84.1	
310-204547-3	MW-309	73.6	84.9	
LCS 160-506418/1-A	Lab Control Sample	69.7	84.5	
LCSD 160-506418/2-A	Lab Control Sample Dup	71.2	83.0	
MB 160-506418/23-A	Method Blank	71.5	81.1	

Ba = Ba Carrier Y = Y Carrier

Eurofins TestAmerica, Cedar Falls

Page 21 of 21



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-204547-3

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

4/27/2021 9:35:14 AM

Authorized for release by:

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

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Have a Question?



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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.

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Case Narrative

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-204547-3

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-204547-3

Comments

No additional comments.

Receipt

The samples were received on 4/16/2021 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.6° C.

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.

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Sample Summary

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-204547-1	MW-307	Water	04/14/21 12:30	04/16/21 17:00
310-204547-2	MW-308	Water	04/14/21 13:55	04/16/21 17:00
310-204547-3	MW-309	Water	04/14/21 13:25	04/16/21 17:00

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Detection Summary

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307 Lab Sample ID: 310-204547-1

Analyte	Result	Qualifier RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	98000	1000	610	ug/L		_	6020A	Total/NA
Potassium	2000	500	150	ug/L	1		6020A	Total/NA
Iron	3700	100	36	ug/L	1		6020A	Total/NA
Magnesium	30000	500	100	ug/L	1		6020A	Total/NA
Manganese	330	10	4.4	ug/L	1		6020A	Total/NA
Cobalt	49	0.50	0.091	ug/L	1		6020A	Dissolved
Iron	3400	100	36	ug/L	1		6020A	Dissolved
Manganese	360	10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	490	10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	490	10	4.6	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-308	Lab Sample ID: 310-204547-2

Analyte	Result Qual	lifier RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	100000	1000	610	ug/L	1	_	6020A	Total/NA
Potassium	4400	500	150	ug/L	1		6020A	Total/NA
Iron	3900	100	36	ug/L	1		6020A	Total/NA
Magnesium	26000	500	100	ug/L	1		6020A	Total/NA
Manganese	1300	10	4.4	ug/L	1		6020A	Total/NA
Iron	3900	100	36	ug/L	1		6020A	Dissolved
Manganese	1300	10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	370	10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	370	10	4.6	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-309

Lab Sample ID: 310-204547-3

 Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	180000	1000	610	ug/L	1	_	6020A	Total/NA
Potassium	750	500	150	ug/L	1		6020A	Total/NA
Iron	900	100	36	ug/L	1		6020A	Total/NA
Magnesium	19000	500	100	ug/L	1		6020A	Total/NA
Manganese	630	10	4.4	ug/L	1		6020A	Total/NA
Iron	660	100	36	ug/L	1		6020A	Dissolved
Manganese	640	10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	280	10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	280	10	4.6	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-204547-1

Matrix: Water

Date Collected: 04/14/21 12:30 Date Received: 04/16/21 17:00

Method: 6020A - Metals (ICP/MS)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	98000		1000	610	ug/L		04/19/21 08:26	04/21/21 15:36	1
Potassium	2000		500	150	ug/L		04/19/21 08:26	04/20/21 19:43	1
Iron	3700		100	36	ug/L		04/19/21 08:26	04/20/21 19:43	1
Magnesium	30000		500	100	ug/L		04/19/21 08:26	04/20/21 19:43	1
Manganese	330		10	4.4	ug/L		04/19/21 08:26	04/20/21 19:43	1
 Method: 6020A - Metals (ICP/MS) -	Dissolved								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	49		0.50	0.091	ug/L		04/19/21 08:16	04/26/21 19:32	1
Iron	3400		100	36	ug/L		04/19/21 08:16	04/26/21 19:32	1
Manganese	360		10	4.4	ug/L		04/19/21 08:16	04/26/21 19:32	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	490		10	4.6	mg/L			04/26/21 10:52	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			04/26/21 10:52	1
Total Alkalinity as CaCO3	490		10	4.6	mg/L			04/26/21 10:52	1

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Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-308

Lab Sample ID: 310-204547-2

Matrix: Water

Date Collected: 04/14/21 13:55 Date Received: 04/16/21 17:00

Method: 6020A - Metals (ICP/MS)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	100000		1000	610	ug/L		04/19/21 08:26	04/21/21 15:38	1
Potassium	4400		500	150	ug/L		04/19/21 08:26	04/20/21 19:46	1
Iron	3900		100	36	ug/L		04/19/21 08:26	04/20/21 19:46	1
Magnesium	26000		500	100	ug/L		04/19/21 08:26	04/20/21 19:46	1
Manganese	1300		10	4.4	ug/L		04/19/21 08:26	04/20/21 19:46	1
Method: 6020A - Metals (ICP/MS)	- Dissolved								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	3900		100	36	ug/L		04/19/21 08:16	04/26/21 19:35	1
Manganese	1300		10	4.4	ug/L		04/19/21 08:16	04/26/21 19:35	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	370		10	4.6	mg/L			04/26/21 10:52	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			04/26/21 10:52	1
Total Alkalinity as CaCO3	370		10	4.6	mg/L			04/26/21 10:52	1

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-309

Lab Sample ID: 310-204547-3

Matrix: Water

Date Collected: 04/14/21 13:25 Date Received: 04/16/21 17:00

Method: 6020A - Metals (ICP/MS)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	180000		1000	610	ug/L		04/19/21 08:26	04/21/21 15:41	1
Potassium	750		500	150	ug/L		04/19/21 08:26	04/20/21 19:48	1
Iron	900		100	36	ug/L		04/19/21 08:26	04/20/21 19:48	1
Magnesium	19000		500	100	ug/L		04/19/21 08:26	04/20/21 19:48	1
Manganese	630		10	4.4	ug/L		04/19/21 08:26	04/20/21 19:48	1
Method: 6020A - Metals (ICP/MS)	- Dissolved								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	660		100	36	ug/L		04/19/21 08:16	04/26/21 19:37	1
Manganese	640		10	4.4	ug/L		04/19/21 08:16	04/26/21 19:37	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	280		10	4.6	mg/L			04/26/21 10:52	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			04/26/21 10:52	1
Total Alkalinity as CaCO3	280		10	4.6	mg/L			04/26/21 10:52	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)

Too Numerous To Count

Toxicity Equivalent Quotient (Dioxin)

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

Glossary

RER

RL

RPD

TEF

TEQ

TNTC

C.CCCa.,	
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

Eurofins TestAmerica, Cedar Falls

4/27/2021

Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-313144/1-A

Analysis Batch: 314022

Client: SCS Engineers

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 313144

	MB	MR							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	<0.091		0.50	0.091	ug/L		04/19/21 08:16	04/26/21 18:52	1
Iron	<36		100	36	ug/L		04/19/21 08:16	04/26/21 18:52	1
Manganese	<4.4		10	4.4	ug/L		04/19/21 08:16	04/26/21 18:52	1

Lab Sample ID: LCS 310-313144/2-A

Matrix: Water

Matrix: Water

Analysis Batch: 314022

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 313144

	Spike	LCS	LCS			%Rec.	
Analyte	Added	Result	Qualifier U	nit D	%Rec	Limits	
Cobalt	100	113	uç	/L	113	80 - 120	
Iron	200	225	uç	/L	112	80 - 120	
Manganese	100	108	นดู	/L	108	80 - 120	

Lab Sample ID: MB 310-313149/1-A

Matrix: Water

Analysis Batch: 313453

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 313149

мв мв Result Qualifier Analyte RL MDL Unit Prepared Analyzed Dil Fac Sodium <610 1000 610 ug/L 04/19/21 08:26 04/20/21 18:14 Potassium <150 500 04/19/21 08:26 04/20/21 18:14 150 ug/L <36 100 ug/L 04/19/21 08:26 04/20/21 18:14 <100 500 04/19/21 08:26 04/20/21 18:14 Magnesium 100 ug/L 04/19/21 08:26 Manganese <4.4 10 4.4 ug/L 04/20/21 18:14

Lab Sample ID: LCS 310-313149/2-A

Matrix: Water

Analysis Batch: 313453

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 313149

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Sodium	2000	2020		ug/L		101	80 - 120	
Potassium	2000	1940		ug/L		97	80 - 120	
Iron	200	212		ug/L		106	80 - 120	
Magnesium	2000	1880		ug/L		94	80 - 120	
Manganese	100	99.7		ug/L		100	80 - 120	

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 310-313906/1

Matrix: Water

Analysis Batch: 313906

Client Sample ID: Method Blank

Prep Type: Total/NA

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/26/21 10:52	1
Carbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/26/21 10:52	1
Total Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/26/21 10:52	1

QC Sample Results

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 310-313906/2

Analysis Batch: 313906

Client Sample ID: Lab Control Sample **Matrix: Water Prep Type: Total/NA**

Spike LCS LCS %Rec. Result Qualifier Added Limits Analyte Unit %Rec Total Alkalinity as CaCO3 1000 1010 mg/L 101 90 - 110

QC Association Summary

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Metals

Prep Batch: 313144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Dissolved	Water	3010A	
310-204547-2	MW-308	Dissolved	Water	3010A	
310-204547-3	MW-309	Dissolved	Water	3010A	
MB 310-313144/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-313144/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 313149

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	3010A	
310-204547-2	MW-308	Total/NA	Water	3010A	
310-204547-3	MW-309	Total/NA	Water	3010A	
MB 310-313149/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-313149/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 313453

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	6020A	313149
310-204547-2	MW-308	Total/NA	Water	6020A	313149
310-204547-3	MW-309	Total/NA	Water	6020A	313149
MB 310-313149/1-A	Method Blank	Total/NA	Water	6020A	313149
LCS 310-313149/2-A	Lab Control Sample	Total/NA	Water	6020A	313149

Analysis Batch: 313546

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	6020A	313149
310-204547-2	MW-308	Total/NA	Water	6020A	313149
310-204547-3	MW-309	Total/NA	Water	6020A	313149

Analysis Batch: 314022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Dissolved	Water	6020A	313144
310-204547-2	MW-308	Dissolved	Water	6020A	313144
310-204547-3	MW-309	Dissolved	Water	6020A	313144
MB 310-313144/1-A	Method Blank	Total/NA	Water	6020A	313144
LCS 310-313144/2-A	Lab Control Sample	Total/NA	Water	6020A	313144

General Chemistry

Analysis Batch: 313906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204547-1	MW-307	Total/NA	Water	SM 2320B	
310-204547-2	MW-308	Total/NA	Water	SM 2320B	
310-204547-3	MW-309	Total/NA	Water	SM 2320B	
MB 310-313906/1	Method Blank	Total/NA	Water	SM 2320B	
LCS 310-313906/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Analysis

SM 2320B

Client Sample ID: MW-307

Date Received: 04/16/21 17:00

Lab Sample ID: 310-204547-1 Date Collected: 04/14/21 12:30

Matrix: Water

Batch Batch Dilution Batch Prepared Prep Type Туре Method Run Factor Number or Analyzed Analyst Lab 3010A Dissolved Prep 313144 04/19/21 08:16 JNR TAL CF Dissolved Analysis 6020A 1 314022 04/26/21 19:32 SAD TAL CF Total/NA Prep 3010A 313149 04/19/21 08:26 JNR TAL CF Total/NA Analysis 6020A 1 313453 04/20/21 19:43 SAD TAL CF 3010A TAL CF Total/NA Prep 313149 04/19/21 08:26 JNR Total/NA Analysis 6020A 1 313546 04/21/21 15:36 SAD TAL CF

Client Sample ID: MW-308 Lab Sample ID: 310-204547-2

1

Date Collected: 04/14/21 13:55 **Matrix: Water**

313906

04/26/21 10:52 DFS

TAL CF

Date Received: 04/16/21 17:00

Total/NA

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			313144	04/19/21 08:16	JNR	TAL CF
Dissolved	Analysis	6020A		1	314022	04/26/21 19:35	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313453	04/20/21 19:46	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313546	04/21/21 15:38	SAD	TAL CF
Total/NA	Analysis	SM 2320B		1	313906	04/26/21 10:52	DFS	TAL CF

Client Sample ID: MW-309 Lab Sample ID: 310-204547-3

Date Collected: 04/14/21 13:25 **Matrix: Water**

Date Received: 04/16/21 17:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			313144	04/19/21 08:16	JNR	TAL CF
Dissolved	Analysis	6020A		1	314022	04/26/21 19:37	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313453	04/20/21 19:48	SAD	TAL CF
Total/NA	Prep	3010A			313149	04/19/21 08:26	JNR	TAL CF
Total/NA	Analysis	6020A		1	313546	04/21/21 15:41	SAD	TAL CF
Total/NA	Analysis	SM 2320B		1	313906	04/26/21 10:52	DFS	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: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

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. . .

Method Summary

Client: SCS Engineers Job ID: 310-204547-3

Project/Site: Ottumwa Generating Station - 25221072

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CF
SM 2320B	Alkalinity	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature L

Client Information					
Client:	Enginee	VS			_
City/State: CITY ad	13M	STATE	Project: Of	turn wa ben	Statom
Receipt Information					
Date/Time Received:	1-16.51	COCI	Received By:	EN	
Delivery Type: UPS	FedEx		FedEx Groun	d US Mail	Spee-Dee
Lab (Courier 🔲 Lab Fie	eld Services	Client Drop-of	f Other:	
Condition of Cooler/Conta	ainers				
Sample(s) received in Co	ooler? X Yes	☐ No	If yes: Cooler I	D: AB-79	
Multiple Coolers?	Yes Yes	No	If yes: Cooler i	# of	
Cooler Custody Seals Pr	esent? Yes	□ No	If yes: Cooler of	custody seals intact? 🛛	Yes 🗌 No
Sample Custody Seals P	resent?	YZP No	If yes: Sample	custody seals intact?	Yes 🗌 No
Trip Blank Present?	☐ Yes	No	If yes: Which V	OA samples are in coole	er? ļ
MW-207	MW-35	Z, W	W 309		
Temperature Record					HAVE BEEN FAMILIES
Coolant: Wet ice	☐ Blue ice	☐ Dry ice	Other:		NE
Thermometer ID:	O		Correction Fac	tor (°C):	
 Temp Blank Temperature 	e - If no temp blank, or	temp blank tem	perature above criter	ia, proceed to Sample Contain	er Temperature
Uncorrected Temp (°C):			Corrected Tem	p (°C):	
 Sample Container Tempe 			200		
Container(s) used:	CONTAINER 1	75/lb-1		ONTAINER 2	
Uncorrected Temp (°C):		مارد			
Corrected Temp (°C):		2.5			
Exceptions Noted	3.9 65 以有计算数据表现的		PAGE STREET		
If temperature exceeds a) If yes: Is there ev			•	sampling?	□ No
2) If temperature is <0°C (e.g., bulging septa, b				mple containers is comp	romised?
Note: If yes, contact PN Additional Comments	A before proceeding.	If no, procee	d with login		
1					

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

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Client Information Client Contact: Meghan Blodgett			Tathanion Doc Moines 40	Consoli	F1741763 07623
lient Information	Sampler	MO 40 I			
ent Contact: eghan Blodgett	Tunten Buszler	Fredri	ck, Sandie	210-59845-17490	-17490.1
типония под применения применения применения применения под приме	Phone: 269-993-0955	E-Mail:	E-Mail: State of Origin candra fractrick@currofineca com		
SCS Engineers	PWS:D:			rage 1 or 1	
Address. 2830 Dairy Drive	Due Date Requested:		Vialysis vetues	Preservation Codes	n Codes:
Ciry: Madison	TAT Requested (days):	CHANADORS IN THE STREET OF THE STREET		A - HCL B - NaCH C - Zh Acetate	
State, 240. Wi. 53718	Compliance Project: A Yes A No			D - Nitric Acid	
Phone: 264-943-0855	PO#: 25221072	от при	£	F - MeOH	R - Na2S2O3 S - H2SO4
Email: mblodgett(@scsengineers.com	W(# //		(0)		
Project Name. Ottumwa Generating Station - 25221072	Project #. 31011020	~	N 10.8	ainers X-EDTA L-EDA	W - pH 4-5 Z - other (specify)
Site: OAS	SSOW#:	при	SD (Ye	troo l	
Sample Identification	Sample Date Time G=c	Sample Matrix Type (whwater, Sergind, Caccomp, Ownstell, Barrah)	6 Defall Files M.R.M. mobies 3208 - Alkalini Acconsoration (1908) Metals (1908)	otel Mumber o	THE REAL PROPERTY OF THE PROPE
SECTION OF THE PROPERTY OF THE		tion Code.		THE PERSON NAMED IN COLUMN NAM	Special Instructions/Note:
MW-307	5 02:21 12.41·h	Water	X		
MVV-308	ļ	Water	Х		
MVV-309	5 52:\$1 12·h1·h	Water	XXX		
					AND THE PROPERTY OF THE PROPER
		на выправанием примента примента при предоставления п	endonematic una especial comerci fraction de comercia	The section of the se	MINING WELLIAM
Possible Hazard Identification Non-Hazard Fiammable Skin Irritant	Deison B K (Inknown Deadio	Radiological	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	d if samples are retained longer th	ian 1 month)
ssted: , II, III, IV, Othe		anniana anna anna anna anna anna anna a	Special Instructions/QC Requirements:		SINDINI
Empty Kit Relinquished by:	Date:		Time:	mensengenengengengengengengengengengengengen	
Relinquished by Tawken Brook	Date/Time. 4.16.71 14:00	Company SCS	Received by	Date-Time: 9-1-P	
	. Date/Time.	Company	Received by:		Company
Relinquished by:	Date/Time:	Contpany	Received by.	Date/Time.	Company
Custody Seals Intact: Custody Seal No.:	and descriptions of the control of t		Cooler Temperature(s) °C and Other Remarks:		

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program Groundwater Monitoring - Ottumwa Generating Station / SCS Engineers Project #25216072

		COCS)C C-+ #2	/Ash Dav	1\					· C -+ #2 /2	" DD)	
	Parameter	(Backg MW-301	Field Blank	MW- 302	MW- 303	MW- 304	MW- 305	MW- 305A	MW- 306	MW- 310	MW- 310A	MW- 311	MW- 311A	MW- 307	Set #3 (Z MW- 308	MW- 309	TOTAL
	Boron	Х	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
_ s	Calcium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	15
te i	Chloride	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	15
a a	Fluoride	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	15
Appendix III Parameters	pH	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
A 9	Sulfate	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	TDS	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Antimony	х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Arsenic	х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Barium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
S	Beryllium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Appendix IV Parameters	Cadmium	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	Х	Х	Х	15
	Chromium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Cobalt	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Fluoride	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
<u>×</u>	Lead	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
2	Lithium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
<u>a</u>	Mercury	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
₹	Molybdenum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Selenium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Thallium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Radium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
္ပံ သ	Bicarbonate (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
CC	Carbonate (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
mei TE	Iron (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
RA	Magnesium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
P. P.	Manganese (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
-ab	Potassium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
al L	Sodium (total)	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	Х	Х	X	Х	Х	15
8 2	Cobalt (filtered)			L			X		X					X			3
를 공	Iron (filtered)	Х	Х	Х	Х	Х	Х	Х	Х	X	X	Х	X	Х	Х	Х	15
Additional Lab Parameters - REQUIRES SEPARATE COC	Lithium (filtered)			Х	,,	.,	.,	X		X	X X		X		,,	.,	3
	Manganese (filtered)	Х			Х	Х	Х	^	Х	Х	_ ^	Х	Х	Х	Х	Х	14
	Ferrous Iron (CHEMets)	Х	X	Х	Х	Х	X	X	X	Х	X	X	Х	Х	Х	Х	15
	Sulfide (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Groundwater Elevation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ı	Well Depth	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
) je	pH (field)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Ĕ	Specific Conductance	X	×	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Field Parameters	Dissolved Oxygen	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
<u> </u>	ORP	X	×	X	X	X	X	X	X	X	X	X	X	X	X	X	15
<u>.</u>	Temperature	X	X	×	X	X	X	×	X	X	×	X	X	X	×	X	15
L L	Turbidity	X	X	×	X	X	X	×	X	X	×	X	X	X	×	X	15
	Color	X	X	×	X	X	X	×	X	X	×	X	X	X	×	X	15
	Odor	X	X	×	X	X	X	×	X	X	×	X	X	X	×	X	15
	Cuoi	^	^_		_ ^	^_	_ ^	^_	_ ^	_ ^	_ ^	^_	_ ^	^_	_ ^	_ ^	

Notes: All samples are unfiltered (total).

 $C: Users Fredrick SApp Data Local Microsoft Windows IN et Cache Content. Outlook Z396 DTG3 \\ [OGS_CCR_Rule_Sampling_2104.xls] Sheet 1. Content SAPP DESCRIPTION OF THE PROPERTY OF THE PROPE$

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Client: SCS Engineers Job Number: 310-204547-3

Login Number: 204547 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Ramos, Eric F

Creator. Ramos, Ent F		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-204548-1

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 4/28/2021 3:10:47 PM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

Review your project results through Total Access

Have a Question?



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www.eurofinsus.com/Env

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.

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Case Narrative

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-204548-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-204548-1

Comments

No additional comments.

Receipt

The samples were received on 4/16/2021 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

HPLC/IC

Methods 300.0, 9056A: The following sample was diluted due to the nature of the sample matrix: MW-301 (310-204548-1). 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.

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-204548-1	MW-301	Water	04/14/21 10:10	04/16/21 17:00	
310-204548-2	Field Blank	Water	04/14/21 09:40	04/16/21 17:00	

Job ID: 310-204548-1

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Detection Summary

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Lab Sample ID: 310-204548-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac D	Method	Prep Type
Chloride	150		5.0	2.2	mg/L	5	9056A	Total/NA
Sulfate	140		5.0	2.5	mg/L	5	9056A	Total/NA
Barium	52		2.0	0.30	ug/L	1	6020A	Total/NA
Boron	690		100	58	ug/L	1	6020A	Total/NA
Calcium	96		0.50	0.19	mg/L	1	6020A	Total/NA
Cobalt	0.29	J	0.50	0.091	ug/L	1	6020A	Total/NA
Lithium	23		10	2.5	ug/L	1	6020A	Total/NA
Selenium	6.5		5.0	0.96	ug/L	1	6020A	Total/NA
Total Dissolved Solids	620		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	682.94				ft	1	Field Sampling	Total/NA
Oxidation Reduction Potential	232.5				millivolts	1	Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	5.99				mg/L	1	Field Sampling	Total/NA
pH, Field	6.26				SU	1	Field Sampling	Total/NA
Specific Conductance, Field	1062				umhos/cm	1	Field Sampling	Total/NA
Temperature, Field	9.1				Degrees C	1	Field Sampling	Total/NA
Turbidity, Field	1.61				NTU	1	Field Sampling	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-204548-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	0.45	J	1.0	0.43	mg/L	1	_	9056A	Total/NA
pН	5.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

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Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Oxidation Reduction Potential

Oxygen, Dissolved, Client

Specific Conductance, Field

Temperature, Field

Turbidity, Field

Supplied pH, Field

232.5

5.99

6.26

1062

9.1

1.61

Client Sample ID: MW-301 Lab Sample ID: 310-204548-1

Date Collected: 04/14/21 10:10
Date Received: 04/16/21 17:00

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	150		5.0	2.2	mg/L			04/25/21 21:04	5
Fluoride	<0.28		0.50	0.28	mg/L			04/25/21 21:04	5
Sulfate	140		5.0	2.5	mg/L			04/25/21 21:04	5
Method: 6020A - Metals (ICF	P/MS)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		04/20/21 09:00	04/26/21 21:56	1
Arsenic	<0.75		2.0	0.75	ug/L		04/20/21 09:00	04/26/21 21:56	1
Barium	52		2.0	0.30	ug/L		04/20/21 09:00	04/26/21 21:56	1
Beryllium	<0.27		1.0	0.27	ug/L		04/20/21 09:00	04/26/21 21:56	1
Boron	690		100	58	ug/L		04/20/21 09:00	04/26/21 21:56	1
Cadmium	<0.051		0.10	0.051	ug/L		04/20/21 09:00	04/26/21 21:56	1
Calcium	96		0.50	0.19	mg/L		04/20/21 09:00	04/26/21 21:56	1
Chromium	<1.1		5.0	1.1	ug/L		04/20/21 09:00	04/26/21 21:56	1
Cobalt	0.29	J	0.50	0.091	ug/L		04/20/21 09:00	04/26/21 21:56	1
Lead	<0.21		0.50	0.21	ug/L		04/20/21 09:00	04/26/21 21:56	1
Lithium	23		10	2.5	ug/L		04/20/21 09:00	04/26/21 21:56	1
Molybdenum	<1.3		2.0	1.3	ug/L		04/20/21 09:00	04/26/21 21:56	1
Selenium	6.5		5.0	0.96	ug/L		04/20/21 09:00	04/26/21 21:56	1
Thallium	<0.26		1.0	0.26	ug/L		04/20/21 09:00	04/26/21 21:56	1
Method: 7470A - Mercury (C	VAA)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		04/22/21 14:28	04/23/21 14:15	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	620		30	26	mg/L			04/19/21 13:42	1
pH	6.8	HF	0.1	0.1	SU			04/16/21 19:33	1
Method: Field Sampling - Fi	eld Sampling								
Analyte		Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	682.94				ft			04/14/21 10:10	1

millivolts

umhos/cm

Degrees C

mg/L

SU

NTU

4/28/2021

04/14/21 10:10

04/14/21 10:10

04/14/21 10:10

04/14/21 10:10

04/14/21 10:10

04/14/21 10:10

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: Field Blank

Date Collected: 04/14/21 09:40

Lab Sample ID: 310-204548-2

Matrix: Water

Method: 9056A - Anions, Id	on Chromatogr	aphy							
Analyte	_	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	0.45	J	1.0	0.43	mg/L			04/25/21 21:35	1
Fluoride	<0.055		0.10	0.055	mg/L			04/25/21 21:35	1
Sulfate	<0.49		1.0	0.49	mg/L			04/25/21 21:35	1
Method: 6020A - Metals (IC	CP/MS)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		04/20/21 09:00	04/26/21 22:12	1
Arsenic	<0.75		2.0	0.75	ug/L		04/20/21 09:00	04/26/21 22:12	1
Barium	<0.30		2.0	0.30	ug/L		04/20/21 09:00	04/26/21 22:12	1
Beryllium	<0.27		1.0	0.27	ug/L		04/20/21 09:00	04/26/21 22:12	1
Boron	<58		100	58	ug/L		04/20/21 09:00	04/26/21 22:12	1
Cadmium	<0.051		0.10	0.051	ug/L		04/20/21 09:00	04/26/21 22:12	1
Calcium	<0.19		0.50	0.19	mg/L		04/20/21 09:00	04/26/21 22:12	1
Chromium	<1.1		5.0	1.1	ug/L		04/20/21 09:00	04/26/21 22:12	1
Cobalt	<0.091		0.50	0.091	ug/L		04/20/21 09:00	04/26/21 22:12	1
Lead	<0.21		0.50	0.21	ug/L		04/20/21 09:00	04/26/21 22:12	1
Lithium	<2.5		10	2.5	ug/L		04/20/21 09:00	04/26/21 22:12	1
Molybdenum	<1.3		2.0	1.3	ug/L		04/20/21 09:00	04/26/21 22:12	1
Selenium	<0.96		5.0	0.96	ug/L		04/20/21 09:00	04/26/21 22:12	1
Thallium	<0.26		1.0	0.26	ug/L		04/20/21 09:00	04/26/21 22:12	1
Method: 7470A - Mercury (CVAA)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		04/22/21 14:28	04/23/21 14:17	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		30	26	mg/L			04/19/21 13:42	1
рН	5.9	HF	0.1	0.1				04/16/21 19:26	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

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 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.

Eisted 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

Eurofins TestAmerica, Cedar Falls

4/28/2021

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QC Sample Results

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-314202/3

Matrix: Water

Analyte

Chloride

Fluoride

Sulfate

Analysis Batch: 314202

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

MB MB Result Qualifier RL **MDL** Unit D Prepared Analyzed Dil Fac 0.43 mg/L < 0.43 1.0 04/25/21 11:26 <0.055 0.10 0.055 mg/L 04/25/21 11:26 < 0.49 1.0 0.49 mg/L 04/25/21 11:26

Lab Sample ID: LCS 310-314202/64

Matrix: Water

Analysis Batch: 314202

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Chloride 90 - 110 10.0 9.02 mg/L 90 Fluoride 2.00 2.08 mg/L 104 90 - 110 Sulfate 10.0 mg/L 9.84 98 90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-313195/1-A

Matrix: Water

Analysis Batch: 314039

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 313195

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1	· <u></u> -	2.0	1.1	ug/L		04/20/21 09:00	04/26/21 20:36	1
Arsenic	<0.75		2.0	0.75	ug/L		04/20/21 09:00	04/26/21 20:36	1
Barium	<0.30		2.0	0.30	ug/L		04/20/21 09:00	04/26/21 20:36	1
Beryllium	<0.27		1.0	0.27	ug/L		04/20/21 09:00	04/26/21 20:36	1
Boron	<58		100	58	ug/L		04/20/21 09:00	04/26/21 20:36	1
Cadmium	<0.051		0.10	0.051	ug/L		04/20/21 09:00	04/26/21 20:36	1
Calcium	<0.19		0.50	0.19	mg/L		04/20/21 09:00	04/26/21 20:36	1
Chromium	<1.1		5.0	1.1	ug/L		04/20/21 09:00	04/26/21 20:36	1
Cobalt	<0.091		0.50	0.091	ug/L		04/20/21 09:00	04/26/21 20:36	1
Lead	<0.21		0.50	0.21	ug/L		04/20/21 09:00	04/26/21 20:36	1
Lithium	<2.5		10	2.5	ug/L		04/20/21 09:00	04/26/21 20:36	1
Molybdenum	<1.3		2.0	1.3	ug/L		04/20/21 09:00	04/26/21 20:36	1
Selenium	<0.96		5.0	0.96	ug/L		04/20/21 09:00	04/26/21 20:36	1
Thallium	<0.26		1.0	0.26	ug/L		04/20/21 09:00	04/26/21 20:36	1

Lab Sample ID: LCS 310-313195/2-A

Matrix: Water

Analysis Batch: 314039

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

Prep Batch: 313195

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Antimony	200	219		ug/L		109	80 - 120	
Arsenic	200	216		ug/L		108	80 - 120	
Barium	100	112		ug/L		112	80 - 120	
Beryllium	100	103		ug/L		103	80 - 120	
Boron	200	231		ug/L		116	80 - 120	
Cadmium	100	113		ug/L		113	80 - 120	
Calcium	2.00	1.86		mg/L		93	80 - 120	
Chromium	100	107		ug/L		107	80 - 120	
Cobalt	100	111		ug/L		111	80 - 120	

Eurofins TestAmerica, Cedar Falls

Page 9 of 20 4/28/2021 Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

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

Lab Sample ID: LCS 310-313195/2-A **Matrix: Water**

Analysis Batch: 314022

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 313195

Client Sample ID: Method Blank

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

Limits

Client Sample ID: Lab Control Sample

90 - 110

%Rec

94

D

Prep Type: Total/NA

Prep Type: Total/NA

4/28/2021

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Lead	200	227		ug/L		114	80 - 120	
Lithium	200	217		ug/L		109	80 - 120	
Molybdenum	200	221		ug/L		110	80 - 120	
Selenium	400	422		ug/L		105	80 - 120	
Thallium	200	231		ug/L		115	80 - 120	

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-313631/1-A

Matrix: Water

Analyte

Mercury

Analysis Batch: 313806

MB MB

Prep Batch: 313631 Result Qualifier RL **MDL** Unit Prepared Analyzed <0.15 0.20 0.15 ug/L

Lab Sample ID: LCS 310-313631/2-A **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA **Analysis Batch: 313806 Prep Batch: 313631** Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Mercury 1.67 1.53 ug/L 92 80 - 120

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

Lab Sample ID: MB 310-313222/1

Matrix: Water

Analysis Batch: 313222

MR MR

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Total Dissolved Solids <26 30 26 mg/L 04/19/21 13:42

Lab Sample ID: LCS 310-313222/2

Matrix: Water Prep Type: Total/NA Analysis Batch: 313222 Spike LCS LCS %Rec.

Result Qualifier

940

Unit

mg/L

Added

1000

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-313078/1

Matrix: Water

Total Dissolved Solids

Analyte

Analysis Batch: 313078

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits D 7.00 7.0 SU 101 98 - 102 pН

QC Association Summary

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

HPLC/IC

Analysis Batch: 314202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	9056A	
310-204548-2	Field Blank	Total/NA	Water	9056A	
MB 310-314202/3	Method Blank	Total/NA	Water	9056A	
LCS 310-314202/64	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 313195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	3010A	
310-204548-2	Field Blank	Total/NA	Water	3010A	
MB 310-313195/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-313195/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 313631

Lab Sample ID 310-204548-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method 7470A	Prep Batch
310-204548-2	Field Blank	Total/NA	Water	7470A	
MB 310-313631/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-313631/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 313806

Lab Sample ID 310-204548-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method 7470A	Prep Batch 313631
310-204548-2	Field Blank	Total/NA	Water	7470A	313631
MB 310-313631/1-A	Method Blank	Total/NA	Water	7470A	313631
LCS 310-313631/2-A	Lab Control Sample	Total/NA	Water	7470A	313631

Analysis Batch: 314022

Lab Sample ID 310-204548-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method 6020A	Prep Batch 313195
310-204548-2	Field Blank	Total/NA	Water	6020A	313195
MB 310-313195/1-A	Method Blank	Total/NA	Water	6020A	313195
LCS 310-313195/2-A	Lab Control Sample	Total/NA	Water	6020A	313195

Analysis Batch: 314039

Lab Sample ID 310-204548-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method 6020A	Prep Batch 313195
310-204548-2	Field Blank	Total/NA	Water	6020A	313195
MB 310-313195/1-A	Method Blank	Total/NA	Water	6020A	313195
LCS 310-313195/2-A	Lab Control Sample	Total/NA	Water	6020A	313195

General Chemistry

Analysis Batch: 313078

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-204548-2	Field Blank	Total/NA	Water	SM 4500 H+ B	
LCS 310-313078/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

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QC Association Summary

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

General Chemistry

Analysis Batch: 313222

Lab Sample ID 310-204548-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method SM 2540C	Prep Batch
310-204548-2	Field Blank	Total/NA	Water	SM 2540C	
MB 310-313222/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-313222/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 313728

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	Field Sampling	

Lab Chronicle

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Date Received: 04/16/21 17:00

Date Collected: 04/14/21 10:10

Lab Sample ID: 310-204548-1 **Matrix: Water**

Batch Batch Dilution Batch **Prepared** Method or Analyzed **Prep Type** Type Run **Factor** Number Analyst Lab Total/NA 9056A 314202 04/25/21 21:04 TAL CF Analysis 5 JNR Total/NA Prep 3010A 313195 04/20/21 09:00 JNR TAL CF Total/NA Analysis 6020A 1 314022 04/26/21 21:56 SAD TAL CF 3010A TAL CF Total/NA Prep 313195 04/20/21 09:00 JNR Total/NA 6020A 314039 04/26/21 21:56 SAD TAL CF Analysis 1 7470A Total/NA 313631 04/22/21 14:28 HED TAL CF Prep Total/NA 7470A 313806 04/23/21 14:15 HED TAL CF Analysis 1 Total/NA SM 2540C Analysis 1 313222 04/19/21 13:42 ARG TAL CF Total/NA Analysis SM 4500 H+ B 1 313078 04/16/21 19:33 GRS TAL CF Analysis 313728 04/14/21 10:10 SLD TAL CF Total/NA Field Sampling 1

Client Sample ID: Field Blank

Date Collected: 04/14/21 09:40

Date Received: 04/16/21 17:00

Lab Sample ID: 310-204548-2

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	314202	04/25/21 21:35	JNR	TAL CF
Total/NA	Prep	3010A			313195	04/20/21 09:00	JNR	TAL CF
Total/NA	Analysis	6020A		1	314022	04/26/21 22:12	SAD	TAL CF
Total/NA	Prep	3010A			313195	04/20/21 09:00	JNR	TAL CF
Total/NA	Analysis	6020A		1	314039	04/26/21 22:12	SAD	TAL CF
Total/NA	Prep	7470A			313631	04/22/21 14:28	HED	TAL CF
Total/NA	Analysis	7470A		1	313806	04/23/21 14:17	HED	TAL CF
Total/NA	Analysis	SM 2540C		1	313222	04/19/21 13:42	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	313078	04/16/21 19:26	GRS	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: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

	Authority	Program	Identification Number	Expiration Date
ı	lowa	State	007	12-01-21

Eurofins TestAmerica, Cedar Falls

Method Summary

Client: SCS Engineers Job ID: 310-204548-1

Project/Site: Ottumwa Generating Station - 25221072

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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature L

Client Information	AND STANDARD CONTRACTOR CONTRACTOR OF THE STANDARD STANDARD CONTRACTOR OF THE STANDARD CONTRACTOR OF T
Client: SCS Encineers	
City/State: CITY Madison STATE	Project: Othum wa Gan. Station
Receipt Information	Control of
Date/Time Received: DATE OH 16 THE TIME	Received By:
Delivery Type: UPS FedEx	FedEx Ground US Mail Spee-Dee
Lab Courier 🔲 Lab Field Service	S 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?	If yes: Which VOA samples are in cooler? ↓
MW-301 Field Blank	-> 250 HNO3 (250 HNO3 (FF) / 500 NT Plastic
Temperature Record	
Coolant: ☑ Wet ice ☐ Blue ice ☐ Dry ic	e Other: NONE
Thermometer ID:	Correction Factor (°C):
• Temp Blank Temperature - If no temp blank, or temp blank to	emperature above criteria, proceed to Sample Container Temperature
Uncorrected Temp (°C):	Corrected Temp (°C):
Uncorrected Temp (°C):	Corrected Temp (°C):
Uncorrected Temp (°C):	
• Sample Container Temperature CONTAINER 1	Corrected Temp (°C):
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: CONTAINER 1	Corrected Temp (°C):
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C):	Corrected Temp (°C):
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C):	CONTAINER 2 CONTAINER 2 Eived same day of sampling? Yes No
Uncorrected Temp (°C): Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recease a) If yes: Is there evidence that the chilling process.	CONTAINER 2 Container 3 Conta
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recean and if yes: Is there evidence that the chilling process of the container is the container in the container in the container is the container in the container is the container in the c	Corrected Temp (°C): CONTAINER 2
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recean a) If yes: Is there evidence that the chilling process. 2) If temperature is <0°C, are there obvious signs that (e.g., bulging septa, broken/cracked bottles, frozer	Corrected Temp (°C): CONTAINER 2
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recean and if yes: Is there evidence that the chilling process of the container is the container in the container in the container is the container in the container is the container in the c	Corrected Temp (°C): CONTAINER 2
Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recean and if yes: Is there evidence that the chilling process of the container is the container in the container in the container is the container in the container is the container in the c	Corrected Temp (°C): CONTAINER 2

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Environment Testing

Eurofins TestAmerica, Cedar Falls

Phone: 319-277-2401 Fax: 319-277-2425

Cedar Falls, IA 50613

3019 Venture Way

0 - AsNaO2 P - Na2O3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 I - T FSP Codecahydrate U - Acetone V - MCAA W - PH 4-5 Z - other (specify) Special Instructions/Note: Ver. 11/01/2020 Company Company Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return To Client Abisposal By Lab Archive For Mon COC No: 310-59839-17485.1 Preservation Codes A - HCL
B - NaOH
C - Zn Acetate
C - Nitnc Acid
E - Nitnc Acid
F - MacO4
G - Amchlor
H - Ascorbic Acid Page: Page 1 of 1 I - Ice J - Di Water K - EDTA L - EDA 35 Total Number of containers Date/Time. Method of Shipmen arrier Tracking No(s) State of Origin: Analysis Requested Cooler Temperature(s) °C and Other Remarks: Special Instructions/QC Requirements: × SE40C_Calcd, SM4500_H÷ × sandra.fredrick@eurofinset.com X K A0747, A0208 × Received by. X 904.0 - Radium-228 (GFPC) X Lab PM: Fredrick, Sandie X × 903.0 - Radium-226 (GFPC) (ou to sey) GSM/SM mtohen me Field Filtered Sample (Yes or No) 4 E-Mail: Company \$55 Preservation Code: Water Matrix (Wewater, Sesoild, Water Company ompany Radiological (C=comp, G=grab) Sample Type 5580-506-692 Buch 5 A Yes A No Sample 00:10 9:40 Time 0:0 Unknown ampler 'AT Requested (days) Compliance Project: Due Date Requested:)ate/Time: 4.16.21 Sample Date 12:11:15 Project #: 31011020 12.41.6 25221072 Jate/Time: Poison B Skin irntant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seal No Busha Ottumwa Generating Station - 25221072 Flammable 5580-643-692 Possible Hazard Identification mblodgett@scsengineers.com Relinquished by Tunden Empty Kit Relinquished by Custody Seals Intact: Client Information Sample Identification ON V 00.S Non-Hazard Client Contact: Meghan Blodgett 2830 Dairy Drive SCS Engineers inquished by: A Yes elinquished by State, Zip: WI, 53718 Field Blank Madison WW-301

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program Groundwater Monitoring - Ottumwa Generating Station / SCS Engineers Project #25216072

		cocs	#1	l													
		(Backg					C	DC Set #2	/Ach Don	.dl					Set #3 (Z	ı DD)	
	Parameter	MW-301	Field	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	TOTAL
	Doron	Х	Blank x	302 X	303 X	304 x	305 X	305A ×	306 ×	310 ×	310A X	311 x	311A ×	307 ×	308 ×	309 X	15
_	Boron Calcium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
≡ s	Chloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
idi)	Fluoride	X	X	×	X	X	X	×	X	X	×	X	X	X	X	X	15
per	pH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Appendix III Parameters	Sulfate	X	X	X	×	X	×	X	×	X	X	X	X	×	×	X	15
,	TDS	X	X	×	×	X	×	X	X	X	X	X	X	×	×	X	15
	100			^	~						~	^					-15
	Antimony	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	X	Х	15
	Arsenic	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Barium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	15
	Beryllium	Х	Х	Х	Х	Х	Х	х	Х	Х	х	х	Х	Х	Х	Х	15
) tel	Cadmium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
Ĕ	Chromium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
ara	Cobalt	Х	Х	Х	Х	х	х	Х	Х	Х	Х	х	Х	Х	Х	х	15
_ A	Fluoride	Х	Х	Х	х	х	х	Х	Х	х	Х	х	х	Х	Х	Х	15
×	Lead	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
펼	Lithium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Appendix IV Parameters	Mercury	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Molybdenum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Selenium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Thallium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Radium	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
<u>,</u> 0	Bicarbonate (total)	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Si O	Carbonate (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ag 円	Iron (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
rar Y-	Magnesium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Pa	Manganese (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ab SEF	Potassium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
I I	Sodium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
S E	Cobalt (filtered)						Х		Х					Х			3
# 2	Iron (filtered)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Additional Lab Parameters REQUIRES SEPARATE COO	Lithium (filtered)									Х	Х		Х				3
	Manganese (filtered)	Х		Х	Х	X	X	Х	Х	Х	Х	X	Х	X	Х	Х	14
	E (OUEN.)		.,			.,				.,		.,				.,	45
	Ferrous Iron (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Sulfide (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ıρ	Groundwater Elevation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Field Parameters	Well Depth	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
i i	pH (field)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ara	Specific Conductance	X X	X	X	X	X X	X	X X	X	X X	X X	X X	X	X	X	X X	15 15
Ä	Dissolved Oxygen ORP	X	X X		X	X	X	X	X	X	X		X	X	X	X	15
ele		X	X	X	X	X		X	X	X	X	X X	X	X		X	15
Œ	Temperature	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Turbidity Color	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Odor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	JOUOI	_ ^	^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^		^	_ ^	13

Notes: All samples are unfiltered (total).

 $\label{local-potential} C:\Users\FredrickS\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\Z396DTG3\[OGS_CCR_Rule_Sampling_2104.xls\]Sheet1$

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Client: SCS Engineers Job Number: 310-204548-1

Login Number: 204548 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Ramos, Eric F

oreator. Namos, Entri		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Eurofins TestAmerica, Cedar Falls

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4/28/2021

Sample	Date/Sample Time	Groundwater Elevation (amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity
MW-301	4/14/2021 - 10:10	682.94	9.1	6.26	5.99	1,062	232.5	1.61
MW-302	4/13/2021 - 18:15	656.05	11.9	6.44	0.37	2,087	198.2	22.9
MW-303	4/13/2021 - 16:50	653.82	9.7	6.67	2.83	1,118	184.7	4.31
MW-304	4/14/2021 - 16:50	654.34	13.1	6.94	0.20	1,797	-97.5	16.9
MW-305	4/16/2021 - 10:15	661.15	12.9	6.92	0.16	1,799	43.6	8.17
MW-305A	4/15/2021 - 13:45	651.16	12.4	7.05	0.88	1,224	158.3	1.02
MW-306	4/13/2021 - 15:00	670.27	12.7	6.42	0.14	1,339	92.0	8.99
MW-307	4/14/2021 - 12:30	649.53	11.5	6.59	0.41	1,675	-39.9	21.2
MW-308	4/15/2021 - 13:55	647.66	11.5	6.70	0.44	1,598	-49.3	4.47
MW-309	4/14/2021 - 15:25	646.46	11.7	7.00	0.36	1,411	-40.6	9.32
MW-310	4/13/2021 - 13:25	642.70	12.6	7.07	0.46	2,362	161.0	2.38
MW-310A	4/15/2021 - 14:20	644.88	12.5	7.47	0.98	3,106	160.2	2.25
MW-311	4/14/2021 - 08:55	643.02	9.3	6.66	1.18	945	179.8	0.78
MW-311A	4/16/2021 - 11:30	644.16	12.3	7.76	0.77	3,332	146.9	0.02

Abbreviations:

mg/L = milligrams per liter amsl = above mean sea level

NA = Not Analyzed NM= Not Measured

Notes: none

 Created by: NDK
 Date: 4/21/2021

 Last revision by: JR
 Date: 4/22/2021

 Checked by: NDK
 Date: 4/22/2021

 $C: \label{local-microsoft-windows-lemma-content} C: \label{local-windows-lemma-content} C: \label{local-windows-local-windows-lemma-content} C: \label{local-windows-local-windows-lemma-content} C: \label{local-windows-loc$



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-204548-2

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 5/18/2021 7:40:15 AM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

Review your project results through Total Access

Have a Question?



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www.eurofinsus.com/Env

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

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Case Narrative

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-204548-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-204548-2

Comments

No additional comments.

Receipt

The samples were received on 4/16/2021 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

RAD

Methods 903.0, 9315: Radium-226 Batch 506413 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 (310-204548-1), Field Blank (310-204548-2), (LCS 160-506413/1-A), (LCSD 160-506413/2-A) and (MB 160-506413/23-A)

Methods 904.0, 9320: Radium-228 Batch 506418 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 (310-204548-1), Field Blank (310-204548-2), (LCS 160-506418/1-A), (LCSD 160-506418/2-A) and (MB 160-506418/23-A)

Method PrecSep_0: Radium 228 Prep Batch 160-506418: Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-301 (310-204548-1) and Field Blank (310-204548-2). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium 226 Prep Batch 160-506413: Insufficient sample volume was available to perform a sample duplicate (DUP) for the following samples: MW-301 (310-204548-1) and Field Blank (310-204548-2). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

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Sample Summary

Client: SCS Engineers Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-204548-1	MW-301	Water	04/14/21 10:10	04/16/21 17:00	
310-204548-2	Field Blank	Water	04/14/21 09:40	04/16/21 17:00	

Job ID: 310-204548-2

Detection Summary

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301 Lab Sample ID: 310-204548-1

No Detections.

Client Sample ID: Field Blank Lab Sample ID: 310-204548-2

No Detections.

Client Sample Results

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-204548-1 Client Sample ID: MW-301

Date Collected: 04/14/21 10:10 **Matrix: Water** Date Received: 04/16/21 17:00

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.133		0.0918	0.0926	1.00	0.124	pCi/L	04/21/21 10:34	05/15/21 10:53	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	69.1		40 - 110					04/21/21 10:34	05/15/21 10:53	1

Method: 904.0 -	Radium-228	(GFPC)								
			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.465	U	0.374	0.377	1.00	0.594	pCi/L	04/21/21 10:55	05/06/21 20:32	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	69.1		40 - 110					04/21/21 10:55	05/06/21 20:32	1
Y Carrier	80.4		40 - 110					04/21/21 10:55	05/06/21 20:32	1

Method: Ra226_Ra	228 Pos -	Combined	d Radium-2	226 and Ra	adium-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.598		0.385	0.388	5.00	0.594	pCi/L		05/17/21 21:22	1

Client Sample Results

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: Field Blank

Date Collected: 04/14/21 09:40 Date Received: 04/16/21 17:00 Lab Sample ID: 310-204548-2

Matrix: Water

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-226	0.00748	U	0.0586	0.0586	1.00	0.120	pCi/L	04/21/21 10:34	05/15/21 10:54	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	70.0		40 - 110					04/21/21 10:34	05/15/21 10:54	1

Method: 904.0 -	Radium-228	(GFPC)								
		. ,	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium-228	0.0664	U	0.291	0.291	1.00	0.512	pCi/L	04/21/21 10:55	05/06/21 20:33	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ba Carrier	70.0		40 - 110					04/21/21 10:55	05/06/21 20:33	1
Y Carrier	86.0		40 - 110					04/21/21 10:55	05/06/21 20:33	1

Method: Ra226_Ra	228 Pos -	Combine	d Radium-2	26 and Ra	dium-228	3				
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.0739	U	0.297	0.297	5.00	0.512	pCi/L		05/17/21 21:22	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

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

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Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-506413/23-A

Lab Sample ID: LCS 160-506413/1-A

Matrix: Water

Matrix: Water

Analysis Batch: 509912

Analysis Batch: 509911

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 506413

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium-226 0.03455 U 0.0669 0.0670 1.00 0.120 pCi/L 04/21/21 10:34 05/15/21 11:00

Total

Count

MB MB

Carrier %Yield Qualifier Limits Prepared Analyzed Dil Fac Ba Carrier 71.5 40 - 110 04/21/21 10:34 05/15/21 11:00

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 506413

Total

LCS LCS %Rec. **Spike** Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Radium-226 11.3 10.23 1.00 0.132 pCi/L 90 75 - 125 1 11

LCS LCS Carrier %Yield Qualifier Limits Ba Carrier 69.7 40 - 110

Lab Sample ID: LCSD 160-506413/2-A

Matrix: Water

Analysis Batch: 509912

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 506413

Total LCSD LCSD %Rec. **RER** Spike Uncert. %Rec Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit Limits RER Limit Radium-226 11.3 1.15 1.00 0.136 pCi/L 95 75 - 125 0.23 10.75

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

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-506418/23-A

Matrix: Water

Analysis Batch: 508606

Client Sample ID: Method Blank

Prep Type: Total/NA Prep Batch: 506418

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium-228 Ū 0.333 0.333 1.00 0.566 pCi/L 04/21/21 10:55 05/06/21 20:29 0.1770

MB MB Carrier %Yield Qualifier Limits Ba Carrier 71.5 40 - 110 40 - 110 Y Carrier 81.1

Prepared Dil Fac Analyzed 04/21/21 10:55 05/06/21 20:29 04/21/21 10:55 05/06/21 20:29

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

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

Lab Sample ID: LCS 160-506418/1-A **Client Sample ID: Lab Control Sample**

Matrix: Water

Analysis Batch: 508605

Prep Type: Total/NA

Prep Batch: 506418

Total LCS LCS %Rec. Spike Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL**MDC** Unit %Rec Limits Radium-228 7.23 8.276 1.07 1.00 0.474 pCi/L 114 75 - 125

LCS LCS

%Yield Qualifier Carrier Limits Ba Carrier 69.7 40 - 110 Y Carrier 84.5 40 - 110

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 506418

Lab Sample ID: LCSD 160-506418/2-A **Matrix: Water**

Analysis Batch: 508605

Total

%Rec. **RER**

Spike LCSD LCSD Uncert. %Rec Limits Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit RER Limit Radium-228 1.00 0.453 pCi/L 7.23 8.808 1.12 122 75 - 125 0.24

LCSD LCSD

Carrier %Yield Qualifier Limits Ba Carrier 71.2 40 - 110 83.0 40 - 110 Y Carrier

QC Association Summary

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Prep Batch: 506413

Lab Sample ID 310-204548-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method PrecSep-21	Prep Batch
310-204548-2	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-506413/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-506413/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-506413/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 506418

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	PrecSep_0	·
310-204548-2	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-506418/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-506418/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-506418/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep 0	

Lab Chronicle

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Date Collected: 04/14/21 10:10 Date Received: 04/16/21 17:00 Lab Sample ID: 310-204548-1

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			506413	04/21/21 10:34	RBR	TAL SL
Total/NA	Analysis	903.0		1	509912	05/15/21 10:53	ANW	TAL SL
Total/NA	Prep	PrecSep_0			506418	04/21/21 10:55	RBR	TAL SL
Total/NA	Analysis	904.0		1	508605	05/06/21 20:32	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	510131	05/17/21 21:22	SCB	TAL SL

Client Sample ID: Field Blank Lab Sample ID: 310-204548-2

Date Collected: 04/14/21 09:40 Matrix: Water

Date Received: 04/16/21 17:00

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			506413	04/21/21 10:34	RBR	TAL SL
Total/NA	Analysis	903.0		1	509912	05/15/21 10:54	ANW	TAL SL
Total/NA	Prep	PrecSep_0			506418	04/21/21 10:55	RBR	TAL SL
Total/NA	Analysis	904.0		1	508605	05/06/21 20:33	ANW	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	510131	05/17/21 21:22	SCB	TAL SL

Laboratory References:

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

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Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

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
lowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-21
Louisiana (DW)	State	LA011	12-31-21
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	04-01-22
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	03-01-22
South Carolina	State	85002001	06-30-21
Texas	NELAP	T104704193	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

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Method Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Laboratory Method **Method Description** Protocol 903.0 Radium-226 (GFPC) EPA TAL SL Radium-228 (GFPC) EPA TAL SL 904.0 Combined Radium-226 and Radium-228 TAL-STL TAL SL Ra226_Ra228 Pos PrecSep 0 Preparation, Precipitate Separation None TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

PrecSep-21

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

Preparation, Precipitate Separation (21-Day In-Growth)

Laboratory References:

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

TAL SL

None

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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature L

Client Information	ACCUPANT MANY SECTION AND AND AND AND AND AND AND AND AND AN
Client: SCS Engineers	
City/State: CITY Madison STATE	Project: Ottum wa Gan. Station
Receipt Information	Committee of the second of the
Date/Time Received: DATE OH 1012 ST TIME 1700	Received By:
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: AC-J
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?	If yes: Sample custody seals intact? Yes No
Trip Blank Present?	If yes: Which VOA samples are in cooler? ↓
MW-301 Field Blank	-> 250 HNO3 (250 HNO3 (FF) / 500 NT Plastic
Temperature Record	
Coolant: Wet ice Blue ice Dry ice	D Other:
	e
Thermometer ID:	Correction Factor (°C):
Thermometer ID:	Correction Factor (°C):
Thermometer ID:	
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C):
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C):	Correction Factor (°C):
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature CONTAINER 1	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C):
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Container(s)	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C):
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C):	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C):
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C):	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 ived same day of sampling? Yes No
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) received.	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 Container 2 Container 3 Container 4 Container 5 Container 7 Container 7 Container 7 Container 7 Container 8 Container 9 Container 1 Container 2 Container 2 Container 2 Container 2 Container 2 Container 2 Container 3 Container 4 Container 4 Container 4 Container 4 Container 4 Container 4 Container 5 Container 4 Container 5 Container 4 Container 7 Contain
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recean and if yes: Is there evidence that the chilling process.	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 Ived same day of sampling? Yes No as began? Yes No It the integrity of sample containers is compromised? Is solid?) Yes No
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recease a) If yes: Is there evidence that the chilling process. 2) If temperature is <0°C, are there obvious signs that (e.g., bulging septa, broken/cracked bottles, frozer	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 Ived same day of sampling? Yes No as began? Yes No It the integrity of sample containers is compromised? Is solid?) Yes No
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recease a) If yes: Is there evidence that the chilling process. 2) If temperature is <0°C, are there obvious signs that (e.g., bulging septa, broken/cracked bottles, frozer Note: If yes, contact PM before proceeding. If no, process.	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 Ived same day of sampling? Yes No as began? Yes No It the integrity of sample containers is compromised? Is solid?) Yes No
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recease a) If yes: Is there evidence that the chilling process. 2) If temperature is <0°C, are there obvious signs that (e.g., bulging septa, broken/cracked bottles, frozer Note: If yes, contact PM before proceeding. If no, process.	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 Ived same day of sampling? Yes No as began? Yes No It the integrity of sample containers is compromised? Is solid?) Yes No
Thermometer ID: • Temp Blank Temperature – If no temp blank, or temp blank to Uncorrected Temp (°C): • Sample Container Temperature Container(s) used: Uncorrected Temp (°C): Corrected Temp (°C): Exceptions Noted 1) If temperature exceeds criteria, was sample(s) recease a) If yes: Is there evidence that the chilling process. 2) If temperature is <0°C, are there obvious signs that (e.g., bulging septa, broken/cracked bottles, frozer Note: If yes, contact PM before proceeding. If no, process.	Correction Factor (°C): Imperature above criteria, proceed to Sample Container Temperature Corrected Temp (°C): CONTAINER 2 Ived same day of sampling? Yes No as began? Yes No It the integrity of sample containers is compromised? Is solid?) Yes No

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Ver. 11/01/2020

Environment Testing

Eurofins TestAmerica, Cedar Falls

Phone: 319-277-2401 Fax: 319-277-2425

Cedar Falls, IA 50613

3019 Venture Way

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0 - AsNaO2 P - Na2O3 Q - Na2SO3 R - Na2S2O3 S - H2SO4 I - T FSP Codecahydrate U - Acetone V - MCAA W - PH 4-5 Z - other (specify) Special Instructions/Note: Company Company Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Return To Client Abisposal By Lab Archive For Mon COC No: 310-59839-17485.1 Preservation Codes A - HCL
B - NaOH
C - Zn Acetate
C - Nitnc Acid
E - Nitnc Acid
F - MacO4
G - Amchlor
H - Ascorbic Acid Page: Page 1 of 1 I - Ice J - Di Water K - EDTA L - EDA 35 Total Number of containers Date/Time. Method of Shipmen Sarrier Tracking No(s) State of Origin: Analysis Requested Cooler Temperature(s) °C and Other Remarks: Special Instructions/QC Requirements: × SE40C_Calcd, SM4500_H÷ × sandra.fredrick@eurofinset.com X K A0747, A0208 Received by. X 904.0 - Radium-228 (GFPC) X Lab PM: Fredrick, Sandie X × 903.0 - Radium-226 (GFPC) (ou to sey) GSM/SM mtohen Field Filtered Sample (Yes or No) 4 E-Mail: Company \$55 Preservation Code: Water Matrix (Wewater, Sesoild, Water Company ompany Radiological (C=comp, G=grab) Sample Type 5580-506-692 Buch 5 A Yes A No Sample 00:61 10:10 9:40 Time Unknown ampler 'AT Requested (days) Compliance Project: Due Date Requested:)ate/Time: 4.16.21 Sample Date 12:11:15 Project #: 31011020 12.41.6 25221072 Jate/Time: Poison B Skin irntant Deliverable Requested: I, II, III, IV, Other (specify) Custody Seal No Busha Ottumwa Generating Station - 25221072 Flammable 5580-643-692 Possible Hazard Identification mblodgett@scsengineers.com Relinquished by Tunden Empty Kit Relinquished by Custody Seals Intact: Client Information Sample Identification ON V 00.S Non-Hazard Client Contact: Meghan Blodgett 2830 Dairy Drive SCS Engineers inquished by: A Yes elinquished by State, Zip: WI, 53718 Field Blank Madison WW-301

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program Groundwater Monitoring - Ottumwa Generating Station / SCS Engineers Project #25216072

		cocs	#1	l													
		(Backg					C	DC Set #2	/Ach Don	.dl					Set #3 (Z	ı DD)	
	Parameter	MW-301	Field	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	MW-	TOTAL
	Doron	Х	Blank x	302 X	303 X	304 x	305 X	305A ×	306 ×	310 ×	310A X	311 x	311A ×	307 ×	308 ×	309 X	15
_	Boron Calcium	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
≡ s	Chloride	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
idi)	Fluoride	X	X	×	X	X	X	×	X	X	×	X	X	X	X	X	15
per	pH	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Appendix III Parameters	Sulfate	X	X	X	×	X	×	X	×	X	X	X	X	×	×	X	15
,	TDS	X	X	×	×	X	×	X	X	X	X	X	X	×	×	X	15
	100			^	~						~						-15
	Antimony	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	X	Х	Х	15
	Arsenic	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Barium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	15
	Beryllium	Х	Х	Х	Х	Х	Х	х	Х	Х	х	х	Х	Х	Х	Х	15
) tel	Cadmium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
Appendix IV Parameters	Chromium	Х	Х	Х	Х	х	х	Х	Х	х	х	х	х	Х	Х	х	15
ara	Cobalt	Х	Х	Х	Х	х	х	Х	Х	Х	Х	х	Х	Х	Х	х	15
_ A	Fluoride	Х	Х	Х	х	х	х	Х	Х	Х	Х	х	х	Х	Х	х	15
×	Lead	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
펼	Lithium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
De .	Mercury	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
₽	Molybdenum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Selenium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Thallium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Radium	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ູ່ ບ	Bicarbonate (total)	X	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Si O	Carbonate (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ag 円	Iron (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
rar Y-	Magnesium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Pa	Manganese (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ab SEF	Potassium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
I I	Sodium (total)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
S E	Cobalt (filtered)						Х		Х					Х			3
# 2	Iron (filtered)	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Additional Lab Parameters REQUIRES SEPARATE COO	Lithium (filtered)									Х	Х		Х				3
	Manganese (filtered)	Х		Х	Х	X	X	Х	Х	Х	Х	X	Х	X	Х	Х	14
	E (OUEN.)		.,			.,				.,		.,				.,	45
	Ferrous Iron (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Sulfide (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ıρ	Groundwater Elevation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
Field Parameters	Well Depth	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
i i	pH (field)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ara	Specific Conductance	X X	X	X	X	X X	X	X X	X	X X	X X	X X	X	X	X	X X	15 15
Ä	Dissolved Oxygen ORP	X	X X		X	X	X	X	X	X	X		X	X	X	X	15
ele		X	X	X	X	X		X	X	X	X	X X	X	X		X	15
Œ	Temperature	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Turbidity Color	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Odor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	JOUOI	_ ^	^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^	_ ^		^	_ ^	13

Notes: All samples are unfiltered (total).

 $C:\Users\FredrickS\App Data\Local\Microsoft\Windows\NetCache\Content.Outlook\Z396DTG3\[OGS_CCR_Rule_Sampling_2104.xls]Sheet1$

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Client: SCS Engineers Job Number: 310-204548-2

Login Number: 204548 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Ramos, Eric F

oreator. Namos, Entri		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Eurofins TestAmerica, Cedar Falls

Page 18 of 20

Client: SCS Engineers Job Number: 310-204548-2

Login Number: 204548 List Number: 2 List Source: Eurofins TestAmerica, St. Louis

List Creation: 04/20/21 02:54 PM

Creator: Mazariegos, Leonel A

Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td>20111110111</td>	True	20111110111
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: 310-204548-2

Project/Site: Ottumwa Generating Station - 25221072

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(40-110)	
310-204548-1	MW-301	69.1	
310-204548-2	Field Blank	70.0	
LCS 160-506413/1-A	Lab Control Sample	69.7	
LCSD 160-506413/2-A	Lab Control Sample Dup	71.2	
MB 160-506413/23-A	Method Blank	71.5	
Tracer/Carrier Legend	l		
Ba = Ba Carrier			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Y	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
310-204548-1	MW-301	69.1	80.4	
310-204548-2	Field Blank	70.0	86.0	
LCS 160-506418/1-A	Lab Control Sample	69.7	84.5	
LCSD 160-506418/2-A	Lab Control Sample Dup	71.2	83.0	
MB 160-506418/23-A	Method Blank	71.5	81.1	

Ba = Ba Carrier Y = Y Carrier

Eurofins TestAmerica, Cedar Falls

5/18/2021

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Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-204548-3

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 4/27/2021 10:45:50 AM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

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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.

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Case Narrative

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-204548-3

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-204548-3

Comments

No additional comments.

Receipt

The samples were received on 4/16/2021 5:00 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

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.

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 310-204548-1
 MW-301
 Water
 04/14/21 10:10
 04/16/21 17:00
 Asset ID

 310-204548-2
 Field Blank
 Water
 04/14/21 09:40
 04/16/21 17:00

Job ID: 310-204548-3

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Detection Summary

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Lab Sample ID: 310-204548-1

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sodium	78000	1000	610	ug/L	1	_	6020A	Total/NA
Potassium	1200	500	150	ug/L	1		6020A	Total/NA
Iron	49 J	100	36	ug/L	1		6020A	Total/NA
Magnesium	34000	500	100	ug/L	1		6020A	Total/NA
Manganese	14	10	4.4	ug/L	1		6020A	Total/NA
Manganese	10	10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	170	10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	170	10	4.6	mg/L	1		SM 2320B	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-204548-2

No Detections.

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This Detection Summary does not include radiochemical test results.

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Client Sample Results

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-204548-1 Client Sample ID: MW-301

Date Collected: 04/14/21 10:10 **Matrix: Water**

Date Received: 04/16/21 17:00

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	78000		1000	610	ug/L		04/20/21 09:00	04/26/21 21:56	1
Potassium	1200		500	150	ug/L		04/20/21 09:00	04/26/21 21:56	•
Iron	49	J	100	36	ug/L		04/20/21 09:00	04/26/21 21:56	
Magnesium	34000		500	100	ug/L		04/20/21 09:00	04/26/21 21:56	1
Manganese	14		10	4.4	ug/L		04/20/21 09:00	04/26/21 21:56	1
Method: 6020A - Metals (ICP/MS Analyte	Result	ved Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fa
Analyte Iron	•		RL 100 10		ug/L	<u>D</u>	04/19/21 08:16	Analyzed 04/26/21 19:40 04/26/21 19:40	Dil Fac
Analyte Iron Manganese General Chemistry	Result <36	Qualifier	100 10	36 4.4	ug/L ug/L		04/19/21 08:16 04/19/21 08:16	04/26/21 19:40 04/26/21 19:40	
Analyte Iron Manganese General Chemistry Analyte	Result <36		100 10 RL	36 4.4 MDL	ug/L ug/L Unit	<u>D</u>	04/19/21 08:16	04/26/21 19:40 04/26/21 19:40 Analyzed	Dil Fa
Analyte	Result <36	Qualifier	100 10	36 4.4 MDL 4.6	ug/L ug/L		04/19/21 08:16 04/19/21 08:16	04/26/21 19:40 04/26/21 19:40	

4/27/2021

Client Sample Results

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: Field Blank

Date Collected: 04/14/21 09:40 Date Received: 04/16/21 17:00 Lab Sample ID: 310-204548-2

Matrix: Water

Method: 6020A - Metals (ICP/	•					_	_		
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	<610		1000	610	ug/L		04/20/21 09:00	04/26/21 22:12	1
Potassium	<150		500	150	ug/L		04/20/21 09:00	04/26/21 22:12	1
Iron	<36		100	36	ug/L		04/20/21 09:00	04/26/21 22:12	1
Magnesium	<100		500	100	ug/L		04/20/21 09:00	04/26/21 22:12	1
Manganese	<4.4		10	4.4	ug/L		04/20/21 09:00	04/26/21 22:12	1
Method: 6020A - Metals (ICP/	MS) - Dissolv	ved							
- Martina de COCOA - Martala (ICD)	MO) Discol	and the second							
Analyte	Result	ved Qualifier	RL		Unit	<u>D</u>	Prepared	Analyzed	Dil Fac
•	•		RL		Unit ug/L	<u>D</u>	Prepared 04/19/21 08:16		Dil Fac
Analyte	Result					<u>D</u>			Dil Fac
Analyte Iron	Result <36			36		<u>D</u>			Dil Fac
Iron General Chemistry	Result <36	Qualifier	100	36 MDL	ug/L		04/19/21 08:16	04/26/21 19:43	1
Iron General Chemistry Analyte	Result <36 Result	Qualifier	100	36 MDL 2.3	ug/L Unit		04/19/21 08:16	04/26/21 19:43 Analyzed	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Qualifiers

M	eta	Is

Qualifier **Qualifier Description**

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

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

Duplicate Error Ratio (normalized absolute difference) DER

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)

Estimated Detection Limit (Dioxin) **EDL** 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 MLMinimum Level (Dioxin) MPN Most Probable Number Method Quantitation Limit MQL

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**

Relative Error Ratio (Radiochemistry) **RER**

Reporting Limit or Requested Limit (Radiochemistry) RL

RPD Relative Percent Difference, a measure of the relative difference between two points

TEF Toxicity Equivalent Factor (Dioxin) **TEQ** Toxicity Equivalent Quotient (Dioxin)

Too Numerous To Count **TNTC**

4/27/2021

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Eurofins TestAmerica, Cedar Falls

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-313144/1-A

Matrix: Water

Analysis Batch: 314022

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 313144

Prep Type: Total/NA

Prep Type: Total/NA

Prep Batch: 313195

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Analyte 100 36 ug/L 04/19/21 08:16 04/26/21 18:52 Iron <36 Manganese <4.4 10 4.4 ug/L 04/19/21 08:16 04/26/21 18:52

Lab Sample ID: LCS 310-313144/2-A **Client Sample ID: Lab Control Sample**

Matrix: Water

Analysis Batch: 314022

Prep Batch: 313144 Spike LCS LCS %Rec. Added Result Qualifier Unit D %Rec

Analyte Limits Iron 200 225 ug/L 112 80 - 120 108 100 ug/L 108 80 - 120 Manganese

Lab Sample ID: MB 310-313195/1-A **Client Sample ID: Method Blank**

Matrix: Water

Analysis Batch: 314022

	MB	MB							
/te	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
ım	<610		1000	610	ug/L		04/20/21 09:00	04/26/21 20:36	1
sium	<150		500	150	ug/L		04/20/21 09:00	04/26/21 20:36	1
	<36		100	36	ug/L		04/20/21 09:00	04/26/21 20:36	1
esium	<100		500	100	ug/L		04/20/21 09:00	04/26/21 20:36	1
anese	<4.4		10	4.4	ug/L		04/20/21 09:00	04/26/21 20:36	1
	yte Im ssium lesium lanese	yte Result um <610	ssium <610 <ssium <100<="" <150="" <36="" essium="" td=""><td>yte Result of the control of the control</td><td>yte Result of the control of the control</td><td>yte Result out Qualifier RL out MDL out Unit sium <610</td> 1000 610 ug/L ug/L ssium <150</ssium>	yte Result of the control	yte Result of the control	yte Result out Qualifier RL out MDL out Unit sium <610	yte Result or many Qualifier RL or many MDL or many Unit or many D or many ssium <150	yte Result om Qualifier RL of the properties MDL of the properties Unit of the properties D of the properties Prepared of the properties ssium <150	yte Result arm Qualifier RL arm MDL brit arm Unit arm D arm Prepared arm Analyzed od/20/21 09:00 Analyzed o

Lab Sample ID: LCS 310-313195/2-A **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 314022							Prep Batch: 313195
	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Sodium	2000	2120		ug/L		106	80 - 120
Potassium	2000	2220		ug/L		111	80 - 120
Iron	200	221		ug/L		110	80 - 120
Magnesium	2000	2070		ug/L		104	80 - 120
Manganese	100	105		ug/L		105	80 - 120

Method: 2320B - Alkalinity (Low Level)

Lab Sample ID: MB 310-313244/1 Client Sample ID: Method Blank Prep Type: Total/NA

Matrix: Water

Analysis Batch: 313244

	MB	MB								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Bicarbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/19/21 15:26	1	
Carbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/19/21 15:26	1	
Total Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/19/21 15:26	1	

Lab Sample ID: LCS 310-313244/2 **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 313244								
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Total Alkalinity as CaCO3	 1000	992		mg/L		99	90 - 110	

Eurofins TestAmerica, Cedar Falls

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QC Sample Results

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 310-313906/1 Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 313906

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/26/21 10:52	1
Carbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/26/21 10:52	1
Total Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			04/26/21 10:52	1

Lab Sample ID: LCS 310-313906/2 **Client Sample ID: Lab Control Sample Matrix: Water Prep Type: Total/NA**

Analysis Batch: 313906

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Total Alkalinity as CaCO3	 1000	1010		mg/L		101	90 - 110	_

Prep Type: Total/NA

QC Association Summary

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Metals

Prep Batch: 313144

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Dissolved	Water	3010A	
310-204548-2	Field Blank	Dissolved	Water	3010A	
MB 310-313144/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-313144/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 313195

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	3010A	
310-204548-2	Field Blank	Total/NA	Water	3010A	
MB 310-313195/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-313195/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 314022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Dissolved	Water	6020A	313144
310-204548-1	MW-301	Total/NA	Water	6020A	313195
310-204548-2	Field Blank	Dissolved	Water	6020A	313144
310-204548-2	Field Blank	Total/NA	Water	6020A	313195
MB 310-313144/1-A	Method Blank	Total/NA	Water	6020A	313144
MB 310-313195/1-A	Method Blank	Total/NA	Water	6020A	313195
LCS 310-313144/2-A	Lab Control Sample	Total/NA	Water	6020A	313144
LCS 310-313195/2-A	Lab Control Sample	Total/NA	Water	6020A	313195

General Chemistry

Analysis Batch: 313244

Lab Sample ID 310-204548-2	Client Sample ID Field Blank	Prep Type Total/NA	Matrix Water	Method 2320B	Prep Batch
MB 310-313244/1	Method Blank	Total/NA	Water	2320B	
LCS 310-313244/2	Lab Control Sample	Total/NA	Water	2320B	

Analysis Batch: 313906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-204548-1	MW-301	Total/NA	Water	SM 2320B	
MB 310-313906/1	Method Blank	Total/NA	Water	SM 2320B	
LCS 310-313906/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Lab Chronicle

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Lab Sample ID: 310-204548-1 Date Collected: 04/14/21 10:10

Matrix: Water

Date Received: 04/16/21 17:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			313144	04/19/21 08:16	JNR	TAL CF
Dissolved	Analysis	6020A		1	314022	04/26/21 19:40	SAD	TAL CF
Total/NA	Prep	3010A			313195	04/20/21 09:00	JNR	TAL CF
Total/NA	Analysis	6020A		1	314022	04/26/21 21:56	SAD	TAL CF
Total/NA	Analysis	SM 2320B		1	313906	04/26/21 10:52	DFS	TAL CF

Lab Sample ID: 310-204548-2 **Client Sample ID: Field Blank**

Date Collected: 04/14/21 09:40 **Matrix: Water**

Date Received: 04/16/21 17:00

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			313144	04/19/21 08:16	JNR	TAL CF
Dissolved	Analysis	6020A		1	314022	04/26/21 19:43	SAD	TAL CF
Total/NA	Prep	3010A			313195	04/20/21 09:00	JNR	TAL CF
Total/NA	Analysis	6020A		1	314022	04/26/21 22:12	SAD	TAL CF
Total/NA	Analysis	2320B		1	313244	04/19/21 15:26	DFS	TAL CF

Laboratory References:

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

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4/27/2021

Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

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Method Summary

Client: SCS Engineers Job ID: 310-204548-3

Project/Site: Ottumwa Generating Station - 25221072

Method	Method Description	Protocol	Laboratory
6020A	Metals (ICP/MS)	SW846	TAL CF
2320B	Alkalinity (Low Level)	SM	TAL CF
SM 2320B	Alkalinity	SM	TAL CF
3010A	Preparation, Total Metals	SW846	TAL CF

Protocol References:

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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature L

Client Information	
Client: SCS ENGINERS	
City/State: CITY Madison STATE	Project: Othum wa Gen. Station
Receipt Information	
Date/Time Received: DATE 16 TIME 1700	Received By:
Delivery Type: UPS FedEx	☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☑ Lab Courier ☐ Lab Field Services	Client Drop-off Other:
Condition of Cooler/Containers	Constraint of the Constraint o
Sample(s) received in Cooler?	If yes: Cooler ID: AC-J
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?	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present? ☐ Yes ☑ No	If yes: Which VOA samples are in cooler? ↓
MW-301 Field Blank	→ 250 HNO3 (250 HNO3 (FF) 500 NT Plasti
Temperature Record	
Coolant: Wet ice Blue ice Dry ice	Other: NONE
Thermometer ID:	Correction Factor (°C):
• Temp Blank Temperature - If no temp blank, or temp blank ter	nperature above criteria, proceed to Sample Container Temperature
Uncorrected Temp (°C):	Corrected Temp (°C):
Sample Container Temperature	CONTAINED 2
Container(s) used:	CONTAINER 2
Uncorrected Temp (°C):	
Corrected Temp (°C):	
Exceptions Noted	
If temperature exceeds criteria, was sample(s) recei a) If yes: Is there evidence that the chilling proces	
 If temperature is <0°C, are there obvious signs that (e.g., bulging septa, broken/cracked bottles, frozen 	
NOTE: If yes, contact PM before proceeding. If no, proce	ed with login
Additional Comments	WHAT IS AND A DOLL NOW SELECTION OF THE PART AND ADDRESS OF THE

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

WW-301

Eurofins TestAmerica, Cedar Falls

Madison

Table 1. Sampling Points and Parameters - CCR Rule Sampling Program Groundwater Monitoring - Ottumwa Generating Station / SCS Engineers Project #25216072

		COC S					co	OC Set #2	(Ash Por	nd)				coc	Set #3 (2	LDP)	
	Parameter	MW-301	Field Blank	MW- 302	MW- 303	MW- 304	MW- 305	MW- 305A	MW- 306	MW- 310	MW- 310A	MW- 311	MW- 311A	MW- 307	MW- 308	MW- 309	TOTAL
	Boron	х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Appendix III Parameters	Calcium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
英호	Chloride	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
5 5	Fluoride	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ara	pH	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Αď	Sulfate	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	TDS	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Antimony	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Arsenic	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Barium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
S	Beryllium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ete	Cadmium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
an	Chromium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Appendix IV Parameters	Cobalt	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
≥	Fluoride	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
. <u>×</u>	Lead	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
Ē	Lithium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
ĕ	Mercury	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
₹	Molybdenum	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Selenium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
	Thallium	Х	Х	Х	Х	Х	х	Х	Х	Х	Х	х	Х	Х	Х	Х	15
	Radium	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	15
1.0	Bicarbonate (total)	Х	Х	×	Х	×	Х	×	Х	Х	×	Х	Х	Х	Х	Х	15
န္ ဝ	Carbonate (total)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ete C	Iron (total)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
am A_TI	Magnesium (total)	Х	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ar. AR.	Manganese (total)	х	Х	Х	Х	Х	х	Х	Х	Х	Х	х	Х	Х	Х	Х	15
P G	Potassium (total)	х	Х	х	Х	х	х	х	Х	Х	Х	х	х	Х	Х	х	15
E S	Sodium (total)	х	Х	Х	Х	х	х	х	Х	Х	Х	х	х	Х	Х	х	15
E Si	Cobalt (filtered)						х		Х					Х			3
Ę Ę	Iron (filtered)	х	Х	Х	Х	Х	х	Х	Х	Х	Х	х	Х	Х	Х	х	15
Additional Lab Parameters - REQUIRES SEPARATE COC	Lithium (filtered)									Х	Х		Х				3
₹ <u>R</u>	Manganese (filtered)	Х		Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	Х	14
	Ferrous Iron (CHEMets)	Х	X	×	X	×	X	X	X	X	X	X	X	X	X	X	15
	Sulfide (CHEMets)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
	Groundwater Elevation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
S	Well Depth	Х	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ete	pH (field)	Х	X	X	X	X	X	X	X	X	X	X	X	X	X	X	15
ä	Specific Conductance	Х	Х	Х	х	х	х	х	х	х	х	х	х	Х	Х	х	15
Field Parameters	Dissolved Oxygen	Х	Х	х	х	х	х	х	х	х	х	х	х	Х	х	х	15
ם	ORP	Х	Х	Х	х	х	х	х	х	х	х	х	х	Х	х	х	15
<u>ie</u>	Temperature	Х	Х	Х	х	х	х	х	х	х	х	х	х	х	х	х	15
-	Turbidity	Х	Х	Х	х	х	х	х	х	х	х	х	х	Х	х	х	15
	Color	Х	Х	Х	х	х	х	х	х	х	х	х	х	Х	х	х	15
	Odor	Х	Х	Х	х	х	х	х	Х	х	х	х	х	Х	х	х	15

Notes: All samples are unfiltered (total).

 $\label{local-potential} C:\Users\FredrickS\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\Z396DTG3\[OGS_CCR_Rule_Sampling_2104.xls\]Sheet1$

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Client: SCS Engineers Job Number: 310-204548-3

List Source: Eurofins TestAmerica, Cedar Falls

Login Number: 204548 List Number: 1

Creator: Ramos, Eric F

Creator: Ramos, Eric F	Anower	Commont
Question Padicactivity weap't checked or is	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Eurofins TestAmerica, Cedar Falls

D3 July 2021 Assessment Monitoring



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-210533-2

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by:

7/21/2021 11:02:56 AM Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

Review your project results through Total Access

Have a Question?



Visit us at: www.eurofinsus.com/Env

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.

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Case Narrative

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-210533-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-210533-2

Comments

Client requested split report

Receipt

The samples were received on 7/9/2021 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.6° C.

Metals

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

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

 Lab Sample ID
 Client Sample ID
 Matrix
 Collected
 Received
 Asset ID

 310-210533-2
 MW-307
 Water
 07/06/21 20:45
 07/09/21 09:25
 Asset ID

Job ID: 310-210533-2

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Detection Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-210533-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	60		0.50	0.091	ug/L	1	_	6020A	Total/NA
Ground Water Elevation	647.03				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	14.7				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.21				mg/L	1		Field Sampling	Total/NA
pH, Field	7.05				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1705				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.2				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	17.91				NTU	1		Field Sampling	Total/NA

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Client Sample Results

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-210533-2 **Client Sample ID: MW-307**

Date Collected: 07/06/21 20:45 Date Received: 07/09/21 09:25

Matrix: Water

Method: 6020A - Metals (ICP/N	IS)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	60		0.50	0.091	ug/L		07/13/21 09:00	07/14/21 23:11	1
- Method: Field Sampling - Field	d Sampling								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	647.03				ft			07/06/21 20:45	1
Oxidation Reduction Potential	14.7				millivolts			07/06/21 20:45	1
Oxygen, Dissolved, Client Supplied	0.21				mg/L			07/06/21 20:45	1
pH, Field	7.05				SU			07/06/21 20:45	1
Specific Conductance, Field	1705				umhos/cm			07/06/21 20:45	1
Temperature, Field	13.2				Degrees C	;		07/06/21 20:45	1
Turbidity, Field	17.91				NTU			07/06/21 20:45	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Glossary

MCL

MDA

Ciocoary	
Abbreviation	These commonly used abbreviations may or may not be present in this report.
n	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)

MDC Minimum Detectable Concentration (Radiochemistry) MDL Method Detection Limit MLMinimum Level (Dioxin) Most Probable Number MPN Method Quantitation Limit MQL

NC Not Calculated

ND Not Detected at the reporting limit (or MDL or EDL if shown)

EPA recommended "Maximum Contaminant Level"

Minimum Detectable Activity (Radiochemistry)

Negative / Absent NEG POS Positive / Present

PQL **Practical Quantitation Limit**

PRES Presumptive QC **Quality Control**

Relative Error Ratio (Radiochemistry) RER

RL Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points RPD

TEF Toxicity Equivalent Factor (Dioxin) Toxicity Equivalent Quotient (Dioxin) TEQ

TNTC Too Numerous To Count

QC Association Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Metals

Prep Batch: 322135

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-210533-2	MW-307	Total/NA	Water	3010A	

Analysis Batch: 322457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-210533-2	MW-307	Total/NA	Water	6020A	322135

Field Service / Mobile Lab

Analysis Batch: 323036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-210533-2	MW-307	Total/NA	Water	Field Sampling	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-210533-2

Matrix: Water

Date Collected: 07/06/21 20:45 Date Received: 07/09/21 09:25

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			322135	07/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	322457	07/14/21 23:11	SAP	TAL CF
Total/NA	Analysis	Field Sampling		1	323036	07/06/21 20:45	SJF	TAL CF

Laboratory References:

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

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Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

	Authority	Program	Identification Number	Expiration Date
ı	lowa	State	007	12-01-21

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7/21/2021

Eurofins TestAmerica, Cedar Falls

Method Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Client information	计图象系统 2007	Salar Persyateur	The state of the s	TO A PERSON OF STATE
Client: SCS EVENCERS				
City/State: CITY	STATE	Project: Hum	Na Caerus	16 State
	HA SECTION OF THE SEC		the second contribution of	Waster St.
Date/Time Received: 7/09/2021	TIME 0925	Received By: AW		
Delivery Type: ☐ UPS		FedEx Ground	US Mail	☐ Spee-Dee
☐ Lab Courier ☐ La	b Field Services [Client Drop-off	Other:	
Condition of Cooler/Containers	10 1 (1) (2) (2)		· 经数据的数据	
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 7/	If yes: Cooler custoo	dy seals intact? 🔀	Yes No
Sample Custody Seals Present?	Yes No	If yes: Sample custo	ody seals intact?	Yes No
Trip Blank Present?	Yes 🔯 No	If yes: Which VOA s	amples are in coo	ler? ↓
'Temperature Record	· 12.03.03.03.05·例	The latest and the la		tanakarakan, k
Coolant: Wet ice Blue ic	e Dry ice	Other:	NC	NE
Thermometer ID:		Correction Factor (°0	C): 💍	
• Temp Blank Temperature - If no temp bla	nk, or temp blank tem	perature above criteria, pro	ceed to Sample Conta	Iner Temperature
Uncorrected Temp (°C):		Corrected Temp (°C	1-0	
Sample Container Temperature			200,000	
Container(s) used:		CONTAIL	NER 2	
Uncorrected Temp (°C):		,		
Corrected Temp (°C):				
Exceptions Noted	建筑等等有 。	Marin Standsun eine eine	STREET STREET	
If temperature exceeds criteria, was a) If yes: Is there evidence that the second content of the second c			ling?	□ No □ No
If temperature is <0°C, are there of (e.g., bulging septa, broken/cracket)			containers is com	promised?
NOTE: If yes, contact PM before proce	eding. If no, procee	d with login		
Additional Comments		Control of the Contro		14 (14 (15) 4 (14 (15) 14 (15) 14 (15) 14 (15)
-				

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Content triumation	Cedar Falls, IA 50613 Phone: 319-277-2401 Fax: 319-277-2425	5	_	Managa Managa	gcord		Environment lesting America
Part	Client Information		7	{	:: ck, Sandie	Carrier Tracking No(s):	COC No: 310-61984-18087.1
Control Engineer Control Eng	Client Contact: Meghan Blodgett		8-250-	5866	a.fredrick@eurofinset.com	State of Origin:	Page:
Accordance Control of the contro	Company: SCS Engineers		PWSID		Analysis R		Job #:
March Marc	Address: 2830 Dairy Drive	Due Date Request	ed:				
Fig. 2016	City. Madison	TAT Requested (d	ays):		•		
Filtre Forester	State, Zip: WI, 53718	The assemilation	□ Yes △		pelin's		
Common Operating Station 2522172 Strong Sample Market Station Sample Common Operating Station 2522172 Strong Sample Common Operating Sample Common Operating Strong Sample Common Operating Samp	82-727-809	PO#: 25221072			1		
Prince forms Prin	Email: mbjodgett@scsengineers.com	WO#:		N. C.	(o)		I - Ice J - DI Water
	Froject Name: Ottumwa Generating Station - 25221072	Project #: 31011020			Divoid:		K - EDTA L - EDA
Sample Identification Sample Date Time Garges Sample Matrix Sample Company Compa	Site:	SSOW#			28D - 1		Other:
Waster Water X	Sample Identification	Sample Date		Matrix (W=water, S=solid. O=waste/olf, BT=Tissue, A=AP)	P O O O O O O O O O		
Water X			1	alion Some	2 2		
MW-307	***************************************		14/5	Water	X		+ only far
WW-310		17/6/21	2045	Water	><		1
MW-311A Field Blank 7 / 6 / 2 1945 Water X X	1414444		1805	Water	×		7
Field Blank	······································	7/7/21	1225	Water	×		
Possible Hazard Identification Possible Hazard Identification	Field Blank		1975	Water			1 William
Possible Hazard Identification Possible Hazard Identification							
Possible Hazard Identification Possible Hazard Identification							Soums
Possible Hazard Identification Possible Hazard Identification Poison B Unknown Radiological Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Deliverable Requested. I. III. IV. Other (specify) Empty Kit Relinquished by. Method of Shipment: Time. Date: Method of Shipment: Posion B Date: Method of Shipment: Posion B Date: Method of Shipment: Method of Shipment: Posion B Date: Date: Method of Shipment: Date: Date:							includ
Possible Hazard Identification Possible Hazard Identification Poison B Unknown Radiological Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo							
Deliverable Requested: I. III. IV. Other (specify) Deliverable Reginquished by: Pater	Possible Hazard Identification						
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Empty Kit Relinquished by. Reinquished by. Reinquished by. Reinquished by. Reinquished by. Reinquished by. Reinquished by. Received by. Received by. Received by. Received by. Received by. Company Received by. Received by. Received by. Conspany Received by. Received by. Conspany Received by.	Deliverable Requested: I, III, IV, Other (specify)				Special Instructions/QC Requirem		
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Custody Seals Infact: Custody Seal No.:	nein iquisited by:	Date/Time:		Company	Received by:	Date/Time:	Company
	Custody Seals Intact:				Cooler Temperature(s) "C and Other	Remarks:	

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Revised: February 12, 2008

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GROUNDWATER SAMPLING REQUEST

				Measure		Discharge							Analytical Parameters	al Para	meters	
List wells in sampling order	Collect	Slug Test	Install Pump	TOC difference	Will well bail dry?	Water to: (see codes below) (3RO	DRO	VOC	PVOC	Diss.	Nat. Atten. (see below)	WDATCP Pest.	8151 Pest.	8151 NO ₂ +NO ₃ & Pest. NH ₃	Other Parameters
Field Blank																المامين المامي
Rinsate Blnk																ליטמים, אייוויים, אי ווטסרומפ
Field Dup.																
MW-301																
MW-302																
MW-303								- 11								
MW-304								[84								
MW-305																
MW-306	×				H											Cobalt only (total)
MW-307	×															Cobalt only (total)
MW-308																
MW-309																
MW-310	×															Lithium only (total)
MW-311																
MW-305A																
MW-310A																
MW-311A	×															Fluoride only (total)
					- B											
		-														

Abbreviations:

\$5 = on-site sanitary sewer (prior approval required)

O5 = on site (clean water)

BW = barrel water and leave on site

WWTP = transport to WWTP (prior approval required) NO 2 & NO 3-N, SO 4, Dissolved Fe, D.O., and pH

I:\25221072.00\Data and Calculations\Field Work Requests\OGS_Field_Work_Request_2107.docx

Client: SCS Engineers Job Number: 310-210533-2

Login Number: 210533 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Watkins, Allison R

oroaton matamo, milion k		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	
s 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	

Table 1. Groundwater Monitoring Results - Field Parameters Ottumwa Generating Station / SCS Engineers Project No. 25221072.00 July 2021

Sample	Date/Sample Time	Groundwater Elevation (amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity
MW-306	7/6/2021 - 19:15	661.87	14.3	7.44	0.33	1,357	119.2	1.37
MW-307	7/6/2021 - 20:45	647.03	13.2	7.05	0.21	1,705	14.7	17.91
MW-310	7/6/2021 - 18:05	639.32	13.0	8.23	0.21	1,852	88.6	0.00
MW-311A	7/7/2021 - 12:25	642.38	14.2	8.19	0.42	3,381	80.8	0.00

Abbreviations:

mg/L = milligrams per liter amsl = above mean sea level NA = Not Analyzed

NM= Not Measured

Notes: none

 Created by: NDK
 Date: 7/20/2021

 Last revision by: NDK
 Date: 7/20/2021

 Checked by: JR
 Date: 7/20/2021

 $C: \label{lem:content:outlook} App Data \label{lem:content:outlook} PAJXB4G4 \cite{Content:outlook} PAJXB4G4 \cite{Content:o$

D4 October 2021 Assessment Monitoring



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-217093-1

Client Project/Site: Ottumwa Generating Statio - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 10/25/2021 5:27:55 PM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

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www.eurofinsus.com/Env

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.

Laboratory Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

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Case Narrative

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Job ID: 310-217093-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-217093-1

Comments

No additional comments.

Receipt

The samples were received on 10/11/2021 5:42 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5° C.

HPLC/IC

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

Metals

Method 7470A: The following samples were improperly preserved in the field: MW-307 (310-217093-1), MW-308 (310-217093-2) and MW-309 (310-217093-3). The preservative used is not compatible with the analytes requested.

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

General Chemistry

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

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Sample Summary

Client: SCS Engineers Project/Site: Ottumwa Generating Statio - 25221072 Job ID: 310-217093-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-217093-1	MW-307	Water	10/07/21 15:47	10/11/21 17:42
310-217093-2	MW-308	Water	10/07/21 15:05	10/11/21 17:42
310-217093-3	MW-309	Water	10/07/21 18:02	10/11/21 17:42

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-217093-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac D	Method	Prep Type
Chloride	240		5.0	2.2	mg/L	5	9056A	Total/NA
Sulfate	110		5.0	2.5	mg/L	5	9056A	Total/NA
Barium	140		2.0	0.37	ug/L	1	6020A	Total/NA
Boron	230		100	58	ug/L	1	6020A	Total/NA
Calcium	240		0.50	0.19	mg/L	1	6020A	Total/NA
Cobalt	48		0.50	0.19	ug/L	1	6020A	Total/NA
Lithium	14		10	2.5	ug/L	1	6020A	Total/NA
Total Dissolved Solids	1000		50	26	mg/L	1	SM 2540C	Total/NA
pH	6.8	HF	0.1	0.1	SU	1	SM 4500 H+ B	Total/NA
Dissolved Oxygen	0.19				mg/L	1	Field Sampling	Total/NA
Field Turbidity	10.0				NTU	1	Field Sampling	Total/NA
Ground Water Elevation	644.49				ft	1	Field Sampling	Total/NA
Oxidation Reduction Potential	-23.8				millivolts	1	Field Sampling	Total/NA
pH, Field	6.71				SU	1	Field Sampling	Total/NA
Specific Conductance, Field	1552				umhos/cm	1	Field Sampling	Total/NA
Temperature, Field	14.4				Degrees C	1	Field Sampling	Total/NA

Client Sample ID: MW-308

Lab Sample ID: 310-217093-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	170		5.0	2.2	mg/L	5	_	9056A	Total/NA
Sulfate	290		5.0	2.5	mg/L	5		9056A	Total/NA
Barium	130		2.0	0.37	ug/L	1		6020A	Total/NA
Boron	200		100	58	ug/L	1		6020A	Total/NA
Calcium	230		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.22	J	0.50	0.19	ug/L	1		6020A	Total/NA
Lithium	16		10	2.5	ug/L	1		6020A	Total/NA
Total Dissolved Solids	1000		50	26	mg/L	1		SM 2540C	Total/NA
pH	6.9	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Dissolved Oxygen	0.17				mg/L	1		Field Sampling	Total/NA
Field Turbidity	12.8				NTU	1		Field Sampling	Total/NA
Ground Water Elevation	641.81				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	-26.1				millivolts	1		Field Sampling	Total/NA
pH, Field	6.83				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1453				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.0				Degrees C	1		Field Sampling	Total/NA

Client Sample ID: MW-309

Lab Sample ID: 310-217093-3

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	67	5.0	2.2	mg/L	5	_	9056A	Total/NA
Sulfate	400	5.0	2.5	mg/L	5		9056A	Total/NA
Barium	47	2.0	0.37	ug/L	1		6020A	Total/NA
Boron	1300	100	58	ug/L	1		6020A	Total/NA
Calcium	120	0.50	0.19	mg/L	1		6020A	Total/NA
Chromium	1.3 J	5.0	1.1	ug/L	1		6020A	Total/NA
Cobalt	2.0	0.50	0.19	ug/L	1		6020A	Total/NA
Lithium	7.5 J	10	2.5	ug/L	1		6020A	Total/NA
Total Dissolved Solids	950	50	26	mg/L	1		SM 2540C	Total/NA
pH	7.3 HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Dissolved Oxygen	0.21			mg/L	1		Field Sampling	Total/NA
Field Turbidity	19.6			NTU	1		Field Sampling	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Cedar Falls

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10/25/2021

Detection Summary

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Client Sample ID: MW-309 (Continued)

Lab Sample ID: 310-217093-3

Analyte	Result Qualifier	RL MD	L Unit	Dil Fac D	Method	Prep Type
Ground Water Elevation	640.71		ft		Field Sampling	Total/NA
Oxidation Reduction Potential	-8.1		millivolts	1	Field Sampling	Total/NA
pH, Field	7.18		SU	1	Field Sampling	Total/NA
Specific Conductance, Field	1297		umhos/cm	1	Field Sampling	Total/NA
Temperature, Field	13.1		Degrees C	1	Field Sampling	Total/NA

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Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Lab Sample ID: 310-217093-1 **Client Sample ID: MW-307** Date Collected: 10/07/21 15:47

Matrix: Water

Date Received: 10/11/21 17:42

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	240		5.0	2.2	mg/L			10/14/21 16:20	5
Fluoride	<0.28		0.50	0.28	mg/L			10/14/21 16:20	5
Sulfate	110		5.0	2.5	mg/L			10/14/21 16:20	5
Method: 6020A - Metals (ICP/M	S)								
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		10/13/21 09:00	10/25/21 15:34	1
Arsenic	<0.75		2.0	0.75	ug/L		10/13/21 09:00	10/25/21 15:34	1
Barium	140		2.0	0.37	ug/L		10/13/21 09:00	10/25/21 15:34	1
Beryllium	<0.27		1.0	0.27	ug/L		10/13/21 09:00	10/25/21 15:34	1
Boron	230		100	58	ug/L		10/13/21 09:00	10/25/21 15:34	1
Cadmium	< 0.051		0.10	0.051	ug/L		10/13/21 09:00	10/25/21 15:34	1
Calcium	240		0.50	0.19	mg/L		10/13/21 09:00	10/25/21 15:34	1
Chromium	<1.1		5.0	1.1	ug/L		10/13/21 09:00	10/25/21 15:34	1
Cobalt	48		0.50	0.19	ug/L		10/13/21 09:00	10/25/21 15:34	1
Lead	<0.21		0.50	0.21	ug/L		10/13/21 09:00	10/25/21 15:34	1
Lithium	14		10		ug/L		10/13/21 09:00	10/25/21 15:34	1
Molybdenum	<1.3		2.0		ug/L		10/13/21 09:00	10/25/21 15:34	1
Selenium	<0.96		5.0		ug/L		10/13/21 09:00	10/25/21 15:34	1
Thallium	<0.26		1.0		ug/L		10/13/21 09:00	10/25/21 15:34	1
Method: 7470A - Mercury (CVA	A)								
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		10/20/21 13:56	10/21/21 08:56	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1000		50	26	mg/L			10/13/21 12:25	1
pH	6.8	HF	0.1	0.1	SU			10/12/21 17:02	1
Method: Field Sampling - Field	Sampling								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Oxygen	0.19				mg/L			10/07/21 15:47	1
Field Turbidity	10.0				NTU			10/07/21 15:47	1
Ground Water Elevation	644.49				ft			10/07/21 15:47	1
Oxidation Reduction Potential	-23.8				millivolts			10/07/21 15:47	1
pH, Field	6.71				SU			10/07/21 15:47	1
Specific Conductance, Field	1552				umhos/cm			10/07/21 15:47	1
Temperature, Field	14.4				Degrees C			10/07/21 15:47	1

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Lab Sample ID: 310-217093-2 Client Sample ID: MW-308 Date Collected: 10/07/21 15:05

Matrix: Water

Date Received: 10/11/21 17:42

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	170		5.0	2.2	mg/L			10/14/21 17:07	- 5
Fluoride	<0.28		0.50	0.28	mg/L			10/14/21 17:07	5
Sulfate	290		5.0	2.5	mg/L			10/14/21 17:07	Ę
Method: 6020A - Metals (ICP/M	S)								
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		10/13/21 09:00	10/25/21 15:37	1
Arsenic	<0.75		2.0	0.75	ug/L		10/13/21 09:00	10/25/21 15:37	1
Barium	130		2.0	0.37	ug/L		10/13/21 09:00	10/25/21 15:37	1
Beryllium	<0.27		1.0	0.27	ug/L		10/13/21 09:00	10/25/21 15:37	1
Boron	200		100	58	ug/L		10/13/21 09:00	10/25/21 15:37	1
Cadmium	< 0.051		0.10	0.051	ug/L		10/13/21 09:00	10/25/21 15:37	1
Calcium	230		0.50	0.19	mg/L		10/13/21 09:00	10/25/21 15:37	1
Chromium	<1.1		5.0	1.1	ug/L		10/13/21 09:00	10/25/21 15:37	1
Cobalt	0.22	J	0.50	0.19	ug/L		10/13/21 09:00	10/25/21 15:37	1
Lead	<0.21		0.50	0.21	ug/L		10/13/21 09:00	10/25/21 15:37	1
Lithium	16		10		ug/L		10/13/21 09:00	10/25/21 15:37	1
Molybdenum	<1.3		2.0		ug/L		10/13/21 09:00	10/25/21 15:37	1
Selenium	<0.96		5.0		ug/L		10/13/21 09:00	10/25/21 15:37	1
Thallium	<0.26		1.0		ug/L		10/13/21 09:00	10/25/21 15:37	1
Method: 7470A - Mercury (CVA	A)								
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15	<u> </u>	0.20	0.15	ug/L		10/20/21 13:56	10/21/21 08:58	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	1000		50	26	mg/L		·	10/13/21 12:25	
pH	6.9	HF	0.1	0.1	SU			10/12/21 16:38	1
Method: Field Sampling - Field	Sampling								
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Oxygen	0.17				mg/L			10/07/21 15:05	1
Field Turbidity	12.8				NTU			10/07/21 15:05	1
Ground Water Elevation	641.81				ft			10/07/21 15:05	1
Oxidation Reduction Potential	-26.1				millivolts			10/07/21 15:05	1
pH, Field	6.83				SU			10/07/21 15:05	1
Specific Conductance, Field	1453				umhos/cm			10/07/21 15:05	1
Temperature, Field	13.0				Degrees C			10/07/21 15:05	1

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Client Sample ID: MW-309

Date Collected: 10/07/21 18:02 Date Received: 10/11/21 17:42

Analyte

pН

Total Dissolved Solids

Lab Sample ID: 310-217093-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	67		5.0	2.2	mg/L			10/14/21 17:23	- 5
Fluoride	<0.28		0.50	0.28	mg/L			10/14/21 17:23	5
Sulfate	400		5.0	2.5	mg/L			10/14/21 17:23	5
Method: 6020A - Metals (ICP/MS)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		10/13/21 09:00	10/25/21 15:54	1
Arsenic	< 0.75		2.0	0.75	ug/L		10/13/21 09:00	10/25/21 15:54	1
Barium	47		2.0	0.37	ug/L		10/13/21 09:00	10/25/21 15:54	1
Beryllium	<0.27		1.0	0.27	ug/L		10/13/21 09:00	10/25/21 15:54	1
Boron	1300		100	58	ug/L		10/13/21 09:00	10/25/21 15:54	1
Cadmium	<0.051		0.10	0.051	ug/L		10/13/21 09:00	10/25/21 15:54	1
Calcium	120		0.50	0.19	mg/L		10/13/21 09:00	10/25/21 15:54	1
Chromium	1.3	J	5.0	1.1	ug/L		10/13/21 09:00	10/25/21 15:54	1
Cobalt	2.0		0.50	0.19	ug/L		10/13/21 09:00	10/25/21 15:54	1
Lead	<0.21		0.50	0.21	ug/L		10/13/21 09:00	10/25/21 15:54	1
Lithium	7.5	J	10	2.5	ug/L		10/13/21 09:00	10/25/21 15:54	1
Molybdenum	<1.3		2.0	1.3	ug/L		10/13/21 09:00	10/25/21 15:54	1
Selenium	<0.96		5.0	0.96	ug/L		10/13/21 09:00	10/25/21 15:54	1
Thallium	<0.26		1.0	0.26	ug/L		10/13/21 09:00	10/25/21 15:54	1
Method: 7470A - Mercury (CVAA)									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		10/20/21 13:56	10/21/21 09:09	1
General Chemistry									

Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Oxygen	0.21			mg/L			10/07/21 18:02	1
Field Turbidity	19.6			NTU			10/07/21 18:02	1
Ground Water Elevation	640.71			ft			10/07/21 18:02	1
Oxidation Reduction Potential	-8.1			millivolts			10/07/21 18:02	1
pH, Field	7.18			SU			10/07/21 18:02	1
Specific Conductance, Field	1297			umhos/cm			10/07/21 18:02	1
Temperature, Field	13.1			Degrees C			10/07/21 18:02	1

RL

50

0.1

MDL Unit

0.1 SU

26 mg/L

Prepared

Analyzed

10/13/21 12:25

10/12/21 16:34

Result Qualifier

7.3 HF

950

Dil Fac

Definitions/Glossary

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Qualifiers

HPLC/IC

Qualifier Qualifier Description

4 MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not

applicable.

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

Eurofins TestAmerica, Cedar Falls

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14

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-332306/3

Matrix: Water

Analysis Batch: 332306

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

MB MB Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac D

Analyte 0.43 mg/L Chloride < 0.43 1.0 10/14/21 15:17 Fluoride <0.055 0.10 0.055 mg/L 10/14/21 15:17 Sulfate < 0.49 1.0 0.49 mg/L 10/14/21 15:17

Lab Sample ID: LCS 310-332306/4

Matrix: Water

Analysis Batch: 332306

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

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Chloride 10.0 10.1 mg/L 101 90 - 110 Fluoride 2.00 2.06 mg/L 103 90 - 110 Sulfate 10.0 10.4 mg/L 104 90 - 110

Lab Sample ID: 310-217093-1 MS

Matrix: Water

Client Sample ID: MW-307 Prep Type: Total/NA

Analysis Batch: 332306 Sample Sample Spike MS MS %Rec.

Result Qualifier Added Analyte Result Qualifier Unit D %Rec Limits Chloride 240 25.0 256 4 mg/L 69 80 - 120 Fluoride <0.28 5.00 4.93 mg/L 99 80 - 120 25.0 129 4 74 80 - 120 Sulfate 110 mg/L

Lab Sample ID: 310-217093-1 MSD

Matrix: Water

Analysis Batch: 332306

Client Sample ID: MW-307 Prep Type: Total/NA

Sample Sample Spike MSD MSD %Rec. **RPD** Result Qualifier Added Analyte Result Qualifier %Rec Limits **RPD** Limit Unit D Chloride 240 25.0 258 4 79 80 - 120 15 mg/L Fluoride <0.28 5.00 5.05 101 mg/L 80 - 120 15 2 Sulfate 110 25.0 130 4 mg/L 78 80 - 120 15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-331427/1-A

Matrix: Water

Analysis Batch: 332861

Client Sample ID: Method Blank Prep Type: Total/NA Prep Batch: 331427

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		10/13/21 09:00	10/25/21 14:36	1
Arsenic	<0.75		2.0	0.75	ug/L		10/13/21 09:00	10/25/21 14:36	1
Barium	<0.37		2.0	0.37	ug/L		10/13/21 09:00	10/25/21 14:36	1
Beryllium	<0.27		1.0	0.27	ug/L		10/13/21 09:00	10/25/21 14:36	1
Boron	<58		100	58	ug/L		10/13/21 09:00	10/25/21 14:36	1
Cadmium	<0.051		0.10	0.051	ug/L		10/13/21 09:00	10/25/21 14:36	1
Calcium	<0.19		0.50	0.19	mg/L		10/13/21 09:00	10/25/21 14:36	1
Chromium	<1.1		5.0	1.1	ug/L		10/13/21 09:00	10/25/21 14:36	1
Cobalt	<0.19		0.50	0.19	ug/L		10/13/21 09:00	10/25/21 14:36	1
Lead	<0.21		0.50	0.21	ug/L		10/13/21 09:00	10/25/21 14:36	1
Lithium	<2.5		10	2.5	ug/L		10/13/21 09:00	10/25/21 14:36	1
Molybdenum	<1.3		2.0	1.3	ug/L		10/13/21 09:00	10/25/21 14:36	1

Eurofins TestAmerica, Cedar Falls

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QC Sample Results

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

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

Lab Sample ID: MB 310-331427/1-A

Lab Sample ID: LCS 310-331427/2-A

Matrix: Water

Matrix: Water

Analysis Batch: 332861

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 331427

MB MB

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	<0.96		5.0	0.96	ug/L		10/13/21 09:00	10/25/21 14:36	1
Thallium	<0.26		1.0	0.26	ug/L		10/13/21 09:00	10/25/21 14:36	1

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 331427

matrix rrator						op . jpo ota
Analysis Batch: 332861						Prep Batch: 331427
	Spike	LCS	LCS			%Rec.
Analyte	Added	Result	Qualifier	Unit	D %Rec	Limits
Antimony	200	189		ug/L	95	80 - 120
Arsenic	200	201		ug/L	100	80 - 120
Barium	100	105		ug/L	105	80 - 120
Beryllium	100	101		ug/L	101	80 - 120
Boron	200	189		ug/L	94	80 - 120
Cadmium	100	99.5		ug/L	99	80 - 120
Calcium	2.00	1.85		mg/L	93	80 - 120
Chromium	100	101		ug/L	101	80 - 120
Cobalt	100	106		ug/L	106	80 - 120
Lead	200	211		ug/L	105	80 - 120
Lithium	200	199		ug/L	100	80 - 120
Molybdenum	200	194		ug/L	97	80 - 120
Selenium	400	377		ug/L	94	80 - 120
Thallium	200	211		ug/L	106	80 - 120

Lab Sample ID: 310-217093-2 DU

Matrix: Water

Analysis Batch: 332861

Client Sample ID: MW-308 Prep Type: Total/NA

Prep Batch: 331427

Alluly 313 Buttoll. 002001							i rep Batein ot	J 1 721
-	Sample	Sample	DU	DU				RPD
Analyte	Result	Qualifier	Result	Qualifier	Unit	D	RPD	Limit
Antimony	<1.1		<1.1		ug/L		NC	20
Arsenic	<0.75		<0.75		ug/L		NC	20
Barium	130		141		ug/L		5	20
Beryllium	<0.27		<0.27		ug/L		NC	20
Boron	200		206		ug/L		1	20
Cadmium	<0.051		<0.051		ug/L		NC	20
Calcium	230		239		mg/L		4	20
Chromium	<1.1		<1.1		ug/L		NC	20
Cobalt	0.22	J	0.220	J	ug/L		0.5	20
Lead	<0.21		<0.21		ug/L		NC	20
Lithium	16		17.0		ug/L		4	20
Molybdenum	<1.3		<1.3		ug/L		NC	20
Selenium	<0.96		<0.96		ug/L		NC	20
Thallium	<0.26		<0.26		ug/L		NC	20

10/25/2021

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-332319/1-A

Lab Sample ID: LCS 310-332319/2-A

Matrix: Water Analysis Batch: 332502

Analysis Batch: 332502

MB MB

Analyte

Result Qualifier

< 0.15

Spike

Added

1.67

Spike

Added

1000

Spike

Added

7.00

RL 0.20

RL

50

MDL Unit 0.15 ug/L

LCS LCS

1.70

Result Qualifier

MDL Unit

LCS LCS

LCS LCS

DU DU

7.1

Result Qualifier

912

Result Qualifier

26 mg/L

Unit

ug/L

Unit

mg/L

Unit

SU

Prepared <u>10/20/21 13:56</u> <u>10/21/21 08:26</u>

102

Prepared

%Rec

91

101

Prep Type: Total/NA

Prep Batch: 332319

Analyzed Dil Fac

Client Sample ID: Lab Control Sample

Prep Type: Total/NA **Prep Batch: 332319**

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

Prep Type: Total/NA

%Rec.

Client Sample ID: Method Blank

80 - 120

Client Sample ID: Method Blank

Client Sample ID: Lab Control Sample

%Rec.

Limits

Client Sample ID: Lab Control Sample

%Rec.

Limits

98 - 102

Client Sample ID: MW-309

90 - 110

Analyzed

10/13/21 12:25

D %Rec Limits

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

Lab Sample ID: MB 310-331505/1

Matrix: Water

Matrix: Water

Mercury

Analyte

Mercury

Analysis Batch: 331505

MB MB

Result Qualifier Analyte **Total Dissolved Solids** <26

Lab Sample ID: LCS 310-331505/2 **Matrix: Water**

Analysis Batch: 331505

Analyte

Total Dissolved Solids

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-331376/1

Matrix: Water

Analysis Batch: 331376

Analyte рН

Lab Sample ID: 310-217093-3 DU

Matrix: Water

Analysis Batch: 331376

Sample Sample Analyte pН

Result Qualifier 7.3 HF

Result Qualifier 7.2

Unit SU

D %Rec

RPD Limit

RPD

Eurofins TestAmerica, Cedar Falls

Dil Fac

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

HPLC/IC

Analysis Batch: 332306

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	9056A	
310-217093-2	MW-308	Total/NA	Water	9056A	
310-217093-3	MW-309	Total/NA	Water	9056A	
MB 310-332306/3	Method Blank	Total/NA	Water	9056A	
LCS 310-332306/4	Lab Control Sample	Total/NA	Water	9056A	
310-217093-1 MS	MW-307	Total/NA	Water	9056A	
310-217093-1 MSD	MW-307	Total/NA	Water	9056A	

Metals

Prep Batch: 331427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	3010A	
310-217093-2	MW-308	Total/NA	Water	3010A	
310-217093-3	MW-309	Total/NA	Water	3010A	
MB 310-331427/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	3010A	
310-217093-2 DU	MW-308	Total/NA	Water	3010A	

Prep Batch: 332319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	7470A	_
310-217093-2	MW-308	Total/NA	Water	7470A	
310-217093-3	MW-309	Total/NA	Water	7470A	
MB 310-332319/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-332319/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 332502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	7470A	332319
310-217093-2	MW-308	Total/NA	Water	7470A	332319
310-217093-3	MW-309	Total/NA	Water	7470A	332319
MB 310-332319/1-A	Method Blank	Total/NA	Water	7470A	332319
LCS 310-332319/2-A	Lab Control Sample	Total/NA	Water	7470A	332319

Analysis Batch: 332861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	6020A	331427
310-217093-2	MW-308	Total/NA	Water	6020A	331427
310-217093-3	MW-309	Total/NA	Water	6020A	331427
MB 310-331427/1-A	Method Blank	Total/NA	Water	6020A	331427
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	6020A	331427
310-217093-2 DU	MW-308	Total/NA	Water	6020A	331427

General Chemistry

Analysis Batch: 331376

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	SM 4500 H+ B	
310-217093-2	MW-308	Total/NA	Water	SM 4500 H+ B	
310-217093-3	MW-309	Total/NA	Water	SM 4500 H+ B	
LCS 310-331376/1	Lab Control Sample	Total/NA	Water	SM 4500 H+ B	

QC Association Summary

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

General Chemistry (Continued)

Analysis Batch: 331376 (Continued)

Lab Sample ID Client Sample ID F		Prep Type	Matrix	Method	Prep Batch	
	310-217093-3 DU	MW-309	Total/NA	Water	SM 4500 H+ B	

Analysis Batch: 331505

Lab Sample ID 310-217093-1	Client Sample ID MW-307	Prep Type Total/NA	Matrix Water	Method SM 2540C	Prep Batch
310-217093-2	MW-308	Total/NA	Water	SM 2540C	
310-217093-3	MW-309	Total/NA	Water	SM 2540C	
MB 310-331505/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-331505/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 331984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	Field Sampling	
310-217093-2	MW-308	Total/NA	Water	Field Sampling	
310-217093-3	MW-309	Total/NA	Water	Field Sampling	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Client Sample ID: MW-307

Date Collected: 10/07/21 15:47 Date Received: 10/11/21 17:42

Lab Sample ID: 310-217093-1

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	332306	10/14/21 16:20	JNR	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 15:34	SAP	TAL CF
Total/NA	Prep	7470A			332319	10/20/21 13:56	EAM	TAL CF
Total/NA	Analysis	7470A		1	332502	10/21/21 08:56	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	331505	10/13/21 12:25	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	331376	10/12/21 17:02	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	331984	10/07/21 15:47	SLD	TAL CF

Client Sample ID: MW-308

Date Collected: 10/07/21 15:05 Date Received: 10/11/21 17:42

Lab Sample ID: 310-217093-2

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A			332306	10/14/21 17:07	JNR	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 15:37	SAP	TAL CF
Total/NA	Prep	7470A			332319	10/20/21 13:56	EAM	TAL CF
Total/NA	Analysis	7470A		1	332502	10/21/21 08:58	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	331505	10/13/21 12:25	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	331376	10/12/21 16:38	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	331984	10/07/21 15:05	SLD	TAL CF

Client Sample ID: MW-309 Lab Sample ID: 310-217093-3

Date Collected: 10/07/21 18:02 Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A			332306	10/14/21 17:23	JNR	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 15:54	SAP	TAL CF
Total/NA	Prep	7470A			332319	10/20/21 13:56	EAM	TAL CF
Total/NA	Analysis	7470A		1	332502	10/21/21 09:09	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	331505	10/13/21 12:25	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	331376	10/12/21 16:34	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	331984	10/07/21 18:02	SLD	TAL CF

Laboratory References:

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

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Matrix: Water

Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

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Method Summary

Client: SCS Engineers Job ID: 310-217093-1

Project/Site: Ottumwa Generating Statio - 25221072

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



Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Cilent Information		到。第一年的大型等於其中的政治的共和的 企业的企业
Client: SCS Engineers		
City/State: CITY Madison	STATE	Project: Ottumina Generating Station App 111/1V
Receipt Information DATE		
Date/Time Received: 10-11-21	1742	Received By: HED
Delivery Type: UPS FedE.		FedEx Ground US Mail Spee-Dee
	ield Services [Client Drop-off Other:
Condition of Cooler/Containers		了。这种是一种,我们就是一个人的。 第一个人的是一个人的是一个人的是一个人的是一个人的是一个人的是一个人的是一个人的是
Sample(s) received in Cooler? Yes	□ No	If yes: Cooler ID: ACZ6
Multiple Coolers?	⊠ No	If yes: Cooler # of
Cooler Custody Seals Present?	`⊠ No	If yes: Cooler custody seals intact? Yes No
Sample Custody Seals Present?	⊠ No	If yes: Sample custody seals intact? ☐ Yes ☐ No
Trip Blank Present?	⊠ No	If yes: Which VOA samples are in cooler? ↓
Temperature Record	STRONG AREA	
Coolant: Wet ice Blue ice	☐ Dry ice	☐ Other:
Thermometer ID: N		Correction Factor (°C): 0
• Temp Blank Temperature - If no temp blank,	or temp blank tem	perature above criteria, proceed to Sample Container Temperature
Uncorrected Temp (°C): 2.5		Corrected Temp (°C): 2.5
	国内的 人名意格	
Container(s) used:		CONTAINER 2
Uncorrected Temp (°C):		
Corrected Temp (°C):		
Exceptions Noted	国等 。1418年2月2	the season in the control of the con
If temperature exceeds criteria, was sa a) If yes: Is there evidence that the criteria.		
2) If temperature is <0°C, are there obvio (e.g., bulging septa, broken/cracked bo		he integrity of sample containers is compromised?
NOTE: If yes, contact PM before proceeding	g. If no, procee	d with login
Additional Comments		
MW-308 Dis	container	empty
·		

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C Environment fest in

Eurofins TestAmerica, Cedar Falls

Phone (319) 277-2401 Phone (319) 277-2425

Cedar Falls, IA 50613

3019 Venture Way

S - H2SO4 T - TSP Dodecahydrate W - pH 4-5 Z - other (specify) Special Instructions/Note: Ver. 01/16/2019 M - Hexane N - None O - AsNaO2 P - Na2O4S O - Na2SO3 R - Na2SO3 U - Acetone Months Company Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Preservation Codes: 310-64467-17489.1 A - HCL B - NaOH C - Zn Acetate D - Nitrc Acid E - MASO4 F - MASO4 G - Amchlor H - Assorbic Acid Page 1 of 1 I - Ice J - Di Water K - EDTA ZhL1 Archive For Total Number of containers Date/Time. 10-11-21 Date/Time Date/Time Aethod of Shipment Disposal By Lab State of Origin: Analysis Requested Sooler Temperature(s) °C and Other Remarks Special Instructions/QC Requirements Lab PM: Fredrick, Sandie E-Mail sandra fredrick@eurofinset com 2640C_Calcd, SM4500_H+ Return To Client 40747, A470A Received by X 1056A_ORGFM_X8D - Chloride, Fluoride & Suifate Received by Received by 903.0 - Radium-226 (GFPC) Perform MS/MSD (Yes or No) Field Filtered Sample (Yes or No) BTaffssue, AsAir Preservation Code: (W=water, S=soiid, O=wastefoil, Matrix Water Water Water Company company Type (C=comp, Radiological G=grab) Sample ۲ ٥ ى 5 28-665-809 Compliance Project: A Yes A No Rosa cm Sample 20.81 5.8 15:47 00:00 Date: Unknown TAT Requested (days): Due Date Requested: Sample Date 12-6-0 16 - (1 - 2) Date/Time: Project #: 31011020 PO#. 25221072 12-6-07 Jate/Time: SOW#: ó Poison B Project Name Ottumwa Generaling Station - 25221072 Am ttt (± 13) Skin Irritant Deliverable Requested: I, III, IV, Other (specify) Custody Seal No. Flammable | Possible Hazard Identification 2007 mblodgett@scsengineers.com Empty Kit Relinquished by: Custody Seals Intact: A Yes A No celinquished by: Ross. Client Information Sample Identification Non-Hazard Meghan Blodgett 2830 Dairy Drive SCS Engineers inquished by. elinquished by State, Zip: WI, 53718 Madison MW-309 WW-307 WW-308

Client: SCS Engineers

Job Number: 310-217093-1

SDG Number:

Login Number: 217093 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

orcator. Homolar, Bana o		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Sample	Date/Sample Time	Groundwater Elevation (amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity
MW-301	10/7/2021 8:29	681.95	17.9	6.26	4.17	1,062	207.3	8.9
MW-302	10/7/2021 10:35	654.86	14.9	6.49	0.30	1,920	211.5	15.6
MW-303	10/7/2021 11:59	649.80	17.6	6.70	0.32	1,343	66.5	11.1
MW-304	10/8/2021 7:57	649.53	13.8	6.97	0.32	1,617	-78.7	7.3
MW-305	10/6/2021 13:25	654.83	13.7	6.94	0.44	1,629	46.9	3.8
MW-305A	10/8/2021 9:30	645.57	14.7	6.90	2.02	1,145	147.8	14.3
MW-306	10/8/2021 9:00	662.27	14.7	6.66	0.40	1,506	86.0	6.7
MW-307	10/7/2021 15:47	644.49	14.4	6.71	0.19	1,552	-23.8	10.0
MW-308	10/7/2021 15:05	641.81	13.0	6.83	0.17	1,453	-26.1	12.8
MW-309	10/7/2021 18:02	640.71	13.1	7.18	0.21	1,297	-8.1	19.6
MW-310	10/6/2021 15:20	638.19	15.4	7.20	0.48	1,425	96.8	1.0
MW-310A	10/8/2021 10:35	639.57	15.6	7.65	6.21	2,808	143.1	15.0
MW-311	10/6/2021 17:10	Dry	NM	NM	NM	NM	NM	NM
MW-311A	10/8/2021 11:55	640.58	15.1	8.12	1.68	2,930	140.7	9.6

Abbreviations:

mg/L = milligrams per liter amsl = above mean sea level

NA = Not Analyzed NM= Not Measured

Notes: none

 Created by: NDK
 Date: 10/15/2021

 Last revision by: JSN
 Date: 10/15/2021

 Checked by: NDK
 Date: 10/15/2021

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Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-217093-2

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 11/14/2021 6:41:20 PM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

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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.

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Case Narrative

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-217093-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-217093-2

Comments

No additional comments.

Receipt

The samples were received on 10/11/2021 5:42 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5° C.

RAD

Methods 903.0, 9315: Radium 226 batch 531985 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-307 (310-217093-1), MW-308 (310-217093-2), MW-309 (310-217093-3), (LCS 160-531985/1-A), (LCSD 160-531985/2-A) and (MB 160-531985/23-A)

Methods 904.0, 9320: Radium 228 batch 531994 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-307 (310-217093-1), MW-308 (310-217093-2), MW-309 (310-217093-3), (LCS 160-531994/1-A), (LCSD 160-531994/2-A) and (MB 160-531994/23-A)

Method PrecSep_0: Radium-228 Prep Batch 160-531994 The following samples were prepared at a reduced aliquot due to Matrix: MW-307 (310-217093-1), MW-308 (310-217093-2) and MW-309 (310-217093-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

Method PrecSep-21: Radium-226 Prep Batch 160-531985 The following samples were prepared at a reduced aliquot due to Matrix: MW-307 (310-217093-1), MW-308 (310-217093-2) and MW-309 (310-217093-3). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead of a sample duplicate (DUP) to demonstrate batch precision.

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

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Sample Summary

Client: SCS Engineers Project/Site: Ottumwa Generating Station - 25221072 Job ID: 310-217093-2

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-217093-1	MW-307	Water	10/07/21 15:47	10/11/21 17:42
310-217093-2	MW-308	Water	10/07/21 15:05	10/11/21 17:42
310-217093-3	MW-309	Water	10/07/21 18:02	10/11/21 17:42

Detection Summary

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307	Lab Sample ID: 310-217093-1
No Detections.	

Client Sample ID: MW-308 Lab Sample ID: 310-217093-2

No Detections.

Client Sample ID: MW-309 Lab Sample ID: 310-217093-3

No Detections.

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Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307 Lab Sample ID: 310-217093-1

Date Collected: 10/07/21 15:47

Date Received: 10/11/21 17:42

Matrix: Water

			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226	2.52		0.607	0.648	1.00	0.531	pCi/L	10/15/21 10:26	11/08/21 17:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	97.4		40 - 110					10/15/21 10:26	11/08/21 17:37	1
- Method: 904.0 - F	Radium-228	(GFPC)								
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 228	1.38		0.400	0.419	1.00	0.516	pCi/L	10/15/21 11:06	11/08/21 12:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	97.4		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Y Carrier	84.9		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Method: Ra226_F	Ra228 Pos -	Combined	d Radium-2	226 and Ra	dium-228	3				
			Count	Total						
			Uncert.	Uncert.						
		Ouglifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Analyte	Result	Qualifier	(20+/-)	(20+1-)	IXL	IVIDO	Oilit	rrepared	Allalyzeu	Diriac

11/14/2021

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

3.22

Radium 226 and 228

Lab Sample ID: 310-217093-2 **Client Sample ID: MW-308**

Date Collected: 10/07/21 15:05 **Matrix: Water** Date Received: 10/11/21 17:42

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226	1.78		0.532	0.555	1.00	0.549	pCi/L	10/15/21 10:26	11/08/21 17:37	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	99.5		40 - 110					10/15/21 10:26	11/08/21 17:37	1
Method: 904.0 -	Radium-228	(GFPC)								
		,	Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 228	1.43		0.400	0.421	1.00	0.510	pCi/L	10/15/21 11:06	11/08/21 12:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	99.5		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Y Carrier	85.6		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Method: Ra226_	Ra228 Pos -	Combined	d Radium-2	26 and Rad	dium-228	3				
			Count	Total						
			Uncert.	Uncert.						
Analyte		Qualifier	(2σ+/-)	(2σ+/-)	RL		Unit	Prepared	Analyzed	Dil Fac

0.697

5.00

0.549 pCi/L

0.666

11/12/21 20:04

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-309

Lab Sample ID: 310-217093-3

Matrix: Water

Date Collected: 10/07/21 18:02 Date Received: 10/11/21 17:42

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226	1.14		0.460	0.472	1.00	0.555	pCi/L	10/15/21 10:26	11/08/21 17:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	99.2		40 - 110					10/15/21 10:26	11/08/21 17:38	1

Method: 904.0 -	Radium-228	(GFPC)								
		. ,	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 228	0.458	U	0.334	0.337	1.00	0.525	pCi/L	10/15/21 11:06	11/08/21 12:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	99.2		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Y Carrier	84.1		40 - 110					10/15/21 11:06	11/08/21 12:51	1

Method: Ra226_Ra2	228 Pos -	Combine	d Radium-2	226 and Ra	adium-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.60		0.568	0.580	5.00	0.555	pCi/L		11/12/21 20:04	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

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.
--------------	---

Eisted 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

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Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-531985/23-A

Lab Sample ID: LCS 160-531985/1-A

Matrix: Water

Matrix: Water

Analysis Batch: 535393

Analysis Batch: 535397

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 531985

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium 226 0.3311 U 0.262 0.264 1.00 0.379 pCi/L 10/15/21 10:26 11/08/21 19:17

Total

MB MB

 Carrier
 %Yield Ba
 Qualifier Qualifier
 Limits 40 - 110
 Prepared 10/15/21 10:26
 Analyzed 71/08/21 19:17
 Dil Fac 71/08/21 19:17

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 531985

Total LCS LCS %Rec. **Spike** Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Radium 226 15.1 13.66 1.75 1.00 0.505 pCi/L 90 75 - 125

Count

 Carrier
 %Yield 700
 Qualifier 40 - 110
 Limits 40 - 110

Lab Sample ID: LCSD 160-531985/2-A

Matrix: Water

Analysis Batch: 535393

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 531985

Total LCSD LCSD %Rec. **RER** Spike Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Radium 226 15.1 1.69 1.00 0.508 pCi/L 86 75 - 125 0.18 13.05

 Carrier
 %Yield Ba
 Qualifier 100
 Limits 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-531994/23-A

Matrix: Water

Analysis Batch: 535393

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

Prep Batch: 531994

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium 228 0.2280 Ū 0.367 0.367 1.00 0.616 pCi/L 10/15/21 11:06 11/08/21 13:04

 Carrier
 %Yield Plant
 Qualifier Plant
 Limits Plant

 Ba
 97.2
 40 - 110

 Y Carrier
 87.5
 40 - 110

 Prepared
 Analyzed
 Dil Fac

 10/15/21 11:06
 11/08/21 13:04
 1

 10/15/21 11:06
 11/08/21 13:04
 1

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QC Sample Results

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

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

Lab Sample ID: LCS 160-531994/1-A Client Sample ID: Lab Control Sample

Matrix: Water Analysis Batch: 535427 Prep Type: Total/NA Prep Batch: 531994

				Iotai						
	Spike	LCS	LCS	Uncert.					%Rec.	
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC	Unit	%Rec	Limits	
Radium 228	12.2	11.49		1.34	1.00	0.499	pCi/L	94	75 - 125	

 Carrier
 %Yield Plant
 Qualifier Plant
 Limits Plant

 Ba
 106
 40 - 110

 Y Carrier
 82.6
 40 - 110

Lab Sample ID: LCSD 160-531994/2-A Client Sample ID: Lab Control Sample Dup

Matrix: Water

Analysis Batch: 535427

Prep Type: Total/NA
Prep Batch: 531994

				Total						
	Spike	LCSD	LCSD	Uncert.				%Rec.		RER
Analyte	Added	Result	Qual	(2σ+/-)	RL	MDC Unit	%Rec	Limits	RER	Limit
Radium 228	12.2	13.96		1.56	1.00	0.444 pCi/L	114	75 - 125	0.85	1

 Carrier
 %Yield Plant
 Qualifier Plant
 Limits Plant

 Ba
 106
 40 - 110

 Y Carrier
 83.4
 40 - 110

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QC Association Summary

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Rad

Prep Batch: 531985

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	PrecSep-21	
310-217093-2	MW-308	Total/NA	Water	PrecSep-21	
310-217093-3	MW-309	Total/NA	Water	PrecSep-21	
MB 160-531985/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-531985/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-531985/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 531994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217093-1	MW-307	Total/NA	Water	PrecSep_0	-
310-217093-2	MW-308	Total/NA	Water	PrecSep_0	
310-217093-3	MW-309	Total/NA	Water	PrecSep_0	
MB 160-531994/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-531994/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-531994/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep_0	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Date Collected: 10/07/21 15:47 Date Received: 10/11/21 17:42 Lab Sample ID: 310-217093-1

Matrix: Water

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			531985	10/15/21 10:26	BMP	TAL SL
Total/NA	Analysis	903.0		1	535393	11/08/21 17:37	FLC	TAL SL
Total/NA	Prep	PrecSep_0			531994	10/15/21 11:06	BMP	TAL SL
Total/NA	Analysis	904.0		1	535427	11/08/21 12:51	EMH	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	536441	11/12/21 20:04	MLK	TAL SL

Client Sample ID: MW-308 Lab Sample ID: 310-217093-2

Date Collected: 10/07/21 15:05 Matrix: Water

Date Received: 10/11/21 17:42

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21	_		531985	10/15/21 10:26	ВМР	TAL SL
Total/NA	Analysis	903.0		1	535393	11/08/21 17:37	FLC	TAL SL
Total/NA	Prep	PrecSep_0			531994	10/15/21 11:06	BMP	TAL SL
Total/NA	Analysis	904.0		1	535427	11/08/21 12:51	EMH	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	536441	11/12/21 20:04	MLK	TAL SL

Client Sample ID: MW-309 Lab Sample ID: 310-217093-3

Date Collected: 10/07/21 18:02 Matrix: Water

Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			531985	10/15/21 10:26	BMP	TAL SL
Total/NA	Analysis	903.0		1	535393	11/08/21 17:38	FLC	TAL SL
Total/NA	Prep	PrecSep_0			531994	10/15/21 11:06	BMP	TAL SL
Total/NA	Analysis	904.0		1	535427	11/08/21 12:51	EMH	TAL SL
Total/NA	Analysis	Ra226 Ra228 Pos		1	536441	11/12/21 20:04	MLK	TAL SL

Laboratory References:

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

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Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

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	06-30-22
California	State	2886	06-30-21 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	200023	11-30-22
Iowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21 *
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-22
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-22
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

 $^{^{\}star} \ \text{Accreditation/Certification renewal pending - accreditation/certification considered valid}.$

Method Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Laboratory Method **Method Description** Protocol 903.0 Radium-226 (GFPC) EPA TAL SL Radium-228 (GFPC) EPA TAL SL 904.0 Combined Radium-226 and Radium-228 TAL-STL TAL SL Ra226_Ra228 Pos PrecSep 0 Preparation, Precipitate Separation None TAL SL

Protocol References:

EPA = US Environmental Protection Agency

None = None

PrecSep-21

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

Preparation, Precipitate Separation (21-Day In-Growth)

Laboratory References:

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

Job ID: 310-217093-2

TAL SL

None

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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Cilent Information		到。第一年的大型等於其中的政治的共和的 企业的企业				
Client: SCS Engineers						
City/State: CITY Madison	STATE	Project: Ottumina Generating Station App 111/1V				
Receipt Information DATE						
Date/Time Received: 10-11-21	1742	Received By: HED				
Delivery Type: UPS FedE.		FedEx Ground US Mail Spee-Dee				
	ield Services [Client Drop-off Other:				
Condition of Cooler/Containers		了。这种是一种,我们就是一个人的。 第一个人的是一个人的是一个人的是一个人的是一个人的是一个人的是一个人的是一个人的是				
Sample(s) received in Cooler? Yes	□ No	If yes: Cooler ID: ACZ6				
Multiple Coolers?	⊠ No	If yes: Cooler # of				
Cooler Custody Seals Present?	`⊠ No	If yes: Cooler custody seals intact? Yes No				
Sample Custody Seals Present?	⊠ No	If yes: Sample custody seals intact? ☐ Yes ☐ No				
Trip Blank Present?	⊠ No	If yes: Which VOA samples are in cooler? ↓				
Temperature Record	STRONG AREA					
Coolant: Wet ice Blue ice	☐ Dry ice	☐ Other:				
Thermometer ID: N		Correction Factor (°C): 0				
• Temp Blank Temperature - If no temp blank,	or temp blank tem	perature above criteria, proceed to Sample Container Temperature				
Uncorrected Temp (°C): 2.5		Corrected Temp (°C): 2.5				
	国内外公司 统					
Container(s) used:		CONTAINER 2				
Uncorrected Temp (°C):						
Corrected Temp (°C):						
Exceptions Noted	国等 。14年1月1日本	the season in the control of the con				
If temperature exceeds criteria, was sa a) If yes: Is there evidence that the criteria.						
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	g. If no, procee	d with login				
Additional Comments						
MW-308 Dis	container	empty				
·						

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C Envioration feature America

Chain of Custody Record Eurofins TestAmerica, Cedar Falls

Cedar Falls, 1A 50613 Phone (319) 277-2401 Phone (319) 277-2425							214		214	
Client Information	Sampler: Rosa o	cw2	Lab PM: Fredrick,	M. rick, Sandie		A FANNING CONTRACTOR OF THE CO	Carrier Tracking No(s)	g No(s):	COC No. 310-64467-17489.	489.1
Client Contact: Meghan Blodgett	Phone 609 - 589	51,28-6	E-Mai	E-Mail: sandra fredrick@eurofinset.com	urofinset	mox	State of Origin:		Page: Page 1 of 1	AND THE PROPERTY OF THE PROPER
Company: SCS Engineers		PWSID:				Alysis	Requested		Job#:	
Address. 2830 Dairy Drive	Due Date Requested:	, and the same of		halduran					Preservation Codes	
City. Madison	TAT Requested (days):	atienteirivovommororovommorovommos	<u>на применти применти</u>	MOUNTAIN.	ë				A - HCL B - NaOH C - Zn Acetate	M - Hexane N - None O - AssNaO2
State, Zp. Wi, 53718	ect:	A Yes A No			otelius				D - Nitric Acid E - NaHSO4	
Phone:	PO#:	живимија до размара до рамо про	THE THE PROPERTY OF THE PROPER	(A sbin				G Amchlor	
Email: Imbiodgett@scsengineers.com	WO#.		-	***************************************	oui∃ ,e					
Project Name Ottumwa Generating Station - 25221072 And III (±1) (3)	Project #: 31011020			.bC)		÷H			tainers	W - pH 4-5 Z - other (specify)
Site:	SSOW#:	utration to recognize the designation of the second of the	No. of the Control of	35) OS		_005±N			of con	
Sample identification	Sample Date	Sample Type (C=comp, Time G=crab)	Matrix (Wewater, Sasoid, Orwostefeli, Britisen oren)	2 besettist blei: M/SM mrofres -muibs8 - 0.00	904 0 - Radium-2 9056AORGFM	NS (bolkO_Oobe			o tadmuM lsto	A S S S S S S S S S S S S S S S S S S S
	1	1	- (**	X	2	du		The state of the s		Special Histinctions and a second
MW-307	15.7-6	41	Water	×		1				Andreas establishment of the second of the s
MW-308	7-21 15.	8 6	Water	7	X	×				
WW-309	10-7-21 18	7 20.8	Water							
							0		поличний виний	ALTERNATURAL TO THE PROPERTY OF THE PROPERTY O
							2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4			
Possible Hazard Identification			THE PERSON NAMED OF THE PE	Sample D	isposal (A fee may be a	ssessed if s	amples are rei	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	f month)
ant	Poison B — Unknown	Radiologica	le.	☐ Ref	Return To Client		Disposal By Lab	at	Archive For	Months
o ,≡ ,i				Special In	structions	Special Instructions/QC Requirements	nts:			
Empty Kit Relinquished by:	Date			Time:		Straguistican perupumber	Method o	Method of Shipment	ditanananumumumumumumumumumumumumumumumumum	coursession for the second course and second courses the second course the second c
Relinquished by RoSa. CVUZ	Date/Time: (9:0)	00	Company	Received by	d by:		Andreas Character Characte	Date/Time:		Company
Refinquished by:			Company	Received by	d by.	Appendix of the contract of th		Date/Time		Company
1 8	Date/Time.		Company	Received by	In	A C	A WORK ENTERTY AND STREET WITH BERREICH STANKED BERKEICH B	Date/Time. 10-11-21	2hL) 17	Company
Custody Seals Intact: Custody Seal No.:				Cooler	emperature	Cooler Temperature(s) °C and Other Remarks	emanks:			research and the second se
2	<u> пантичной видовичения провидения видовичения видовичения</u>	импининопоненского принципа	MANAGE OF THE PROPERTY OF THE	and designation of the second	NAMES OF TAXABLE PROPERTY OF TAXABLE PARTY OF TAXABLE PAR	отемина и постава и п Постава и постава и	Чата бактемпеватего в в чество в чест	nutrio de la companyamenta del companyamenta del companyamenta de la companyamenta de la companyamenta de la companyamenta del company	от в поставления поставления в поставления	Ver 01/16/2010

Client: SCS Engineers

Job Number: 310-217093-2

SDG Number:

Login Number: 217093 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

orcator. Homolar, Bana o		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Client: SCS Engineers

Job Number: 310-217093-2

SDG Number:

Login Number: 217093

List Source: Eurofins TestAmerica, St. Louis

List Number: 2

List Creation: 10/13/21 04:01 PM

Creator: Johnson, Autumn R

Creator: Johnson, Autumn R		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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: 310-217093-2

Project/Site: Ottumwa Generating Station - 25221072

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(40-110)	
310-217093-1	MW-307	97.4	
310-217093-2	MW-308	99.5	
310-217093-3	MW-309	99.2	
LCS 160-531985/1-A	Lab Control Sample	106	
LCSD 160-531985/2-A	Lab Control Sample Dup	106	
MB 160-531985/23-A	Method Blank	97.2	
Tracer/Carrier Legend	Í		
Ba = Ba			

Method: 904.0 - Radium-228 (GFPC)

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

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
310-217093-1	MW-307	97.4	84.9	
310-217093-2	MW-308	99.5	85.6	
310-217093-3	MW-309	99.2	84.1	
LCS 160-531994/1-A	Lab Control Sample	106	82.6	
LCSD 160-531994/2-A	Lab Control Sample Dup	106	83.4	
MB 160-531994/23-A	Method Blank	97.2	87.5	

Ba = Ba

Y = Y Carrier

Page 20 of 20



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-217094-1

Client Project/Site: Ottumwa Generating Station - 25221072

Additional

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 10/26/2021 2:55:07 PM

Sanda Ireduch

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

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Have a Question?



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www.eurofinsus.com/Env

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.

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Case Narrative

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072 Additional

Job ID: 310-217094-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-217094-1

Comments

No additional comments.

Receipt

The samples were received on 10/11/2021 5:42 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 2.5° C.

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.

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 Additional

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-217094-1	MW-307	Water	10/07/21 15:47	10/11/21 17:42
310-217094-2	MW-308	Water	10/07/21 15:05	10/11/21 17:42
310-217094-3	MW-309	Water	10/07/21 18:02	10/11/21 17:42

Job ID: 310-217094-1

Detection Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Additional

Client Sample ID: MW-307

Lab Sample ID: 310-217094-1

Job ID: 310-217094-1

Analyte	Result Qu	ualifier RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	3900	100	36	ug/L	1	_	6020A	Total/NA
Magnesium	28000	500	100	ug/L	1		6020A	Total/NA
Manganese	440	10	4.4	ug/L	1		6020A	Total/NA
Potassium	2000	500	150	ug/L	1		6020A	Total/NA
Sodium	100000	1000	610	ug/L	1		6020A	Total/NA
Cobalt	59	0.50	0.19	ug/L	1		6020A	Dissolved
Iron	3400	100	36	ug/L	1		6020A	Dissolved
Manganese	410	10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	550	10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	550	10	4.6	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-308

Lab Sample ID: 310-217094-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	4700		100	36	ug/L	1	_	6020A	Total/NA
Magnesium	24000		500	100	ug/L	1		6020A	Total/NA
Manganese	1100		10	4.4	ug/L	1		6020A	Total/NA
Potassium	4300		500	150	ug/L	1		6020A	Total/NA
Sodium	110000		1000	610	ug/L	1		6020A	Total/NA
Iron	300		100	36	ug/L	1		6020A	Dissolved
Manganese	950		10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	410		10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	410		10	4.6	mg/L	1		SM 2320B	Total/NA

Client Sample ID: MW-309

Lab Sample ID: 310-217094-3

Analyte	Result Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Iron	950	100	36	ug/L		_	6020A	Total/NA
Magnesium	18000	500	100	ug/L	1		6020A	Total/NA
Manganese	650	10	4.4	ug/L	1		6020A	Total/NA
Potassium	740	500	150	ug/L	1		6020A	Total/NA
Sodium	180000	1000	610	ug/L	1		6020A	Total/NA
Iron	680	100	36	ug/L	1		6020A	Dissolved
Manganese	600	10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	300	10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	300	10	4.6	mg/L	1		SM 2320B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Client Sample ID: MW-307 Lab Sample ID: 310-217094-1

Date Collected: 10/07/21 15:47 Date Received: 10/11/21 17:42

Matrix: Water

Method: 6020A - Metals (ICP/M	S)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	3900		100	36	ug/L		10/13/21 09:00	10/25/21 15:58	1
Magnesium	28000		500	100	ug/L		10/13/21 09:00	10/25/21 15:58	1
Manganese	440		10	4.4	ug/L		10/13/21 09:00	10/25/21 15:58	1
Potassium	2000		500	150	ug/L		10/13/21 09:00	10/25/21 15:58	1
Sodium	100000		1000	610	ug/L		10/13/21 09:00	10/25/21 15:58	1
- Method: 6020A - Metals (ICP/M	S) - Dissol	ved							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	59		0.50	0.19	ug/L		10/13/21 09:00	10/22/21 22:46	1
Iron	3400		100	36	ug/L		10/13/21 09:00	10/22/21 22:46	1
Manganese	410		10	4.4	ug/L		10/13/21 09:00	10/23/21 12:52	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	550		10	4.6	mg/L			10/18/21 08:37	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			10/18/21 08:37	1
Total Alkalinity as CaCO3	550		10	4.6	mg/L			10/18/21 08:37	1

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Client Sample ID: MW-308 Lab Sample ID: 310-217094-2

Date Collected: 10/07/21 15:05 Date Received: 10/11/21 17:42

Method: 6020A - Metals (ICP/MS	3)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	4700		100	36	ug/L		10/13/21 09:00	10/25/21 16:01	1
Magnesium	24000		500	100	ug/L		10/13/21 09:00	10/25/21 16:01	1
Manganese	1100		10	4.4	ug/L		10/13/21 09:00	10/25/21 16:01	1
Potassium	4300		500	150	ug/L		10/13/21 09:00	10/25/21 16:01	1
Sodium	110000		1000	610	ug/L		10/13/21 09:00	10/25/21 16:01	1
_ Method: 6020A - Metals (ICP/MS	S) - Dissol	ved							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	300		100	36	ug/L		10/14/21 09:00	10/23/21 15:05	1
Manganese	950		10	4.4	ug/L		10/14/21 09:00	10/23/21 15:05	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	410		10	4.6	mg/L			10/18/21 11:28	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			10/18/21 11:28	1
Total Alkalinity as CaCO3	410		10	4.6	mg/L			10/18/21 11:28	1

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Client Sample ID: MW-309 Lab Sample ID: 310-217094-3

Date Collected: 10/07/21 18:02 Date Received: 10/11/21 17:42

Matrix: Water

Method: 6020A - Metals (ICP/MS	S)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	950		100	36	ug/L		10/13/21 09:00	10/25/21 16:05	1
Magnesium	18000		500	100	ug/L		10/13/21 09:00	10/25/21 16:05	1
Manganese	650		10	4.4	ug/L		10/13/21 09:00	10/25/21 16:05	1
Potassium	740		500	150	ug/L		10/13/21 09:00	10/25/21 16:05	1
Sodium	180000		1000	610	ug/L		10/13/21 09:00	10/25/21 16:05	1
Analyte Iron Manganese	Result 680 600	Qualifier	RL 100 10		Unit ug/L ug/L	<u>D</u>	Prepared 10/13/21 09:00 10/13/21 09:00	Analyzed 10/22/21 22:49 10/23/21 13:05	1 1
General Chemistry Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	300		10	4.6	mg/L			10/15/21 08:54	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			10/15/21 08:54	1
Total Alkalinity as CaCO3	300		10	4.6	mg/L			10/15/21 08:54	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Relative Error Ratio (Radiochemistry)

Toxicity Equivalent Factor (Dioxin)

Too Numerous To Count

Toxicity Equivalent Quotient (Dioxin)

Reporting Limit or Requested Limit (Radiochemistry)

Relative Percent Difference, a measure of the relative difference between two points

Additional

RER

RL RPD

TEF

TEQ

TNTC

Classon

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
Percent Recovery
Contains Free Liquid
Colony Forming Unit
Contains No Free Liquid
Duplicate Error Ratio (normalized absolute difference)
Dilution Factor
Detection Limit (DoD/DOE)
Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
Decision Level Concentration (Radiochemistry)
Estimated Detection Limit (Dioxin)
Limit of Detection (DoD/DOE)
Limit of Quantitation (DoD/DOE)
EPA recommended "Maximum Contaminant Level"
Minimum Detectable Activity (Radiochemistry)
Minimum Detectable Concentration (Radiochemistry)
Method Detection Limit
Minimum Level (Dioxin)
Most Probable Number
Method Quantitation Limit
Not Calculated
Not Detected at the reporting limit (or MDL or EDL if shown)
Negative / Absent
Positive / Present
Practical Quantitation Limit
Presumptive
Quality Control

Eurofins TestAmerica, Cedar Falls

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Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-331373/1-A Client Sample ID: Method Blank

Matrix: Water

Analysis Batch: 332110

Prep Type: Total/NA

Prep Batch: 331373

MB MB Analyte Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac Cobalt <0.19 0.50 0.19 ug/L 10/13/21 09:00 10/18/21 19:38 100 10/13/21 09:00 10/18/21 19:38 Iron <36 36 ug/L 1 <4.4 10 10/13/21 09:00 10/18/21 19:38 Manganese 4.4 ug/L

Lab Sample ID: MB 310-331373/1-A **Client Sample ID: Method Blank**

Matrix: Water

Analysis Batch: 332664

Prep Type: Total/NA

Prep Batch: 331373

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac 0.50 Cobalt <0.19 0.19 ug/L 10/13/21 09:00 10/22/21 14:46 100 10/13/21 09:00 10/22/21 14:46 Iron <36 36 ug/L 1 10/13/21 09:00 10/22/21 14:46 Manganese <4.4 10 4.4 ug/L

Lab Sample ID: LCS 310-331373/2-A

MB MB

Matrix: Water

Analysis Batch: 332110

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 331373

%Rec. Limits 86

Analyte Added Result Qualifier Unit %Rec Cobalt 100 86.0 ug/L 80 - 120 200 Iron 168 ug/L 84 80 - 120 Manganese 100 88.0 ug/L 88 80 - 120

Spike

Lab Sample ID: LCS 310-331373/2-A **Client Sample ID: Lab Control Sample**

LCS LCS

Matrix: Water

Analysis Batch: 332664

Prep Type: Total/NA **Prep Batch: 331373**

LCS LCS Spike %Rec. Analyte Added Result Qualifier Unit %Rec Limits 100 108 108 80 - 120 Cobalt ug/L Iron 200 223 ug/L 111 80 - 120 100 100 100 80 - 120 Manganese ug/L

Lab Sample ID: MB 310-331427/1-A **Client Sample ID: Method Blank**

Matrix: Water

Analysis Batch: 332861

Prep Type: Total/NA

Prep Batch: 331427

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac	
Iron	<36		100	36	ug/L		10/13/21 09:00	10/25/21 14:36	1	
Magnesium	<100		500	100	ug/L		10/13/21 09:00	10/25/21 14:36	1	
Manganese	<4.4		10	4.4	ug/L		10/13/21 09:00	10/25/21 14:36	1	
Potassium	<150		500	150	ug/L		10/13/21 09:00	10/25/21 14:36	1	
Sodium	<610		1000	610	ug/L		10/13/21 09:00	10/25/21 14:36	1	

Lab Sample ID: LCS 310-331427/2-A

MR MR

Matrix: Water

Analysis Batch: 332861

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

Prep Batch: 331427

-	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Iron	 200	199		ug/L		99	80 - 120	
Magnesium	2000	2050		ug/L		102	80 - 120	

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10/26/2021

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

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

Lab Sample ID: LCS 310-331427/2-A **Client Sample ID: Lab Control Sample** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 332861

Prep Batch: 331427 Spike LCS LCS %Rec. Added Analyte Result Qualifier Unit D %Rec Limits Manganese 100 103 ug/L 103 80 - 120 Potassium 2000 2070 ug/L 103 80 - 120 2000 Sodium 1980 ug/L 99 80 - 120

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 310-331761/1 **Client Sample ID: Method Blank** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 331761

	MB ME	3						
Analyte	Result Qu	ıalifier RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/15/21 08:54	1
Carbonate Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/15/21 08:54	1
Total Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/15/21 08:54	1

Lab Sample ID: LCS 310-331761/2 Client Sample ID: Lab Control Sample **Matrix: Water** Prep Type: Total/NA

Analysis Batch: 331761

	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Total Alkalinity as CaCO3	 1000	962		mg/L		96	90 - 110	

Lab Sample ID: MB 310-331940/1 **Client Sample ID: Method Blank** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 331940

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			10/18/21 08:37	1
Carbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			10/18/21 08:37	1
Total Alkalinity as CaCO3	<2.3		5.0	2.3	ma/L			10/18/21 08:37	1

Lab Sample ID: LCS 310-331940/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 331940

Spike LCS LCS %Rec. Added Result Qualifier Unit D %Rec Limits Total Alkalinity as CaCO3 1000 1060 mg/L 106 90 - 110

Lab Sample ID: MB 310-331994/1 **Client Sample ID: Method Blank Prep Type: Total/NA**

MR MR

Matrix: Water

Analysis Batch: 331994

ı		INID	IAID							
	Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Bicarbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			10/18/21 11:28	1
	Carbonate Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			10/18/21 11:28	1
	Total Alkalinity as CaCO3	<2.3		5.0	2.3	mg/L			10/18/21 11:28	1

Eurofins TestAmerica, Cedar Falls

10/26/2021

QC Sample Results

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Method: SM 2320B - Alkalinity (Continued)

Lab Sample ID: LCS 310-331994/2 **Client Sample ID: Lab Control Sample Prep Type: Total/NA**

Matrix: Water

Analysis Batch: 331994

	Spike	LCS	LCS			%Rec.
Analyte	Added	Result	Qualifier	Unit [O %Re	c Limits
Total Alkalinity as CaCO3	1000	1060		mg/L	10	90 - 110

QC Association Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Additional

Metals

Filtrati	on R	atch	. 3	21	27	ч
ııııaı	OII D	ацы		J	91	

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-2	MW-308	Dissolved	Water	Filtration	

Prep Batch: 331373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-1	MW-307	Dissolved	Water	3010A	
310-217094-3	MW-309	Dissolved	Water	3010A	
MB 310-331373/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-331373/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 331427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-1	MW-307	Total/NA	Water	3010A	
310-217094-2	MW-308	Total/NA	Water	3010A	
310-217094-3	MW-309	Total/NA	Water	3010A	
MB 310-331427/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 331609

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-2	MW-308	Dissolved	Water	3005A	331371

Analysis Batch: 332110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-331373/1-A	Method Blank	Total/NA	Water	6020A	331373
LCS 310-331373/2-A	Lab Control Sample	Total/NA	Water	6020A	331373

Analysis Batch: 332664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-331373/1-A	Method Blank	Total/NA	Water	6020A	331373
LCS 310-331373/2-A	Lab Control Sample	Total/NA	Water	6020A	331373

Analysis Batch: 332689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-1	MW-307	Dissolved	Water	6020A	331373
310-217094-3	MW-309	Dissolved	Water	6020A	331373

Analysis Batch: 332758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-1	MW-307	Dissolved	Water	6020A	331373
310-217094-2	MW-308	Dissolved	Water	6020A	331609
310-217094-3	MW-309	Dissolved	Water	6020A	331373

Analysis Batch: 332861

Lab Sample ID 310-217094-1	Client Sample ID MW-307	Prep Type Total/NA	Matrix Water	Method 6020A	Prep Batch 331427
310-217094-2	MW-308	Total/NA	Water	6020A	331427
310-217094-3	MW-309	Total/NA	Water	6020A	331427
MB 310-331427/1-A	Method Blank	Total/NA	Water	6020A	331427
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	6020A	331427

Eurofins TestAmerica, Cedar Falls

10/26/2021

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Job ID: 310-217094-1

QC Association Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Additional

General Chemistry

Analysis Batch: 331761

Lab Sample ID 310-217094-3	Client Sample ID MW-309	Prep Type Total/NA	Matrix Water	Method SM 2320B	Prep Batch
MB 310-331761/1	Method Blank	Total/NA	Water	SM 2320B	
LCS 310-331761/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 331940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-1	MW-307	Total/NA	Water	SM 2320B	
MB 310-331940/1	Method Blank	Total/NA	Water	SM 2320B	
LCS 310-331940/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Analysis Batch: 331994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217094-2	MW-308	Total/NA	Water	SM 2320B	
MB 310-331994/1	Method Blank	Total/NA	Water	SM 2320B	
LCS 310-331994/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Job ID: 310-217094-1

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Lab Chronicle

Client: SCS Engineers Job ID: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Client Sample ID: MW-307 Lab Sample ID: 310-217094-1 Date Collected: 10/07/21 15:47

Matrix: Water

Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332689	10/22/21 22:46	SAP	TAL CF
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332758	10/23/21 12:52	SAP	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 15:58	SAP	TAL CF
Total/NA	Analysis	SM 2320B		1	331940	10/18/21 08:37	WJF	TAL CF

Client Sample ID: MW-308 Lab Sample ID: 310-217094-2

Matrix: Water

Date Collected: 10/07/21 15:05 Date Received: 10/11/21 17:42

Batch Dilution Batch Batch Prepared Method **Prep Type** Type Run **Factor** Number or Analyzed Analyst Lab Dissolved Filtration Filtration 331371 10/12/21 15:35 ACM2 TAL CF Dissolved Prep 3005A 331609 10/14/21 09:00 ACM2 TAL CF Dissolved Analysis 6020A 332758 10/23/21 15:05 SAP TAL CF Total/NA 3010A Prep 331427 10/13/21 09:00 ACM2 TAL CF Total/NA Analysis 6020A 332861 10/25/21 16:01 SAP TAL CF Total/NA Analysis SM 2320B 331994 10/18/21 11:28 WJF TAL CF 1

Client Sample ID: MW-309 Lab Sample ID: 310-217094-3

Date Collected: 10/07/21 18:02 **Matrix: Water** Date Received: 10/11/21 17:42

_	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332689	10/22/21 22:49	SAP	TAL CF
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332758	10/23/21 13:05	SAP	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 16:05	SAP	TAL CF
Total/NA	Analysis	SM 2320B		1	331761	10/15/21 08:54	WJF	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: 310-217094-1

Project/Site: Ottumwa Generating Station - 25221072

Additional

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number				
lowa	State	007	12-01-21			

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Method Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Additional

Method **Method Description Protocol** Laboratory SW846 6020A Metals (ICP/MS) TAL CF SM 2320B Alkalinity SM TAL CF 3005A Preparation, Total Metals SW846 TAL CF 3010A Preparation, Total Metals SW846 TAL CF Filtration Sample Filtration None TAL CF

Protocol References:

None = None

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

Job ID: 310-217094-1

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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Clientilinformation (1)	A CAN SHIP IS			1.46.20	别人的影響和那种
Client: SCS Engineer					
City/State: CITY Madison		STATE	Project: Ottumwo	a Generating Skti	on Appill/IV
area in dimention					
Date/Time Received:	10-11-21	1742	Received By: HE	D	
Delivery Type: UPS	FedEx		FedEx Ground	US Mail	☐ Spee-Dee
	er 🔲 Lab Fie			Other:	
Condition of Cooler/Container	8 为 的			A SHE I THE SECTION	
Sample(s) received in Cooler	? X Yes	□ No	If yes: Cooler ID:	AC26	
Multiple Coolers?	☐ Yes	⊠ No	If yes: Cooler# _	of	
Cooler Custody Seals Presen	t? Yes	™ No	If yes: Cooler cust	ody seals intact?	Yes No
Sample Custody Seals Prese	nt?	⊠ No	If yes: Sample cus	tody seals intact?	Yes No
Trip Blank Present?	Yes	™ No	If yes: Which VOA	samples are in coo	ler? ↓
Temperature Record		. Utto a little by	門實的特別的政府的	the section of the second section	THE PLANT FM
Coolant: Wet ice	Blue ice	☐ Dry ice	Other:	NO	NE
Thermometer ID: N			Correction Factor (
• Temp Blank Temperature ⇒lf n	o temp blank; or	temp blank tem	perature above criteria, pi	roceed to Sample Contai	ner Temperature
Uncorrected Temp (°C): 2.5			Corrected Temp (°C	_	
 Sample Container Temperatur 			A The second was		Control of the last
Container(s) used:	ITAINER 1		CONTA	MNER 2	
Uncorrected Temp (°C):				ı	
Corrected Temp (°C):					
Exceptions Noted	MESTERS	* 74 4 5 6 6 6	ACTION CONTROL OF SERVICE	(1) (2) (2) (2) (2) (3) (4) (4) (4) (4) (4) (4) (4) (4) (4) (4	griss (A. A. J. A.)
If temperature exceeds crite a) If yes: Is there evidence				pling?	□ No □ No
 If temperature is <0°C, are (e.g., bulging septa, broker 				e containers is comp	oromised?
NOTE: If yes, contact PM before Additional Comments	re proceeding.	If no, proceed	with login		
	308 Dis	container			
			- 1		

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019 General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

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Environment Tosting America

Eurofins TestAmerica, Cedar Falls

Cedar Falls, IA 50613

3019 Venture Way

S - H2SOA T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specity) Special Instructions/Note: Ver: 01:16:2019 N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 Сопрану Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For Mont COC No: 310-64468-17490.1 Preservation Codes G - Amchlor H - Ascomic Acid A - HCL B - NaOH C - Zn Acetate D - Nitno Acid E - NaHSO4 F - MeOH I - Ice J - Di Water K - EDTA Page 1 of 1 2/11 Total Number of containers 12-11-01 Date/Time Method of Shipment State of Origin Analysis Requested Cooler Temperature(s) °C and Other Remarks Special Instructions/QC Requirements Lab PM: Fredrick, Sandie E-Maii sandra fredrick@eurofinset com Return To Client 6020A - D. Metals (2-3) Received by. Received by (office of NS/MSD (Yes of No) ne Field Filtered Sample (Yes or No) G=grab) BT=fissue, A=Air) (Wirwater, Sesoild, Orivaste/oil, Preservation Code: Matrix Water Water Water Company ompany Radiological Type (C=comp, Sample sh28-9 D 0 ompliance Project: A Yes A No losa cruz Wydyn (1-11-1) 20,81 15.05 Sample 10-01-21 15:47 608-800 Unknown TAT Requested (days): Due Date Requested: Sample Date 12-6-07 12-1-07 PO# 25221072 WO# Project #: 31011020 Date/Tinre Poison B (3) Skin imtant Deliverable Requested: I, II, III, IV, Other (specify) Ottumwa Generating Station - 25221072 Add. Phone (319) 277-2401 Phone (319) 277-2425 Custody Seal No. 4050 UVU Fiammable Possible Hazard Identification mblodgett@scsengineers.com Empty Kit Relinquished by: Custody Seals Intact: Client Information Sample Identification Non-Hazard Meghan Blodgett 2830 Dairy Drive Company: SCS Engineers Relinquished by: elinquisfied by. Relinquished by State, Zip: WI, 53718 Madison MW-309 MW-307 MW-308

Client: SCS Engineers

Job Number: 310-217094-1

SDG Number:

Login Number: 217094

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.</td <td>N/A</td> <td></td>	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.	False	Refer to Job Narrative for details.
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	



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-217096-1

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 10/25/2021 5:29:39 PM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

..... LINKS

Review your project results through

Total Access

Have a Question?



Visit us at: www.eurofinsus.com/Env 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.

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Case Narrative

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-217096-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-217096-1

Comments

No additional comments.

Receipt

The samples were received on 10/11/2021 5:42 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

HPLC/IC

Methods 300.0, 9056A: The following sample was diluted due to the nature of the sample matrix: MW-301 (310-217096-1). 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.

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Sample Summary

Client: SCS Engineers Project/Site: Ottumwa Generating Station - 25221072 Job ID: 310-217096-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received		
310-217096-1	MW-301	Water	10/07/21 08:29	10/11/21 17:42		
310-217096-2	Field Blank	Water	10/07/21 09:00	10/11/21 17:42		

Detection Summary

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Lab Sample ID: 310-217096-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Chloride	180		5.0	2.2	mg/L	5	_	9056A	Total/NA
Sulfate	180		5.0	2.5	mg/L	5		9056A	Total/NA
Barium	61		2.0	0.37	ug/L	1		6020A	Total/NA
Boron	800		100	58	ug/L	1		6020A	Total/NA
Cadmium	0.057	J	0.10	0.051	ug/L	1		6020A	Total/NA
Calcium	100		0.50	0.19	mg/L	1		6020A	Total/NA
Cobalt	0.48	J	0.50	0.19	ug/L	1		6020A	Total/NA
Lithium	26		10	2.5	ug/L	1		6020A	Total/NA
Selenium	7.5		5.0	0.96	ug/L	1		6020A	Total/NA
Total Dissolved Solids	670		50	26	mg/L	1		SM 2540C	Total/NA
pH	6.5	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA
Ground Water Elevation	681.95				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	207.3				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	4.17				mg/L	1		Field Sampling	Total/NA
pH, Field	6.26				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1062				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	17.9				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	8.9				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-217096-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Sulfate	0.75	J	1.0	0.49	mg/L	1	_	9056A	Total/NA
рН	6.8	HF	0.1	0.1	SU	1		SM 4500 H+ B	Total/NA

This Detection Summary does not include radiochemical test results.

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-217096-1 Client Sample ID: MW-301

Date Collected: 10/07/21 08:29 **Matrix: Water**

Date Received: 10/11/21 17:42

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Chloride	180		5.0	2.2	mg/L			10/14/21 18:27	
Fluoride	<0.28		0.50	0.28	mg/L			10/14/21 18:27	:
Sulfate	180		5.0	2.5	mg/L			10/14/21 18:27	
Method: 6020A - Metals (ICP/M	S)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Antimony	<1.1		2.0	1.1	ug/L		10/13/21 09:00	10/25/21 16:08	
Arsenic	<0.75		2.0	0.75	ug/L		10/13/21 09:00	10/25/21 16:08	
Barium	61		2.0	0.37	ug/L		10/13/21 09:00	10/25/21 16:08	
Beryllium	<0.27		1.0	0.27	ug/L		10/13/21 09:00	10/25/21 16:08	
Boron	800		100	58	ug/L		10/13/21 09:00	10/25/21 16:08	
Cadmium	0.057	J	0.10	0.051	ug/L		10/13/21 09:00	10/25/21 16:08	
Calcium	100		0.50	0.19	mg/L		10/13/21 09:00	10/25/21 16:08	
Chromium	<1.1		5.0	1.1	ug/L		10/13/21 09:00	10/25/21 16:08	
Cobalt	0.48	J	0.50	0.19	ug/L		10/13/21 09:00	10/25/21 16:08	
Lead	<0.21		0.50	0.21	ug/L		10/13/21 09:00	10/25/21 16:08	
Lithium	26		10	2.5	ug/L		10/13/21 09:00	10/25/21 16:08	
Molybdenum	<1.3		2.0	1.3	ug/L		10/13/21 09:00	10/25/21 16:08	
Selenium	7.5		5.0	0.96	ug/L		10/13/21 09:00	10/25/21 16:08	
Thallium	<0.26		1.0	0.26	ug/L		10/13/21 09:00	10/25/21 16:08	
Method: 7470A - Mercury (CVA	A)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Mercury	<0.15		0.20	0.15	ug/L		10/20/21 13:56	10/21/21 09:11	
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fa
Total Dissolved Solids	670		50	26	mg/L			10/12/21 11:54	
pH	6.5	HF	0.1	0.1	SU			10/12/21 17:04	
Method: Field Sampling - Field	Sampling								
Analyte	Result	Qualifier	RL	MDL		D	Prepared	Analyzed	Dil Fa
Ground Water Elevation	681.95	 -			ft			10/07/21 08:29	
Oxidation Reduction Potential	207.3				millivolts			10/07/21 08:29	
Oxygen, Dissolved, Client Supplied	4.17				mg/L			10/07/21 08:29	
pH, Field	6.26				SU			10/07/21 08:29	
Specific Conductance, Field	1062				umhos/cm			10/07/21 08:29	
Temperature, Field	17.9				Degrees C			10/07/21 08:29	
Turbidity, Field	8.9				NTU			10/07/21 08:29	

10/25/2021

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: Field Blank

Date Collected: 10/07/21 09:00 Date Received: 10/11/21 17:42

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Lab Sample ID: 310-217096-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	<0.43		1.0	0.43	mg/L			10/14/21 18:42	1
Fluoride	<0.055		0.10	0.055	mg/L			10/14/21 18:42	1
Sulfate	0.75	J	1.0	0.49	mg/L			10/14/21 18:42	1
Method: 6020A - Metals (IC	P/MS)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<1.1		2.0	1.1	ug/L		10/13/21 09:00	10/25/21 16:11	1
Arsenic	<0.75		2.0	0.75	ug/L		10/13/21 09:00	10/25/21 16:11	1
Barium	<0.37		2.0	0.37	ug/L		10/13/21 09:00	10/25/21 16:11	1
Beryllium	<0.27		1.0	0.27	ug/L		10/13/21 09:00	10/25/21 16:11	1
Boron	<58		100	58	ug/L		10/13/21 09:00	10/25/21 16:11	1
Cadmium	<0.051		0.10	0.051	ug/L		10/13/21 09:00	10/25/21 16:11	1
Calcium	<0.19		0.50	0.19	mg/L		10/13/21 09:00	10/25/21 16:11	1
Chromium	<1.1		5.0	1.1	ug/L		10/13/21 09:00	10/25/21 16:11	1
Cobalt	<0.19		0.50	0.19	ug/L		10/13/21 09:00	10/25/21 16:11	1
Lead	<0.21		0.50	0.21	ug/L		10/13/21 09:00	10/25/21 16:11	1
Lithium	<2.5		10	2.5	ug/L		10/13/21 09:00	10/25/21 16:11	1
Molybdenum	<1.3		2.0	1.3	ug/L		10/13/21 09:00	10/25/21 16:11	1
Selenium	<0.96		5.0	0.96	ug/L		10/13/21 09:00	10/25/21 16:11	1
Thallium	<0.26		1.0	0.26	ug/L		10/13/21 09:00	10/25/21 16:11	1
Method: 7470A - Mercury (CVAA)								
Analyte	•	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		10/20/21 13:56	10/21/21 09:13	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Dissolved Solids	<26		50	26	mg/L			10/13/21 12:25	1

0.1

0.1 SU

6.8 HF

10/12/21 16:59

Definitions/Glossary

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

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

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.

Eisted 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

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10/25/2021

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QC Sample Results

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 310-332306/3

Matrix: Water

Analysis Batch: 332306

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

MB MB Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac D Chloride 0.43 mg/L < 0.43 1.0 10/14/21 15:17 Fluoride <0.055 0.10 0.055 mg/L 10/14/21 15:17 Sulfate < 0.49 1.0 0.49 mg/L 10/14/21 15:17

Lab Sample ID: LCS 310-332306/4

Matrix: Water

Analysis Batch: 332306

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

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit D %Rec Limits Chloride 90 - 110 10.0 10.1 mg/L 101 Fluoride 2.00 2.06 mg/L 103 90 - 110 Sulfate 10.0 mg/L 10.4 104 90 - 110

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-331427/1-A

Matrix: Water

Analysis Batch: 332861

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 331427

	MB MB						•	
Analyte Re	sult Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	<1.1 <u>quamior</u> -	2.0		ug/L	<u>-</u>	10/13/21 09:00		1
•	0.75	2.0		ug/L		10/13/21 09:00		1
Barium <	0.37	2.0	0.37	Ü		10/13/21 09:00	10/25/21 14:36	1
Beryllium <	0.27	1.0	0.27	ug/L		10/13/21 09:00	10/25/21 14:36	1
Boron	<58	100	58	ug/L		10/13/21 09:00	10/25/21 14:36	1
Cadmium <0	051	0.10	0.051	ug/L		10/13/21 09:00	10/25/21 14:36	1
Calcium <	0.19	0.50	0.19	mg/L		10/13/21 09:00	10/25/21 14:36	1
Chromium	<1.1	5.0	1.1	ug/L		10/13/21 09:00	10/25/21 14:36	1
Cobalt <	0.19	0.50	0.19	ug/L		10/13/21 09:00	10/25/21 14:36	1
Lead <	0.21	0.50	0.21	ug/L		10/13/21 09:00	10/25/21 14:36	1
Lithium	<2.5	10	2.5	ug/L		10/13/21 09:00	10/25/21 14:36	1
Molybdenum	<1.3	2.0	1.3	ug/L		10/13/21 09:00	10/25/21 14:36	1
Selenium <	0.96	5.0	0.96	ug/L		10/13/21 09:00	10/25/21 14:36	1
Thallium <	0.26	1.0	0.26	ug/L		10/13/21 09:00	10/25/21 14:36	1

Lab Sample ID: LCS 310-331427/2-A

Matrix: Water

Analysis Batch: 332861

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

Prep Batch: 331427

_	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Antimony	200	189		ug/L		95	80 - 120	
Arsenic	200	201		ug/L		100	80 - 120	
Barium	100	105		ug/L		105	80 - 120	
Beryllium	100	101		ug/L		101	80 - 120	
Boron	200	189		ug/L		94	80 - 120	
Cadmium	100	99.5		ug/L		99	80 - 120	
Calcium	2.00	1.85		mg/L		93	80 - 120	
Chromium	100	101		ug/L		101	80 - 120	
Cobalt	100	106		ug/L		106	80 - 120	

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Page 9 of 20 10/25/2021 Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

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

Lab Sample ID: LCS 310-331427/2-A **Matrix: Water**

Analysis Batch: 332861

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 331427

7 maryolo Batom 662661	Spike	LCS	LCS				%Rec.
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits
Lead	200	211		ug/L		105	80 - 120
Lithium	200	199		ug/L		100	80 - 120
Molybdenum	200	194		ug/L		97	80 - 120
Selenium	400	377		ug/L		94	80 - 120
Thallium	200	211		ug/L		106	80 - 120

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 310-332319/1-A

Matrix: Water

Analysis Batch: 332502

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

Prep Batch: 332319

•	MB	MB						•	
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	<0.15		0.20	0.15	ug/L		10/20/21 13:56	10/21/21 08:26	1

Lab Sample ID: LCS 310-332319/2-A

Matrix: Water

Analysis Batch: 332502

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 332319

%Rec.

LCS LCS Spike Analyte Added Result Qualifier Unit D %Rec Limits Mercury 1 67 1.70 ug/L 102 80 - 120

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

Lab Sample ID: MB 310-331341/1

Matrix: Water

Analysis Batch: 331341

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte Result Qualifier RL **MDL** Unit Prepared Analyzed Dil Fac Total Dissolved Solids <26 50 26 mg/L 10/12/21 11:54

Lab Sample ID: LCS 310-331341/2

Matrix: Water

Analysis Batch: 331341

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Client Sample ID: Lab Control Sample

Spike LCS LCS %Rec. Analyte Added Result Qualifier Limits Unit D %Rec 948 Total Dissolved Solids 1000 95 90 - 110 mg/L

Lab Sample ID: MB 310-331505/1

Matrix: Water

Analysis Batch: 331505

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

MB MB

MR MR

RL **MDL** Unit Dil Fac Analyte Result Qualifier Prepared Analyzed **Total Dissolved Solids** <26 50 26 mg/L 10/13/21 12:25

Lab Sample ID: LCS 310-331505/2

Matrix: Water

Analysis Batch: 331505

LCS LCS Spike %Rec. Added Result Qualifier Analyte Unit %Rec Limits **Total Dissolved Solids** 1000 912 91 90 - 110 mg/L

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Prep Type: Total/NA

QC Sample Results

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Method: SM 4500 H+ B - pH

Lab Sample ID: LCS 310-331376/1 **Client Sample ID: Lab Control Sample Prep Type: Total/NA**

Matrix: Water

Analysis Batch: 331376

	S	Spike LC	S LCS				%Rec.
Analyte	A	dded Resu	t Qualifier	Unit	D	%Rec	Limits
pH		7.00 7.	1	SU		101	98 - 102

QC Association Summary

Client: SCS Engineers

Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

HPLC/IC

Amalı		Databa	222206
Anar	7515	Datcii.	332306

Lab Sample ID 310-217096-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method 9056A	Prep Batch
310-217096-2	Field Blank	Total/NA	Water	9056A	
MB 310-332306/3	Method Blank	Total/NA	Water	9056A	
LCS 310-332306/4	Lab Control Sample	Total/NA	Water	9056A	

Metals

Prep Batch: 331427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217096-1	MW-301	Total/NA	Water	3010A	
310-217096-2	Field Blank	Total/NA	Water	3010A	
MB 310-331427/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 332319

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217096-1	MW-301	Total/NA	Water	7470A	
310-217096-2	Field Blank	Total/NA	Water	7470A	
MB 310-332319/1-A	Method Blank	Total/NA	Water	7470A	
LCS 310-332319/2-A	Lab Control Sample	Total/NA	Water	7470A	

Analysis Batch: 332502

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217096-1	MW-301	Total/NA	Water	7470A	332319
310-217096-2	Field Blank	Total/NA	Water	7470A	332319
MB 310-332319/1	-A Method Blank	Total/NA	Water	7470A	332319
LCS 310-332319/	2-A Lab Control Sample	Total/NA	Water	7470A	332319

Analysis Batch: 332861

Lab Sample ID 310-217096-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method 6020A	Prep Batch 331427
310-217096-2	Field Blank	Total/NA	Water	6020A	331427
MB 310-331427/1-A	Method Blank	Total/NA	Water	6020A	331427
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	6020A	331427

General Chemistry

Analysis Batch: 331341

Lab Sample ID 310-217096-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method SM 2540C	Prep Batch
MB 310-331341/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-331341/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Analysis Batch: 331376

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217096-1	MW-301	Total/NA	Water	SM 4500 H+ B	
310-217096-2 LCS 310-331376/1	Field Blank Lab Control Sample	Total/NA Total/NA	Water Water	SM 4500 H+ B SM 4500 H+ B	

Analysis Batch: 331505

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch			
310-217096-2	Field Blank	Total/NA	Water	SM 2540C				

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QC Association Summary

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

General Chemistry (Continued)

Analysis Batch: 331505 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-331505/1	Method Blank	Total/NA	Water	SM 2540C	
LCS 310-331505/2	Lab Control Sample	Total/NA	Water	SM 2540C	

Field Service / Mobile Lab

Analysis Batch: 331984

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217096-1	MW-301	Total/NA	Water	Field Sampling	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-301

Lab Sample ID: 310-217096-1 Date Collected: 10/07/21 08:29

Matrix: Water

Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		5	332306	10/14/21 18:27	JNR	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 16:08	SAP	TAL CF
Total/NA	Prep	7470A			332319	10/20/21 13:56	EAM	TAL CF
Total/NA	Analysis	7470A		1	332502	10/21/21 09:11	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	331341	10/12/21 11:54	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	331376	10/12/21 17:04	ARG	TAL CF
Total/NA	Analysis	Field Sampling		1	331984	10/07/21 08:29	SLD	TAL CF

Lab Sample ID: 310-217096-2 **Client Sample ID: Field Blank**

Date Collected: 10/07/21 09:00 **Matrix: Water**

Date Received: 10/11/21 17:42

D T	Batch	Batch Method	D	Dilution	Batch	Prepared	Amalust	l ala
Prep Type	Type		Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	332306	10/14/21 18:42	JNR	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 16:11	SAP	TAL CF
Total/NA	Prep	7470A			332319	10/20/21 13:56	EAM	TAL CF
Total/NA	Analysis	7470A		1	332502	10/21/21 09:13	EAM	TAL CF
Total/NA	Analysis	SM 2540C		1	331505	10/13/21 12:25	ARG	TAL CF
Total/NA	Analysis	SM 4500 H+ B		1	331376	10/12/21 16:59	ARG	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: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

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Method Summary

Client: SCS Engineers Job ID: 310-217096-1

Project/Site: Ottumwa Generating Station - 25221072

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
ield Sampling	Field Sampling	EPA	TAL CF
8010A	Preparation, Total Metals	SW846	TAL CF
'470A	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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: SCS Engine	er s				
City/State: Madison		STATE W	Project: 0H	umwa Geneating S	Action -Adolitional
Receipt Information			participation and the control		- 17 - 14 4 may - 3
Date/Time Received:	10-11-21	1742	Received By	: HED	
Delivery Type: UPS	☐ FedEx	[☐ FedEx Grou	ınd 🔲 US Ma	ail Spee-Dee
☐ Lab Cour	ier 🔲 Lab Fie	eld Services [Client Drop-	off Other:	
Condition of Cooler/Container	S				
Sample(s) received in Cooler	? X Yes	□No	If yes: Coole	r ID: AC23	
Multiple Coolers?	☐ Yes	⊠No	If yes: Coole	r# of	
Cooler Custody Seals Preser	nt? Yes	⊠No	If yes: Coole	r custody seals inta	ct? Yes No
Sample Custody Seals Prese	ent? Yes	⊠No	If yes: Samp	le custody seals int	act? 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 Fa		
• Temp Blank Temperature – If	no temp blank, or	temp blank tem	perature above cr	iteria, proceed to Sample	e Container Temperature
Uncorrected Temp (°C):			Corrected Te	mp (°C):	
Sample Container Temperatu					
Containor(c) used:	NTAINER 1		1	CONTAINER 2	
	250 ml No	Treat M	W-301		
Uncorrected Temp (°C):	1.6				
Corrected Temp (°C):	1.6				
Exceptions Noted			是连续 的复数		斯·西斯·马尔·西斯·马尔·马斯·
If temperature exceeds cri a) If yes: Is there eviden				of sampling?	= -
2) If temperature is <0°C, ar (e.g., bulging septa, broke					is compromised? 'es No
Note: If yes, contact PM be	fore proceeding	. If no, procee	ed with login		
Additional Comments				140,000 50 767,000,000,000	ETAL CLEMENT OF STATE

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Coch	Phone (319) 277-2401 Phone (319) 277-2425													America
Promotion Program Pr	Client Information	r. R	0	27	Lab P Fred	m. rrck, Sano	ie			Carrier Tracki	ing No(s):	COC No.	463-1748	τ. 4-
Market Doe Dute Reseased Parish Parish Doe Dute Reseased Does Dute Reseased	Client Contact: Meghan Blodgett	800)	S	28	5	il.	(@enrof	ine of C	600	State of Origi	.u	Page.		
Discourage Requested (Early) And Register (Early) And Regi	Сопралу. SCS Engineers			1				niser.c.	nalveie R	potaging		Page 1	0 1	
A	Address: 2830 Dairy Driva	Due Date Requeste	d:			HIPERE			Tanyara N	ednesten		Preserv	ation Cod	es:
Complement Polylett A Ves A No.	City. Madison	TAT Requested (da	ys):	THE WORLD WINDS TO THE PARTY OF	иотичестичести					AAAAAAA TOO AAAAAAAA TOO AAAAAAAA TOO AAAAAAAA		A - HCL.	I	M - Hexar N - None
10	State 2D: State 2D: Wil 53718	orion Daniel	, V	, in the second		BO17011111111111111111111111111111111111		əşeşir				C - Zn A	cetate : Acid	O - AsNa(P - Na2O
Sample Date	Yi, Oct 10 Phone	PO#	S 168) No	DESCRIPTION OF THE PROPERTY OF			is & si				F - MeO	NO4	Q - Na2Si R - Na2Si
10	Enail:	25221072 WO#						phou!4				H - Asco	rbic Acid	T - TSP D
10 - 07 - 1 10 - 07 - 1	monogengascaerigineers.com Frigati Name Ottimus Geografius Gratics	Project #	-		NA COLORADO DE	oN 10		epino	÷				ater A	V - MCAA
Sample Date Sample Water Captain Sample Water Captain Sample Captain	Sile:	31011020 SSOW#	POSOSIONI TITURE O TROBOSIONES	Procure or		sey) Q		8D - CPI	-н-005+					Jauro - 7
	Sample Identification	Samuelo Date	Sample		Matrix (W.water, Sesolid, Onwastefoll,	ertorm MS/MS			S40C_Calcd, SM		MO PORTOR DESCRIPTION OF THE PROPERTY OF THE P			
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[0 - 07.1 97.00 6 Water X X X X X X X X X X X	MW-301	10-	1.	2	Water		×		. ×					*******
ant Date Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Poison B Unknown Radiological Special Instructions/CC Requirements.	Field Blank	12.60.01	97.60	2	Water		×		>					
ant DaterTime DaterTime D											maning and an analysis of the second and analysis of the second and an		TO IN A STREET, AND A STREET, AND ASSESSED TO STREET,	THE SECTION OF SECTION
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Sample Disposal (After may be assessed if samples are retained longer than 1 mo Received by Rec				The second of th	AND THE PROPERTY OF THE PARTY O			THE REAL PROPERTY.	TO THE REAL PROPERTY OF THE PERSON OF T		100000000000000000000000000000000000000	44	Maria de la constanta de la co	a escar
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Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Special Instructions/QC Requirements. Date/Time: Date/Date/Date/Date/Date/Date/Date/Date/														
Sample Disposal (A fee may be assessed if samples are retained longer than 1 mo Special Instructions/QC Requirements: Date/Time: Date/Date/Date/Date/Date/Date/Date/Date/														
Date: Date: Date: Time: Time: Date: Date						Samp	le Disp	sal (A	fee may be	assessed if	samples are re	stained long	er than 1	month)
265a C V UZ Date/Time: Company Received by: Date/Time: Date/Time: 265a C V UZ Lo-ill-1 C : 60 Company Received by: Date/Time: Date/Time: Date/Time: Date/Time: Company Received by: Date/Time: Date/Time: A No A No A No Cooker Temperature(s) % Date Remarks: LO-II-21 1742	G// //	0		kadiological		Specia	Keturn al Instru	70 Cilei ctions/C	ot Requirem	Disposal By nents:	Lab	Archive For		Months
2 6 Scu くソ U Z	Empty Kit Relinquished by		Date		STATES OF THE PRODUCTION OF THE PERSONS ASSESSED.	Time		- Companies of Com		Method	of Shipment.			
Date/Time: Company Received by Date/Time Date/Time Company Received by M.A. Q.A. D.A. 1742 October Temperature(s) "C and Other Remarks.	20sa	Date/Time:	. `		Company	g.	ceived by:				Date/Time:			Company
Seceived by MA ON Collectine. Company Received by MA ON COLL Collections. Conspany Received by MA ON COLL Collec	Relinquished by:	Date/Time:			Company	Re	ceived by:				Date/Time:			Company
Custody Seal No.:		Date/Time.			Company	S.	ceived by.			4	Date/Fime.		14.2	Company
						ී	oler Temp	erature(s) °C and Other	Remarks:				

Client: SCS Engineers

Job Number: 310-217096-1

SDG Number:

Login Number: 217096 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

orcator. Homolar, Bana o		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Eurofins TestAmerica, Cedar Falls

Table 1. Groundwater Monitoring Results - Field Parameters Ottumwa Generating Station / SCS Engineers Project No. 25221072.00 October 2021

Sample	Date/Sample Time	Groundwater Elevation (amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity
MW-301	10/7/2021 8:29	681.95	17.9	6.26	4.17	1,062	207.3	8.9
MW-302	10/7/2021 10:35	654.86	14.9	6.49	0.30	1,920	211.5	15.6
MW-303	10/7/2021 11:59	649.80	17.6	6.70	0.32	1,343	66.5	11.1
MW-304	10/8/2021 7:57	649.53	13.8	6.97	0.32	1,617	-78.7	7.3
MW-305	10/6/2021 13:25	654.83	13.7	6.94	0.44	1,629	46.9	3.8
MW-305A	10/8/2021 9:30	645.57	14.7	6.90	2.02	1,145	147.8	14.3
MW-306	10/8/2021 9:00	662.27	14.7	6.66	0.40	1,506	86.0	6.7
MW-307	10/7/2021 15:47	644.49	14.4	6.71	0.19	1,552	-23.8	10.0
MW-308	10/7/2021 15:05	641.81	13.0	6.83	0.17	1,453	-26.1	12.8
MW-309	10/7/2021 18:02	640.71	13.1	7.18	0.21	1,297	-8.1	19.6
MW-310	10/6/2021 15:20	638.19	15.4	7.20	0.48	1,425	96.8	1.0
MW-310A	10/8/2021 10:35	639.57	15.6	7.65	6.21	2,808	143.1	15.0
MW-311	10/6/2021 17:10	Dry	NM	NM	NM	NM	NM	NM
MW-311A	10/8/2021 11:55	640.58	15.1	8.12	1.68	2,930	140.7	9.6

Abbreviations:

mg/L = milligrams per liter amsl = above mean sea level

NA = Not Analyzed NM= Not Measured

Notes: none

 Created by:
 NDK
 Date:
 10/15/2021

 Last revision by:
 JSN
 Date:
 10/15/2021

 Checked by:
 NDK
 Date:
 10/15/2021

C:\Users\Fredrick\$\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\MM4BE9B8\[2110_Oct - OGS_CCR_Field.xlsx]GW Field Parameters



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-217096-2

Client Project/Site: Ottumwa Generating Station - 25221072

App III/IV

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 11/14/2021 6:42:55 PM

Sanda Ireduch

Sandie Fredrick, Project Manager II

(920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

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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.

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Case Narrative

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/IV

Job ID: 310-217096-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-217096-2

Comments

No additional comments.

Receipt

The samples were received on 10/11/2021 5:42 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

RAD

Methods 903.0, 9315: Radium 226 batch 531985 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 (310-217096-1), Field Blank (310-217096-2), (LCS 160-531985/1-A), (LCSD 160-531985/2-A) and (MB 160-531985/23-A)

Methods 904.0, 9320: Radium 228 batch 531994 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 (310-217096-1), Field Blank (310-217096-2), (LCS 160-531994/1-A), (LCSD 160-531994/2-A) and (MB 160-531994/23-A)

Method PrecSep_0: Radium-228 Prep Batch 160-531994 Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-217096-1) and Field Blank (310-217096-2). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

Method PrecSep-21: Radium-226 Prep Batch 160-531985 Insufficient sample volume was available to perform a sample duplicate for the following samples: MW-301 (310-217096-1) and Field Blank (310-217096-2). A laboratory control sample/ laboratory control sample duplicate (LCS/LCSD) were prepared instead to demonstrate batch precision.

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

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 App III/IV

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-217096-1	MW-301	Water	10/07/21 08:29	10/11/21 17:42
310-217096-2	Field Blank	Water	10/07/21 09:00	10/11/21 17:42

Job ID: 310-217096-2

Detection Summary

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Client Sample ID: MW-301 Lab Sample ID: 310-217096-1

No Detections.

Client Sample ID: Field Blank Lab Sample ID: 310-217096-2

No Detections.

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Client Sample Results

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Client Sample ID: MW-301 Lab Sample ID: 310-217096-1

Date Collected: 10/07/21 08:29 **Matrix: Water**

Date Received: 10/11/21 17:42

			Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226	0.299	U	0.231	0.232	1.00	0.339	pCi/L	10/15/21 10:26	11/08/21 17:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	102		40 - 110					10/15/21 10:26	11/08/21 17:38	1

Method: 904.0 -	Radium-228	(GFPC)								
		. ,	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 228	0.744		0.318	0.325	1.00	0.452	pCi/L	10/15/21 11:06	11/08/21 12:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	102		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Y Carrier	67.7		40 - 110					10/15/21 11:06	11/08/21 12:51	1

Method: Ra226_Ra2	228 Pos -	Combined	d Radium-2	226 and Ra	dium-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	1.04		0.393	0.399	5.00	0.452	pCi/L		11/12/21 20:04	1

Client Sample Results

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Client Sample ID: Field Blank

Lab Sample ID: 310-217096-2 Date Collected: 10/07/21 09:00

Matrix: Water

Date Received: 10/11/21 17:42

Method: 903.0 - Ra	dium-226	(GFPC)								
		` '	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226	0.180	U	0.207	0.207	1.00	0.337	pCi/L	10/15/21 10:26	11/08/21 17:38	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	106		40 - 110					10/15/21 10:26	11/08/21 17:38	1
_										

Method: 904.0 -	Radium-228	(GFPC)								
		` '	Count Uncert.	Total Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 228	0.186	U	0.215	0.215	1.00	0.354	pCi/L	10/15/21 11:06	11/08/21 12:51	1
Carrier	%Yield	Qualifier	Limits					Prepared	Analyzed	Dil Fac
Ва	106		40 - 110					10/15/21 11:06	11/08/21 12:51	1
Y Carrier	85.2		40 - 110					10/15/21 11:06	11/08/21 12:51	1

Method: Ra226_Ra2	228 Pos -	Combined	d Radium-2	226 and Ra	adium-228					
			Count	Total						
			Uncert.	Uncert.						
Analyte	Result	Qualifier	(2σ+/-)	(2σ+/-)	RL	MDC	Unit	Prepared	Analyzed	Dil Fac
Radium 226 and 228	0.366		0.298	0.298	5.00	0.354	pCi/L		11/12/21 20:04	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

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

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Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Method: 903.0 - Radium-226 (GFPC)

Lab Sample ID: MB 160-531985/23-A

Lab Sample ID: LCS 160-531985/1-A

Matrix: Water

Matrix: Water

Analysis Batch: 535393

Analysis Batch: 535397

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 531985

MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Analyzed Dil Fac Radium 226 0.3311 U 0.262 0.264 1.00 0.379 pCi/L 10/15/21 10:26 11/08/21 19:17

Total

Count

MB MB

Carrier **%Yield Qualifier** Limits Prepared Analyzed Dil Fac Ва 97.2 40 - 110 10/15/21 10:26 11/08/21 19:17

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 531985

Total LCS LCS %Rec. **Spike** Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits Radium 226 15.1 13.66 1.75 1.00 0.505 pCi/L 90 75 - 125

LCS LCS %Yield Qualifier Carrier Limits Ва 106 40 - 110

Lab Sample ID: LCSD 160-531985/2-A

Matrix: Water

Analysis Batch: 535393

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 531985

Total LCSD LCSD %Rec. **RER** Spike Uncert. Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit %Rec Limits RER Limit Radium 226 15.1 1.69 1.00 0.508 pCi/L 86 75 - 125 0.18 13.05

LCSD LCSD Carrier %Yield Qualifier Limits 40 - 110

Method: 904.0 - Radium-228 (GFPC)

Lab Sample ID: MB 160-531994/23-A

Matrix: Water

Analysis Batch: 535393

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

Prep Batch: 531994

Count Total MB MB Uncert. Uncert. Analyte Result Qualifier $(2\sigma + / -)$ $(2\sigma + / -)$ RL **MDC** Unit Prepared Dil Fac Analyzed Radium 228 0.2280 Ū 0.367 0.367 1.00 0.616 pCi/L 10/15/21 11:06 11/08/21 13:04

MB MB Carrier %Yield Qualifier Limits Ba 97.2 40 - 110 40 - 110 87.5 Y Carrier

Prepared Dil Fac Analyzed 10/15/21 11:06 11/08/21 13:04 10/15/21 11:06 11/08/21 13:04

Eurofins TestAmerica, Cedar Falls

QC Sample Results

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

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

Lab Sample ID: LCS 160-531994/1-A Client Sample ID: Lab Control Sample

Total

Uncert.

 $(2\sigma + / -)$

Matrix: Water

Analyte

Y Carrier

Analysis Batch: 535427

Prep Batch: 531994

%Rec.

RL MDC Unit %Rec Limits

Spike

Added

40 - 110

LCS LCS

Result Qual

Lab Sample ID: LCSD 160-531994/2-A

Client Sample ID: Lab Control Sample Dup

Matrix: Water

Prep Type: Total/NA

Matrix: Water Prep Type: Total/NA
Analysis Batch: 535427 Prep Batch: 531994

Total **Spike** LCSD LCSD Uncert. %Rec. **RER** %Rec Limits Analyte Added Result Qual $(2\sigma + / -)$ RL **MDC** Unit RER Limit Radium 228 1.00 0.444 pCi/L 12.2 13.96 1.56 114 75 - 125 0.85

 Carrier
 %Yield Plant
 Qualifier Plant
 Limits Plant

 Ba
 106
 40 - 110

 Y Carrier
 83.4
 40 - 110

82.6

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Prep Type: Total/NA

75 - 125

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QC Association Summary

Job ID: 310-217096-2 Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Prep Batch: 531985

Lab Sample ID 310-217096-1	Client Sample ID MW-301	Prep Type Total/NA	Matrix Water	Method PrecSep-21	Prep Batch
310-217096-2	Field Blank	Total/NA	Water	PrecSep-21	
MB 160-531985/23-A	Method Blank	Total/NA	Water	PrecSep-21	
LCS 160-531985/1-A	Lab Control Sample	Total/NA	Water	PrecSep-21	
LCSD 160-531985/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep-21	

Prep Batch: 531994

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217096-1	MW-301	Total/NA	Water	PrecSep_0	-
310-217096-2	Field Blank	Total/NA	Water	PrecSep_0	
MB 160-531994/23-A	Method Blank	Total/NA	Water	PrecSep_0	
LCS 160-531994/1-A	Lab Control Sample	Total/NA	Water	PrecSep_0	
LCSD 160-531994/2-A	Lab Control Sample Dup	Total/NA	Water	PrecSep 0	

Lab Chronicle

Client: SCS Engineers Job ID: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Client Sample ID: MW-301

Lab Sample ID: 310-217096-1

Matrix: Water

Date Collected: 10/07/21 08:29 Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21			531985	10/15/21 10:26	BMP	TAL SL
Total/NA	Analysis	903.0		1	535393	11/08/21 17:38	FLC	TAL SL
Total/NA	Prep	PrecSep_0			531994	10/15/21 11:06	BMP	TAL SL
Total/NA	Analysis	904.0		1	535427	11/08/21 12:51	EMH	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	536441	11/12/21 20:04	MLK	TAL SL

Client Sample ID: Field Blank Lab Sample ID: 310-217096-2

Date Collected: 10/07/21 09:00 **Matrix: Water**

Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	PrecSep-21	_		531985	10/15/21 10:26	BMP	TAL SL
Total/NA	Analysis	903.0		1	535393	11/08/21 17:38	FLC	TAL SL
Total/NA	Prep	PrecSep_0			531994	10/15/21 11:06	BMP	TAL SL
Total/NA	Analysis	904.0		1	535427	11/08/21 12:51	EMH	TAL SL
Total/NA	Analysis	Ra226_Ra228 Pos		1	536441	11/12/21 20:04	MLK	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: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

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	06-30-22
California	State	2886	06-30-21 *
Connecticut	State	PH-0241	03-31-23
Florida	NELAP	E87689	06-30-22
HI - RadChem Recognition	State	n/a	06-30-22
Illinois	NELAP	200023	11-30-22
lowa	State	373	12-01-22
Kansas	NELAP	E-10236	10-31-21 *
Kentucky (DW)	State	KY90125	01-01-22
Kentucky (WW)	State	KY90125 (Permit KY0004049)	12-31-21
Louisiana	NELAP	04080	06-30-22
Louisiana (DW)	State	LA011	12-31-21
Maryland	State	310	09-30-22
MI - RadChem Recognition	State	9005	06-30-22
Missouri	State	780	06-30-22
Nevada	State	MO000542020-1	07-31-22
New Jersey	NELAP	MO002	06-30-22
New York	NELAP	11616	04-01-22
North Dakota	State	R-207	06-30-22
NRC	NRC	24-24817-01	12-31-22
Oklahoma	State	9997	08-31-22
Oregon	NELAP	4157	09-01-22
Pennsylvania	NELAP	68-00540	03-01-22
South Carolina	State	85002001	06-30-22
Texas	NELAP	T104704193	07-31-22
US Fish & Wildlife	US Federal Programs	058448	07-31-22
USDA	US Federal Programs	P330-17-00028	03-11-23
Utah	NELAP	MO000542021-14	08-01-22
Virginia	NELAP	10310	06-14-22
Washington	State	C592	08-30-22
West Virginia DEP	State	381	10-31-22

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

Method Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Client Information					
Client: SCS Engine	(5		_		
City/State: CITY Madison		STATE	Project: OHUMWA	Generating Station	-Adolitional
Receipt Information	CONTROL PROPERTY		Married At the Charles of Con-		
Date/Time Received: DATE)-11-21	1742	Received By: HE		
Delivery Type: UPS	FedEx	[☐ FedEx Ground	US Mail	☐ Spee-Dee
	r 🔲 Lab Fie	eld Services [Client Drop-off	Other:	
Condition of Cooler/Containers	产。2005年度大会员				
Sample(s) received in Cooler?	⊠ Yes	□No	If yes: Cooler ID:	AC23	
Multiple Coolers?	☐ Yes	⊠ No	If yes: Cooler # _	of	
Cooler Custody Seals Present	? Yes	⊠No	If yes: Cooler cust	ody seals intact?	Yes No
Sample Custody Seals Presen	t? Yes	⊠ No	If yes: Sample cus	tody seals intact?	Yes No
Trip Blank Present?	Yes	⊠ No	If yes: Which VOA	samples are in coo	oler? ↓
Temperature Record	Frail Laborator				
Coolant:	Blue ice	☐ Dry ice	Other:	NO	ONE
Thermometer ID: N			Correction Factor (
• Temp Blank Temperature – If no	temp blank, or	temp blank tem	perature above criteria, p	roceed to Sample Conta	niner Temperature
Uncorrected Temp (°C):			Corrected Temp (°	C):	
 Sample Container Temperature 		7			
Containou(a)d.	TAINER 1	Treat M		AINER 2	
Uncorrected Temp (°C):	1.6	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
Corrected Temp (°C):	1.4				
Exceptions Noted	2.4040b3240510	te aprile gardenis			on deliberation of the second
If temperature exceeds crite a) If yes: Is there evidence				ppling?	□ No □ No
2) If temperature is <0°C, are (e.g., bulging septa, broker				le containers is com	npromised?
Note: If yes, contact PM befo	re proceeding	. If no, procee	d with login		7.0 M 32.00 (0.10 M 31.00 M
Additional Comments	stor talled				

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Client Information	A No A No A No Type (Wearth Cacomp, Cacomp) Gagrab) Statement Cacomp, Cacomp Second Cacomp, Cacomp Second Cacomp, Cacomp Second Cacomp (Cacomp) Statement Cacomp C	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) Perform MS/MSD (Yes or No) Perform MS/MSD (Yes or No)	T 9056A_ORGER_28D - Chlonde Fiuonde & Suitate D 6020A, 7470A N 2540C_Caiod, 5M4500_H+	Analysis Requested Analysis Requested Called Shadon H+	COC No. 310-64463-17485.1 Page	35.1
Phone (665)	A No Sample (Wever (Wever) Type (Cacomp), Gagrab) Stringer, Preservation Coording (Gagrab) Stringer, Preservation Coordinate (Cacomp), Gagrab) Stringer, Preservation Coordinate (Cacomp), Watt		Note	Sizie of Origin.	Page 1 of 1	
Due Date Requeste	Sample Matr Type Second (Cacomp, Gagrab) Preservation Coo	10 10 10 10 10 10 10 10	Note Note	sis Requested	Page 1 of 1 Job #: Preservation Cod A - HCL B - NaOH C - Zn Acetate D - Nitro Acid	
iny Drive 8 8 Compilance Project PO # 25221072 WO # 10 - 07-2 Interesting Station Williams Station Work Station Williams Station Work Station Work Work Work Work Work Work Station Work Work Work Work Work Work Work Work	Sample Type (C=cronp, G=cronp) Preserva	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) O 903.0 - Radium-226 (GFPC)	Z 9056A_ORGFM_28D - Chlonde. Fluoride & Suifate	sis Requested	Job #: Preservation Cod A- HCL B- NaOH C - Zn Acetate D- Nitro Acid	_
Politication Due Date Requested (148	Sample Type (C=comp.) G=grab) Preserva	Field Filtered Sample (Yes or No) Perfoym MS/MSD (Yes or No) O 903 0 - Radium-226 (GFPC)	Z 9056A_ORGFM_28D - Chlonde Fluonde & Suitate		Preservation Cod A - HCL B - NaOH C - Zn Acetate D - Ninro Addit	
TAT Requested (da	Sample Type (C=conp.) G=grab) Preserva	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No)	Z soseA_ORGFM_28D - Chlonde Fluonde & Suifate D 6020A, 7470A		A - HCL B - NaOH C - Zn Acetate C - Zn Acetate E - NaHSO4	les;
8 Compliance Project 100 # 25221072 100 # 25221072 100 # 31011020 100 ** 31011020 100	Sample Type (C=comp.) Preserva	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) O 903 0 - Radium-226 (GFPC)	Z 9056A_ORGFM_28D - Chloride Fluoride & Suifate D 6020A, 7470A		C - Zn Acetate D - Nitric Acid E - NaHSO4	M - Hexane N - None
Sample Date Sample Date Do 07.7	Sample Type (C=conp.) G=grab) Preserva	Field Filtered Sample (Yes or No) Perform MS/MSD (Yes or No) Perform Padium-226 (GFPC)	Z soseA_ORGFM_28D - Chlonde Fluonde & Su D 6020A, 7470A		E NaHSO4	0 - AsNaO2 P - Na2O45
\$5221072 WO# Project # 31011020 \$50W# [6 - 0 7 - 2]	Sample Type (C=comp.) G=grab) Preserva	Field Filtered Sample (Yes of No) Partoym MS/MSD (Yes of No)	Z 9056A_ORGFM_28D - Chionde. Fiuonde D 6020A, 7470A		F - MeOH	Q - Na2SO:: R - Na2S2(3
W0# Project # 31011020 SSOW# 10 - 07 - 2 10 - 07 - 2	Sample Type (C=comp.) G=grab) Preserva	Field Fillered Sample (Yes or No)	Z 9056A_ORGFM_28D - Chloride Fiud		G - Amchlor H - Ascomic Acid	S - H2SO4
Project # 310/11020 SSOW# Sample Date	Sample Type (C=conp, G=grab) Preserva	Field Filtered Sample (Yes or I) Perform MS/MSD (Yes or I) Perform Padium-226 (GFPC)	Z 9056A_ORGFM_28D - Chiond C 6020A, 7470A			U - Acetone V - MCAA
Sample Date 10 - 07 - 2 10 - 07 - 2	Sample Type (C=comp, G=grab) Preserva	Field Filtered Sampli	A0164, 7470A		tainer L-EDA	W - pH 4-5 Z - other (specify)
Sample Date 10 - 07-2 10 - 07-2	Sample Type (C=Comp, G=grab) Preserva	2 Parelli Fillered S	S 9056A_ORGFM © 6020A, 7470A		off conf	
	G=grab) Preserva	206 G	209 O		o todmuM is	
12.Lo.01						Special Instructions Note:
12.20-01	9		× ×		A CONTRACTOR OF THE CONTRACTOR	Commence of the second
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	TOTAL THE STATE OF				And the second designation of the second des	and the state of t
		Sample Di	sposal (A fee n	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	are retained fonger than 1	month)
Non-Hazard Flammable Skin Intant Poison B Unknown L	 Radiological	Retu	Return To Client	Disposal By Lab	Archive For	Months
A POSICIO DE SANCIA DE CONTRACTOR DE CONTRAC		opecial Ins	special instructions/QC Requirements	[
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	Сотрану	Received by	í by:	Date/Time	9	Company
Relinquished by	Сотрапу	Received by.	D My C	Date/fime	2 11-11 17d2	Company

Client: SCS Engineers

Job Number: 310-217096-2

SDG Number:

Login Number: 217096 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

oreator. Homoral, Dana 3		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Client: SCS Engineers

Job Number: 310-217096-2

SDG Number:

Login Number: 217096

List Source: Eurofins TestAmerica, St. Louis

List Creation: 10/13/21 04:01 PM

List Number: 2

Creator: Johnson, Autumn R		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>True</td> <td></td>	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: 310-217096-2

Project/Site: Ottumwa Generating Station - 25221072 App III/I\

Method: 903.0 - Radium-226 (GFPC)

Matrix: Water Prep Type: Total/NA

			Percent Yield (Acceptance Limits)
		Ва	
Lab Sample ID	Client Sample ID	(40-110)	
310-217096-1	MW-301	102	
310-217096-2	Field Blank	106	
LCS 160-531985/1-A	Lab Control Sample	106	
LCSD 160-531985/2-A	Lab Control Sample Dup	106	
MB 160-531985/23-A	Method Blank	97.2	
Tracer/Carrier Legend	I		
Ba = Ba			

Method: 904.0 - Radium-228 (GFPC)

Matrix: Water Prep Type: Total/NA

				Percent Yield (Acceptance Limits)
		Ва	Υ	
Lab Sample ID	Client Sample ID	(40-110)	(40-110)	
310-217096-1	MW-301	102	67.7	
310-217096-2	Field Blank	106	85.2	
LCS 160-531994/1-A	Lab Control Sample	106	82.6	
LCSD 160-531994/2-A	Lab Control Sample Dup	106	83.4	
MB 160-531994/23-A	Method Blank	97.2	87.5	

Ba = Ba Y = Y Carrier

Page 19 of 19



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-217097-1

Client Project/Site: Ottumwa Generating Station - 25221072 -

Additional

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Sanda Ireduch

Attn: Meghan Blodgett

Authorized for release by: 10/26/2021 8:15:09 AM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

·····LINKS ······

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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.

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Detection Summary	5
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Method Summary	15
Chain of Custody	16
Racaint Chacklists	18

Case Narrative

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 - Additional

Job ID: 310-217097-1

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-217097-1

Comments

No additional comments.

Receipt

The samples were received on 10/11/2021 5:42 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 1.6° C.

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.

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 - Additional

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-217097-1	MW-301	Water	10/07/21 08:29	10/11/21 17:42
310-217097-2	Field Blank	Water	10/07/21 09:00	10/11/21 17:42

Job ID: 310-217097-1

Detection Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Client Sample ID: MW-301

Lab Sample ID: 310-217097-1

Job ID: 310-217097-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Magnesium	36000		500	100	ug/L	1	_	6020A	Total/NA
Manganese	18		10	4.4	ug/L	1		6020A	Total/NA
Potassium	1300		500	150	ug/L	1		6020A	Total/NA
Sodium	88000		1000	610	ug/L	1		6020A	Total/NA
Manganese	15		10	4.4	ug/L	1		6020A	Dissolved
Bicarbonate Alkalinity as CaCO3	210		10	4.6	mg/L	1		SM 2320B	Total/NA
Total Alkalinity as CaCO3	210		10	4.6	mg/L	1		SM 2320B	Total/NA
Ground Water Elevation	681.95				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	207.3				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	4.17				mg/L	1		Field Sampling	Total/NA
pH, Field	6.26				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1062				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	17.9				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	8.9				NTU	1		Field Sampling	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-217097-2

Analyte	Result Qualifier	RL	MDL Unit	Dil Fac D Method	Prep Type
Iron	97 J	100	36 ug/L	1 6020A	Dissolved

10/26/2021

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Client Sample Results

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Client Sample ID: MW-301 Lab Sample ID: 310-217097-1

Date Collected: 10/07/21 08:29
Date Received: 10/11/21 17:42

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<36		100	36	ug/L		10/13/21 09:00	10/25/21 16:15	1
Magnesium	36000		500	100	ug/L		10/13/21 09:00	10/25/21 16:15	1
Manganese	18		10	4.4	ug/L		10/13/21 09:00	10/25/21 16:15	1
Potassium	1300		500	150	ug/L		10/13/21 09:00	10/25/21 16:15	1
Sodium	88000		1000	610	ug/L		10/13/21 09:00	10/25/21 16:15	1
Method: 6020A - Metals (ICP/MS	S) - Dissol	ved							
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<36		100	36	ug/L		10/13/21 09:00	10/22/21 22:52	1
Manganese	15		10	4.4	ug/L		10/13/21 09:00	10/23/21 13:08	1
General Chemistry									
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	210		10	4.6	mg/L			10/18/21 08:37	1
Carbonate Alkalinity as CaCO3	<4.6		10	4.6	mg/L			10/18/21 08:37	1
Total Alkalinity as CaCO3	210		10	4.6	mg/L			10/18/21 08:37	1
Method: Field Sampling - Field	Sampling								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	681.95				ft			10/07/21 08:29	1
Oxidation Reduction Potential	207.3				millivolts			10/07/21 08:29	1
Oxygen, Dissolved, Client Supplied	4.17				mg/L			10/07/21 08:29	1
pH, Field	6.26				SU			10/07/21 08:29	1
Specific Conductance, Field	1062				umhos/cm			10/07/21 08:29	1
Temperature, Field	17.9				Degrees C			10/07/21 08:29	1
Turbidity, Field	8.9				NTU			10/07/21 08:29	1

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10/26/2021

Client Sample Results

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Total Alkalinity as CaCO3

Client Sample ID: Field Blank Lab Sample ID: 310-217097-2

Date Collected: 10/07/21 09:00
Date Received: 10/11/21 17:42

<2.3

Matrix: Water

10/15/21 11:51

Method: 6020A - Metals (ICP/N Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<36		100	36	ug/L		10/13/21 09:00	10/25/21 16:18	1
Magnesium	<100		500	100	ug/L		10/13/21 09:00	10/25/21 16:18	1
Manganese	<4.4		10	4.4	ug/L		10/13/21 09:00	10/25/21 16:18	1
Potassium	<150		500	150	ug/L		10/13/21 09:00	10/25/21 16:18	1
Sodium	<610		1000	610	ug/L		10/13/21 09:00	10/25/21 16:18	1
Method: 6020A - Metals (ICP/M	MS) - Dissol	ved			J				
Analyte		Qualifier	RL	MDL	Unit ug/L	<u>D</u>	Prepared 10/13/21 09:00	Analyzed 10/22/21 23:05	Dil Fac
Analyte Iron General Chemistry	Result 97	Qualifier	100	MDL 36	Unit ug/L		10/13/21 09:00	10/22/21 23:05	1
Analyte Iron General Chemistry Analyte	Result 97	Qualifier	100	MDL 36	Unit ug/L Unit	<u>D</u>		10/22/21 23:05 Analyzed	Dil Fac Dil Fac
Analyte Iron General Chemistry	Result 97	Qualifier	100	MDL 36	Unit ug/L		10/13/21 09:00	10/22/21 23:05	1

5.0

2.3 mg/L

10/26/2021

Definitions/Glossary

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Qualifiers

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.

Glossary

Abbreviation	These commonly	used abbreviations may	or may not be	present in this report.

Example 2 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

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Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 310-331373/1-A **Client Sample ID: Method Blank**

Matrix: Water

Analysis Batch: 332110

Prep Type: Total/NA **Prep Batch: 331373**

MB MB **Analyte** Result Qualifier RL MDL Unit D Prepared Analyzed Dil Fac Iron <36 100 36 ug/L 10/13/21 09:00 10/18/21 19:38 <4.4 10 10/13/21 09:00 10/18/21 19:38 Manganese 4.4 ug/L

Lab Sample ID: MB 310-331373/1-A

Matrix: Water

Analysis Batch: 332664

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

Prep Batch: 331373

MB MB Result Qualifier RI **MDL** Unit D Prepared Analyzed Dil Fac Analyte 100 36 10/13/21 09:00 Iron <36 ug/L 10/22/21 14:46 Manganese <4.4 10 4.4 ug/L 10/13/21 09:00 10/22/21 14:46

LCS LCS

168

0.88

Result Qualifier

Unit

ug/L

ug/L

Lab Sample ID: LCS 310-331373/2-A

Matrix: Water

Analyte

Manganese

Iron

Analysis Batch: 332110

Client Sample ID: Lab Control Sample

Prep Type: Total/NA **Prep Batch: 331373**

%Rec

%Rec.

Limits

84 80 - 120 88 80 - 120

Lab Sample ID: LCS 310-331373/2-A

Matrix: Water

Analysis Batch: 332664

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 331373

	Spike	LUS	LUS		%Rec.	
Analyte	Added	Result	Qualifier Unit	D %Rec	Limits	
Iron	200	223	ug/L		80 - 120	
Manganese	100	100	ug/L	100	80 - 120	

MR MR

Spike

Added

200

100

Lab Sample ID: MB 310-331427/1-A

Matrix: Water

Analysis Batch: 332861

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 331427

		1410							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	<36		100	36	ug/L		10/13/21 09:00	10/25/21 14:36	1
Magnesium	<100		500	100	ug/L		10/13/21 09:00	10/25/21 14:36	1
Manganese	<4.4		10	4.4	ug/L		10/13/21 09:00	10/25/21 14:36	1
Potassium	<150		500	150	ug/L		10/13/21 09:00	10/25/21 14:36	1
Sodium	<610		1000	610	ug/L		10/13/21 09:00	10/25/21 14:36	1

Lab Sample ID: LCS 310-331427/2-A

Matrix: Water

Analysis Batch: 332861

Client Sample ID: Lab Control Sample

Prep Type: Total/NA Prep Batch: 331427

Spike LCS LCS %Rec. Analyte Added Result Qualifier Unit %Rec Limits D 200 199 Iron ug/L 99 80 - 120 2000 2050 Magnesium ug/L 102 80 - 120 100 80 - 120 Manganese 103 ug/L 103 Potassium 2000 2070 80 - 120 ug/L 103 Sodium 2000 1980 ug/L 99 80 - 120

Eurofins TestAmerica, Cedar Falls

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QC Sample Results

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Method: 2320B - Alkalinity (Low Level)

Lab Sample ID: MB 310-331791/1 **Client Sample ID: Method Blank**

Matrix: Water Prep Type: Total/NA

Analysis Batch: 331791

	MB MB							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/15/21 11:51	1
Carbonate Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/15/21 11:51	1
Total Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/15/21 11:51	1

Lab Sample ID: LCS 310-331791/2 **Client Sample ID: Lab Control Sample Prep Type: Total/NA Matrix: Water**

Analysis Ratch: 331701

Alialysis Dalcii. 331731								
	Spike	LCS	LCS				%Rec.	
Analyte	Added	Result	Qualifier	Unit	D	%Rec	Limits	
Total Alkalinity as CaCO3	1000	1020		mg/L		102	90 - 110	

Method: SM 2320B - Alkalinity

Lab Sample ID: MB 310-331940/1 **Client Sample ID: Method Blank** Prep Type: Total/NA

Matrix: Water

Analysis Batch: 331940

-	MB MB							
Analyte	Result Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Bicarbonate Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/18/21 08:37	1
Carbonate Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/18/21 08:37	1
Total Alkalinity as CaCO3	<2.3	5.0	2.3	mg/L			10/18/21 08:37	1

Lab Sample ID: LCS 310-331940/2 **Client Sample ID: Lab Control Sample Matrix: Water** Prep Type: Total/NA

Analysis Batch: 331940

	Spike	LCS	LCS			%Rec.	
Analyte	Added	Result	Qualifier I	Unit D	%Rec	Limits	
Total Alkalinity as CaCO3	1000	1060	1	mg/L	106	90 - 110	

Eurofins TestAmerica, Cedar Falls

10/26/2021

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Metals

Prep Batch: 331373

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217097-1	MW-301	Dissolved	Water	3010A	
310-217097-2	Field Blank	Dissolved	Water	3010A	
MB 310-331373/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-331373/2-A	Lab Control Sample	Total/NA	Water	3010A	

Prep Batch: 331427

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217097-1	MW-301	Total/NA	Water	3010A	
310-217097-2	Field Blank	Total/NA	Water	3010A	
MB 310-331427/1-A	Method Blank	Total/NA	Water	3010A	
LCS 310-331427/2-A	Lab Control Sample	Total/NA	Water	3010A	

Analysis Batch: 332110

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-331373/1-A	Method Blank	Total/NA	Water	6020A	331373
LCS 310-331373/2-A	Lab Control Sample	Total/NA	Water	6020A	331373

Analysis Batch: 332664

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-331373/1-A	Method Blank	Total/NA	Water	6020A	331373
LCS 310-331373/2-A	Lab Control Sample	Total/NA	Water	6020A	331373

Analysis Batch: 332689

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217097-1	MW-301	Dissolved	Water	6020A	331373
310-217097-2	Field Blank	Dissolved	Water	6020A	331373

Analysis Batch: 332758

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217097-1	MW-301	Dissolved	Water	6020A	331373

Analysis Batch: 332861

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217097-1	MW-301	Total/NA	Water	6020A	331427
310-217097-2	Field Blank	Total/NA	Water	6020A	331427
MB 310-331427/1-A	Method Blank	Total/NA	Water	6020A	331427
LCS 310-331427/2-	A Lab Control Sample	Total/NA	Water	6020A	331427

General Chemistry

Analysis Batch: 331791

Lab Sample ID 310-217097-2	Client Sample ID Field Blank	Prep Type Total/NA	Matrix Water	Method 2320B	Prep Batch
MB 310-331791/1	Method Blank	Total/NA	Water	2320B	
LCS 310-331791/2	Lab Control Sample	Total/NA	Water	2320B	

Analysis Batch: 331940

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-217097-1	MW-301	Total/NA	Water	SM 2320B	
MB 310-331940/1	Method Blank	Total/NA	Water	SM 2320B	

Eurofins TestAmerica, Cedar Falls

10/26/2021

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QC Association Summary

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

General Chemistry (Continued)

Analysis Batch: 331940 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 310-331940/2	Lab Control Sample	Total/NA	Water	SM 2320B	

Field Service / Mobile Lab

Analysis Batch: 331984

Li	ab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
3	10-217097-1	MW-301	Total/NA	Water	Field Sampling	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Lab Sample ID: 310-217097-1 Client Sample ID: MW-301 Date Collected: 10/07/21 08:29

Matrix: Water

Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332689	10/22/21 22:52	SAP	TAL CF
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332758	10/23/21 13:08	SAP	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 16:15	SAP	TAL CF
Total/NA	Analysis	SM 2320B		1	331940	10/18/21 08:37	WJF	TAL CF
Total/NA	Analysis	Field Sampling		1	331984	10/07/21 08:29	SLD	TAL CF

Lab Sample ID: 310-217097-2 **Client Sample ID: Field Blank**

Date Collected: 10/07/21 09:00 **Matrix: Water**

Date Received: 10/11/21 17:42

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Туре	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Dissolved	Prep	3010A			331373	10/13/21 09:00	ACM2	TAL CF
Dissolved	Analysis	6020A		1	332689	10/22/21 23:05	SAP	TAL CF
Total/NA	Prep	3010A			331427	10/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	332861	10/25/21 16:18	SAP	TAL CF
Total/NA	Analysis	2320B		1	331791	10/15/21 11:51	WJF	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: 310-217097-1

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

Laboratory: Eurofins TestAmerica, Cedar Falls

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

Authority	Program	Identification Number	Expiration Date
lowa	State	007	12-01-21

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Method Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072 -

Additional

 Method
 Method Description
 Protocol
 Laboratory

 6020A
 Metals (ICP/MS)
 SW846
 TAL CF

2320B Alkalinity (Low Level) SM TAL CF SM 2320B Alkalinity 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

Job ID: 310-217097-1

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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

Client Information		T	KAN ALK	See 维托马	" " " " " " " " " " " " " " " " " " " "		对其中的现在分词
Client: SCS Eng	ner	5					
City/State: Madis			STATE W	Projec	t: OHUMWO	Gunating Station	-Adolitional
Receipt Information	ATE		TIME	A CONTRACTOR OF THE PARTY OF TH			
Date/Time Received:	10-1	1-21	1742	Receiv	red By: HE	D	
Delivery Type: UPS		FedEx]	FedE	x Ground	US Mail	Spee-De
⊠ Lab C	ourier	☐ Lab Fie	ld Services [Client	Drop-off	Other:	
Condition of Cooler/Conta	iners						
Sample(s) received in Co	oler?	⊠ Yes	□No	If yes:	Cooler ID:	AC23	
Multiple Coolers?		☐ Yes	⊠No	If yes:	Cooler#_	of	
Cooler Custody Seals Pre	esent?	☐ Yes	⊠No	If yes:	Cooler cus	tody seals intact?	Yes 🗌 No
Sample Custody Seals Pr	resent?	Yes	⊠No	If yes:	Sample cus	stody seals intact?	Yes 🗌 No
Trip Blank Present?		☐ Yes	⊠ No	If yes:	Which VOA	samples are in cool	er? ↓

Temperature Record	\$87.	5世。此后			William Co.	Carlotte Control Control	
Coolant: 💢 Wet ice	□в	ue ice	☐ Dry ice	Ot	her:		NE
Thermometer ID: N				Correct	ion Factor	(°C): 0	
Temp Blank Temperature	Ļ lf no tei	np blank, or	temp blank tem	perature at	pove criteria, p	proceed to Sample Contain	er Temperature
Uncorrected Temp (°C):				Correct	ed Temp (°	- ·	
Sample Container Tempe						AMED 2	
Container(s) used:	CONTAI 250	ml No	Treat MU	N-301	CONT	AINER 2	
Uncorrected Temp (°C):	(.6				4	
Corrected Temp (°C):		1.6					
Exceptions Noted		47. 45.9			0.01	KARANTANAN KARA	AND AND A
If temperature exceeds a) If yes: Is there evi					day of sam	npling?	☐ No ☐ No
2) If temperature is <0°C (e.g., bulging septa, but					ity of samp	le containers is comp	romised?
NOTE: If yes, contact PM							e.c. Couledo.
Additional Comments		State Holding					

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019 General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Chain of Custody Record

Eurofins TestAmerica, Cedar Falls

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

Client Information		Rusa corz	N	Lab PM: Fredric	Lab PM: Fredrick, Sandie	ndie			Carrier Tracking No(s):	No(s):	COC No.	COC No 310-64464-17486 1	
Dient Contact:	Phone (2162 - 272	2749	E-Ma	_		E-Mail:		State of Origin:		Page		
Jeghan Blodgett	200	1.00	200	Sand	ira.fredr	ick@eu	rofinset.co	m			Page 1 of 1	f 1	
ompany SCS Engineers			PWSiD				⋖	Analysis Requested	quested		Job#:		
kddress: 2830 Dairy Drive	Due Date Requested:	d:									Preservat	Preservation Codes:	
ity: Madison	TAT Requested (days):	ys):				***************************************			N at annual property and the		A - HCL B - NaOH	M - Hexane N - None	xane
State, Zip. M, 53718	Compliance Project:	A Yes	Δ No								D - Arric Ar D - Nitric Ar E - NaHSO		NaO2 2048 2503
Энопе:	PO# 25221072	Approximation in Comment	NT CONTROL OF THE PROPERTY OF	WINDSANDARDANDON	(·					F - MeOH G - Amchlor		R - Na2S203 S - H2SO4
maii: nblodgett@scsengineers.com	# OM				-			y					 Dodecanydrate stone AA
Project Name. Ottumwa Generating Station - 25221072 WAITHING L	Project#. 31011020				THE PERSON NAMED IN	dasoi6/					tainers		w - pH 4-5 Z - other (specify)
•	SSOW#	Branch Company of the	THE THE PROPERTY OF THE PROPER	THE TREE OF THE PROPERTY OF TH	*************		(2)				oon of Other:		
Sample Identification	Sample Date	Sample	Sample Type (C=comp, G=grab)	Sample Matrix Type (verwater. S-stolid. O-wasted. G-grab) BT-Tissue. A-A-A-I	Pield Filtered MS/M motie9	2320B - Alkalinit 6020A - Metals (:	6020A - D. Metal				Total Muniber o	Special Instructions/Note:	one/Note.
		X	Preservation Code	ion Code:	X	-	0	A STATE OF THE STA		al survey that the same and the survey of th			OIDNIAGIE.
VIVV-301	10-07-21	8:29	0	Water	>	×	1						
Field Blank	10-07-21	9:00	و	Water	5	×	7						e vilitimis de la visa de mentra de mentra de la visa d
				and the special way of the respective contraction to the special speci							C C C C C C C C C C C C C C C C C C C		
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Possible Hazard Identification					San	nple Dis	posal (A	fee may be	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month.	mples are ret	ained longer	than 1 month	()
ssted: I, II, III, IV, Other (specify)			Sauloura;		Spe	cial Insti	ਸਵਾਪਾਸ 10 ਵਸ਼ਵਾਸ al Instructions/QC	Special Instructions/QC Requirements:	Disposal By Lab ents:	, ,	Archive For	Mior	Months
Empty Kit Relinquished by:		Date:			- ime				Method of Shipment	Shipment:			
1	1:	3		Company		Received by	by:			Date/Time		Company	N
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Custody Seals Intact: Custody Seal No.:	Sandara de la composito de la					Sooler Tel	mperature(s	Cooler Temperature(s) °C and Other Remarks:				-	
от в статительной в применений	- Committee of the Comm	Mitterschillter er nowakischtergen			-					odeside o o o o o o o o o o o o o o o o o o o		Ver. 0	Ver. 01/16/2019

Client: SCS Engineers

Job Number: 310-217097-1

SDG Number:

Login Number: 217097 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Homolar, Dana J

oroutor. Homolar, Burla o		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Appendix E Historical Monitoring Results

Name: IPL - Ottumwa Generating Station

Number of Sampling Dates: 22			010010017	0//0/00/	40/00/00:-	41401001	******	0100100:-	0.000.000.0	44101001	41401007	014410047	0.000.000.0	4014010017	4101004-	41010047	4010410077	0/2/005	01101000-	********	40101000	414 4100 - 1	40.0000
Parameter Name	Units	4/26/2016	6/23/2016	8/10/2016	10/26/2016	1/18/2017	4/19/2017	6/20/2017	8/23/2017	11/8/2017	4/18/2018	8/14/2018	8/29/2018	10/16/2018	1/8/2019	4/8/2019	10/24/2019	2/5/2020	3/12/2020	4/14/2020	10/8/2020	4/14/2021	10/7/2021
Boron	ug/L	574	612	597	620	599	565	657	779	488	480	735		410		380	680	540		700	650	690	800
Calcium	mg/L	66.9	62.5	65.6	71.9	74.1	61.5	59.3	66.8	65.2	63	72.5		47.2		43	78	68		84	94	96	100
Chloride	mg/L	63.4	66.9	73.3	76.3	71.6	54.8	69.8	73.5	59.8	63.4	-	63.1	33.9	-	50	110	120		140	170	150	180
Fluoride	mg/L	0.22	0.2	0.44	0.27	0.17	0.24	0.26	0.34	0.27	0.22	-	0.27	0.3		0.44	<0.23			<0.23	<0.23	<0.28	<0.28
Field pH	Std. Units	6.54	6.06	6.08	6.26	6.47	6.64	6.31	6.16	6.41	6.41	6.26	6.31	6.27	5.68	6.61	6.33	6.39	6.48	6.58	6.22	6.26	6.26
Sulfate	mg/L	150	157	159	169	171	190	166	162	178	186	-	181	164		81	130	130		140	140	140	180
Total Dissolved Solids	mg/L	500	531	576	545	545	499	490	557	448	514	-	532	392		340	510	570		550	660	620	670
Antimony	ug/L	<0.058	0.13	0.12	<0.058	0.11	<0.026	0.054	0.063		<0.026	0.2		<0.078		<0.53	<0.53			<0.58	<0.51	<1.1	<1.1
Arsenic	ug/L	0.38	0.38	0.26	0.14	0.23	0.22	0.15	0.14		0.074	0.29		0.16		<0.75	<0.75	<0.88		<0.88	<0.88	<0.75	<0.75
Barium	ug/L	51.6	55.8	52.3	53.3	42.4	35.5	39.9	44		31.6	44.5		28.1		25	56	43		54	58	52	61
Beryllium	ug/L	<0.08	<0.08	<0.08	<0.08	<0.08	<0.012	<0.012	<0.012		<0.012	0.14		<0.089		<0.27	<0.27			<0.27		<0.27	<0.27
Cadmium	ug/L	<0.029	<0.029	0.12	0.038	<0.029	0.035	0.044	0.037		0.023	0.16		<0.033		<0.077	0.04	<0.039		<0.039	0.075	<0.051	0.057
Chromium	ug/L	0.59	0.74	0.64	<0.34	0.59	0.49	0.25	0.39	-	<0.054	0.25		0.11		<0.98	<0.98	<1.1		<1.1	<1.1	<1.1	<1.1
Cobalt	ug/L	4.1	3.1	1.8	1.8	1.3	0.97	1	0.96		0.46	1.4		0.36		0.44	0.6	1.1	0.43	0.52	0.41	0.29	0.48
Lead	ug/L	<0.19	<0.19	<0.19	<0.19	<0.19	0.06	0.1	0.049		0.041	0.18		<0.13		<0.27	<0.27	<0.27		<0.27	<0.11	<0.21	<0.21
Lithium	ug/L	22.8	28.7	27.6	25.5	20.1	21.8	24.9	27.9		19.1	26.5		19.4		15	24	17	21	24	23	23	26
Mercury	ug/L	<0.039	<0.039	<0.039	<0.039	<0.039	<0.046	<0.046	<0.046		<0.09	<0.083			<0.09	<0.1	<0.1			<0.1		<0.15	<0.15
Molybdenum	ug/L	1.2	1.2	0.89	1	0.76	0.54	0.79	1.3		0.67	1.3		0.72		<1.1	1.1			1.2	<1.1	<1.3	<1.3
Selenium	ug/L	4.7	5.4	6.1	6.5	5.9	4.2	5.5	7.2		4.3	6.3		3.4		3.1	6.2			6.8	7.7	6.5	7.5
Thallium	ug/L	<0.5	<0.5	<0.5	<0.5	<0.5	0.14	<0.036	0.067		<0.036	0.16		<0.099		<0.27	<0.27			<0.26	<0.26	<0.26	<0.26
Total Radium	pCi/L	0.51	0.614	1.56	1.24	0.143	0.631	1.06	0.725		0.513	1.19		1.16		0.0956	0.956	0.228		0.315	0.407	0.598	1.04
Radium-226	pCi/L	0.084	0	0.831	-0.13	0.143	0.139	0.501	0.123		0.145	0.417		0.529		0.0726	0.15	0.049		0.0921	0.324	0.133	<0.339
Radium-228	pCi/L	0.426	0.614	0.732	1.24	-0.403	0.492	0.562	0.602		0.368	0.773		0.627		0.023	0.753	0.179		0.223	0.0831	0.465	0.744
Field Specific Conductance	umhos/cm	572	777	807	853	834	742	758	1107	743	770	867	781	599	310	501	902	966	962	939	1035	1062	1062
Field Temperature	deg C	10.5	17.1	19.9	16.3	6.8	10.8	17.3	19.7	13.9	7.2	20.4	20.6	16.6	7.88	7.27	13.71	5.38	6.9	8.7	15.4	9.1	17.9
Groundwater Elevation	feet	682.8	682.58	682.27	682.04	681.67	682.15	681.91	681.28	681.54	681.53	680.91	681.09	682.5	682.22	682.69	683.07	683.3	682.82	683.25	682.34	682.94	681.95
Oxygen, Dissolved		4.04	2.55	3.43	3.72	4.87	5.74	4.34	2.88	4.16	6.52	3.18	4.71	4.12	5.68	8.32	4.94	7.28	5.31	5.14	4.2	5.99	4.17
79 -	mg/L NTU	1.82			-	-	-	-	0.79	-								1.43		-			
Turbidity			1.51	0.52	0.9	0.6	0.47	0.38		1.03	0.66	0.52	0.63	2.91	0.77	1.87	1.6		1.33	0.87	0.02	1.61	8.9
pH at 25 Degrees C	Std. Units	6.5	6.4	6.5	6.7	6.8	6.7	6.5	6.4	6.4	6.6		6.5	6.6		7.1	7.1	6.7		6.6	6.4	6.8	6.5
Field Oxidation Potential	millivolts	244.1	74.6	58.6	91.3	30.2	148	67.2	41.4	200.7	105.5	-55.5		119.7	118.3	37.6	9.9	68	258.5	176.3	163.6	232.5	207.3
Bicarbonate Alkalinity as CaCO3	mg/L	-		-	-	-				-		-								150	160	170	210
Carbonate Alkalinity as CaCO3	mg/L	-		-		-						-								<1.9	<3.8	<4.6	<4.6
Total Alkalinity as CaCO3	mg/L	-		-	-	-					-	-		-						150	160	170	210
Iron, total	ug/L	-		-		-						-								50	<50	49	<36
Magnesium, total	ug/L	-		-	-	-						-								33000	38000	34000	36000
Manganese, dissolved	ug/L	-		-		-						-							17	16	13	10	15
Potassium, total	ug/L	-		-		-						-								1500	1500	1200	1300
Sodium, total	ug/L			-		-						-								77000	87000	78000	88000
Cobalt, dissolved	ug/L			-								-							0.32	0.44			
Iron, dissolved	ug/L	-		-		-													<50	<50	<50	<36	<36
Manganese, total	ug/L	-		-	-	-						-							16	19	14	14	18
Lithium, dissolved	ug/L	-		_															22				

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Name: IPL - Ottumwa Generating Station

Number of Sampling Dates: 20 Parameter Name	Units	1/19/2017	4/20/2017	6/21/2017	8/21/2017	11/8/2017	4/16/2018	5/30/2018	6/28/2018	7/18/2018	10/16/2018	4/8/2019	10/23/2019	12/11/2019	2/5/2020	4/14/2020	10/7/2020	2/23/2021	4/14/2021	7/6/2021	10/7/2021
Boron	ug/L	207	205	197	197	214	200	-	210	-	195	240	200	190	200	240	260		200		230
Calcium	mg/L	230	241	229	221	227	220	-	239	-	222	240	230	230	210	240	240		250		240
Chloride	mg/L	210	201	213	219	217	224	-		223	293	220	220	200	220	230	230		210		240
Fluoride	mg/L	0.12	0.13	0.16	0.2	0.12	0.11	-		0.13	<0.19	0.28	<0.23	<0.23		<0.23	<0.23		<0.28		<0.28
Field pH	Std. Units	6.7	6.51	6.82	6.4	6.61	7.04	6.44	6.87	6.62	6.54	6.76	6.68	6.37	6.67	6.76	6.97	6.5	6.59	7.05	6.71
Sulfate	mg/L	105	105	110	102	102	103			105	104	100	95	92	100	99	100		92		110
Total Dissolved Solids	mg/L	1050	1100	1070	1050	1030		1100		1070	1070	1000	1000	1000	970	980	1000		1000		1000
Antimony	ug/L	0.1	<0.026	<0.026	<0.026	<0.026	<0.026		<0.15		<0.078			<0.53		<0.58			<1.1		<1.1
Arsenic	ug/L	1.1	0.96	0.62	0.52	0.54	0.41		0.86		0.66			<0.75	<0.88	<0.88	<0.88		<0.75		<0.75
Barium	ug/L	127	139	132	128	131	126		147		145			140	130	140	140		160		140
Beryllium	ug/L	<0.08	0.029	0.016	<0.012	<0.012	<0.012		<0.12		<0.089			<0.27		<0.27			<0.27		<0.27
Cadmium	ug/L	<0.029	0.025	<0.018	<0.018	0.018	<0.018		<0.07	-	<0.033			<0.039	<0.039	<0.039			<0.051		<0.051
Chromium	ug/L	0.59	1.6	1	0.38	0.38	0.28	_	1.4	_	0.59			<0.98	<1.1	<1.1	<1.1		<1.1		<1.1
Cobalt	ug/L	0.62	1.6	1.1	1.1	1.3	1.3		2.9		4.8			11	13	20	18	64	46	60	48
Lead	ug/L	<0.19	0.49	0.26	0.085	0.075	0.13		0.48		0.13			0.71	<0.27	0.31	<0.11		<0.21		<0.21
Lithium	ug/L	10	9.4	11.2	15.2	12.9	9.3		13.2		11.6			12	9.1	13	11		14		14
Mercury	ug/L	<0.039	<0.046	<0.046	<0.046	<0.046	<0.09		<0.037		<0.09			<0.1		<0.1			<0.15		<0.15
Molybdenum	ug/L	0.5	0.56	0.31	0.31	0.37	0.3		0.39		<0.57			<1.1		<1.1	<1.1		<1.3		<1.3
Selenium	ug/L	<0.18	0.12	0.11	0.11	0.13	<0.086		0.25		0.13			<1		<1	<1		<0.96		<0.96
Thallium	ug/L	<0.5	<0.036	<0.036	<0.036	0.065	<0.036		<0.14		<0.099			<0.27		<0.26			<0.26		<0.26
Total Radium	pCi/L	2.66	2.77	2.83	3.07	2.88	2.96		2.47		3.1			2.46	2.23	2.06	2.36		3.08		3.9
Radium-226	pCi/L	1.55	1.72	1.87	1.69	1.76	1.31		1.84		2.11			1.65	1.51	1.5	1.47		1.99		2.52
Radium-228	pCi/L	1.11	1.05	0.96	1.38	1.12	1.65		0.629		0.991			0.81	0.718	0.562	0.885		1.09		1.38
Field Specific Conductance	umhos/cm	1640	1648	1557	2193	1656	1674	1710	1686	1718	1697	1599	1684	1576	1681	1554	1637	1632	1675	1705	1552
Field Temperature	deg C	12.9	12	12.7	13	13.2	11.6	12.7	13.4	12.9	14.3	12.47	13.38	11.5	11.65	10.6	13.2	12.2	11.5	13.2	14.4
Groundwater Elevation	feet	648.81	653.62	649.85	645.78	647.37	649.66	652.45	652.87	652.27	654.13	654.9	651.89 ft	649.59	649.88	650.66	646.18	646.8	649.53	647.03	644.49
Oxygen, Dissolved	mg/L	0.16	0.2	0.08	0.08	0.17	0.29	0.18	0.21	0.21	0.08	0.51	0.25	0.18	0.9	0.69	0.08	0.2	0.41	0.21	0.19
Turbidity	NTU	9.01	66.67	34.94	4.89	11.16	11.93	18.58	53.34	14.94	14.08	26	12.5	43.13	9.74	28.9	4.56	2.41	21.2	17.91	10
pH at 25 Degrees C	Std. Units	7	6.9	6.8	6.9	7	7.1			6.7	6.8	6.7	7.5	6.7	6.7	6.8	6.9		6.8		6.8
Field Oxidation Potential	millivolts	-42	-16	-23.1	23.7	176.7	-105.9	-45.8	-43.4	-416.3	-65.7	-3.7	-24.8	-45.8	-15.6	-52.9	-62.2	0.8	-39.9	14.7	-23.8
Bicarbonate Alkalinity as CaCO3	mg/L															520	480		490		550
Carbonate Alkalinity as CaCO3	mg/L															<1.9	<3.8		<4.6		<4.6
Total Alkalinity as CaCO3	mg/L															520	480		490		550
Iron, total	ug/L															3800	3500		3700		3900
Magnesium, total	ug/L															28000	27000		30000		28000
Manganese, dissolved	ug/L									_						290	350		360		410
Potassium, total	ug/L															1900	1900		2000		2000
Sodium, total	ug/L															97000	100000		98000		100000
Cobalt, dissolved	ug/L															19	19		49		59
Iron, dissolved	ug/L ug/L							_	-	_						3100	3600		3400		3400
iioii, uissoiveu	ug/L															3100	290		330	-	440

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Name: IPL - Ottumwa Generating Station

Parameter Name	Units	1/19/2017	4/20/2017	6/21/2017	8/21/2017	11/8/2017	4/16/2018	5/30/2018	6/28/2018	7/18/2018	10/16/2018	4/8/2019	10/23/2019	12/11/2019	2/5/2020	4/14/2020	10/7/2020	4/14/2021	10/7/2021
Boron	ug/L	218	146	182	214	240	210		153		162	190	220	160	220	210	270	220	200
Calcium	mg/L	212	222	209	218	212	229		215		209	240	240	220	210	240	220	230	230
Chloride	mg/L	151	149	146	151	156	153			158	158	160	160	150	160	170	160	150	170
Fluoride	mg/L	0.11	0.12	0.12	0.23	0.12	0.1			0.12	<0.19	<0.23	<0.23	<0.23		<0.23	<0.23	<0.28	<0.28
Field pH	Std. Units	6.85	6.7	6.93	6.52	6.76	7.14	6.61	7.08	6.73	6.68	6.9	6.78	6.55	6.78	6.9	7.24	6.7	6.83
Sulfate	mg/L	296	283	303	294	297	305			310	311	300	300	280	300	290	290	270	290
Total Dissolved Solids	mg/L	1060	1100	1050	1020	1120		1090		1080	1110	1200	1100	1100	1100	1000	1000	1100	1000
Antimony	ug/L	0.11	<0.026	0.039	<0.026	<0.026	<0.026		<0.15		<0.078			<0.53		<0.58		<1.1	<1.1
Arsenic	ug/L	0.44	0.34	0.14	0.32	0.32	0.29		0.39		0.44			<0.75	<0.88	<0.88	<0.88	<0.75	<0.75
Barium	ug/L	118	118	125	132	133	123		134		143			130	130	140	130	140	130
Beryllium	ug/L	<0.08	<0.012	<0.012	<0.012	<0.012	<0.012		<0.12		<0.089			<0.27		<0.27		<0.27	<0.27
Cadmium	ug/L	<0.029	<0.018	<0.018	<0.018	<0.018	<0.018		<0.07		<0.033			<0.039	<0.039	<0.039		<0.051	<0.051
Chromium	ug/L	0.57	0.44	0.34	0.49	0.45	0.17		0.42		0.27			5.9	<1.1	<1.1	<1.1	<1.1	<1.1
Cobalt	ug/L	0.52	0.43	0.25	0.26	0.23	0.18		0.19		0.15			0.26	0.14	0.14	0.14	0.16	0.22
Lead	ug/L	<0.19	0.066	<0.033	<0.033	<0.033	0.043		<0.12		<0.13			0.52	<0.27	<0.27	<0.11	<0.21	<0.21
Lithium	ug/L	10.3	13.3	12.7	19.1	12.6	12.3		17.6		13.7			16	12	17	14	16	16
Mercury	ug/L	<0.039	<0.046	<0.046	<0.046	<0.046	<0.09		<0.037		<0.09			<0.1		<0.1		<0.15	<0.15
Molybdenum	ug/L	0.95	0.53	0.5	0.61	0.75	0.6		0.46		<0.57			<1.1		<1.1	<1.1	<1.3	<1.3
Selenium	ug/L	<0.18	<0.086	<0.086	<0.086	<0.086	<0.086		<0.16		<0.085			<1		<1	<1	<0.96	<0.96
Thallium	ug/L	<0.5	<0.036	<0.036	<0.036	<0.036	<0.036		<0.14		<0.099			<0.27		<0.26		<0.26	<0.26
Total Radium	pCi/L	1.45	0.496	3.3	2.17	1.47	1.63		1.88		2.85			2.73	2.13	1.69	2.67	2.87	3.22
Radium-226	pCi/L	0.282	-0.173	2	1.42	1.18	0.532		1.5		1.44			1.54	1.42	1.24	1.53	1.36	1.78
Radium-228	pCi/L	1.17	0.496	1.3	0.745	0.286	1.1		0.379		1.41			1.19	0.705	0.454	1.14	1.51	1.43
Field Specific Conductance	umhos/cm	1559	1509	1467	2042	1577	1577	1611	1584	1628	1594	1539	1637	1532	1630	1502	1575	1598	1453
Field Temperature	deg C	12.6	11.9	12.2	12.6	13	11.8	12.1	13.1	12.6	13.1	12.54	13.16	10.5	11.35	10.9	13.2	11.5	13
Groundwater Elevation	feet	647.42	651.09	648.26	643.12	644.99	647.91	651.05	651.43	650.67		653.7	651.31	647.39	650.12	650.09	642.85	647.66	641.81
Oxygen, Dissolved	mg/L	0.15	0.21	0.03	0.12	0.12	0.35	0.14	0.19	0.13	0.08	0.66	4.42	0.43	1.48	0.28	0.11	0.44	0.17
Turbidity	NTU	1.65	4.6	0.84	1.15	0.73	0.93	3.34	5.87	1.54	5.49	6.87	7.42	15.72	3.49	5.12	1.15	4.47	12.8
pH at 25 Degrees C	Std. Units	7.2	7.2	7	6.9	7	7.1			6.8	7	6.8	7.9	6.8	6.8	6.9	7.1	7.1	6.9
Field Oxidation Potential	millivolts	-44.4	1.7	-29.1	24.4	169.7	-47.2	-48.2	-60.3	-415.4	-80.8	-23	-38.7	-56.6	-35.9	-69.1	-56.5	-49.3	-26.1
Bicarbonate Alkalinity as CaCO3	mg/L		_				_									380	390	370	410
Carbonate Alkalinity as CaCO3	mg/L		_				_									<1.9	<3.8	<4.6	<4.6
Total Alkalinity as CaCO3	mg/L															380	390	370	410
Iron, total	ug/L		_				_									5100	3800	3900	4700
Magnesium, total	ug/L															25000	23000	26000	24000
Manganese, dissolved	ug/L		_													770	1400	1300	950
Potassium, total	ug/L															3900	4000	4400	4300
Sodium, total	ug/L		_				_									110000	100000	100000	110000
Cobalt, dissolved	ug/L		_				_									0.11		-	
Iron, dissolved	ug/L															4400	4000	3900	300
Manganese, total	ug/L															800	1200	1300	1100

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Name: IPL - Ottumwa Generating Station

Parameter Name	Units	1/19/2017	4/20/2017	6/21/2017	8/21/2017	11/8/2017	4/16/2018	5/30/2018	6/28/2018	7/18/2018	10/16/2018	4/8/2019	10/23/2019	12/11/2019	2/5/2020	4/14/2020	10/7/2020	4/14/2021	10/7/202
Boron	ug/L	1300	1280	1250	1320	1360	1340		1360		1280	1500	1300	1100	1300	1400	1200	1400	1300
Calcium	mg/L	134	152	136	135	135	150		181		139	160	150	150	130	150	120	130	120
Chloride	mg/L	73.1	73.7	75.5	78.4	78.1	78.9			76.4	80.6	72	74	66	68	69	68	57	67
Fluoride	mg/L	0.12	0.13	0.16	0.19	0.14	0.094			0.13	<0.19	0.27	<0.23	<0.23		0.36	<0.23	<0.28	<0.28
Field pH	Std. Units	7.18	7.01	7.17	6.9	7.11	7.52	6.92	7.36	7.02	6.95	7.18	6.98	6.67	7.09	7.21	7.57	7	7.18
Sulfate	mg/L	406	393	415	395	402	373			417	453	410	400	370	370	390	380	360	400
Total Dissolved Solids	mg/L	1030	1030	1020	1010	1010	_	1050		1030	1040	1100	1100	980	990	1000	930	940	950
Antimony	ug/L	0.095	<0.026	0.041	0.029	<0.026	0.079		<0.15		<0.078	-		<0.53		<0.58		<1.1	<1.1
Arsenic	ug/L	0.66	1.1	0.52	0.44	0.45	0.62		2		0.74			1.1	<0.88	0.88	<0.88	<0.75	<0.75
Barium	ug/L	48.7	62.4	48.7	46.1	46	53.7		82.1		54.5	-		54	46	50	42	52	47
Beryllium	ug/L	<0.08	0.073	0.025	<0.012	0.016	0.056		0.28		<0.089	-		<0.27		<0.27		<0.27	<0.27
Cadmium	ug/L	<0.029	0.042	0.033	0.018	<0.018	0.052		0.15		<0.033	-		0.09	<0.039	<0.039		<0.051	<0.051
Chromium	ug/L	1.4	3.2	1.8	1.2	1.2	2.7		5.4		1.6			1.7	<1.1	1.3	<1.1	<1.1	1.3
Cobalt	ug/L	2	3.1	2.4	2.1	2	2.4		4.7		2.7			3.7	2.3	3.2	2	2.3	2
Lead	ug/L	<0.19	1	0.5	0.096	0.057	0.95		3.1		0.46			2.8	0.63	1.6	<0.11	<0.21	<0.21
Lithium	ug/L	5.8	9.3	7.3	9.4	6.9	8		16.2		8.8			8.2	6.3	9.6	6.9	8.9	7.5
Mercury	ug/L	<0.039	<0.046	<0.046	<0.046	<0.046	<0.09		<0.037		<0.09	-		<0.1		<0.1		<0.15	<0.15
Molybdenum	ug/L	0.57	0.32	0.28	0.28	0.37	0.29		0.33		<0.57			<1.1		<1.1	<1.1	<1.3	<1.3
Selenium	ug/L	<0.18	0.22	<0.086	<0.086	<0.086	<0.086		1		0.24			<1		<1	<1	<0.96	<0.96
Thallium	ug/L	<0.5	<0.036	<0.036	<0.036	<0.036	<0.036		<0.14		<0.099			<0.27		<0.26		<0.26	<0.26
Total Radium	pCi/L	0.606	2.23	1.63	1.65	1.11	1.59		2.36		2.2			1.77	1.02	0.957	1.77	1.05	1.6
Radium-226	pCi/L	0.143	0.968	1.37	0.783	0.284	0.974		1.83		1.09	-		1.08	0.771	0.868	0.863	0.604	1.14
Radium-228	pCi/L	0.463	1.26	0.259	0.866	0.825	0.614		0.534		1.11			0.683	0.251	0.0894	0.906	0.448	<0.525
Field Specific Conductance	umhos/cm	1426	1430	1363	1821	1431	1445	1484	1477	1501	1464	1396	1461	1350	1433	1322	1371	1411	1297
Field Temperature	deg C	12.7	12.1	12.4	12.6	13.1	11.2	12.4	13.8	12.6	13.5	12.4	12.83	11.5	11.42	11.2	13.3	11.7	13.1
Groundwater Elevation	feet	646.66	650.16	647.6	641.82	644.2	647.65	650.98	651.47	650.69	651.61	653.55	651.28	647.24	648.34	649.19	641.5	646.46	640.71
Oxygen, Dissolved	mg/L	0.09	0.16	0.06	0.08	0.13	0.37	0.12	0.17	0.11	0.03	0.66	0.36	0.26	1.07	0.16	0.09	0.36	0.21
Turbid ity	NTU	8.56	77.74	20.33	2.34	3.71	36.7	40.55	241.4	40.38	28.27	72.1	42.6	413.6	18.1	100.1	7.7	9.32	19.6
pH at 25 Degrees C	Std. Units	7.4	7.4	7.2	7.2	7.4	7.3			7.3	7.2	7.2	7.2	7.1	7.2	7.1	7.4	7.3	7.3
Field Oxidation Potential	millivolts	-42.1	0.2	-34.8	-5	149.7	-58.5	-38	-45.5	-432.6	-81.6	-3.3	-27.5	-37.8	-7.8	-51.5	-71.1	-40.6	-8.1
Bicarbonate Alkalinity as CaCO3	mg/L															290	290	280	300
Carbonate Alkalinity as CaCO3	mg/L						_									<1.9	<1.9	<4.6	<4.6
Total Alkalinity as CaCO3	mg/L						_									290	290	280	300
Iron, total	ug/L															1900	890	900	950
Magnesium, total	ug/L						-									19000	18000	19000	18000
Manganese, dissolved	ug/L						-									660	660	640	600
Potassium, total	ug/L		-				-									670	670	750	740
Sodium, total	ug/L															170000	180000	180000	180000
Cobalt, dissolved	ug/L															2.2			
Iron, dissolved	ug/L		_				_									590	690	660	680
Manganese, total	ug/L															740	620	630	650

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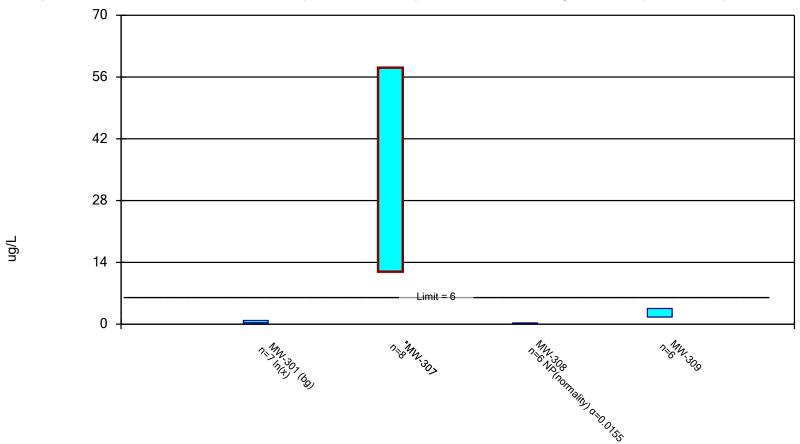
Appendix F Statistical Evaluation

Confidence Interval

	Ottum	wa Generating Sta	tion Client: SCS	Engineers	Data: O	GS_CP_	Export_2011	22 Printe	d 12/13/2021, 11:01	PM	
Constituent	<u>Well</u>	Upper Lim.	Lower Lim.	Compliance	Sig.	<u>N</u>	<u>%NDs</u>	ND Adj.	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Cobalt (ug/L)	MW-301 (bg)	0.824	0.31	6	No	7	0	None	In(x)	0.01	Param.
Cobalt (ug/L)	MW-307	58.12	11.88	6	Yes	8	0	None	No	0.01	Param.
Cobalt (ug/L)	MW-308	0.26	0.14	6	No	6	0	None	No	0.0155	NP (normality)
Cobalt (ug/L)	MW-309	3.549	1.618	6	No	6	0	None	No	0.01	Param.

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 12/13/2021 11:01 PM View: OGS - ZLDP Ottumwa Generating Station Client: SCS Engineers Data: OGS_CP_Export_201122

Confidence Interval

Constituent: Cobalt (ug/L) Analysis Run 12/13/2021 11:01 PM View: OGS - ZLDP
Ottumwa Generating Station Client: SCS Engineers Data: OGS_CP_Export_201122

	MW-301 (bg)	MW-307	MW-308	MW-309
10/24/2019	0.6			
12/11/2019		11	0.26 (J)	3.7
2/5/2020	1.1	13	0.14 (J)	2.3
3/12/2020	0.43 (J)			
4/14/2020	0.52	20	0.14 (J)	3.2
10/7/2020		18	0.14 (J)	2
10/8/2020	0.41 (J)			
2/23/2021		64		
4/14/2021	0.29 (J)	46	0.16 (J)	2.3
7/6/2021		60		
10/7/2021	0.48 (J)	48	0.22 (J)	2
Mean	0.5471	35	0.1767	2.583
Std. Dev.	0.2622	21.81	0.05125	0.7026
Upper Lim.	0.824	58.12	0.26	3.549
Lower Lim.	0.31	11.88	0.14	1.618

Appendix G Alternative Source Demonstration Report

Alternative Source Demonstration February, April, and July 2021 Assessment Monitoring

Zero Liquid Discharge Pond Ottumwa Generating Station 20775 Power Plant Road Ottumwa, Iowa

Prepared for:



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

SCS ENGINEERS

25221072.00 | August 30, 2021

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

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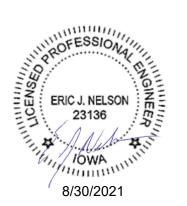
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Appendices

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Appendix D	Boring Logs
Appendix E	Cobalt Lower Confidence Limit Evaluation
Appendix F	Ash Pond CCR Unit Cobalt Data

PE CERTIFICATION



I, Eric J. Nelson, hereby certify that that the information in this alternative source demonstration is accurate and meets the requirements of 40 CFR 257.95(g)(3)(ii). This certification is based on my review of the groundwater data and related site information available for the Ottumwa Generating Station. I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

8/30/2021

(signature)

(date)

Eric J. Nelson

(printed or typed name)

License number 23136

My license renewal date is December 31, 2022.

Pages or sheets covered by this seal: Alternative Source Demonstration, February, April, and July,

2021

Assessment Monitoring, Zero Liquid Discharge Pond,

Ottumwa Generating Station, Ottumwa, Iowa



1.0 INTRODUCTION

This Alternative Source Demonstration (ASD) 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 257.95(g)(3)(ii). The applicable sections of the Rule are provided below in *italics*.

This report was prepared to also fulfill the requirements of 40 CFR 257.100 for inactive CCR surface impoundments.

1.1 §257.95(G)(3) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

- (3) Within 90 days of finding that any of the constituents listed in appendix IV to this part have been detected at a statistically significant level exceeding the groundwater protection standards the owner or operator must either:
 - (i) Initiate an assessment of corrective measures as required by § 257.96; or
 - (ii) Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the constituents in Appendix III and Appendix IV of this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority.

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program. The ASD is completed to determine if any other sources are likely causes of the identified exceedance(s) of established benchmark(s) at the site. This ASD was performed in response to results showing cobalt at concentrations exceeding the groundwater protection standard (GPS) during assessment monitoring under the CCR Rule. Cobalt was determined to be present at an SSL above the GPS in the statistical evaluation of the February results, which was completed on June 1, 2021.

Cobalt was detected above the GPS in samples collected from monitoring well MW-307 in February, April, and July 2021. The February and July 2021 sampling event were supplemental to provide more details on site conditions; while, the April 2021 sampling event was part of the semiannual assessment monitoring for the Zero Liquid Discharge Pond (ZLDP).

Cobalt was previously determined to be at an SSL above the GPS at MW-307 in the initial evaluation of assessment monitoring results dated July 13, 2020. An ASD was completed on October 12, 2020, concluding that the most likely source of the GPS exceedance for cobalt at MW-307 was the adjacent OGS Ash Pond, and not the OGS ZLDP. Following the October 2020 monitoring event, the statistical evaluation completed on January 15, 2021, indicated that the cobalt concentration at MW-307 was not at an SSL above the GPS; therefore, no ASD was required for that event.

1.2 SITE INFORMATION AND MAP

Ottumwa Generating Station (OGS) is located at 20775 Power Plant Road in Ottumwa, Wapello County, Iowa (**Figure 1**). OGS is an active, coal-powered generating station. In addition to the ZLDP, which is an inactive CCR surface impoundment, there is one active existing CCR surface impoundment at OGS (OGS Ash Pond). There are no existing or closed CCR landfills or closed CCR surface impoundments at the site.

The ZLDP is currently in the process of closing. The pond has been dewatered (started in May 2021) and CCR material is actively being removed and relocated to the OGS Ash Pond. The ZLDP will be transitioned to a low volume wastewater treatment pond after CCR removal is complete. The OGS Ash Pond is currently scheduled to be closed in 2022, with dewatering activities starting in the fall of 2021.

The CCR surface impoundments at OGS are monitored using single-unit groundwater monitoring systems. The single-unit system for the ZLDP is designed to detect monitored constituents at the waste boundary of the facility as required by 40 CFR 257.91(d). The groundwater monitoring system consists of one upgradient and three downgradient monitoring wells. A separate single-unit groundwater monitoring system is used to monitor the OGS Ash Pond CCR Unit, consisting of one upgradient well (shared with the ZLDP monitoring system) and five downgradient wells at the Ash Pond compliance boundary. Five additional downgradient monitoring wells have been installed as part of an Assessment of Corrective Measures (ACM) and Selection of Remedy (SOR) process for the Ash Pond CCR Unit.

A map showing the CCR Units and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program is provided as **Figure 2**.

1.3 SAMPLE COLLECTION AND ANALYSIS

In addition to the semiannual assessment monitoring event in April 2021, two supplemental sampling events were completed in February and July 2021. Both supplemental monitoring events were performed to collect additional samples from monitoring well MW-307 to support the evaluation of whether cobalt was present at the well at an SSL above the GPS. The results are summarized in **Table 1**.

The field parameters results were compiled by SCS Engineers (SCS) and provided to the laboratory for inclusion in the laboratory reports. The results are also summarized in **Table 1** and the July 2021 laboratory report is included in **Appendix A**. The February and April laboratory reports were previously provided to Interstate Power & Light (IPL) under separate cover.

1.4 STATISTICALLY SIGNIFICANT LEVELS ABOVE GPS IDENTIFIED

The Appendix IV parameter monitoring results were compared to the GPS values established under 40 CFR 257.95(h) in **Table 1**. The only assessment monitoring parameter for which a monitoring

result exceeded the GPS was cobalt in the samples from MW-307. Cobalt exceeded the GPS in the samples from MW-307 from sampling events in February, April, and July 2021. The cobalt levels also exceeded the upper prediction limit (UPL) established based on background monitoring at the upgradient well. Cobalt was first determined to be present at an SSL above the GPS in the statistical evaluation of the February results, which was completed on June 1, 2021.

USEPA's Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation & Recovery Act (RCRA) Facilities (EPA 530-R-09-007, March 2009) recommends the use of confidence intervals for comparison of assessment monitoring data to fixed GPS values. Specifically, the suggested approach for comparing assessment groundwater monitoring data to GPS values based on long-term chronic health risk, such as drinking water Maximum Contaminant Levels (MCLs), is to compare the lower confidence limit around the arithmetic mean with the fixed GPS.

A lower confidence limit (LCL) evaluation was completed for cobalt and the LCLs were calculated with SanitasTM using historical concentrations measured since assessment monitoring was initiated for the ZLDP in October 2019. The LCL for the mean for cobalt exceeded the GPS at compliance well MW-307; therefore, cobalt is present at a statistically significant level (SSL) above the GPS at this well, See Section 3.3. for more details on the statistical evaluation.

1.5 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION APPROACH

This ASD report includes:

- Background information (Section 2.0)
- Evaluation of potential that GPS exceedances are due to methodology or analysis (Section 3.0)
- Evaluation of potential that GPS exceedances are due to natural sources or man-made sources other than the ZLDP CCR Unit (Section 4.0)
- ASD conclusions (**Section 5.0**)
- Monitoring recommendations (**Section 6.0**)

Historical cobalt concentration samples from background and compliance sampling for cobalt in the ZLDP monitoring wells are provided in **Table 2**. Historical concentration trends are shown in **Appendix B**. Laboratory reports for the eight background monitoring events were included in the 2018 Annual Groundwater Monitoring and Corrective Action Report submitted in August 2019 (SCS, 2019). The laboratory reports for the February, April, and July 2021 assessment monitoring events will be included in the 2021 Annual Groundwater Monitoring and Corrective Action Report which is due in August 2022.

2.0 BACKGROUND

To provide context for the ASD, the following background information is provided, prior to the ASD sections:

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Information

The uppermost aquifer unit at the site, as defined under 40 CFR 257.53, is the Mississippian bedrock aquifer and hydraulically connected overlying unconsolidated deposits. Regionally, unconsolidated alluvial aquifers near the Des Moines River and deeper bedrock aquifers are both used for water supply. The thickness and water-producing capacity of the unconsolidated material in the area is variable. A summary of the regional hydrogeologic stratigraphy is included in **Appendix C**.

The bedrock surface elevation is highly variable due to erosion. A map showing regional bedrock surface topography is included in **Appendix C.**

Although not encountered in drilling at the OGS site, the uppermost bedrock unit in the surrounding region consists of Pennsylvanian shales with minor siltstone, sandstone, limestone, and coal intervals. The continuity of these minor beds is highly variable. The Pennsylvanian bedrock unit is considered to be a regional aquitard. The thickness of the Pennsylvanian shale is variable; in some areas of Wapello County it is over 100 feet thick, while in other areas it is absent. The variation in thickness is due to erosion of the bedrock surface. Based on the available boring logs from the OGS site, it appears that the Pennsylvanian shale is absent at the site.

Underlying the Pennsylvanian shales are Mississippian limestone and dolomite, with some shale and sandstone. A map showing the elevation of the top of the Mississippian limestone in Southeastern lowa is included in **Appendix C**. The Mississippian unit is the shallowest regional bedrock aquifer. The available boring logs from the site indicate that the Mississippian limestone is the uppermost bedrock unit at the site.

The Devonian units underlying the Mississippian are composed of shale, dolomite, and limestone, and are in turn underlain by Silurian dolomite and Cambrian-Ordovician dolomite and sandstone. The Cambrian-Ordovician aquifer is commonly the source of municipal and industrial high-capacity wells in the region (Coble, 1971).

Groundwater flow within the Mississippian limestone is generally to the east. A map showing the regional potentiometric surface in the Mississippian limestone is included with the hydrogeologic background information presented in **Appendix C**.

2.1.2 Site Information

Site boring logs indicate that the unconsolidated material at the site is fairly thin (approximately 20 to 30 feet or less) and consists of a clay layer overlying clay and sand. Monitoring wells MW-301 through MW-309 were installed to intersect the bedrock aquifer or unconsolidated material in contact with the bedrock aquifer at the site. The unconsolidated material at these well locations is generally clay, silt, and sand, and the uppermost bedrock appears to be weathered. The total boring depths were between 14.5 and 52 feet and weathered bedrock was encountered at depths between 7 and 44 feet below ground surface. Boring logs for the monitoring wells used to evaluate the ZLDP (MW-301, MW-307, MW-308, and MW-309) are included in **Appendix D**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of one upgradient (background) monitoring well and three downgradient monitoring wells for the ZLDP. The background well is MW-301, and the three downgradient wells include MW-307, MW-308, and MW-309. The CCR Rule wells are installed in the Mississippian aquifer and/or hydraulically connected overlying unconsolidated deposits, which comprise the uppermost aquifer unit at the site. Well depths range from approximately 28 to 30 feet, measured from the top of the well casing.

The background well (MW-301) is located to the west of the site. The downgradient wells (MW-307, MW-308, and MW-309) are located along the eastern edge of the ZLDP. The downgradient wells were installed as close as practicable to the pond boundaries considering the site layout (**Figure 2**).

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at OGS as part of the single-unit monitoring system developed for the OGS Ash Pond CCR Unit.

The additional monitoring wells include five compliance wells at the Ash Pond boundary (MW-302 through MW-306), two downgradient well nests (MW-310/MW-310A and MW-311/MW-311A), and a piezometer added in a nest with one of the existing compliance wells (MW-305A). The wells added to the OGS Ash Pond monitoring system beyond the original background and compliance wells have been installed as part of an ACM and SOR process for the Ash Pond CCR Unit.

Boring depths of existing monitoring well are between 14.5 and 82 feet. Weathered bedrock was encountered at depths between 7 and 44 feet below ground surface. The existing Ash Pond and the inactive ZLDP share the same upgradient (background) monitoring well, MW-301.

2.4 GROUNDWATER FLOW DIRECTION

Groundwater flow in the area of the ZLDP is generally to the east, following the same flow patterns observed in regional flow maps of the area. The shallow and deep potentiometric surface maps for April 2021 are shown on **Figure 3** and **Figure 4**. The shallow and deep potentiometric surface maps show groundwater flow moving generally to the east toward the Des Moines River. The groundwater elevation data for the CCR monitoring wells are provided in **Table 3**.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that the cobalt GPS exceedance is due to a source other than the ZLDP, SCS used a two-step evaluation process. First, the sample collection, field and laboratory analysis, and statistical evaluation were reviewed to identify any potential error or analysis that led to an exceedance of the benchmark. Second, potential alternative sources, including natural variation and man-made sources other than the CCR Unit, were evaluated. This section of the report provides the findings of the methodology and analysis review. **Section 4.0** of the report addresses the potential alternative sources.

3.1 SAMPLING AND FIELD ANALYSIS REVIEW

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed GPS exceedances. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field error. Field blank sample results were also reviewed for

an indication of potential contamination from sampling equipment or containers. Based on the review of the field notes and results, SCS did not identify any indication that the concentrations exceeding the GPS were due to a sampling error.

Because cobalt is a laboratory parameter, there is little potential for a field analysis error to contribute to a GPS exceedance for this parameter.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the February, April, and July 2021 assessment monitoring events were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to the observed cobalt concentrations above the GPS. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results.

Based on the review of the laboratory reports, SCS did not identify any indication that the GPS exceedances were due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory reports that affect the usability of the data for assessment monitoring.

A time series plot of the cobalt analytical data was also reviewed for anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plot is provided in **Appendix B**. Cobalt at MW-307 has followed a generally increasing trend since the start of assessment monitoring with the December 2019 sampling event. Although there is some variability in the results, the time series plot does not appear to show any anomalous results indicating a sampling or laboratory error.

3.3 STATISTICAL EVALUATION REVIEW

As noted above, USEPA's Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities (EPA 530-R-09-007, March 2009) recommends the use of confidence intervals for comparison of assessment monitoring data to fixed GPS values. Specifically, the suggested approach for comparing assessment groundwater monitoring data to GPS values based on long-term chronic health risk, such as drinking water MCLs, is to compare the lower confidence limit around the arithmetic mean with the fixed GPS.

An LCL evaluation was completed for cobalt and the LCLs were calculated with Sanitas™ using historical concentrations measured since assessment monitoring began in October 2019. The LCL for the mean for cobalt exceeded the GPS at monitoring well MW-307; therefore, cobalt is at a SSL above the GPS at this well. The evaluation is provided in **Appendix E**.

The cobalt concentrations at MW-307 have shown an increasing shift or trend since the beginning of assessment monitoring. In this scenario, the Unified Guidance recommends consideration of a "moving window" approach for confidence limits or a confidence band around a trend line, because a standard LCL calculation may result in an overly wide confidence interval that would not identify an SSL (false negative). However, since the SSL for cobalt was identified without consideration of the shift/trend, there is no need for further analysis to narrow the interval (raise the LCL).

3.4 SUMMARY OF THE METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the determination that cobalt concentrations exceeded the GPS at MW-307 based on the methodology and analysis review, and no errors or issues causing or contributing to the reported GPS exceedance were identified.

4.0 ALTERNATIVE SOURCES

This section of the report discusses the potential alternative sources for the cobalt GPS exceedance at MW-307, identifies the mostly alternative source(s), and presents lines of evidences indicating that an alternative source is most likely the cause of the observed GPS exceedance for cobalt.

4.1 POTENTIAL CAUSES OF STATISTICALLY SIGNIFICANT INCREASE

4.1.1 Natural Variation

If concentrations of a constituent that is naturally present in the aquifer vary spatially, then the potential exists that the downgradient concentrations may be higher than upgradient concentrations due to natural variation. Although natural variation is likely present in the aquifer, SCS has not identified evidence that natural variation is the likely primary source causing the cobalt GPS exceedance at MW-307.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the cobalt GPS exceedances could include the active Ash Pond CCR Unit, hydrated fly ash pile, coal pile runoff pond, and coal storage area, impacts associated with roads or rail lines, or other on-site or off-site sources

Based on the groundwater flow directions and on previous investigations at the site, the Ash Pond CCR Unit appears to be the most likely cause of the cobalt GPS exceedances for well MW-307.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the GPS exceedances for cobalt in compliance well MW-307 are due to the Ash Pond include:

- 1. Monitoring well MW-307 is downgradient of the OGS Ash Pond CCR Unit and is downgradient from the Ash Pond monitoring wells with GPS exceedances for cobalt (MW-305 and MW-306).
- 2. The distribution of cobalt in groundwater based on the site monitoring wells is consistent with the Ash Pond as a source and is not consistent with the ZLDP as a source.
- 3. Based on historical use and the quantity and types of materials discharged to ponds, the Ash Pond is a more likely source of cobalt in groundwater than the ZLDP.

4.2.1 Groundwater Flow Direction

As shown on **Figure 3**, groundwater flow in the area of the Ash Pond and ZLDP is generally to the east, following the same flow patterns observed in regional flow maps of the area. MW-307 is located downgradient from a small portion of the ZLDP and is also downgradient from a larger

portion of the Ash Pond. MW-307 is also downgradient from the area of the Ash Pond monitoring system where cobalt impacts attributed to the Ash Pond have been identified, including monitoring wells MW-305 and MW-306.

Water level data from the Ash Pond and ZLDP indicate that the water level in the Ash Pond is higher than the water level in the ZLDP (Hard Hat Services, 2016); therefore, shallow groundwater flow within the berm separating the two ponds is also to the east.

4.2.2 Cobalt Distribution in Groundwater

The distribution of cobalt in groundwater is consistent with an Ash Pond source and is not consistent with the ZLDP as a source. The three wells with cobalt concentrations exceeding the GPS are all downgradient from the northeast boundary of the Ash Pond. Cobalt concentrations for the ZLDP monitoring wells are shown in **Table 2**, and cobalt results for all monitoring wells at OGS are summarized in **Appendix F**.

The other downgradient monitoring wells for the ZLDP, MW-308 and MW-309, have consistently lower cobalt concentrations. All cobalt concentrations at MW-308 are J flagged values below the laboratory's limit of quantitation. All cobalt concentrations for samples from MW-308 and MW-309, including background and compliance monitoring events, have been below the cobalt GPS (6 micrograms per liter [µg/L]) (**Table 2**).

The OGS Ash Pond is currently in the corrective action process in response to the cobalt concentrations observed at the Ash Pond downgradient wells.

4.2.3 Historical Impoundment Use

As described in the History of Construction report for the OGS surface impoundments (Hard Hat Services, 2016), the Ash Pond has been the primary receiver of bottom ash and economizer ash sluiced from the generating plant. The bottom ash and economizer ash were originally discharged in the northwest corner of the ash pond. In addition to the sluiced CCR, the OGS Ash Pond was also a primary receiver of process water flows from the plant, including flows from an oil separation basin (inclusive of miscellaneous plant floor drains, flash evaporator blowdown, sodium softener regeneration waste, condensate polisher regeneration waste), an ash water pit (inclusive of steam cycle blowdown), cooling tower blowdown, boiler blowdown, sluiced pyrites from the pyrites hopper, as well as other miscellaneous flows. Cobalt in coal is commonly associated with sulfide minerals such as pyrite; therefore, the sluiced pyrites are a potential source of cobalt in groundwater downgradient from the Ash Pond.

The historical use of the ZLDP was to collect storm water runoff from dry fly ash stored on the west side of the ZLDP, north of the plant, as well as storm water from the surrounding embankments. Based on the location of the former fly ash storage along the northern portion of the ZLDP, impacts from the fly ash storage or runoff would be expected to be similar or greater in the northern ZLDP wells (MW-308 and MW-309) rather than the southern well (MW-307), which is located furthest from the source and downgradient from the narrowest width of the ZLDP.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

Based on the available data, the most likely source of the GPS exceedance for cobalt at MW-307 is the adjacent OGS Ash Pond, and not the OGS ZLDP.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.95(g)(3)(ii).) of the CCR Rule, the OGS ZLDP CCR Unit may continue with assessment monitoring based on this ASD. The ASD report will be included in the 2021 Annual Report due in August 2022.

7.0 REFERENCES

Coble, R.W., 1971, The Water Resources of Southeast Iowa, Iowa Geological Survey Water Atlas Number 4, 1971.

Hard Hat Services, 2016, History of Construction, CCR Surface Impoundment, Alliant Energy, Interstate Power and Light Company, Ottumwa Generating Station, issued September 29, 2016.

Kentucky Geological Survey, University of Kentucky website, Coal, Major, Minor, and Trace Elements, https://www.uky.edu/KGS/coal/coal-major-minor-trace-elements.php, downloaded October 1, 2020.

SCS Engineers, 2019, 2018 Annual Groundwater Monitoring and Corrective Action Report, Ottumwa Generating Station, Ottumwa, IA, 2019.

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

- 1 Groundwater Analytical Results Summary
- 2 Historical Analytical Results for Cobalt
- 3 Groundwater Élevations CCR Monitoring Well Networks

Table 1. Groundwater Analytical Results Summary Ottumwa Generating Station - Zero Liquid Discharge Pond (ZLDP) SCS Engineers Project #25221072.00

				Background Compliance Wells					
	UPL			MW-301		MW-307		MW-308 MW-309	
Parameter Name	Method	UPL	GPS	4/14/2021	2/23/2021	4/14/2021	7/6/2021	4/14/2021	4/14/2021
Appendix III									
Boron, ug/L	Р	820		690		200		220	1400
Calcium, mg/L	Р	78.7		96		250		230	130
Chloride, mg/L	Р	86.8		150		210		150	57
Fluoride, mg/L	Р	0.484		<0.28		<0.28		<0.28	<0.28
Field pH, Std. Units	Р	6.87	_	6.26	6.50	6.59	7.05	6.70	7.00
Sulfate, mg/L	Р	199	_	140		92 F1		270	360
Total Dissolved Solids, mg/L	Р	628	_	620		1,000		1,100	940
Appendix IV									
Antimony, ug/L	P*	0.22	6	<1.1		<1.1		<1.1	<1.1
Arsenic, ug/L	P*	0.53	10	<0.75		<0.75		<0.75	<0.75
Barium, ug/L	Р	68.8	2,000	52		160		140	52
Beryllium, ug/L	DQ	DQ	4	<0.27		<0.27		<0.27	<0.27
Cadmium, ug/L	NP*	0.12	5	<0.051		<0.051		<0.051	<0.051
Chromium, ug/L	Р	1.07	100	<1.1		<1.1		<1.1	<1.1
Cobalt, ug/L	NP	4.10	6	0.29 J	64	46	60	0.16 J	2.3
Fluoride, mg/L	P*	0.484	4	<0.28		<0.28		<0.28	<0.28
Lead, ug/L	NP*	0.10	15	<0.21		<0.21		<0.21	<0.21
Lithium, ug/L	Р	34.2	40	23		14		16	8.9 J
Mercury, ug/L	DQ	DQ	2	<0.15		<0.15		<0.15	<0.15
Molybdenum, ug/L	P	1.74	100	<1.3		<1.3		<1.3	<1.3
Selenium, ug/L	P	8.55	50	6.5		<0.96		<0.96	<0.96
Thallium, ug/L	NP*	0.14	2	<0.26		<0.26		<0.26	<0.26
Radium 226/228 Combined,									
pCI/L	Р	2.15	5	0.598		3.08		2.87	1.05
Additional Parameters Collected	d for Ash Pon	d Selection	of Remed			40			
Cobalt - dissolved, # ug/L	4					49			
Lithium - dissolved, # ug/L						2.400			
Iron, dissolved, [#] ug/L				<36 49 J		3,400 3,700		3,900 3,900	660 900
Iron, ug/L Magnesium ug/L				34,000		30,000		26,000	19,000
Manganese, dissolved, # ug/L	LIDL one of t	UPL and GPS not applicable				360		1,300	640
Manganese, ug/L	UPL and (330		1,300	630
Potassium, ug/L				1,200		2,000		4,400	750
Sodium, ug/L				78,000		98,000		100,000	180,000
Bicarbonate Alkalinity, mg/L				170		490		370	280
Cabonate Alkalinity, mg/L				<4.6		<4.6		<4.6	<4.6
Total Alkalinity, mg/L				170		490		370	280

4.4 30.8 17 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the LOQ. Yellow highlighted cell indicates the compliance well result exceeds the GPS.

Grayscale indicates Additional Parameters sampled for selection of remedy and evaluation of MNA

Table 1. Groundwater Analytical Results Summary Ottumwa Generating Station - Zero Liquid Discharge Pond (ZLDP) SCS Engineers Project #25221072.00

Abbreviations: MNA = Monitored Natural Attenuation mg/L = milligrams per liter UPL = Upper Prediction Limit ug/L = micrograms per liter mg/L = milligrams per liter

LOD = Limit of Detection -- = Not Analyzed ug/L = micrograms per liter P = Parametric UPL with 1-of-2 retesting LOQ = Limit of Quantitation GPS = Groundwater Protection Standard

NP = Non Parametric UPL DQ = Double Quantification Rule (not detected in background)

J = Estimated concentration at or above the LOD and below the LOQ.

F1 = MS and/or MSD recovery exceeds control limits

* = UPL is below the LOQ for background sampling. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs abovebackground or statistically significant level above GPS.

- 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 well MW-301.

Created by: NDK Date: 3/9/2021 Last revision by: NDK Date: 8/9/2021 Checked by: RM Date: 8/9/2021 Proj Mgr QA/QC: TK Date: 8/17/2021

Table 2. Historical Analytical Results for Cobalt Ottumwa Generating Station, Zero Liquid Discharge Pond

Well Group	Well	Collection Date	Cobalt (µg/L)
		4/26/2016	4.10
		6/23/2016	3.10
		8/10/2016	1.80
		10/26/2016	1.80
		1/18/2017	1.30
		4/19/2017	0.97 J
		6/20/2017	1.00 J
Background		8/23/2017	0.96 J
0.0		4/18/2018	0.46 J
ğ	MW-301	8/14/2018	1.40
g		10/16/2018	0.36 J
۵		4/8/2019	0.44 J
		10/24/2019	0.60
		2/5/2020	1.10
		3/12/2020	0.43 J
		4/14/2020	0.52
		10/8/2020	0.41 J
		4/14/2021	0.29 J
		1/19/2017	0.62 J
		4/20/2017	1.60
	MW-307	6/21/2017	1.10
		8/21/2017	1.10
		11/8/2017	1.30
		4/16/2018	1.30
		6/28/2018	2.90
		10/16/2018	4.80
		12/11/2019	11.0
		2/5/2020	13.0
		4/14/2020	20.0
		10/7/2020	18
Φ		2/23/2021	64
ğ		4/14/2021	46
االط		7/6/2021	60
Compliance		1/19/2017	0.52 J
		4/20/2017	0.43 J
		6/21/2017	0.25 J
		8/21/2017	0.26 J
		11/8/2017	0.23 J
		4/16/2018	0.18 J
	MW-308	6/28/2018	0.19 J
		10/16/2018	0.15 J
		12/11/2019	0.26 J
		2/5/2020	0.14 J
		4/14/2020	0.14 J
		10/7/2020	0.14 J
		4/14/2021	0.16 J

Table 2. Historical Analytical Results for Cobalt
Ottumwa Generating Station, Zero Liquid Discharge Pond

Well	Collection Date	Cobalt (µg/L)
	1/19/2017	2.00
	4/20/2017	3.10
	6/21/2017	2.40
MW-309	8/21/2017	2.10
	11/8/2017	2.00
	4/16/2018	2.40
	6/28/2018	4.70
	10/16/2018	2.70
	12/11/2019	3.70
	2/5/2020	2.30
	4/14/2020	3.20
	10/7/2020	2.00
	4/14/2021	2.30
		1/19/2017 4/20/2017 6/21/2017 8/21/2017 11/8/2017 4/16/2018 MW-309 6/28/2018 10/16/2018 12/11/2019 2/5/2020 4/14/2020 10/7/2020

Abbreviations:

μg/L = micrograms per liter or parts per billion (ppb)

Notes:

- (1) Complete laboratory reports included in the Annual Groundwater Monitoring and Corrective Action Reports.
- J = Estimated concentations at or above the limit of detection and the limit of quantitation.

Created by:	RM	Date:	8/10/2021
Last revision by:	RM	Date:	8/10/2021
Scientist check by:	NDK	Date:	8/11/2021

Table 3. Groundwater Elevations - CCR Rule Monitoring Well Networks IPL - Ottumwa Generating Station / SCS Engineers Project #25221072.00

Ground Water or Surface Water Elevation in feet above mean sea level (amsl)															
Well Number	MW-301	MW-302	MW-303	MW-304	MW-305	MW-305A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-310A	MW-311	MW-311A	River at Intake
Top of Well Casing Elevation /															
Surface Water Reference Elevation	686.63	673.90	661.07	682.84	683.91	684.03	683.47	657.56	655.39	654.94	658.63	657.93	654.18	653.54	656.31
(feet amsl)															
Screen Length (ft)	10.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	NA
Total Depth (ft from top of casing)	17.0	25.8	17.5	52.3	51.5	81.91	36.6	28.0	25.0	27.5	25.9	55.55	17.9	47.68	NA
Top of Well Screen Elevation (ft)	679.63	653.10	648.57	635.54	637.41	607.12	651.87	634.56	635.39	632.44	637.76	607.38	641.24	610.86	NA
Measurement Date															
April 26, 2016	682.80	655.63	652.42	655.37	661.67	NI	670.86	ZI	Z	N	Z	NI	Z	NI	NI
June 23, 2016	682.58	655.65	652.89	656.53	662.36	NI	670.64	ZI	Z	N	Z	NI	Z	NI	NI
August 9, 2016	682.27	655.52	651.76	653.79	660.78	NI	670.35	NI	Z	NI	Z	NI	Z	NI	NI
October 26-27, 2016	682.04	655.67	652.17	655.03	661.37	NI	670.21	NI	NI	NI	NI	NI	NI	NI	NI
January 18-19, 2017	681.67	655.46	651.74	654.50	660.87	NI	669.89	648.81	647.42	646.66	NI	NI	NI	NI	NI
April 19-20, 2017	682.15	656.35	654.57	657.48	663.27	NI	670.69	653.62	651.09	650.16	NI	NI	NI	NI	NI
June 20-21, 2017	681.91	655.65	652.42	654.75	661.26	NI	669.94	649.85	648.26	647.60	NI	NI	NI	NI	NI
August 21-23, 2017	681.28	655.13	650.58	652.39	659.00	NI	668.77	645.78	643.12	641.82	NI	NI	NI	NI	NI
November 8, 2017	681.54	655.40	651.34	653.03	659.76	NI	669.04	647.37	644.99	644.20	ZI	NI	Z	NI	NI
April 18, 2018	681.53	655.71	652.47	655.55	660.99	NI	668.92	649.66	647.91	647.65	ZI	NI	Z	NI	NI
May 30, 2018	NM	NM	NM	NM	NM	NI	NM	652.45	651.05	650.98	ZI	NI	Z	NI	NI
June 28, 2018	NM	NM	NM	NM	NM	NI	NM	652.87	651.43	651.47	NI	NI	ZI	NI	NI
July 18, 2018	NM	NM	NM	NM	NM	NI	NM	652.27	650.67	650.69	Z	NI	Z	NI	NI
August 14-15, 2018	680.91	656.05	652.57	656.35	661.56	NI	668.66	NM	NM	NM	NI	NI	Z	NI	NI
August 29, 2018	681.09	655.89	655.07	657.82	NM	NI	NM	NM	NM	NM	Z	NI	Z	NI	NI
October 16, 2018	682.50	656.91	656.17	658.20	663.37	NI	670.24	654.13	NM	651.61	Z	NI	Z	NI	NI
January 8, 2019	682.22	656.03	654.65	656.28	662.13	NI	669.84	NM	NM	NM	NI	NI	Z	NI	NI
April 8, 2019	682.69	657.23	655.55	659.33	664.01	NI	670.96	654.90	653.70	653.55	NI	NI	Z	NI	NI
August 28, 2019	NM	NM	NM	NM	NM	NI	NM	NM	NM	NM	640.98	NI	642.10	NI	NI
October 23-24, 2019	683.07	660.14	653.86	657.71	663.21	NI	671.28	651.89	651.31	651.28	649.31	NI	647.80	NI	NI
December 11, 2019	NM	NM	NM	NM	NM	NI	NM	649.59	647.39	647.24	NM	NI	ММ	NI	NI
February 5, 2020	683.30	NM	NM	NM	NM	NI	NM	649.88	650.12	648.34	644.71	NI	645.00	NI	NI
March 12-13, 2020	682.82	NM	NM	NM	661.41	651.64	NM	NM	NM	NM	645.45	617.84	644.18	624.11	NI
April 1, 2020	683.27	657.00	655.89	658.57	660.59	655.05	671.13	653.76	651.88	651.23	651.09	649.16	649.35	648.27	649.71
April 13-14, 2020	683.25	656.45	654.08	656.42	662.44	653.69	670.71	650.66	650.09	649.19	645.91	647.50	646.79	648.42	645.71
May 4, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
June 30, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	647.73	NM
October 5-12, 2020	682.34	655.80	650.37	652.95	659.81	648.01	670.18	646.18	642.85	641.50	638.46	640.20	638.73	641.09	638.16
February 23, 2021	NM	NM	NM	NM	NM	NM	669.86	646.80	NM	NM	638.77	NM	NM	641.16	NM
April 12 - 16, 2021	682.94	656.05	653.82	654.34	661.15	651.16	670.27	649.53	647.66	646.46	642.70	644.88	643.02	644.16	640.91
July 6, 2021	NM	NM	NM	NM	NM	NM	661.87	647.03	NM	NM	639.32	NM	NM	642.38	NM
Bottom of Well Elevation (ft)	669.63	648.10	643.57	630.54	632.41	602.12	646.87	629.56	630.39	627.44	632.76	602.38	636.24	605.86	

Notes: Created by: NDK Date: 1/15/20218

NM = not measured Last rev. by: RM Date: 8/10/2021

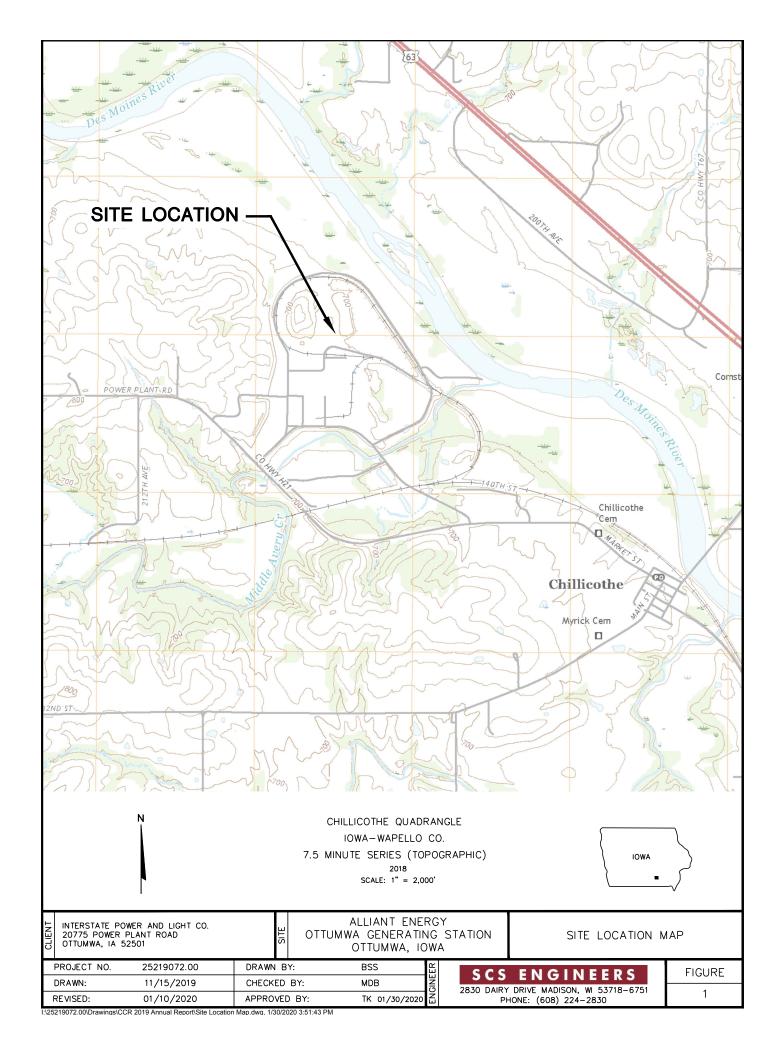
NI = not installed Checked by: NDK Date: 8/11/2021

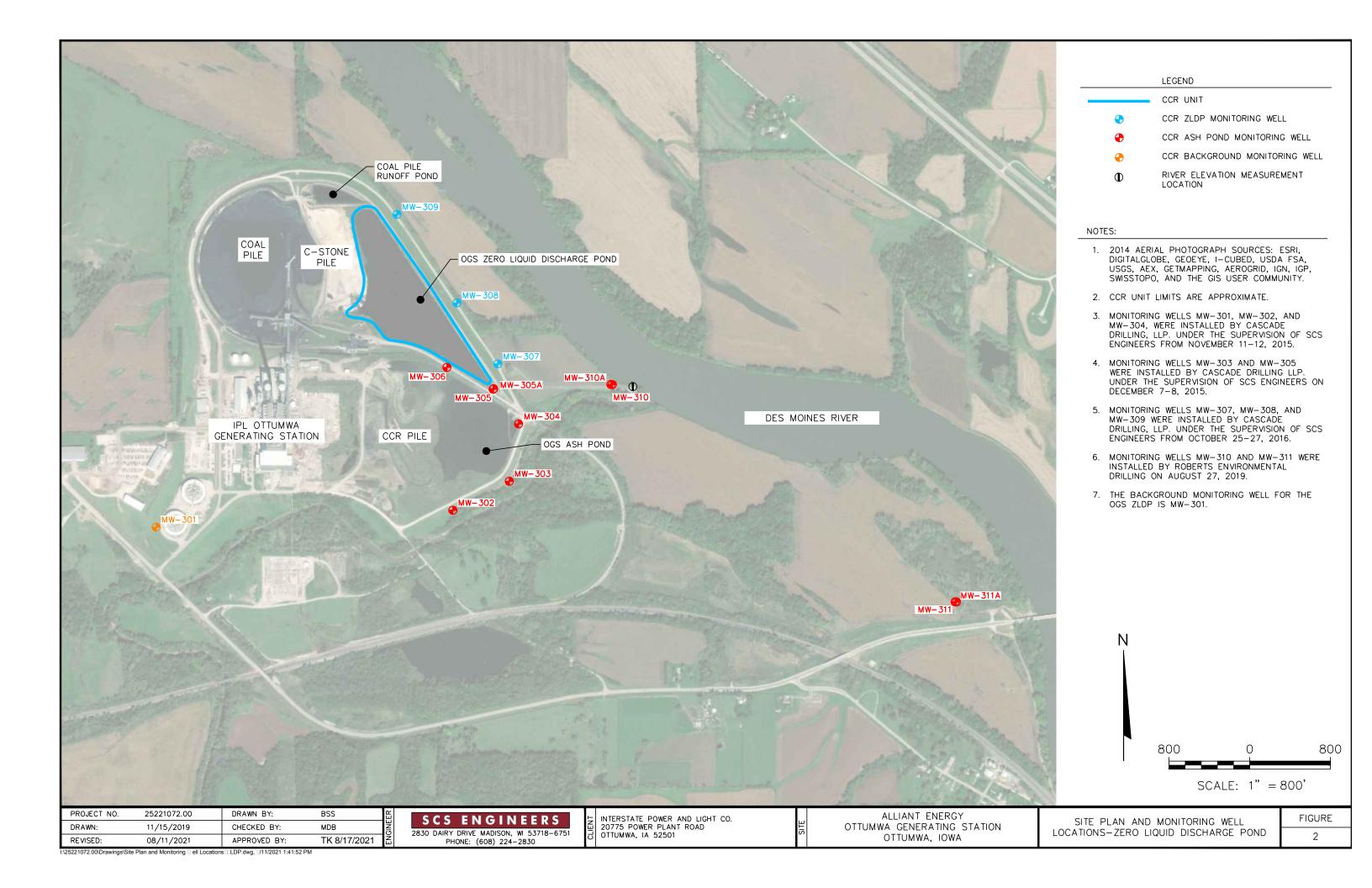
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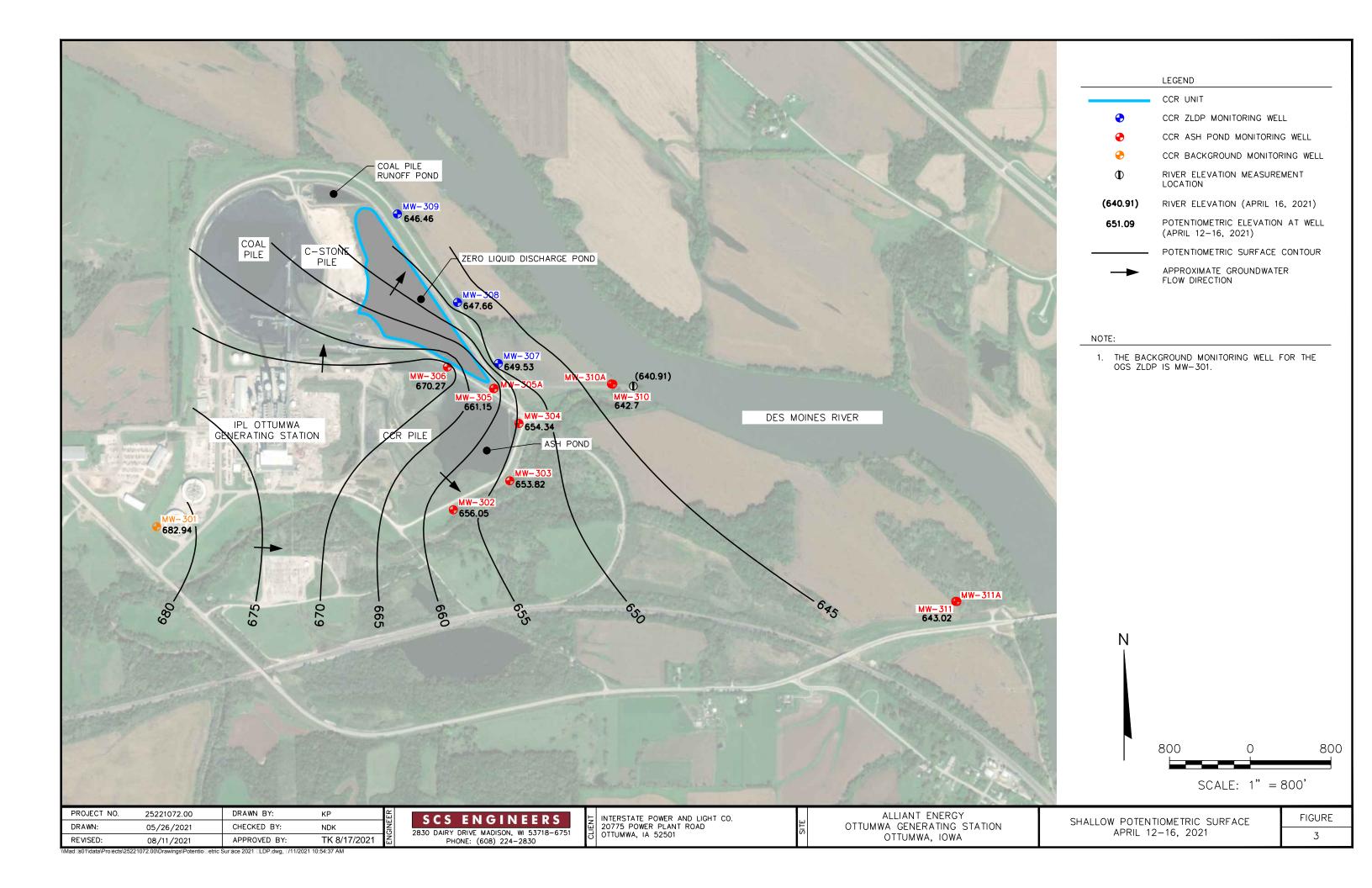
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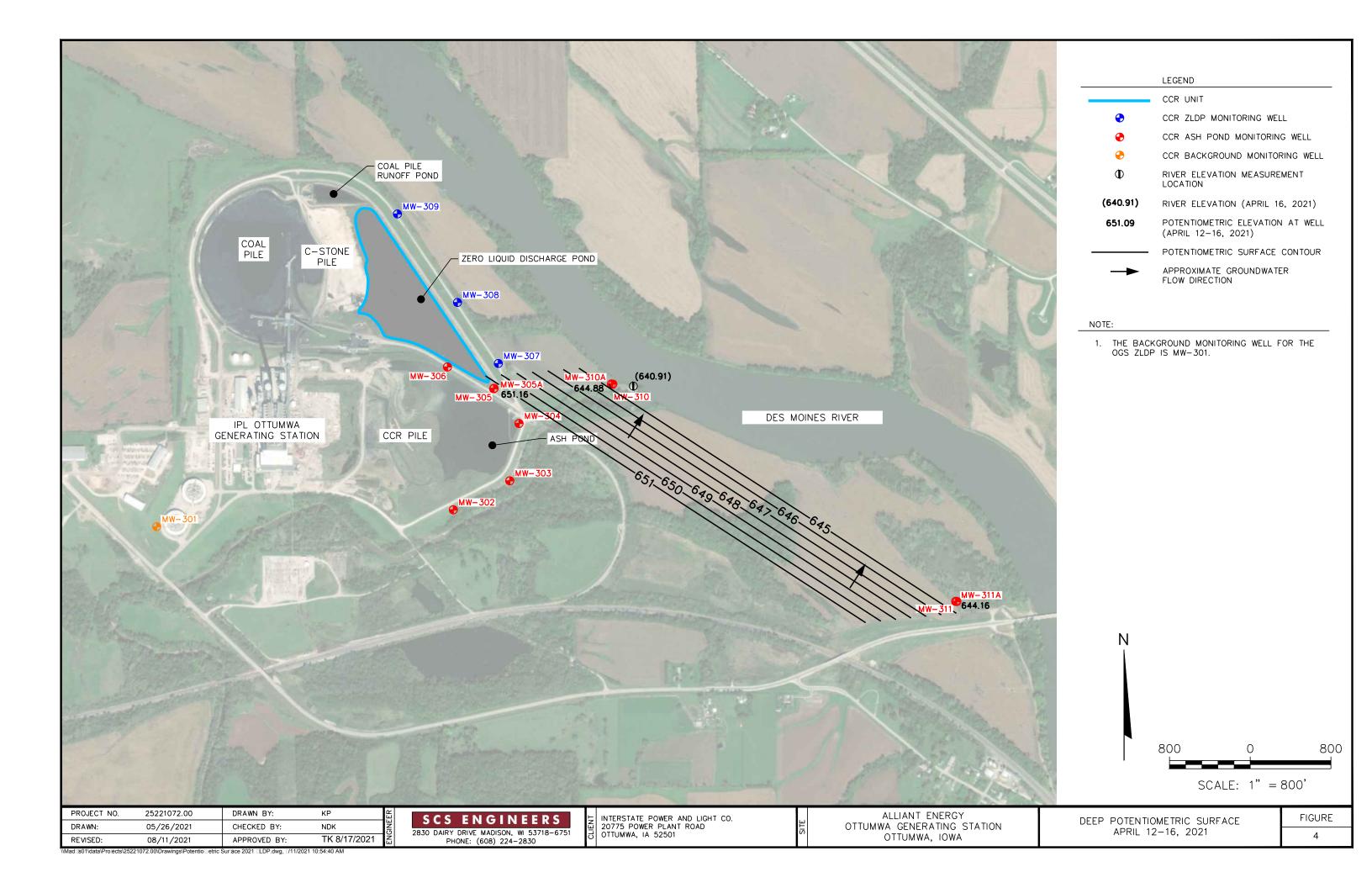
Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Shallow Potentiometric Surface April 2021
- 4 Deep Potentiometric Surface April 2021









Appendix A July 2021 Laboratory Report



Environment Testing America

ANALYTICAL REPORT

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

Laboratory Job ID: 310-210533-2

Client Project/Site: Ottumwa Generating Station - 25221072

For:

SCS Engineers 2830 Dairy Drive Madison, Wisconsin 53718

Attn: Meghan Blodgett

Authorized for release by: 7/21/2021 11:02:56 AM

Sandie Fredrick, Project Manager II (920)261-1660

sandra.fredrick@eurofinset.com

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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.

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Case Narrative

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Job ID: 310-210533-2

Laboratory: Eurofins TestAmerica, Cedar Falls

Narrative

Job Narrative 310-210533-2

Comments

Client requested split report

Receipt

The samples were received on 7/9/2021 9:25 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.6° C.

Metals

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

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Sample Summary

Client: SCS Engineers

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
310-210533-2	M\M_307	Water	07/06/21 20:45	07/09/21 09:25	

Job ID: 310-210533-2

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Detection Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-210533-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Cobalt	60		0.50	0.091	ug/L	1	_	6020A	Total/NA
Ground Water Elevation	647.03				ft	1		Field Sampling	Total/NA
Oxidation Reduction Potential	14.7				millivolts	1		Field Sampling	Total/NA
Oxygen, Dissolved, Client Supplied	0.21				mg/L	1		Field Sampling	Total/NA
pH, Field	7.05				SU	1		Field Sampling	Total/NA
Specific Conductance, Field	1705				umhos/cm	1		Field Sampling	Total/NA
Temperature, Field	13.2				Degrees C	1		Field Sampling	Total/NA
Turbidity, Field	17.91				NTU	1		Field Sampling	Total/NA

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Client Sample Results

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Lab Sample ID: 310-210533-2 **Client Sample ID: MW-307**

Date Collected: 07/06/21 20:45 Date Received: 07/09/21 09:25

Matrix: Water

Method: 6020A - Metals (ICP/N	IS)								
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	60		0.50	0.091	ug/L		07/13/21 09:00	07/14/21 23:11	1
- Method: Field Sampling - Field	d Sampling								
Analyte		Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ground Water Elevation	647.03				ft			07/06/21 20:45	1
Oxidation Reduction Potential	14.7				millivolts			07/06/21 20:45	1
Oxygen, Dissolved, Client	0.21				mg/L			07/06/21 20:45	1
Supplied									
pH, Field	7.05				SU			07/06/21 20:45	1
Specific Conductance, Field	1705				umhos/cm			07/06/21 20:45	1
Temperature, Field	13.2				Degrees C			07/06/21 20:45	1
Turbidity, Field	17.91				NTU			07/06/21 20:45	1

Definitions/Glossary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Glossarv

DLC

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

EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCI	FPA recommended "Maximum Cont

EPA recommended "Maximum Contaminant Level" MDA Minimum Detectable Activity (Radiochemistry) MDC Minimum Detectable Concentration (Radiochemistry)

Decision Level Concentration (Radiochemistry)

MDL Method Detection Limit ML Minimum Level (Dioxin) Most Probable Number MPN 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) Toxicity Equivalent Quotient (Dioxin) TEQ

TNTC Too Numerous To Count

QC Association Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Metals

Prep Batch: 322135

	Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
1	310-210533-2	MW-307	Total/NA	Water	3010A	

Analysis Batch: 322457

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-210533-2	MW-307	Total/NA	Water	6020A	322135

Field Service / Mobile Lab

Analysis Batch: 323036

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-210533-2	MW-307	Total/NA	Water	Field Sampling	

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Lab Chronicle

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Client Sample ID: MW-307

Lab Sample ID: 310-210533-2

Matrix: Water

Date Collected: 07/06/21 20:45 Date Received: 07/09/21 09:25

	Batch	Batch		Dilution	Batch	Prepared		
Prep Type	Type	Method	Run	Factor	Number	or Analyzed	Analyst	Lab
Total/NA	Prep	3010A			322135	07/13/21 09:00	ACM2	TAL CF
Total/NA	Analysis	6020A		1	322457	07/14/21 23:11	SAP	TAL CF
Total/NA	Analysis	Field Sampling		1	323036	07/06/21 20:45	SJF	TAL CF

Laboratory References:

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

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Accreditation/Certification Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

Laboratory: Eurofins TestAmerica, Cedar Falls

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

	Authority	Program	Identification Number	Expiration Date
ı	lowa	State	007	12-01-21

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Method Summary

Client: SCS Engineers Job ID: 310-210533-2

Project/Site: Ottumwa Generating Station - 25221072

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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Environment Testing TestAmerica



Cooler/Sample Receipt and Temperature Log Form

ity/State:												
Client: SCS EVENCERS												
		Project:	Na Caerus	16 State								
	HA SECTION OF THE SEC		the second contribution of	Waster St.								
	0925	Received By: AW										
Delivery Type: ☐ UPS ☑ Fe		FedEx Ground	US Mail	☐ Spee-Dee								
☐ Lab Courier ☐ La	b Field Services [Client Drop-off	Other:									
Condition of Cooler/Containers	10 1 (1) (2) (2)		· 经数据的数据									
Sample(s) received in Cooler?	Yes No	If yes: Cooler ID:										
Multiple Coolers?	-		of									
Cooler Custody Seals Present?	Yes No 7/	If yes: Cooler custoo	dy seals intact? 🔀	Yes No								
Sample Custody Seals Present?	Yes No	If yes: Sample custo	ody seals intact?	Yes No								
Delivery Type: UPS												
Project:												
	plant: Wet ice Blue ice Other: NONE crmometer ID: Correction Factor (°C): Corrected Temp											
'Temperature Record	· 12.03.03.03.05·例	The latest and the la		tanakarakan, k								
colant: Wet ice Blue ice Dry ice Other: NONE ermometer ID: Correction Factor (°C): Corrected Temp (°C): Corrected Temp (°C): Corrected Temp (°C): Container Temperature Container Temperature Container Container Temperature Container Temperature Container Temp												
Date/Time Received: DATE												
City/State:												
Uncorrected Temp (°C):			1-0									
			200,000									
Container(s) used:		CONTAIL	NER 2									
Uncorrected Temp (°C):		,										
Corrected Temp (°C):												
Exceptions Noted	建筑等等有 。	Marin Standsun eine eine	STREET STREET									
NOTE: If yes, contact PM before proce	eding. If no, procee	d with login										
Additional Comments		Carry as a standard to the control of the control o		UK (1981-1975-1975)								
Cooler Custody Seals Present?												
Corrected Temp (°C): Container Temperature Container (°C): Container Temperature Container (°C): Container Temperature Container (°C): Container Temperature Container (°C): Container (

Document: CF-LG-WI-002

Revision: 25 Date: 06/17/2019

Eurofins TestAmerica, Cedar Falls

General temperature criteria is 0 to 6°C Bacteria temperature criteria is 0 to 10°C

Environment Testing

Seurofins

arrier Tracking No(s)

Chain of Custody Record

Eurofins TestAmerica, Cedar Falls

Cedar Falls, IA 50613 Phone: 319-277-2401 Fax: 319-277-2425

3019 Venture Way

Him Fluoride Q - 142503 R - 142503 S - 142604 T - 175P Dodecehydrate U - Acetone W - JPH 4-1-5 Z - other (specify) Fluoride only for 311A for 30¢ For 707 Lithium only for 30 Special Instructions/Note: table included O - AsNaO2 P - Na2O4S Sample Company Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) Cotal+ only ONLY 310-61984-18087.1 reservation Codes E - NaHSO4 F - MeOH G - Amchior H - Ascorbic Acid Page: Job#: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid See 26 Coba 6 be 1 Total Number of containers Date/Time: 7/09/12 State of Origin. Date/Time: Disposal By Lab Analysis Requested Cooler Temperature(s) °C and Other Remarks Special Instructions/QC Requirements sandra.fredrick@eurofinset.com Return To Client × COSON - Metals (Co. LI) 9056A_ORGFM_28D - Fluoride eceived by. Received by: 9056A_ORGFM_28D - Chloride, Fluoride & Sulfate Fredrick, Sandie 6020A - Metals (5) Time SCS EAS E-Mail: BTrTissue, AmAir Matrix Water Water Water Water Water company -250-9985 Adam Watron Radiological Type (C=comp, Sample G=grab) 1500 2045 Sample 1915 2/6/21 1805 7/7/21 1225 7/6/21 1945 Date: ∞ Unknown 6/8/2021 TAT Requested (days): Due Date Requested: 00 Sample Date 7/6/21 7/6/21 25221072 WO#: Project #: 31011020 Jate/Time: Poison B Skin Irritant Deliverable Requested: I, II, III, IV, Other (specify) 608-224-2830 Valton Custody Seal No Froject Name. Ottumwa Generating Station - 25221072 Flammable Possible Hazard Identification mbiodgett@scsengineers.com Empty Kit Relinquished by: Relinquished by Adum Custody Seals Intact: △ Yes △ No Client Information Sample Identification Client Contact: Meghan Blodgett Non-Hazard 2830 Dairy Drive SCS Engineers elinquished by: Field Blank MI, 537 18 MW-311A Madison MW-310 state, Zip: MW-306 MW-307 hone:

Ver 11/01/2020

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Revised: February 12, 2008

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GROUNDWATER SAMPLING REQUEST

				Measure		Discharge							Analytical Parameters	cal Para	meters	
List wells in sampling order	Collect	Slug	Pump	TOC	Will well bail dry?	Water to: (see codes below)	GRO	DRO	V0C	PVOC	Diss. Pb.	Nat. Atten. (see below)	WDATCP Pest.	8151 Pest.	8151 NO ₂ +NO ₃ & Pest. NH ₃	Other Parameters
Field Blank																Cobalt lithium & fluoride
Rinsate Blnk																
Field Dup.																
MW-301																
MW-302																
MW-303								-11								
MW-304																
MW-305								l/y/								
MW-306	×				h											Cobalt only (total)
MW-307	×						H									Cobalt only (total)
MW-308																
MW-309																
MW-310	×															Lithium only (total)
MW-311																
MW-305A				į												
MW-310A																
MW-311A	×															Fluoride only (total)
					ě											

Abbreviations:

\$5 = on-site sanitary sewer (prior approval required)

\$05 = on site (clean water)

BW = barrel water and leave on site

WWTP = transport to WWTP (prior approval required) NA parameters include; NO₂ & NO₃-N, SO₄, Dissolved Fe, D.O., and pH

I:\25221072.00\Data and Calculations\Field Work Requests\OGS_Field_Work_Request_2107.docx

Client: SCS Engineers

Job Number: 310-210533-2

Login Number: 210533 List Source: Eurofins TestAmerica, Cedar Falls

List Number: 1

Creator: Watkins, Allison R

oreator. Watkins, Allison K		
Question	Answer	Comment
Radioactivity wasn't checked or is = background as measured by a survey meter.</td <td>N/A</td> <td></td>	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	

Table 1. Groundwater Monitoring Results - Field Parameters Ottumwa Generating Station / SCS Engineers Project No. 25221072.00 July 2021

Sample	Date/Sample Time	Groundwater Elevation (amsl)	Temperature (Deg. C)	pH (Std. Units)	Dissolved Oxygen (mg/L)	Specific Conductivity (µmhos/cm)	ORP (mV)	Turbidity
MW-306	7/6/2021 - 19:15	661.87	14.3	7.44	0.33	1,357	119.2	1.37
MW-307	7/6/2021 - 20:45	647.03	13.2	7.05	0.21	1,705	14.7	17.91
MW-310	7/6/2021 - 18:05	639.32	13.0	8.23	0.21	1,852	88.6	0.00
MW-311A	7/7/2021 - 12:25	642.38	14.2	8.19	0.42	3,381	80.8	0.00

Abbreviations:

mg/L = milligrams per liter amsl = above mean sea level NA = Not Analyzed

NM= Not Measured

Notes: none

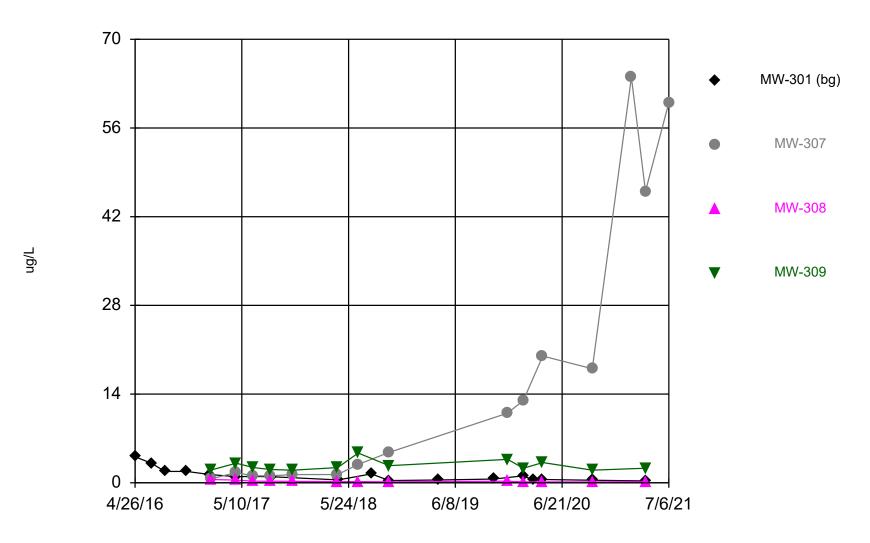
 Created by: NDK
 Date: 7/20/2021

 Last revision by: NDK
 Date: 7/20/2021

 Checked by: JR
 Date: 7/20/2021

Appendix B CCR Well Trend Plot

Cobalt



Time Series Analysis Run 8/10/2021 9:18 AM View: OGS - ZLDP
Ottumwa Generating Station Client: SCS Engineers Data: OGS_CP_Export_201122

Time Series

Constituent: Cobalt (ug/L) Analysis Run 8/10/2021 9:19 AM View: OGS - ZLDP

	MW-301 (bg)	MW-307	MW-308	MW-309
4/26/2016	4.1			
6/23/2016	3.1			
8/10/2016	1.8			
10/26/2016	1.8			
1/18/2017	1.3			
1/19/2017		0.62 (J)	0.52 (J)	2
4/19/2017	0.97 (J)			
4/20/2017		1.6	0.43 (J)	3.1
6/20/2017	1 (J)			
6/21/2017		1.1	0.25 (J)	2.4
8/21/2017		1.1	0.26 (J)	2.1
8/23/2017	0.96 (J)			
11/8/2017		1.3	0.23 (J)	2
4/16/2018		1.3	0.18 (J)	2.4
4/18/2018	0.46 (J)			
6/28/2018		2.9	0.19 (J)	4.7
8/14/2018	1.4			
10/16/2018	0.36 (J)	4.8	0.15 (J)	2.7
4/8/2019	0.44 (J)			
10/24/2019	0.6			
12/11/2019		11	0.26 (J)	3.7
2/5/2020	1.1	13	0.14 (J)	2.3
3/12/2020	0.43 (J)			
4/14/2020	0.52	20	0.14 (J)	3.2
10/7/2020		18	0.14 (J)	2
10/8/2020	0.41 (J)			
2/23/2021		64		
4/14/2021	0.29 (J)	46	0.16 (J)	2.3
7/6/2021		60		

Appendix C Regional Geologic and Hydrogeologic Background Information

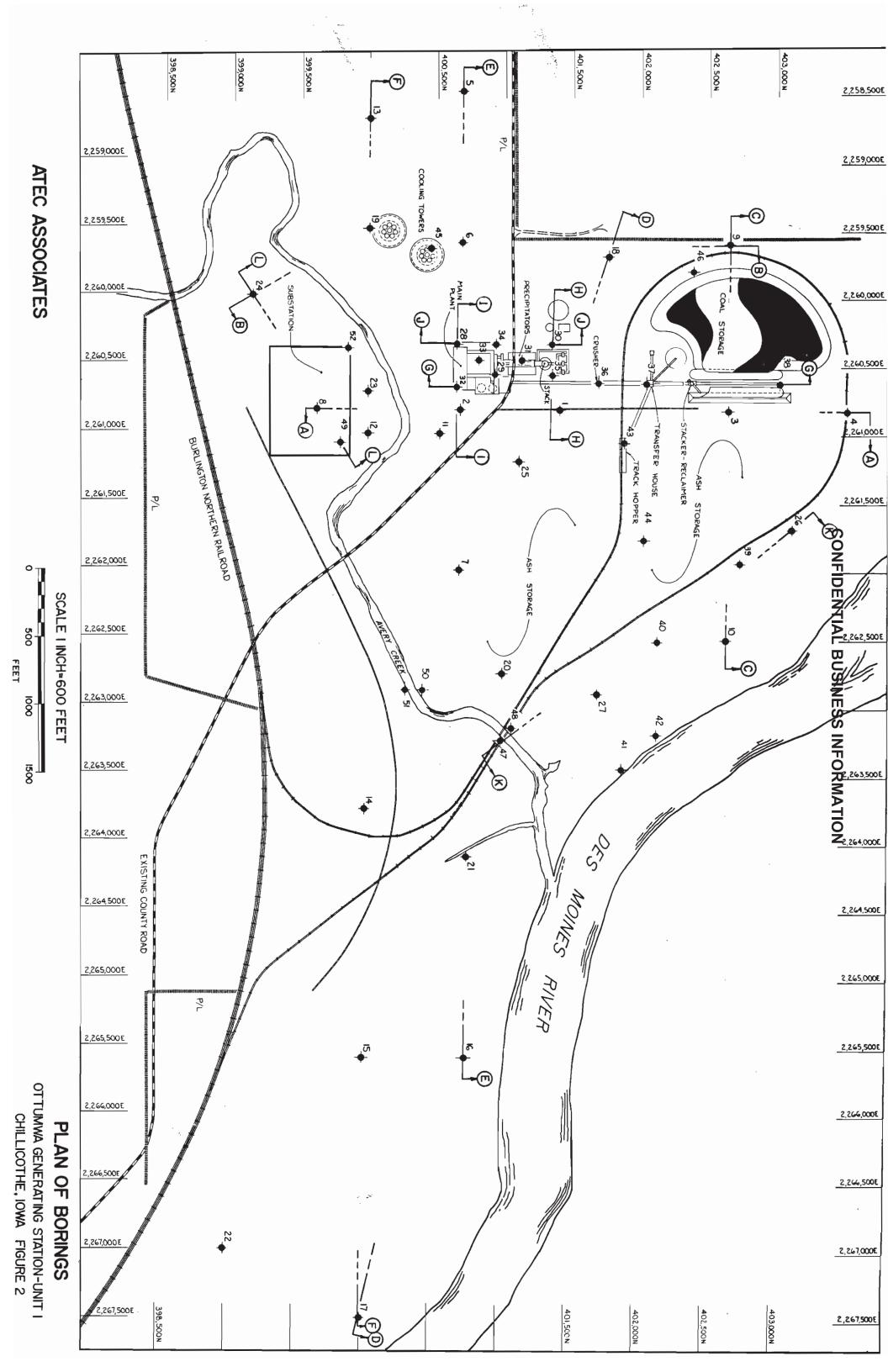
Table OGS-2. Regional Hydrogeologic Stratigraphy Ottumwa Midland Landfill / SCS Engineers Project #25215053.01

Age of Rocks Quaternary (0-1 million years old) Pennsylvanian (180 to 310 million years old) Mississippian (310 to 345 million years old) Devonian (345 to 400 million years old) Silurian (400 to 425 million years old) Ordovician (425 to 500 million years old) Cambrian (500 to 600 million years old) Precambrian (600 million to 2 billion + years old)	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Type of Rock
	Surficial Aquifers • Alluvial • Buried-Channel • Drift	0 to 320	Undifferentiated	 Sand, gravel, silt, and clay Sand, gravel, silt, and clay Till (sandy, pebbly clay), sand, and silt
	Aquiclude	0 to 370	Undifferentiated	Shale, sandstone, limestone, and coal
	Mississippian Aquifer • Upper		St. Louis Spergen	Limestone and sandstone Limestone
(310 to 345 million	• Lower	0 to 600	Warsaw Keokuk Burlington Hampton Starrs Cave	 Shale and dolomite Dolomite, limestone, and shale Dolomite and limestone Limestone and dolomite Limestone
	Aquiclude	0 to 425	Prospect Hill McCraney Yellow Spring Lime Creek	Siltstone Limestone Shale, dolomite, and siltstone Dolomite and shale
•	Devonian Aquifer	110 to 420	Cedar Valley Wapsipinicon	Limestone and dolomite Dolomite, limestone, shale, and gypsum
Quaternary (0-1 million years old) Pennsylvanian (180 to 310 million years old) Mississippian (310 to 345 million years old) Devonian (345 to 400 million years old) Silurian (400 to 425 million years old) Ordovician (425 to 500 million years old) Cambrian (500 to 600 million years old) Precambrian (600 million to 2	- Devolitali Aquitei	0 to 105	Undifferentiated	• Dolomite
(425 to 500 million	Aquiclude	150 to 600	Maquoketa Galena Decorah Platteville	 Dolomite and shale Dolomite and chert Limestone and shale Limestone, shale, and sandstone
years ora;	Cambrian-Ordovician	750 to	St. Peter Prairie du Chien	Sandstone Dolomite and sandstone
	aquifer	1,110	Jordan St. Lawrence	Sandstone Dolomite
(500 to 600 million	Not considered an aquifer in southeast	450 to 750+	Franconia Galesville Eau Claire Mt. Simon	 Shale, siltstone, and sandstone Sandstone Sandstone, shale, and dolomite Sandstone
(600 million to 2	lowa			Sandstone, igneous rocks, and metamorphic rocks

^{*}This nomenclature and classification of rock units in this report are those of the lowa Geological Survey and do not necessarily coincide with those accepted by the U.S. Geological Survey.

Source: "Water Resources of Southeast Iowa," <u>Iowa Geologic Survey Water Atlas No. 4</u>.

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CONFIDENTIAL BUSINESS INFORMATION

Ottumwa Generating Station-Unit 1 Chillicothe, Iowa

N 400,675 BORING METHOD: HSA DATE: 5-30-75 LOCATION: E 2,262,000 ⊗ Unconfined Compressive Strength, TSF STANDARD DEPTH PENETRATION BLOWS/6 In. 3-6 in. INCREMENTS DEPTH SCALE, O Natural Dry Density, PCF STRATUM (FT. SHELBY 90 100 110 120 130 ☐ Water Content, % @ Plast. Lim., % 2 Liq. Lim., % 20 30 Standard Penetration, Blows/Ft. SURFACE ELEVATION- 676 4 6/7 25 Dark Brown moist stiff SILTY CLAY 2.5 6 7/9 25 Brown moist stiff SILTY CLAY (CL) 5 3 5/7 L00 3/5 90 约 -medium stiff 10 100 90 11/12 (F) -very stiff 15 100 -very stiff 9/18 (1) (b) Brown very moist soft SILTY CLAY 9.0 (CL) w/trace Sand 2/50 100 20 Brown wet soft SANDY CLAYEY RC 1 SILT (ML) RQD 96 Gray fine grained LIMESTONE w/ 18 several partings and Glauconitic 25 Clay seams with Limestone rock RC 2 fragments RQD 66 **28.**7 Gray SANDY LIMESTONE \$0.3 30 RC 3 Gray LIMEY SANDSTONE RQD 76 42 \$4.5 35 Gray fine to medium grained friable Quartz SANDSTONE with partially RC 4 filled vugs ROD 100 38 40 RC 5 RQD 92 20 45 COMPLETION DEPTIA: (cont'd on next page) NOTED ON RODS FT. GROUND WATER: AT COMPLETION ET. ROCK CORE DIAMETER: 2 1/8" AFTER HRS.

CONFIDENTIAL BUSINESS INFORMATION

Ottumwa Generating Station-Unit 1 Chillicothe, Iowa

N 400,675 BORING METHOD: **HSA** DATE: 5-30-75 LOCATION: E 2,262,000 ⊗ Unconfined Compressive Strength, TSF STANDARD STRATUM DEPTH FT. PENETRATION TUBE DEPTH SCALE, BLCWS/6 in. 3-6 in. INCREMENTS O Natural Dry Density, PCF SHELBY 110 100 120 130 □ Water Content, % 🛛 Plast. Lim., % 💆 Liq. Lim., % 20 9 Standard Penetration, Blows/Ft. SURFACE ELEVATION-20 40 50 10 Gray fine grained LIMESTONE with Stylolites RC 6 -irregular clay fillings 97 RQD 48.5 to 49.5' 55 56 -chert nodules at 52.0, 52.3 and 59.5' -lenses of shale at 55.0 and 55.9 50.3 60 Note: Piezometer installed at 20.0' 65

COMPLETION DEPTH: 60.31 POCK CORE DIAMETER: 2 1/8"

GROUND WATER:

NOTED ON RODS AT COMPLETION AFTER

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FΈ,

CONFIDENTIALE BUSINESS INFORMATION

Ottumwa Generating Station-Unit 1 Chillicothe, Iowa

	Chill:		ie, Iow		7114, C I	N 401,0	00	
BOR	ING METHOD: HSA DA	ΓE: 6	5 -13- 75		LOCATION:			
DEРТН SCALE, FT.	surface elevation— 658	STRATUM DEPTH FT.	SAMPLE. DEPTH BLOWS/6 in. TEX 3-6 in.	NOITE	1 O Natural Dr 90 D Water Cont	100 1 ent, % Z Plas 20 Penetration, B	3 4 F 10 120 st. Lim., % 2 30 40	130 S
- 5	Brown moist very stiff SILTY CLAY (CL) -medium stiff Brown wet loose fine to medium SAND (SP-SM) with trace Silt Gray dry hard Calcareous CLAY with LIMESTONE fragments (weathered	5.5 10.5	2 2/3 2 2 1/1	50 10 100		9 0		
- 15 - 20	limestone) Gray fine grained LIMESTONE with interbedded Glauconitic SHALE and SANDSTONE Gray fine grained SANDSTONE (loosely cemented)	14.3	50/.: RC 1 RQD 36	82				
- 25 - 30	-friable sandstone 29.0 to 31.8' -sand sized limestone frags. 31.2 to 31.8'		RC 2 RQD 17	77				
35	White LIMESTONE with irregular Clay Filled seams White fine grained massive LIME- STONE with Stylolites	31.8	RQD 95	99				
- 40	Gray fine grained massive LIMEY SANDSTONE		RC 4 RQD	100		1.		
1	COMPLETION DEPTH: 40.01 ROCK CORE DIAMETER: 1 7/8"		<u> </u>	erou	ND WATER:	NOTED OF AT COMPL AFTER	0	.0 FT. FT. FT.

CONFIDENTIAL BUSINESSINFORMATION

Ottumwa Generating Station-Unit 1 Chillicothe, Iowa

N 402,725

BOR	ING METHOD: HSA DA	TE:	10-	-3-75		LOCATIO		402,7: 2.261				
		1		STANDA	RĐ	⊗ Unconf				TSF		Ammer.
:, FT.		DEPTH	1	ENETRA.		1			3	4	5	U8E
SCALE,		\ \overline{\ove	ui-	BLOWS/6 in. 3-6 in. NOREMENTS	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	O Natural				20 1	ı	h
150		15F	SAMPLE	S/6	ÆR	□ Water C		l			Lim.,%	SHELBY.
DEPTH		STRATUM FT.	SA	Δ φ φ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ γ	ECOVER	10 & Standa				0	50	T,
Ö	SUPFACE ELEVATION- 654	U)	1	7 295	G.	10				10 5	50	
	Dark Gray medium stiff CLAY(CH)		22	3	100	{					{	
	w/trace organic material	1		$\frac{3}{3/5}$		9		_ C	3	ļ		-
ļ				3	100	0:		GA GA			8 23	
- 5	,*	1	i.	$\frac{3}{4/4}$	1200	- 5			<u> </u>			
		1		$\frac{2}{3/4}$	100			ت ا		1	}	١
		}		3/4					l		1	
- 10		10.	5	$\frac{3}{3}/5$	100	- 59			3			
10	Dark Gray soft to very soft SILTY	-			 75	1 71						-
	CLAY(CL) with trace Sand and fine		Water.	2/3	'] / i						1
	Gravel	1	7	1	75	0/		Eat		2 83		and or an
- 15		15.	5	$\frac{1}{1/2}$, ,	6						-
	Dark Gray wet loose to medium dens SILTY SAND(SM)w/some f-m Gravel	J27-1		3/21			~			-		
	Light Gray very moist very dense	LE	9	100/.3	100							Ĭ
- 20	SILTY SAND (SM-ML) w/soft Rock frac (calcareous)	1/\\			ļ							
20	(calcareous)	+77	H		l							
		1										
	Note: Auger refusal at 18.0 ft	1	{{									
 -	Auger Terusar at 10.0 ft	1	H		1							-
		1	$\ $			1						
-		}	П		1							
		}	$\ \cdot\ $		ĺ	}			l			
		1	H				·					i
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		}	$\{\}$		}	} }			}			
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-		}	H		l	l —			<u> </u>			1
-												
												-
								1-				
	·										l	
	COMPLETION DEPTH: 18.0		ړ. ل	R. WHITE CO. THE REP. AND			NO	TED ON	RODS	15.0	immerson Ff.	, ž.
	ROCK CORE DIAMETER:			C	ROU	ND WATER	R: AT	COMPLE TER			FT. FT.	İ
Commy Stee C	NY SITY NO THAN TO THE PROTECT OF TH	-	· Auto		TERRITO - BAR	Paraueus kandinasis Mi	7-11-11-11-11-11-11-11-11-11-11-11-11-11	E C. P.	11170°	THE BOLD AND THE	ರ ನಿರ್ಮಾತ ಚಿತ್ರವಾಗಿ ಪ	,traffee

CONFIDENTIAL BUSINESS INFORMATION

Ottumwa Generating Station-Unit 1 Chillicothe, Towa

N 402,130

BOR	ING METHOD: HSA	DAT	E:]	.0-	3-75		LOCATIO		2,260				
FT.			E		TANDA NETRA		1		mpressive				bi
E, F			DEPTH	<u> </u>		%	O Natura	L	2 Insity, PCF	3	4	5	TUBE
DEPTH SCALE,			STRATUM PT.	걆	6 in.	COVERY,	9	0 3	100 1	10	120	130	≿
TH			RAT	SAMPL	WS/ in. REM	O VE	□ Water (0	20 3	30	40	q. Lim., 50	% HE
d3O	surface elevation— 652		ST	5	BLOWS/6 In. 3-6 in. INCREMENTS	л О	@ Standa		tration, BI	ows/FL 30	40	50	
	Dark Gray moist stiff CLAY(CH)	547 /			***	CANTE MARKET		A CONTRACTOR OF STREET		-	**************************************	Company of the same of the	F-100000 - 10
	trace organic material	**/			$\frac{2}{4/7}$	75		9		9	-		
	-medium stiff			le si	3	75	0	ø		0			
5				i.	3 4/6	"		- 5	4	C)			ව 🖯
					8 ⁵ 11	100			B	1			
			9.0			<u> </u>					-	-	į.
- 10	Dark Gray very moist loose SANL	У	11.0		$\frac{3}{3/4}$	100	•		0	ļ			
	SILT(ML) v/trace Clay			f I	4 4/5	100	/						
	Brown wet loose to medium dense	2			4/5					Ì	-	1	
- 15	fine to medium SAND (SP) with trace Silt				4 9/8	1.00		19					
	oraco pric			i I		75							
	-trace coarse sand		ា្រ ខ 	4	6/7	1		6	-	-			
- 20	The state of the s			5	0/.3	0						_	-6
20	Note: Piezometer installed at									-			
	18.5 ft										-		
]			
-				Н		l l					_		
											-	1	
-				Ц									
]			1	-		-	
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-							'				1		
						}					}		
											}		
-				H					ļ				
										. 21. MARKET D.C.E.O.	BARONAL AND DESAU SAM	H COST HERMING	- CON 1710
20 A 100	COMPLETION DEPTH: 18.81				C	ROU	ND WATE		OTED ON T COMPLI		12.0		ľ, T,
B	GROUND WATER: AT COMPLETION FT. ROCK CORE DIAMETER: AFTER HRS. FT.												T.

CONFIDENTIAL BUSINESS INFORMATION

Ottumwa Generating Station-Unit l Chillicothe, Iowa

N 402,020

BORING METHO	DD: HSA	DAΤΕ	: 1	.0-7-75		LOCATIO		402,02 2,261,			
DEPTH SCALE, FT.	ELEVATION- 662		STRATUM DEPTH FT.	SAMPLE. DEPTH. BLOWS/6 in. 3-6 in. INCREMENTS	RD	⊗ Unconf 1 ○ Natural 90 □ Water C 10 G Standa	Dry Den Ontent, % 2 ontent, %	npressive: sity, PCF 0 11 c & Hast 0 3 ation, Bid	Strength, 3 / 10 1: . Lim., % 0 4	4 5 20 13	0 HS
stiff -5 Brown	Gray slightly moist very SILTY CLAY (CL) moist stiff SANDY CLAY(Comoist med.dense fine SANDA	CISC	<u>6•5</u>	5 9/6			# D D	00			
SAND Brown SW-SC Brown	wet loose fine to medium (SP) w/trace Silt -very loose wet very loose CLAYEY S/ C) w/little fine to med.(very moist med.stiff CLA (L) w/tr.Sand & fine Gvl	AND GVl _I	3.0 5.5	2 2/2				O			
Brown - 20 (ML) Dark G with t	wet very loose SANDY SI	CL-CH	4.0	272 272 34 25/16						•	
Gray v SAND(S -30 Note:	very moist very dense fir (SP) w/trace Silt (SP) w/trace Silt (SP) solution 23.5 to 25.0' coulder	ne /	6.3	307.2							
* Cave	ed to 11.8 ft at completi	ion									
COMPLETIO	ON DEPTH: 26.3		parameter complete.					TED ON		10.5	
ROCK COR	E DIAMETER:	· Caller	e Telev	G Section and the section of the sec	ROU	ND WATE		COMPLI TER	TTION HRS.	8.2	FT. *

CONFIDENTIAL BUSINESS INFORMATION

Ottumwa Generating Station-Unit 1 Chillicothe, Iowa N 401,070

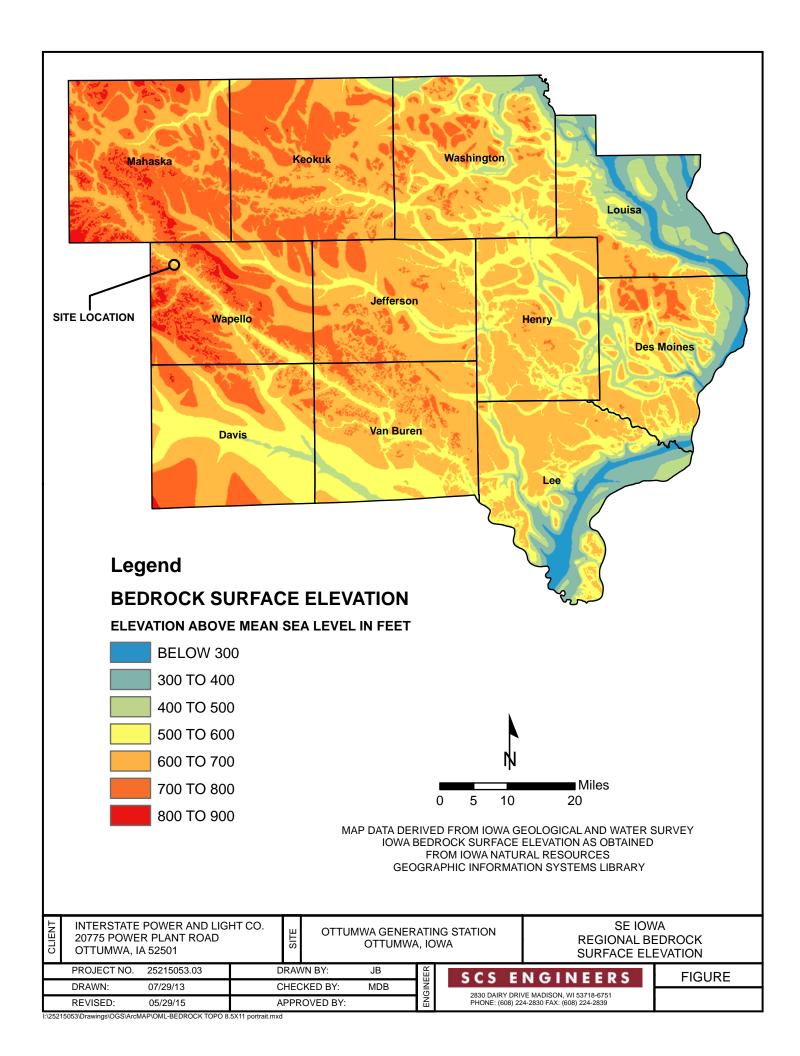
	CHILL							401,07			
BOR	ING METHOD: HSA DAT	E: 10	d wan	7-75		LOCATIO				TSE	
E, FT.		DEPTH		STANDA ENETRAT	% FION	O Natural	2	2	3 4		E E E
DEPTH SCAL	surface elevation— 655	STRATUM FT.	SAMPLE	BLOWS/6 In. 3-6 In. INCREMENTS	RECOVERY,	90 Water C 10 Standa	Content, % 2 ard Perieti	6 & Plast 0 3 ation, Di	0 4	g Liq.L 0 5	.m.,%
	Dark Gray to Brown moist stiff CLAY (CL-CH)		The second	6 6/7	1.00	in the second	6			. 720	
- 5		 		7/10 5 8/7	100			a a			
- 10		10.5		4/8	100	@	6	0			
- 15	Brown moist loose SILTY fine SAND (SM) -wet below 13.0'	15.5	Card Bridge	2 4/6 0 1/1	75 50		\$				
	Dark Gray very moist soft CLAY (CH)	18,5		1/3	50	0		æ	[[)	ស
- 20	Dark Gray wet very loose SILTY fine SAND (SP-SM)	21.0		1/4 50/.2	50 50	<u></u>		-			
- 25	Gray very loosely comented fine grained LIMEY QUARTZ SANDSTONE -friable below 27.9' -limestone fragments 30.3 to 31.1 -white fine grained limestone w/	 -		RC 1 RQD 0	33						
- 30	irregular clay filled seams 31.1 to 31.8'	31.8	3	RC 2 RQD 38	100						
- 35	*Caved to 12.1 ft at completion				- 						
						ger i seminari pau i filia i i i i ini		,.			and the second s
	COMPLETION DEPTH: 31.8' ROCK CORE DIAMETER: 2 1/8"	ern dense.	11	r Japan errege render Gara inn	GROU	ND WATE	R: AT	TED ON COMPL TER	RODS ETION HRS.	13.0 12.1	FT. *

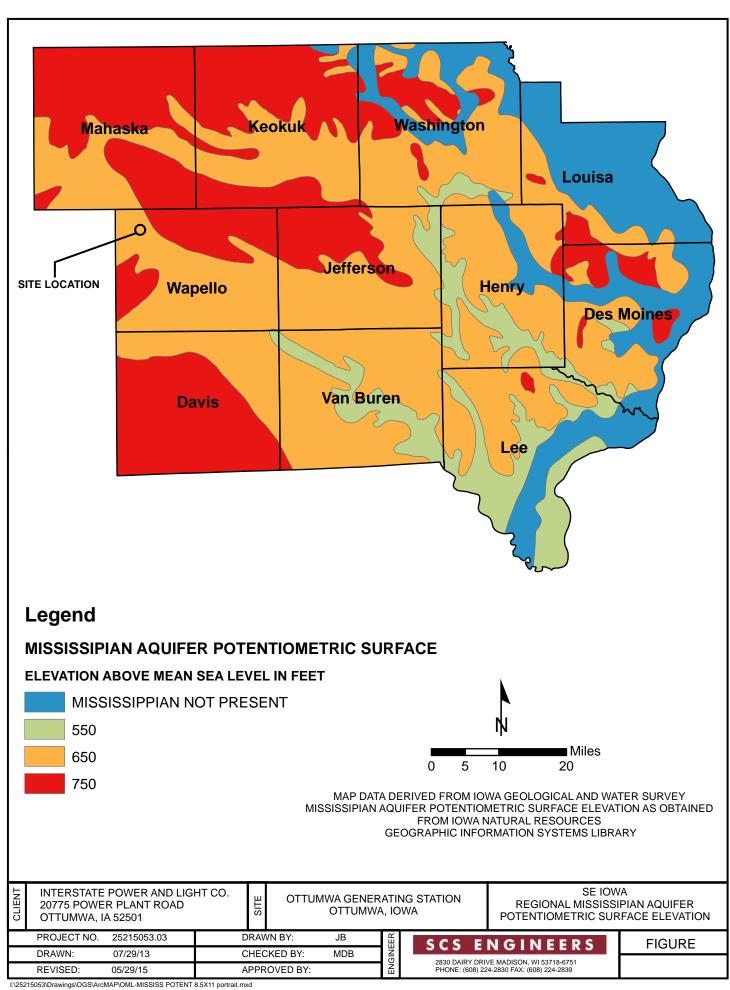
CONFIDENTIAL BUSINESS INFORMATION

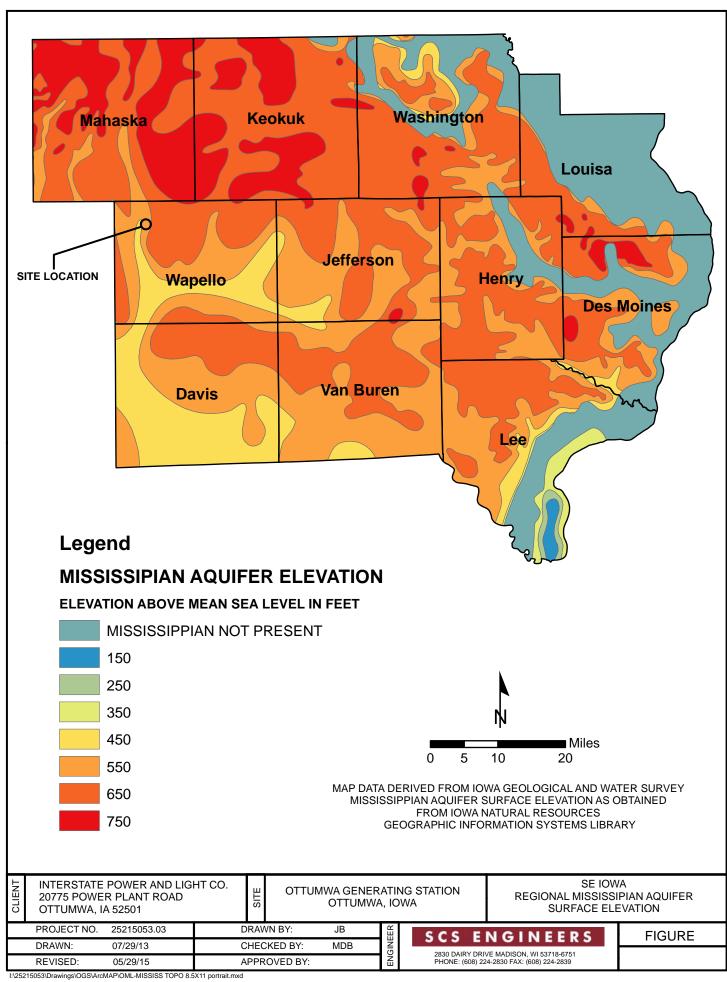
Ottumwa Generating Station-Unit 1 Chillicothe, Iowa

N 400,410

BOR	ING METHOD: HSA DA	TE:]	10	-8-75		LOCATIO		400,4				
٦.	Ministra Companies and an arredon property on a management of the Party Companies and the American		T	STANDA	RĐ	⊗ Uncent				ih, TSF	19 19 Tonas	
		DEPTH	+	PENETRA.	,ç	O Natural		nsily, PCF	3	4	1	- 1
SCAL			Li.	6 in.	, ∀	90 Water C	-			120	130	>
DEPTH SCALE,		STRATUM FT.	SAM	ELOWS/6 In. 3-6 In. INCREMENTS	ECOVERY,	10)	20 :	30	40	50 50	, %
Ü	surface elevation— 654	122	الم	19 PE	C.	() Standa		tration, B 20	lows/Ft. 30	40	50	
	Dark Gray slightly moist very stiff CLAY (CL-CH)											
- 5		6.0		9 10/13	100			10				-
	Gray and Brown (mottled) moist stiff SILTY CLAY (CL)											
- 10		11.	5	6/7	100		8 5		,	-		
	Dark Gray very moist medium stiff CLAY (CL) with trace Sand	-		2	75							
- 1.5				3/3	/5		n draw (Mills annialise) (
20	-soft			2/2	75				0 _			
	5010			2/1.				1/3				
- 25	Light Gray slightly moist very dense SANDY SILT(ML-SM) (calcareous)	24.	П	18 50/.5	75					_	+	~
	White friable fine grained Quartz			RC 1	55							
- 3 0	-limestone fragments 24.5 to 25.3			36						_		
	White fine grained LIMESTONE -clay fillings 32.0-33.5'	32.0		RC 2 ROD 92	100							
- 35	*Caved to 18.4 ft at completion	7.3.	, _									
-												
								,:				
	The second secon	AT LUMBBOOK N. V. W.		Sanggrigans (Alexandra) Sandak (Alexandra)		A state of a second second second	ر المساود الله المساود الدينة المساود الدينة المساود الدينة المساود الدينة المساود الدينة المساود الدينة المسا	m. Schwassen, samena	A LOW BLU THE REPORT IN	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	and the second	Industry 1
	COMPLETION DEPTH: 34.5 ROCK CORE DIAMETER: 2 1/8"			(3ROU	ALY MALE	R: A	OTED ON T COMPL FTER		14.8	* [FT. FT.







Appendix D

Boring Logs

	ENG nment			and Conti	ractors					8	OIL	BOR	ING	LOC	G IN	FOR	RMA	ATION
			Ro	oute To:	Watershed/V	Wastewater	Waste	Manage	ement									
					Remediation	n/Redevelopment	Other											
																1 c	of	1
	y/Proje			nating C	tation	CCC# 25215125 40	License/	Permit/	Monito	ring Nu	ımber		Boring	Num		ΛW-	30	1
				rating S	ief (first, last)	SCS#: 25215135.40 and Firm	Date Dr	illing St	arted		Da	ate Drill	ing Co	nplete				ng Method
	ld Scl																	/4 hollow
Cas	cade e Well	Drilli No.	ng	DND V	Well ID No.	Common Well Name	Final Sta)/2015		Surfac	e Eleva	11/10,	2015		Roral		m auger Diameter
Omqu	e wen	INO.		DIVIN	Well ID No.	MW-301	Tillal Sta	Fe		1	Surrac		.3 Fe	et		Dorci		.5 in
	Grid O	rigin				oring Location 🖂	I.	at	0	1	"	Local (Grid Lo	cation				
State NW		of S		1,077 N, 1/4 of Sect	1,899,709 tion 26,	DE S/C/N T 73 N, R 15 W			0	,			Eas	t 🗆				Eeet W
Facilit		101 3	VV		County	1 /3 N, K 13 W	Lon		Civil T	own/Ci	ty/ or	l Village	ree		<u> </u>		r	reet 🗀 w
-		,			Wapello				Ottur	nwa								
San	nple												Soil	Prop	ertie	S		
	% : (ii)	ıts	eet			Rock Description												
er ype	h Att ered	Cour	In F			eologic Origin For		S	i.	l m	6	ard ation	ure	_	sity			ents
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		Ea	ich Major Unit		SC	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid I imit	Plasticity	Index	200	RQD/ Comments
<u> </u>	L M	<u> </u>	E	TOPSO	IL.			D	117 1		Ь	N P	20		1 4	=	Ь	<u> </u>
			E ₁					OPSO	2.37									
			Ē	SANDY fine.	SILT WITH G	RAVEL, gray (7.5YR 6/1), g	ravel is											
			-2															
			_3															
			E_4					ML					-					
п			F 4					IVIL										
		١.,	_5															
S1	10	woh 1	E 6										W					
Ш			Ē															
П			<u>-7</u>	WEATH	HERED SANDS	TONE, very weak, light gray blor very dark gray 910YR 3/	matrix			1 🖹								
S2	13	24 50	<u>-</u> 8	massive	scondary co	olor very dark gray 910 f K 3/	1),						W					
			Ē,															
			<u>-9</u>															
			-10															
S3	5	50	E_11				SA	NDST)NE				W					
Ш			E															
П			12															
S4	6	50	13										W					
- '			Ė															

Endo of Boring at 15 feet bgs.

Signature For Kyle Krame

Firm SCS Engineers 2830 Dairy Drive Madison, WI 53718

Tel: (608) 224-2830 Fax:

W

T	C 1	1 0
Hazaronmental	Concultante	and Contractors

			Ro	oute To:		astewater	Waste N	_	ement								
					Remediation	Redevelopment	Other										
Facilit	y/Proje	at Man					T : //		N ()		- 1		D :	Pag		of	2
				ating St	ation	SCS#: 25216148.00	License/I	ermit	Monito	ring Ni	ımbe	er	Boring	Numbe		V-30	7
Boring	Drille	d By:	Name o	f crew ch	ief (first, last) a		Date Dril	lling St	arted		I	Date Drilli	ing Con	npleted	1717		ing Method
	e Mu							10/0/									~ .
Uniqu	cade l e Well	Drilli No	ng	DNR V	Well ID No.	Common Well Name	Final Sta		5/2016		Surf	ace Eleva	10/25/	2016	Ro	HS	SA Diameter
Omqu	o won			Bivic	ven ib ive.	MW-307	I mai Sta	Fe		J1	buil		.1 Fee	et	100		.5 in
	Grid O	rigin			or Bor		T ==	4	0	1		" Local C	Grid Loc				
State NE		of S		,/0 / N, /4 of Sec	1,903,070 tion 26,	E S/C/N T 73 N, R 15 W	La		0	,		-	Foot	□ N □ S		1	☐ E Feet ☐ W
Facilit		01 13	L ,		County	1 /3 N, K 13 W	Long		Civil T	own/C	ity/ o	r Village	reet	<u> </u>			reet 🗆 w
					Wapello				Ottur								
San	nple												Soil	Prope	rties		
	. & (in)	ıts	eet			ock Description											
er /pe	ı Att ered	Cour	In F			cologic Origin For		S	ပ	E		rd	ire it		ity		ents
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet		Eac	ch Major Unit		SC	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
Z is	L. R	B	ļ Ā	POORI	Y GRADED SAN	ND WITH GRAVEL, tan, fi	ine to	ר	5 3	M K	=	St	Σŏ	E E	P n	<u>Д</u>	<u> </u>
			Ė.	coarse s	and and gravel, (o	construction fill sand to fill	in										
			E,														
			_2														
			E														
			=3														
			<u>-</u> 4								}						
			E														
			<u>-</u> 5					SP									
			<u> </u>														
_			= 0														water level
			-7														6.5 ft bgs.
			Ė,														
п			<u>-</u> 8														
Ш			<u>-</u> 9														
S1	24	2 2 3 2	E										W				
Ш		32	-10		CLAY, dark yello	wish brown (10YR 4/4), sli	ghtly										
			E ₁₁	dense.													
			E														
			-12														
			E -13					CL									
S2	14	4 1	F 13										w				
	- '	4 4	-14										"				
			E -15														
			113		11.0												

 Firm
 SCS Engineers
 Tel: (608) 224-2830

 2830 Dairy Drive Madison, WI 53711
 Fax:

SOIL BORING LOG INFORMATION SUPPLEMENT Form 4400-122A

	g Num nple		141	<i>N</i> -307						Soil	Pag Prope		of	
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	PID/FID	Standard Penetration			Plasticity Index	P 200	RQD; Comments
			-	LEAN CLAY, dark yellowish brown (10YR 4/4), slightly dense. (continued)	CL		23							
S3	24	1224	-16 -17	SILT, dark yellowish brown (10YR 3/4), fine to medium sand.	ML					W				
54	17	3 3	-18 -19		MIL					W				Bedrock @19.5 ft bgs.
П		50/0	= 20	SANDSTONE, dark brown (10YR 3/3),										
55	5	50/0.	-21 -22							W				More competent @20.5' -24.5' bgs.
			-23 -24	,										
			-25 -26	more weathered.										
s6 =	1	100	-27 -28	Same as above except, gray (10YR 6/1).										
0	1		20	End of boring at 28 ft bgs.										
						2								

Environmental	Concultante an	d Contractors
Environmental	L onsultants and	a Contractors

	Route To:		Vastewater /Redevelopment	Waste I Other	_	ement								
											Pag	ge 1	of	2
Facility/Project Name				License/I	Permit/	Monito	ring Nu	ımber		Boring	Numbe	er		
IPL-Ottumwa Ge			SCS#: 25216148.00	D . D .	u: G	. 1		lp.	. D :11:		1.1		V-30	
Boring Drilled By: Na	ime of crew chi	ef (first, last) a	ind Firm	Date Dri	lling St	arted		Da	te Drilli	ng Con	npleted		Drill	ing Method
Mike Mueller Cascade Drilling	Ţ				10/25	5/2016	5		1	0/25/	2016		HS	SA
Unique Well No.		Vell ID No.	Common Well Name	Final Sta				Surfac	e Elevat			Во		Diameter
			MW-308		Fee	et				.9 Fee			8	.5 in
Local Grid Origin State Plane	(estimated: 402,312 N,	1 002 665	ring Location 🖂	La	t	0		.,	Local C	irid Lo				
NE 1/4 of SE	1/4 of Sect		E S/C/N T 73 N, R 15 W	Long		0	ī	"		East	□ N □ S		r	☐ E Feet ☐ W
Facility ID		County	1 75 N, K 15 W	, LOUE		Civil T	own/Ci	 ty/ or \	Village	reet	s			reet 🗆 w
	3	Wapello				Ottur			Ü					
Sample										Soil	Prope	erties		
% (iii) s	ಕ	Soil/F	Rock Description											
Att.	n Fe	And Go	eologic Origin For						dion	o o		>		nts
Number and Type Length Att. & Recovered (in) Blow Counts	Depth In Feet	Eac	ch Major Unit		CS	Graphic Log	l gran	PID/FID	ndaro	stur	nid it	ticit	200	D/ nme
Number and Type Length At Recoverec Blow Cou	Dep				N S	Grap Log	Well Diagram	PID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 2(RQD/ Comments
S1 24 19 4 2 2 =	-1 coarse sa hydrovad		OYR 4/3), dense.		SP					W				water @ 6.5 ft bgs.
<u> </u>	-14				ML									

Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711

Tel: (608) 224-2830

Fax:

SOIL BORING LOG INFORMATION SUPPLEMENT Form 4400-122A

Environmental Consultants and Contractors

Borin	g Num	ber	MV	V-308								Pag	e 2	oſ	2
Sar	nple										Soil	Prope	rties		
	in)		1 43	Soil/Rock Description											
	tt.	unt	Fee	And Geologic Origin For						on		<u> </u>			ts t
ype	h A	ပိ	In	Each Major Unit	S	iic		am	1	ard	ure	-	city		nen
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Each Major Offit	S	Graphic	Log	Well	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
a Z	L W	B	Ď		Þ	5	Lc	W C	PI	St	Σö	I I	Pl	Д	<u>× × × × × × × × × × × × × × × × × × × </u>
			E	SILT, brown (10YR 4/3), some clay. (continued)	ML										
S 3	18	1213	_16				Щ				W		8		
55	10	1 3	E	SILTY SAND, brown (10YR 4/3).	SM		Ц				**				
			-17	POORLY GRADED SAND, brown (10YR 4/3), fine grained.	ap.										
			E		SP										
			-18	WELL CRANED SAND AND CRANEL duel conside		0 0 0	• •								
S4	13	4 12		WELL GRADED SAND AND GRAVEL, dark grayish brown (10YR 3/2), fine to coarse grained, (weathered	SW	000	000				W		-	1	
		13 3	-19	bedrock). SANDSTONE, dark grayish brown (10YR 4/2), weathered		000	° ° °						1		
			=	bedrock.											
S5		12 26	-20	Same as above except, brown (10YR 4/3).											
S5 L	6	50/0.4	.E	Same as above except, stown (1011k 1/3).							W				
			-21												
			E		-				1	-				=-	
			-22												
			E												
			-23					i i							
			Ε										-		
			-24	Same as above except, dark grayish brown (10YR 4/2).									-		
S6	4	50/0.4	- 25								W				
20			-25	End of boring at 25 ft bgs.							.,,				=
					ŝ									5	
													-		
					3								1		
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	10														
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Environmental Consultants and Contractors

IPL-Ottumwa Generating Station SCS#: 25216148.00 Boring Drilled By: Name of crew chief (first, last) and Firm Date Drilling Started Date Drilling Completed Mike Mueller Cascade Drilling 10/27/2016 Unique Well No. DNR Well ID No. Common Well Name MW-309 Feet Surface Elevation Borehole MW-309 Feet G52.5 Feet State Plane 403,189 N, 1,902,070 E S/C/N NE 1/4 of SE 1/4 of Section 26, T 73 N, R 15 W Long ' " Feet □ S	
Facility IPO jeet Name IPL-Ottumwa Generating Station SCS#: 25216148.00 Boring Drilled By: Name of crew chief (first, last) and Firm Mike Mueller Cascade Drilling Unique Well No. Unique Well No. Unique Well No. Soll Rock Description And Geologic Origin For Each Major Unit Soll/Rock Description And Geologic Origin For Each Major Unit Soll/Rock Description And Geologic Origin For Each Major Unit Boring Number MW-30 Boring Number MW-30 Date Drilling Started Date Drilling Completed IO/27/2016 IO/27/	ing Method SA Diameter .5 in
Facility IPO jeet Name IPL-Ottumwa Generating Station SCS#: 25216148.00 Boring Drilled By: Name of crew chief (first, last) and Firm Mike Mueller Cascade Drilling Unique Well No. Unique Well No. Unique Well No. Soll Rock Description And Geologic Origin For Each Major Unit Soll/Rock Description And Geologic Origin For Each Major Unit Soll/Rock Description And Geologic Origin For Each Major Unit Boring Number MW-30 Boring Number MW-30 Date Drilling Started Date Drilling Completed IO/27/2016 IO/27/	SA Diameter .5 in
Boring Drilled By: Name of crew chief (first, last) and Firm Date Drilling Started Date Drilling Completed Mike Mueller	SA Diameter .5 in
Mike Mueller Cascade Drilling Unique Well No. DNR Well ID No. MW-309 Feet Surface Elevation 652.5 Feet Surface Elevation State Plane 403,189 N, 1,902,070 E S/C/N NE 1/4 of SE 1/4 of Section 26, T 73 N, R 15 W NE 1/4 of SE 1/4 of Section 26, T 73 N, R 15 W Sample Soil/Rock Description And Geologic Origin For Each Major Unit Borehold 652.5 Feet Surface Elevation Borehold 652.5 Feet Surface Elevation Borehold 652.5 Feet Surface Elevation County Lat Soil/Rock Description And Geologic Origin For Each Major Unit Soil/Rock Description And Geologic Origin For Each Major Unit Soil/Rock Description And Geologic Origin For Each Major Unit Soil/Rock Description And Geologic Origin For Each Major Unit Hydrovac borehole to 10 ft bgs.	SA Diameter .5 in
Cascade Drilling	Diameter .5 in
Unique Well No.	Diameter .5 in
MW-309 Feet 652.5 Feet State Plane Good Grid Origin Gestimated: Origin Origin Good Grid Origin Origi	.5 in
Local Grid Origin Cestimated: Origin Ostation State Plane 403,189 N, 1,902,070 E S/C/N Lat Ostation Cestimated: Ostation Note	□ E
Sample Sample Add I graph and Geologic Origin For Each Major Unit Soll/Rock Description And Geologic Origin For Each Major Unit Back Major Unit Hydrovac borehole to 10 ft bgs.	
Facility ID Sample Sample And Geologic Origin For Each Major Unit Each Major Unit Sample And Geologic Origin For Each Major Unit By Sample By	Feet W
Sample Sample Soil/Rock Description And Geologic Origin For Each Major Unit Solly Flower and Flo	
Sample Application Content Co	
Number and Type and T	
Hydrovac borehole to 10 ft bgs. -1 -2 -3 -4	İ
Hydrovac borehole to 10 ft bgs. -1 -2 -3 -4	
Hydrovac borehole to 10 ft bgs. -1 -2 -3 -4	ents
Hydrovac borehole to 10 ft bgs. -1 -2 -3 -4	RQD/ Comments
	<u> </u>
LEAN CLAY, very dark grayish brown (10YR 3/2), trace sand.	
S1	
S2 $\begin{bmatrix} 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 & 2 $	

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

Signature

Firm SCS Engineers 2830 Dairy Drive Madison, WI 53711

Tel: (608) 224-2830

Fax:

Boring Numl	oer	MV	V-309						1	G 11			of	2
Sample & .g	ıts	eet	Soil/Rock Description							Soil	Prope	erties		
Number and Type Length Att. & Recovered (in)	Blow Counts	Depth In Feet	And Geologic Origin For Fach Major Unit	USCS	Graphic	Log	well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
33	1 1	16	SILTY SAND, very dark grayish brown (10YR 3/2), fine to medium grained.							W				
	1 1 1 1	17		SM						vv				
4	3 5	18								W				
	3 5 4 6	19 	POORLY GRADED SAND, yellowish brown (10YR 5/4), coarse grained.							vv				
5	2 3 7 50	-20 -21		SP						W				
	7 50	22	WEATHERED SANDSTONE.							.,				
		23												
		24												
6		-25 -26								W				
		27												
			End of boring at 27.5 ft bgs.										2	
										1				

	ENG			and Contractors					i	SOIL	BOR	ING	LOG	INFO	ORM	ATION
			<u>R</u>	watershed/N Remediation	Wastewater □ n/Redevelopment □	Waste I Other	_	ement								
													Pa	ge 1	of	2
	y/Proje					License/I	Permit	Monito	ring N	umber		Boring	g Numl	oer		
IPL	-Ottu	mwa	Gener	ating Station	SCS#: 25216148.00					15					3092	
	g Drille ke Mu		Name o	of crew chief (first, last)	and Firm	Date Dri	lling S	tarted		Da	ate Drill	ing Co	mplete	1	Dril	ling Method
	cade		ng				10/20	5/2016	5			10/26	/2016		Н	SA
	e Well		***8	DNR Well ID No.	Common Well Name	Final Sta				Surfac	e Eleva		2010			Diameter
							Fe	et				Feet			8	3.5 in
	Grid O	rigin	☐ (e		oring Location 🖂	La	+	0	1	"	Local (Grid Lo				
State NE		of S	C :	N, 1/4 of Section 26,	E S/C/N			0	1	"		г				E
Facilit		01 3	E .	County	T 73 N, R 15 W	Long	3 —	Civil T	own/C	ity/ or	Village	Fee	t 🗆 :	· · · · · · · · · · · · · · · · · · ·		Feet W
	,			Wapello				Ottur		10,7 01	, mage					
San	nple									Ι		Soil	Prop	erties		
	& (ii)	,,	#	Soil/	Rock Description											
e	Att.	Blow Counts	Depth In Feet		eologic Origin For						_ uo			_		ıts
ryp Typ	gth /	Č ×	th Ir	Ea	ch Major Unit		CS	hic	l Tam	Œ	dard	sture	pi +	hicity	0)/ nmer
Number and Type	Length Att. & Recovered (in)	Blov	Dep				SO	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid	Plasticity Index	P 200	RQD/ Comments
			-1 -2 -3 -4 -5 -6 -7 -8 -9	coarse sand and gravel, hydrovac hole cleared to	ND WITH GRAVEL, tan, fi (construction fill sand to fill 9 ft bgs).	in	SP									Water at 6.5 ft bgs
S1	12	1334	11 -12 -13	SILT, dark brown (10YI	₹ 3/3), some clay.		CL					W				

Signature

SCS Engineers 2830 Dairy Drive Madison, WI 53711

Tel: (608) 224-2830

Fax:

Environmental Consultants and Contractors

Boring Number	B-309X							Pag	ge 2	of	2
Sample							Soil	Prope	rties		
Number and Type Length Att. & Recovered (in) Blow Counts	Soil/Rock Description										
er //pe h Att ered Cour	And Geologic Origin For	S	ic	am am		ard atior	ure nt		ity		nents
Number and Type Length Att. & Recovered (in Blow Counts	Soil/Rock Description And Geologic Origin For Each Major Unit	SC	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
E B R L S X	SILT, dark brown (10YR 3/3), some clay. (continued)	D		D Q	<u> </u>	NA	20		P II	Д	
S3 20 3 3 2 5	16 POORLY CRADED SAND your dark growing brown (10VP)	ML					W				
	3/2), fine grained.	SP					**		1		
	17 SILT, dark brown (10YR 3/3).	ML									
	POORLY GRADED SAND, brown (10YR 4/3).	SP									
S4 15 1 17 50/0.2							W				Bedrock at18.5 ft bgs
50/0 3							337				
S5 6 50/0.3	-20						W				
	-21										
	22										
	-22										
	-23										
	-24										
										5	
	-25										
	-26										
	End of boring at 26.5 ft bgs.									3	
								-			
				3							
									8		
								ś			
									6		

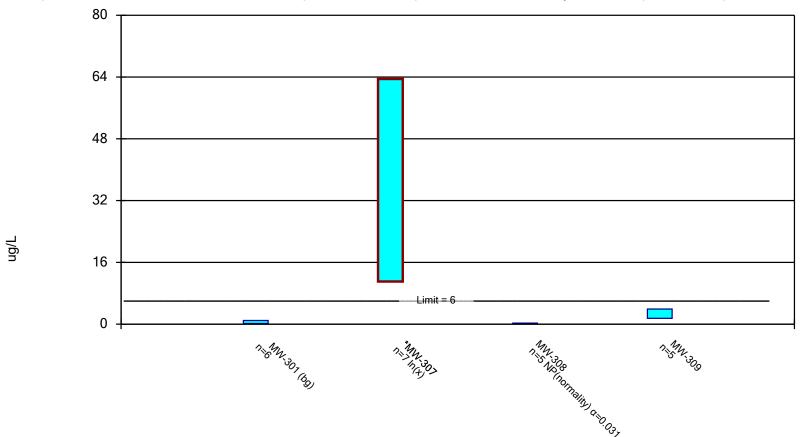
Appendix E Cobalt Lower Confidence Limit Evaluation

Confidence Interval

	Ottum	wa Generating Sta	tion Client: SC	S Engineers	Data: C	GS_CP_	Export_201	122 Printe	ed 8/10/2021, 12:24 F	PM	
Constituent	<u>Well</u>	Upper Lim.	Lower Lim.	Compliance	Sig.	<u>N</u>	%NDs	ND Adj.	<u>Transform</u>	<u>Alpha</u>	Method
Cobalt (ug/L)	MW-301 (bg)	0.9503	0.1664	6	No	6	0	None	No	0.01	Param.
Cobalt (ug/L)	MW-307	63.51	11.03	6	Yes	7	0	None	In(x)	0.01	Param.
Cobalt (ug/L)	MW-308	0.26	0.14	6	No	5	0	None	No	0.031	NP (normality)
Cobalt (ug/L)	MW-309	3.903	1.497	6	No	5	0	None	No	0.01	Param.

Parametric and Non-Parametric (NP) Confidence Interval

Compliance limit is exceeded.* Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Cobalt Analysis Run 8/10/2021 12:24 PM View: OGS - ZLDP

Confidence Interval

Constituent: Cobalt (ug/L) Analysis Run 8/10/2021 12:25 PM View: OGS - ZLDP
Ottumwa Generating Station Client: SCS Engineers Data: OGS_CP_Export_201122

	MW-301 (bg)	MW-307	MW-308	MW-309
10/24/2019	0.6			
12/11/2019		11	0.26 (J)	3.7
2/5/2020	1.1	13	0.14 (J)	2.3
3/12/2020	0.43 (J)			
4/14/2020	0.52	20	0.14 (J)	3.2
10/7/2020		18	0.14 (J)	2
10/8/2020	0.41 (J)			
2/23/2021		64		
4/14/2021	0.29 (J)	46	0.16 (J)	2.3
7/6/2021		60		
Mean	0.5583	33.14	0.168	2.7
Std. Dev.	0.2853	22.87	0.05215	0.7176
Upper Lim.	0.9503	63.51	0.26	3.903
Lower Lim.	0.1664	11.03	0.14	1.497

Appendix F Ash Pond CCR Unit Cobalt Data

Cobalt Results for Ash Pond and ZLDP Wells IPL - Ottumwa Generating Station

Parameter: Cobalt
Number of Sampling Dates: 42
Units: ug/L

	Background		Comp	liance - Asl	n Pond		Cor	npliance - Z	LDP	Additional Wells for ACM/SOR - Ash Pond					
Location ID	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-305A	MW-310A	MW-311A	
4/26/2016	4.1	2.6	2.2	0.89	14.8	8.3									
6/23/2016	3.1	1.4	2.5	1.1	15.1	7.7									
8/10/2016	1.8	1.1	2.6												
8/11/2016				<0.5	13.7	6.4									
10/26/2016	1.8	1	3.1												
10/27/2016				<0.5	14.8	6.6									
1/18/2017	1.3	0.94	2.6	<0.5	15.2	6									
1/19/2017							0.62	0.52	2						
4/19/2017	0.97	0.95	1.8	0.37	14.6	5.7									
4/20/2017							1.6	0.43	3.1						
6/20/2017	1	0.86	1.9												
6/21/2017				0.36	14.4	5.2	1.1	0.25	2.4						
8/21/2017							1.1	0.26	2.1						
8/22/2017		0.88	2.8	0.3											
8/23/2017	0.96				14.7	5									
11/8/2017							1.3	0.23	2						
4/16/2018							1.3	0.18	2.4						
4/18/2018	0.46	0.9	2.1	0.39	14.5	4.8									
6/28/2018							2.9	0.19	4.7						
8/14/2018	1.4	1.5	2.2												
8/15/2018				0.92	15.6	5.5									
10/16/2018	0.36	4	1.7	0.45	17.2	6.4	4.8	0.15	2.7						
1/8/2019					16.4	6.2									
4/8/2019	0.44	1.2	0.42	0.4	17	6.9									
10/23/2019				0.5	17	6.2									
10/24/2019	0.6	2.7	1.2							0.57	0.78				
12/11/2019							11	0.26	3.7						

Cobalt Results for Ash Pond and ZLDP Wells IPL - Ottumwa Generating Station

Parameter: Cobalt
Number of Sampling Dates: 42
Units: ug/L

	Background		Comp	liance - Asl	n Pond		Con	npliance - Z	LDP	Additional Wells for ACM/SOR - Ash Pond					
Location ID	MW-301	MW-302	MW-303	MW-304	MW-305	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-305A	MW-310A	MW-311A	
2/5/2020	1.1						13	0.14	2.3	0.32	0.11	 			
							13	0.14	2.3		0.11				
3/12/2020	0.43									0.32					
3/13/2020		-	-		18	•		-			<0.091	2.4	0.63	0.19	
4/13/2020				0.57	16					0.24	<0.091			0.13	
4/14/2020	0.52	5.3	0.87			5.5	20	0.14	3.2			2.7	0.39		
10/7/2020							18	0.14	2						
10/8/2020	0.41	1.5	2.4	0.41										0.12	
10/9/2020					17	5.9					-	1.5			
10/12/2020		-	-		-	-		-		0.38	2.2		0.43		
2/23/2021		-	-		-	5.6	64	-			-		-		
4/13/2021		5.5	0.43			5.6				0.75	-				
4/14/2021	0.29		-	0.43		-	46	0.16	2.3		<0.091				
4/15/2021			-									0.5	0.48		
4/16/2021			-		18	-					-			0.13	
7/6/2021						5.8	60								

Notes:

17 Grayscale indicates concentration is above the Cobalt GPS (6 μg/L)

 Created by: RM
 Date: 8/10/2021

 Last updated by: RM
 Date: 8/10/2021

 Checked by: NDK
 Date: 8/11/2021