2024 Annual Groundwater Monitoring and Corrective Action Report

Columbia Energy Center
Dry Ash Disposal Facility, Modules 10 – 11 and 12 – 13
Pardeeville, Wisconsin

Prepared for:

Alliant Energy

SCS ENGINEERS

25224067.00 | January 31, 2025

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

OVERVIEW OF CURRENT STATUS

Columbia Energy Center, Dry Ash Disposal Facility, Modules 10 - 11 and 12 - 13
2024 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 Columbia Energy Center (COL) Dry Ash Disposal Facility Modules 10 -11 monitors a single CCR unit. Modules 12 and 13 were under construction in 2024 and background monitoring was in progress. 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;	Detection Monitoring
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;	Detection Monitoring
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 appendix III to this part and the names of the monitoring wells associated with such an increase; and	October and December 2023: Calcium: MW-315 TDS: MW-315 April and May 2024: Boron: MW-315 Calcium: MW-315 TDS: MW-315
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	Alternative Source Demonstrations prepared for October 2023 and April 2024 events during 2024. Assessment Monitoring not required.

Category	Rule Requirement	Site Status
Statistically Significant Levels (SSL) Above Groundwater Protection Standard (GPS)	(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:	Not applicable – Appendix IV sampling not required
	(A) Identify those constituents listed in appendix IV to this part and the names of the monitoring wells associated with such an increase;	
	(B) Provide the date when the assessment of corrective measures was initiated for the CCR unit;	
	(C) Provide the date when the public meeting was held for the assessment of corrective measures for the CCR unit; and	
	(D) Provide the date when the assessment of corrective measures was completed for the CCR unit.	
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 – Site is in detection monitoring
Corrective Action	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable – Site is in detection monitoring

Table of Contents

Section Page

Tables

Figures

Appendices

I:\25224067.00\Deliverables\2024 - Fed CCR Annual Report - Mod 10 - 13\250131_2024 Annual CCR GW Report COL MOD 10-13 LF_Final.docx

1.0 INTRODUCTION

This 2024 Annual Groundwater Monitoring and Corrective Action Report was prepared to support compliance with the groundwater monitoring requirements of the Coal Combustion Residuals (CCR) Rule [40 Code of Federal Regulations (CFR) 257.50-107]. Specifically, this report was prepared to fulfill the requirements of 40 CFR 257.90(e). The applicable sections of the Rule are provided below in italics, followed by applicable information relative to the 2024 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units. The site location is shown on **Figure 1**.

This report covers the period of groundwater monitoring from January 1, 2024, through December 31, 2024.

In 2024 the groundwater monitoring system for the Columbia Energy Center (COL) Dry Ash Disposal Facility Modules 10 and 11 monitored a single CCR unit:

- COL Dry Ash Disposal Facility – Modules 10-11 (new CCR Landfill)

The system was designed to detect monitored constituents at the waste boundary of Modules 10 and 11 of the COL Dry Ash Disposal Facility as required by 40 CFR 257.91(d). New Modules 12 through 13 of the COL Dry Ash Disposal Facility were under construction in 2024 and are a lateral expansion of the Module 10 and 11 CCR unit.

Throughout 2024, the groundwater monitoring system consisted of two upgradient and three downgradient monitoring wells. In May 2024, monitoring wells MW-313, MW-314, and MW-315 were abandoned to allow for the construction of Modules 12-13. New wells MW-317, MW-318, and MW-319 were installed at the northern waste boundary of Modules 12-13, to serve as downgradient compliance wells for Modules 10-11 and Modules 12-13 (when constructed and receiving CCR). The monitoring network as of the end of the reporting period is summarized in **Table 1** and shown on **Figure 2A** (early 2024 with Modules 10 and 11) and **2B** (Modules 10 through 13).

In 2024, separate groundwater monitoring systems evaluated groundwater conditions for the other CCR Landfill Units at the site, Modules 1 through 3 and Modules 4 through 6. In 2025, WPL plans to establish a single multi-unit monitoring system to monitor all Modules of the COL Dry Ash Facility, rather than having separate monitoring systems for the CCR units as has been done to date.

2.0 BACKGROUND

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

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL Ash Disposal Facility Modules 10 through 13. Immediately underlying the surficial sand and gravel aquifer is the

Cambrian-Ordovician sandstone aquifer. A summary of the regional hydrogeologic stratigraphy is presented in **Appendix A**.

The sand and gravel aquifer is capable of producing sufficient water for industrial or municipal use in some parts of Columbia County and is capable of producing sufficient water for domestic use in many areas, including along the Wisconsin River near the Columbia Energy Center (Harr et al., 1978). A map showing expected well yields within the sand and gravel aquifer in Columbia County is included in **Appendix A**.

Regional groundwater flow in the site vicinity is generally west toward the Wisconsin River. A map showing the regional water table elevations is included with the regional hydrogeologic information in **Appendix A**.

2.1.2 Site Information

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL Ash Disposal Facility were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc., 1978). During drilling of CCR wells MW-301, MW-313, MW-314, MW-315, MW-317, MW-318, and MW-319 the unconsolidated materials were identified as consisting primarily of silty sand and sand. Boring logs for previously installed monitoring well MW-84A show silty sand and sand as the primary unconsolidated materials at this location. The boring logs for Ash Disposal Facility Modules 10 through 13 are provided in **Appendix B**. All CCR monitoring wells are screened within the unconsolidated sand unit.

Shallow groundwater at the site typically flows to the north and west across the existing landfill area. The water table elevations and groundwater flow directions for the April 2024 monitoring event are shown on **Figure 3**. The April 2024 water levels and apparent flow direction across the unit were consistent with the historical groundwater flow direction from southeast/east towards the northwest/west, except in the northeast corner of the site. The water table elevation at new monitoring well MW-319 was higher than at surrounding wells, indicating a localized groundwater high with flow southwest toward Module 13. Well MW-319 is installed in a berm between Module 13 and the entrance road, and the higher water level may reflect the higher topography. A supplemental groundwater elevation sampling event was completed in August 2024, with groundwater elevations and flow as shown on **Figure 4.** The water table elevations and groundwater flow directions for the October 2024 monitoring event are shown on **Figure 5**. For the August and October 2024 monitoring events, the groundwater flow direction across the unit was generally to the north, except in the area of the apparent local groundwater mound at MW-319. The groundwater elevation data for the CCR monitoring wells are provided in **Table 3.** Calculated horizontal gradients and flow velocities for representative flow paths are provided in **Table 4**.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells (**Table 1** and **Figure 2**). The background wells include MW-301 and MW-84A. The original downgradient wells included MW-313, MW-314, and MW-315. In 2024, these wells were abandoned due to construction of Modules 12 and 13, and were replaced by MW-317, MW-318, and MW-319. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 26 to 46 feet, measured from the top of the well casing.

3.0 §257.90(e) ANNUAL REPORT REQUIREMENTS

Annual groundwater monitoring and corrective action report. For existing CCR landfills and existing CCR surface impoundments, no later than January 31, 2018, and annually thereafter, the owner or operator must prepare an annual groundwater monitoring and corrective action report. For new CCR landfills, new CCR surface impoundments, and all lateral expansions of CCR units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31 of the year following the calendar year a groundwater monitoring system has been established for such CCR unit as required by this subpart, and annually thereafter. For CCR management units, the owner or operator must prepare the initial annual groundwater monitoring and corrective action report no later than January 31, 2029, and annually thereafter. For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year. For purposes of this section, the owner or operator has prepared the annual report when the report is placed in the facility's operating record as required by § 257.105(h)(1). At a minimum, the annual groundwater monitoring and corrective action report must contain the following information, to the extent available:

3.1 §257.90(e)(1) SITE MAP

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

A map of the site location is provided on **Figure 1**. A map showing the Dry Ash Disposal Facility Modules 10 through 13 and all background (or upgradient) and downgradient monitoring wells with identification numbers for the groundwater monitoring program is provided as **Figure 2**. Other CCR units are also shown on **Figure 2**.

3.2 §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;

In May 2024, monitoring wells MW-313, MW-314, and MW-315 were abandoned to allow for the construction of Modules 12-13. New wells MW-317, MW-318, and MW-319 were installed at the northern waste boundary of Modules 12-13, to serve as downgradient compliance wells for Modules 10-11 and Modules 12-13 (when constructed and receiving CCR).

In 2025, WPL plans to establish a single multi-unit monitoring system to monitor all Modules of the COL Dry Ash Facility, rather than having separate monitoring systems for the CCR units as has been done to date.

3.3 §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;

Two detection monitoring program groundwater sampling events (April 2024 and October 2024) were conducted at COL Dry Ash Disposal Modules 10 and 11 in 2024. The April 2024 event included background monitoring wells MW-84A and MW-301 and downgradient monitoring wells MW-313, MW-314, and MW-315. The October 2024 event included the background wells MW-84A and MW-301 and the newly installed monitoring wells MW-317, MW-318, and MW-319. Monitoring wells MW-313, MW-314, and MW-315 were not sampled in October 2024 because they were abandoned in May 2024. One supplemental sampling event was conducted in May 2024 at MW-315 prior to abandonment.

Six background groundwater sampling events (June, July, August, October 1-2, October 31, and December 2024) were conducted at monitoring wells MW-317, MW-318, and MW-319 for Modules 10 through 13. The background samples for MW-317, MW-318, and MW-319 were analyzed for both Appendix III and Appendix IV constituents. A summary including the number of groundwater samples that were collected for analysis for each background and downgradient well, the dates the samples were collected, and whether the sample was required by the detection or assessment monitoring program is included in **Table 2**.

The validation and evaluation of the October 2024 monitoring event data and the last three 2024 background events were in progress at the end of 2024 and will be transmitted to WPL in 2025; therefore, the monitoring results with analytical reports for October 2024 and the last three 2024 background events will be included in the 2025 annual report. The October 2024 groundwater elevation data is included in this report.

Sampling results for Modules 10-11 for October and December 2023 are summarized in **Table 5A**. Sampling results for Modules 10-11 for April and May 2024 are summarized in **Table 5B**. Sampling results for the first three rounds of background sampling at the new monitoring wells are summarized in **Table 5C**. Field parameter results for detection monitoring are summarized in **Table 6A,** and results for background monitoring are summarized in **Table 6B**. The analytical laboratory reports for detection monitoring events in October 2023, December 2023, April 2024, and May 2024 are provided in **Appendix C**. The analytical laboratory reports for background monitoring events in June, July, and August 2024 are also provided in **Appendix C**. Historical results for each monitoring well through May 2024 are summarized in **Appendix D**.

3.4 §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);

There were no transitions between monitoring programs during 2024. The COL Dry Ash Disposal Facility Modules 10 and 11 CCR Unit continued in detection monitoring.

In 2024, the monitoring results for the October 2023 and April 2024 monitoring events were evaluated for statistically significant increases (SSIs) in detection monitoring parameters relative to background. The comparison to background was based on a prediction limit approach, comparing the results to intrawell UPLs.

The October 2023 and April 2024 and retest sample results were compared to the intrawell UPLs that were calculated in March 2024 using background data collected from January 2023 through August 2023, prior to CCR placement in Modules 10-11. The March 2024 statistical analysis is included in **Appendix F.**

For the October 2023 event, SSIs for calcium, and TDS at MW-315 were identified. For the April 2024 events, SSIs for boron, calcium, and TDS at MW-315 were identified.

Alternative source demonstrations (ASDs) were completed for the October 2023 and April 2024 events, demonstrating that sources other than the CCR unit were the likely cause of the observed SSIs. The ASD reports are provided in **Appendix E**.

3.5 §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 2024 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units.

3.5.1 §257.90(e) General Requirements

For the preceding calendar year, the annual report must document the status of the groundwater monitoring and corrective action program for the CCR unit, summarize key actions completed, describe any problems encountered, discuss actions to resolve the problems, and project key activities for the upcoming year.

Status of Groundwater Monitoring and Corrective Action Program. Detection monitoring in 2024. The groundwater monitoring and corrective action program transitioned to detection monitoring in October 2023.

Summary of Key Actions Completed.

- Two semi-annual sampling events (April and October 2024).
- Retest sampling event in May 2024.
- Installation of new monitoring wells MW-317, MW-318, and MW-319 in April 2024.
- Abandonment of monitoring wells MW-313, MW-314, and MW-315 in May 2024.

Description of Any Problems Encountered. As discussed in **Section 2.1.2**, water level monitoring in 2024 suggests the new compliance well MW-319, installed at the north waste boundary of Module 13, may not be downgradient from the CCR unit due to localized groundwater mounding in the berm area between the CCR unit and the entrance road.

Discussion of Actions to Resolve the Problems. To address this new information on flow direction in the Module 12-13 area, WPL plans to combine the monitoring systems for the CCR landfill to establish a single multi-unit monitoring system in 2025. The multi-unit monitoring system will monitor groundwater at the downgradient waste boundary of the combined CCR units.

Projection of Key Activities for the Upcoming Year (2025).

- Establish and certify multi-unit monitoring system.

- Complete statistical evaluation and determination of any SSIs for the October 2024 and April 2025 monitoring events.

- If an SSI is determined, then within 90 days either:
  - Complete ASD (if applicable), or
  - Establish an assessment monitoring program.

- Complete seventh and eighth baseline groundwater sampling events for new wells MW-317, MW-318, and MW-319.

- Two semiannual groundwater sampling and analysis events (April and October 2025).

3.5.2 §257.94(d) Alternative Detection Monitoring Frequency

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

Not applicable. No alternative detection monitoring frequency has been proposed.

3.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Alternative source demonstrations for detection monitoring were completed for the October 2023 and April 2024 sampling events. The ASD reports are included in **Appendix F**.

3.5.4 §257.95(c) Alternative Assessment Monitoring Frequency

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

Not applicable. Assessment monitoring has not been initiated.

3.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards

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

Not applicable. Assessment monitoring has not been initiated.

3.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring

The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Assessment monitoring has not been initiated.

3.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment

The assessment of corrective measures must be completed within 90 days, unless the owner or operator demonstrates the need for additional time to complete the assessment of corrective measure due to site-specific conditions or circumstances. The owner or operator must obtain a certification from a qualified professional engineer attesting that the demonstration is accurate. The 90-day deadline to complete the assessment of corrective measures may be extended for longer than 60 days. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer.

Not applicable. Corrective measures assessment has not been initiated.

3.6 §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.

4.0 REFERENCES

Harr, C.A., L.C. Trotta, and R.G. Borman, 1978, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.

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.

Warzyn Engineering, Inc., 1978, Feasibility Study, Proposed Fly Ash and/or Scrubber Sludge Disposal Facility – Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

[This page left blank intentionally]

Tables

Table 1. Groundwater Monitoring Well Network
Columbia Energy Center - Dry Ash Disposal Facility - Modules 10-13
SCS Engineers Project #25224067.00

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-84A	Upgradient	Background
MW-301	Upgradient	Background
MW-313*	Downgradient	Compliance
MW-314*	Downgradient	Compliance
MW-315*	Downgradient	Compliance
MW-317	Downgradient	Compliance
MW-318	Downgradient	Compliance
MW-319	Downgradient	Compliance

* = Wells abandoned in May 2024 to accommodate construction of Modules 12 and 13.

Last revision by: NLB Date: 12/18/2024
Checked by: RM Date: 12/27/2024

Table 2. Groundwater Samples Summary
Columbia Energy Center - Dry Ash Disposal Facility - Modules 10-13
SCS Engineers Project #25224067.00

Sample Dates	Downgradient Wells						Background Wells	
	MW-313	MW-314	MW-315	MW-317	MW-318	MW-319	MW-84A	MW-301
April 15-17, 2024	D	D	D	--	--	--	D	D
May 20, 2024	--	--	D-R	--	--	--	--	--
June 27, 2024	Aban	Aban	Aban	B	B	B	--	--
July 31, 2024	Aban	Aban	Aban	B	B	B	--	--
August 30, 2024	Aban	Aban	Aban	B	B	B	--	--
October 1-2, 2024	Aban	Aban	Aban	B-D	B-D	B-D	D	D
October 31, 2024	Aban	Aban	Aban	B	B	B	--	--
December 9, 2024	Aban	Aban	Aban	B	B	B	--	--
Total Samples	1	1	2	6	6	6	2	2

Abbreviations:
D = Detection Monitoring Event
D-R = Additional Detection Monitoring Retest Event
B = Background Monitoring Event
B-D = Background and Detection Monitoring Event
-- = Not Sampled
Aban = Well abandoned in May 2024

Last revision by: NLB Date: 12/18/2024
Checked by: RM Date: 12/27/2024

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
	Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
	Screen Length (ft)																	10	5	10
	Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
	Top of Well Screen Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	787.19	750.21	784.29
	Measurement Date																			
Dry Ash Facility (Facility ID #03025)	October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
	April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
	October 8, 2013													785.66	785.42	785.97	785.52	NI	NI	NI
	October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
	April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
	October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
	April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
	October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
	April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
	October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
	April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
	October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
	October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 (6)	NM	NM	NM	NM	NM	NM	NI	NI	NI
	February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
	April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
	October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
	April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
	October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
	May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
	October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
	February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	c	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
	June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
	October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
	October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
	February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
	March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
	May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
	May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
	October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
	April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
	April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
	July 29, 2024	aband	aband	NM	NM	NM	787.29	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	August 15, 2024	aband	aband	789.12	788.77	787.94	787.62	787.56	788.05	788.44	788.17	788.07	788.31	788.66	788.40	789.03	788.58	788.39	788.35	788.31
	October 1-3, 2024	aband	aband	788.25	787.33	786.64	786.79	786.75	786.60	788.86	787.14	787.06	787.14	787.81	787.52	788.33	787.86	787.00	786.97	786.90
	November 5, 2024	NM	NM	NM	785.98	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
Ash Pond Facility (Facility ID #02325)	**Top of Casing Elevation (feet amsl)**	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90
	Screen Length (ft)											
	Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96
	Top of Well Screen Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94
	Measurement Date											
	October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55
	April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02
	October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36
	October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM
	April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87
	October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03
	April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42
	October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26
	April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36
	October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09
	April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09
	October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61
	April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45
	October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52
	April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46
	October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42
	May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89
	October 7-8 &17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49
	April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49
	October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66
	April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83
	June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM
	October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49
	March 27-28, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30
	May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03
	October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43
	April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40
	April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48
	August 15, 2024	781.49	784.27	786.74	786.56	787.47	787.31	783.56	787.87	786.90	783.38	783.95
	October 1-3, 2024	779.13	783.42	785.25	785.12	785.99	785.86	782.99	785.86	785.19	782.26	783.50
	October 4, 2024	--	783.57	--	--	--	--	--	--	--	--	--
	Bottom of Well Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
	Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	818.88	820.37	828.28
	Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
	Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	784.6	787.4	790.7
	Measurement Date																								
	December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
	March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI	NI	NI	NI
	April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
	May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
	June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
	July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
	August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
	September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
	October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI	NI	NI	NI	NI	NI	NI
	April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI	NI	NI	NI	NI	NI	NI
	June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI	NI	NI	NI
	June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
CCR Rule Wells	October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
	December 13, 2019	--	--	--	--	NI	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	December 23, 2019	--	--	--	--	NI	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI	NI	NI	NI
	January 17, 2020	--	--	785.58	--	NI	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
	June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
	December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
	February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
	June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
	July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
	December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
	July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
	November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
	December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI
	January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
	January 24, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.73	783.36	783.63	783.77	NI	NI	NI	NI
	February 20-23, 2023	785.56	784.98	NM	NM	NI	NM	NM	NM	NM	NM	783.04	782.91	785.32	783.31	783.34	783.40	783.50	783.59	783.82	783.96	NI	NI	NI	NI
	March 27-28, 2023	786.83	785.87	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.84	783.98	784.43	NM	784.12	784.41	784.57	NI	NI	NI	NI
	April 24-27, 2023	787.57	786.87	784.38	784.03	NI	NM	782.59	785.79	786.22	786.97	784.82	784.25	787.75	785.05	785.18	785.69	NM	785.21	785.43	785.59	NI	NI	NI	NI
	May 5, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.55	NM	NM	NM	780.49	NI	NI	NI
	May 16, 2023	787.43	787.07	783.88	784.12	NI	dry	781.64	785.64	786.06	786.88	784.65	783.89	786.88	785.15	785.11	785.39	785.97	785.46	785.68	785.88	780.48	NI	NI	NI
	May 30-31, 2023	787.04	786.89	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	784.90	784.69	784.97	NM	785.24	785.55	785.77	NM	NI	NI	NI
	June 29-30, 2023	786.32	786.39	NM	NM	NI	NM	NM	784.32	785.04	785.92	NM	NM	NM	784.12	783.84	783.97	NM	784.67	784.95	785.17	NM	NI	NI	NI
	July 31, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.96	784.26	784.49	NM	NI	NI	NI
	Bottom of Well Elevation (ft)	777.49	779.40	775.72	779.72	773.61	780.72	766.52	777.21	770.52	774.07	780.63	780.39	778.90	775.60	775.21	773.55	774.29	774.10	776.61	774.18	764.79	774.58	777.37	780.68

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
	Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	818.88	820.37	828.28
	Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
	Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	784.6	787.4	790.7
	August 31, 2023	NM	785.30	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.47	NM	NM	783.55	783.83	783.97	NM	NI	NI	NI
	October 9-11, 2023	784.67	784.65	781.21	780.09	NI	779.93	780.54	782.57	783.55	784.39	NM	NM	783.09	782.58	782.32	782.22	783.69	783.10	783.33	783.59	780.30	NI	NI	NI
	November 9, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.76	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	November 20, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	781.97	781.45	782.85	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	December 27, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.18	783.36	NM	NI	NI	NI
	April 15-17, 2024	785.27	784.49	782.16	aband	782.17	780.80	781.38	783.02	784.14	784.90	782.40	782.24	784.51	782.79	782.68	782.64	783.59	783.16	783.42	783.53	782.09	783.12	783.05	785.27
CCR Rule Wells (cont)	April 19, 2024	785.51	784.55	782.26	aband	782.23	dry	dry	783.06	784.28	785.05	NM	782.64	784.69	782.90	782.82	782.74	783.68	783.30	783.49	783.62	782.15	NM	NM	NM
	May 20, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.25	NM	NM	NM	NM
	June 4, 2024	NM	NM	NM	aband	NM	783.03	783.66	NM	NM	NM	NM	NM	NM	784.27	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	June 27, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.87	785.97	787.20
	July 31, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.95	788.83	789.56
	August 8, 2024	NM	NM	787.17	aband	786.34	783.77	784.45	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.24	NM	NM	NM
	August 15, 2024	788.75	789.53	786.93	aband	786.03	783.75	784.27	788.77	787.62	788.17	787.66	787.24	788.39	787.90	787.93	788.37	788.31	aband	aband	aband	785.99	787.87	788.63	789.68
	August 30, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	787.28	787.78	789.17
	October 1-3, 2024	787.92	788.35	785.30	aband	784.91	782.80	783.42	787.33	786.79	787.14	786.04	785.94	786.88	786.46	786.35	786.40	786.90	aband	aband	aband	784.80	786.41	786.71	788.22
	October 18, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	785.50	785.08	786.34	NM	NM	NM	NM	aband	aband	aband	NM	NM	NM	NM
	October 31, 2024	NM	NM	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	aband	aband	aband	NM	785.73	785.92	787.88
	November 5, 2024	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.45	NM	NM	NM	NM	NM	NM	NM	NM	NM
	Bottom of Well Elevation (ft)	777.49	779.40	775.72	779.72	773.61	780.72	766.52	777.21	770.52	774.07	780.63	780.39	778.90	775.60	775.21	773.55	774.29	774.10	776.61	774.18	764.79	774.58	777.37	780.68

Notes:
NM = not measured
NI = not installed
aband = abandoned
(1) The depth to water at MW-84A was not measured prior to purging for sampling during the October 3-5, 2017 sampling event. The level was allowed to return to static and was measured on October 10, 2017.
(2) MW-303 was extended in 2022 due to regrading. Prior to October 2022, the TOC elevation was 811.52'. For events in October 2022 and later, the TOC elevation is 815.72'.

Created by: MDB Date: 5/6/2013
Last revision by: EMS Date: 11/5/2024
Checked by: RM Date: 11/8/2024

Table 4. Horizontal Gradients and Flow Velocity
Columbia Energy Center - MOD 10-13
SCS Engineers Project #25224067.00
January - December 2024

	Flow Path A - Northwest				
Sampling Dates	**h1 (ft)**	**h2 (ft)**	**Δl (ft)**	**Δh/Δl (ft/ft)**	**V (ft/d)**
4/15-17/2024	784.00	783.16	530	0.0016	0.010

	Flow Path B and C - North				
Sampling Dates	**h1 (ft)**	**h2 (ft)**	**Δl (ft)**	**Δh/Δl (ft/ft)**	**V (ft/d)**
8/15/2024	789.00	788	1447	0.0007	0.004
10/1-3/2024	788.00	786.41	1435	0.0011	0.007

Wells	**K Values (cm/sec)**	**K Values (ft/d)**
MW-313	1.80E-03	5.10
MW-314	2.20E-03	6.24
MW-315	1.30E-03	3.69
MW-317	7.33E-04	2.1
MW-318	4.54E-04	1.3
MW-319	2.99E-04	0.8
Geometric Mean	8.95E-04	2.54

Assumed Porosity, n
0.40

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

ft = feet
ft/d = feet per day
K = hydraulic conductivity
n = effective porosity
V = groundwater flow velocity
h1, h2 = point interpreted groundwater elevation at locations 1 and 2
Δl = distance between location 1 and 2
Δh/Δl = hydraulic gradient

Note:
1. See Figures 3 and 4 for velocity calculation flow path locations.

Last revision by: NLB Date: 12/18/2024
Checked by: LH Date: 12/20/2024

Table 5A. Groundwater Analytical Results Summary - October and December 2023
Columbia Generating Station - Modules 10-11 / SCS Engineers Project #25224067.00

	Background Wells		Compliance Wells							
Parameter Name	**MW-84A**	**MW-301**	**MW-313**		**MW-314**			**MW-315**		
	10/11/2023	10/11/2023	Intrawell UPL	10/11/2023	Intrawell UPL	10/11/2023	12/27/2023	Intrawell UPL	10/11/2023	12/27/2023
Groundwater Elevation, ft amsl	784.39	784.67		783.10		783.33	783.18		783.59	783.36
Appendix III										
Boron, µg/L	14.0	36.2	252	41.3	18.3	12.4	--	15.3	15	--
Calcium, µg/L	65,100	52,300	75,400	66,800	116,000	106,000	--	132,000	134,000	142,000
Chloride, mg/L	3.1	2.1	45.9	29.6	3.78	3.2	--	7.30	3.1	--
Fluoride, mg/L	<0.095	<0.095 M0	0.610	<0.095	0.620	<0.095	--	0.095	<0.095	--
Field pH, Std. Units	7.51	7.06	7.71	7.24	7.50	7.21	7.23	7.46	6.97	7.03
Sulfate, mg/L	1.4 J	11.8	24.2	9	5.51	3.5	--	13.6	3.1	--
Total Dissolved Solids, mg/L	324	300	431	372	515	526	464	541	602	618

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

Abbreviations:
mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase
UPL = Upper Prediction Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation

Lab Notes:
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits

Notes:
1. Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
2. Intrawell UPLs were calculated from background sampling results for the compliance wells from January 2023 through August 2023.

Created by:	RM	Date:	8/15/2022
Last revision by:	SCC	Date:	3/21/2024
Checked by:	RM	Date:	3/22/2024
Proj Mgr QA/QC:	TK	Date:	3/29/2024

Table 5B. Groundwater Analytical Results Summary - April and May 2024
Columbia Generating Station - Modules 10-11 / SCS Engineers Project #25224067.00

Parameter Name	Background Wells		Compliance Wells						
	MW-84A	MW-301	MW-313		MW-314		MW-315		
	4/17/2024	4/17/2024	Intrawell UPL	4/15/2024	Intrawell UPL	4/15/2024	Intrawell UPL	4/15/2024	5/20/2024
Groundwater Elevation, ft amsl	784.90	785.27		783.16		783.42		783.53	783.62
Appendix III									
Boron, µg/L	11.9	24.9	252	22.7	18.3	13.5	15.3	20.2	17.7
Calcium, µg/L	73,700	102,000	75,400	65,400	116,000	110,000	132,000	149,000	140,000
Chloride, mg/L	3.2	1.6 J	45.9	12.0	3.78	3.2	7.30	2.9	--
Fluoride, mg/L	0.12 J	<0.095	0.610	<0.095	0.620	<0.095	0.095	<0.095	--
Field pH, Std. Units	7.68	7.06	7.71	7.24	7.50	6.94	7.46	6.68	6.60
Sulfate, mg/L	1.4 J	11.5	24.2	7.3	5.51	4.6	13.6	4.4	--
Total Dissolved Solids, mg/L	322	458	431	304	515	492	541	660	642

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

Abbreviations:
mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase
UPL = Upper Prediction Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation
-- = Not Analyzed

Lab Notes:
J = Estimated concentration at or above the LOD and below the LOQ.

Notes:
1. Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
2. Intrawell UPLs were calculated from background sampling results for the compliance wells from January 2023 through August 2023.

Created by: RM Date: 8/15/2022
Last revision by: RM Date: 6/3/2024
Checked by: GK Date: 7/1/2024
Proj Mgr QA/QC: TK Date: 8/9/2024

Table 5C. Groundwater Analytical Results Summary - Background Monitoring for New Wells - June to August 2024
Columbia Generating Station - Modules 10-13 / SCS Engineers Project #25224067.00

Parameter Name	Compliance Wells								
	MW-317			MW-318			MW-319		
	6/27/2024	7/31/2024	8/30/2024	6/27/2024	7/31/2024	8/30/2024	6/27/2024	7/31/2024	8/30/2024
Groundwater Elevation, ft amsl	786.35	788.43	787.76	786.54	789.40	788.35	787.69	790.05	789.66
Appendix III									
Boron, ug/L	33.8	41.7	49.3	17.2	14.5	23.5	20.4	22.5	42.2
Calcium, ug/L	43,800	44,300	44,600	122,000	110,000	101,000	125,000	126,000	131,000
Chloride, mg/L	5.1	7.0	6.1	44.9	19.7	31.8	486	712	802
Fluoride, mg/L	0.28 J	0.31 J	0.28 J	<0.095	<0.095	<0.095	<0.48 D3	<0.48 D3	<0.095
Field pH, Std. Units	7.60	7.88	7.44	7.34	7.57	7.22	7.32	7.15	7.43
Sulfate, mg/L	26.4	23.5	13.5	276	290	272	26.1	43.6	70.9 J
Total Dissolved Solids, mg/L	318	328	334	804	712	694	1140	1530	1700
Appendix IV									
Antimony, µg/L	0.17 J	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic, µg/L	1.4	1.5	1.3	<0.28	<0.28	<0.28	<0.28	<0.28	<0.28
Barium, µg/L	51.6	55.2	54.5	52.1	12.5	11.8	68.6	63.9	51.4
Beryllium, µg/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium, µg/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium, µg/L	<1.0	<1.0	<1.0	<1.0	1.1 J	2.0 J	1.4 J	1.2 J	1.7 J
Cobalt, µg/L	0.24 J	0.19 J	0.13 J	0.44 J	<0.12	0.31 J	0.44 J	0.45 J	0.37 J
Fluoride, mg/L	0.28 J	0.31 J	0.28 J	<0.095	<0.095	<0.095	<0.48 D3	<0.48 D3	<0.095
Lead, µg/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Lithium, µg/L	6.6	5.3	4.5	1.8	0.92 J	0.95 J	1.4	1.3	1.5
Mercury, µg/L	<0.066 1q	<0.066	<0.066	<0.066 1q	<0.066	<0.066	<0.066 1q	<0.066	<0.066
Molybdenum, µg/L	43.8	50.7	52.4	3.2	<0.44	0.45 J	1.1 J	0.86 J	1.6
Selenium, µg/L	<0.32	<0.32	<0.32	1.2	1.3	1.1	1.4	1.5	1.4
Thallium, µg/L	<0.14	0.14 J	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Radium 226/228 Combined, pCi/L	0.564	0.273	0.450	1.8	0.552	0.727	0.827	0.904	1.30

Abbreviations:
mg/L = milligrams per liter
µg/L = micrograms per liter
NA = Not Applicable
LOD = Limit of Detection
LOQ = Limit of Quantitation

Lab Notes:
J = Estimated concentration at or above the LOD and below the LOQ.
D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
1q = Analyte was measured in the associated method blank at a concentration of -0.090 µg/L.

Notes:
1. Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
2. Intrawell UPLs will be calculated from background sampling results for the compliance wells from the first 8 events.

Created by: RM Date: 7/19/2024
Last revision by: KMV Date: 12/4/2024
Checked by: RM Date: 12/20/2024
Proj Mgr QA/QC: TK Date: 1/4/2025

Table 6A. Groundwater Field Data Summary - Detection Monitoring
Columbia Energy Center - Dry Ash Disposal Facility - Modules 10-13
SCS Engineers Project #25224067.00

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-84A	10/11/2023	784.39	12.3	7.51	8.44	599.9	91.2	0.03
	4/17/2024	784.90	11.0	7.68	7.82	588.1	0	0.00
MW-301	10/11/2023	784.67	10.7	7.06	0.16	536	23.8	0.34
	4/17/2024	785.27	8.6	7.06	2.53	781	17.9	0.00
MW-313	10/11/2023	783.10	11.0	7.24	8.58	604.4	168	0.00
	4/15/2024	783.16	11.0	7.24	8.66	515.2	67.3	2.48
MW-314	10/11/2023	783.33	11.0	7.21	7.34	879	188.8	0.09
	12/27/2023	783.18	10.9	7.23	7.00	790	176.1	0.00
	4/15/2024	783.42	11.1	6.94	7.18	831	56.8	0.33
MW-315	10/11/2023	783.59	11.3	6.97	2.80	1008	159.1	0.81
	12/27/2023	783.36	10.7	7.03	2.97	1011	162.5	0.42
	4/15/2024	783.53	11.0	6.68	1.66	1096	44.5	2.66
	5/20/2024	783.62	10.9	6.60	1.38	1078	148.6	0.00

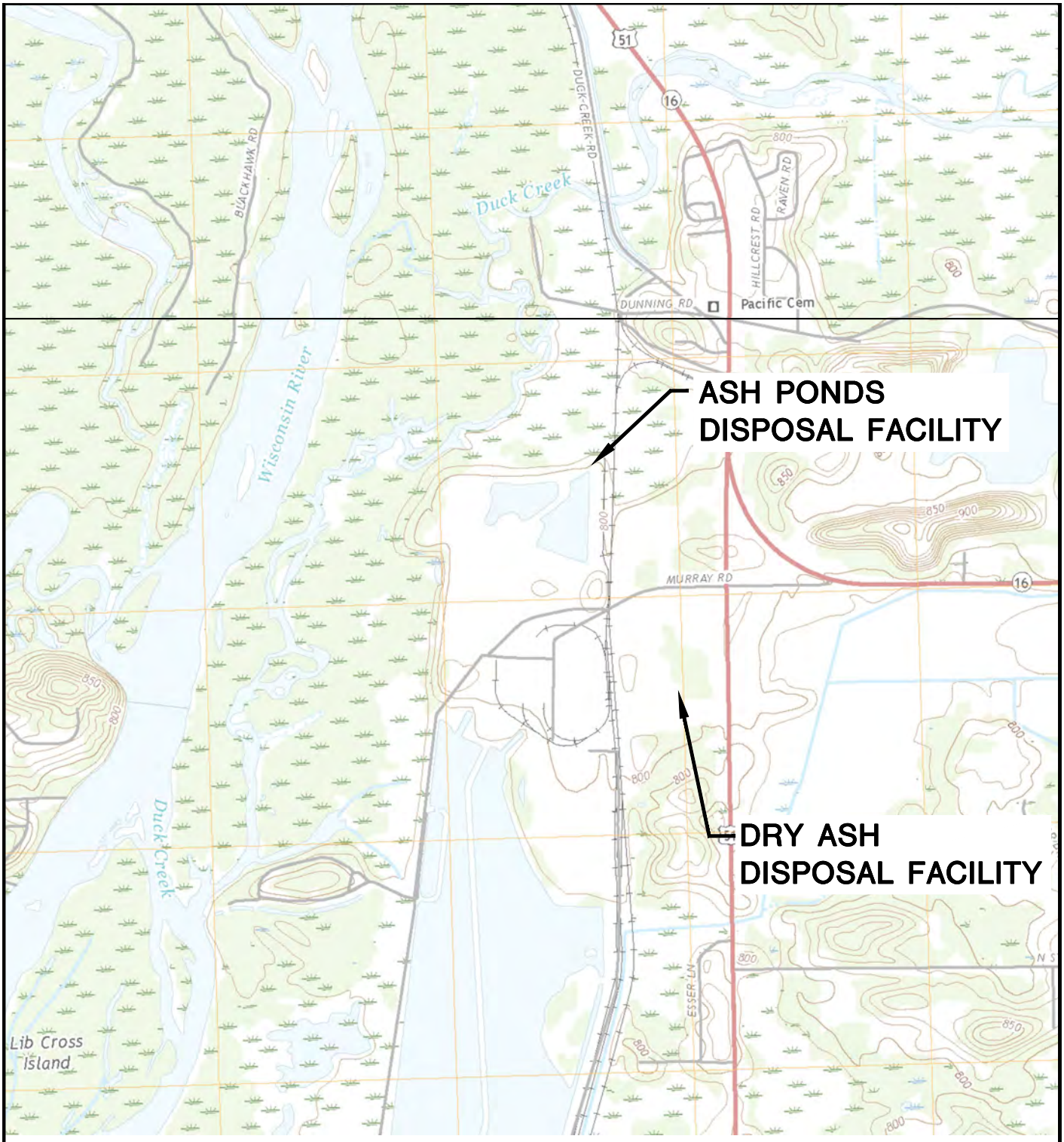
Last revision by: NLB Date: 12/5/2024
Checked by: BLR Date: 12/5/2024

Table 6B. Groundwater Field Data Summary - Background Monitoring
Columbia Energy Center Dry Ash Disposal Facility - Modules 10-13 / SCS Engineers Project #25224067.00

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-84A	10/11/2023	784.39	12.3	7.51	8.44	599.9	91.2	0.03
	4/17/2024	784.90	11.0	7.68	7.82	588.1	0.00	0.00
MW-301	10/11/2023	784.67	10.7	7.06	0.16	536	23.8	0.34
	4/17/2024	785.27	8.6	7.06	2.53	781	17.9	0.00
MW-317	6/27/2024	785.87	11.8	7.60	0.28	484.1	-119.4	4.31
	7/31/2024	787.95	12.5	7.88	0.63	540	-143.0	9.97
	8/30/2024	787.28	12.7	7.44	0.13	545.9	-130.2	3.37
MW-318	6/27/2024	785.97	11.7	7.34	5.76	1115	97.1	4.89
	7/31/2024	788.83	13.0	7.57	8.40	984	98.4	1.97
	8/30/2024	787.78	13.4	7.22	8.05	969	95.3	4.08
MW-319	6/27/2024	787.20	12.5	7.32	6.89	1869	146.5	4.2
	7/31/2024	789.56	12.8	7.15	5.78	2725	85.9	2.58
	8/30/2024	789.17	12.3	7.43	7.67	2948	107.4	4.39

Created by: NLB Date: 9/16/2024
Last revision by: BLR Date: 9/23/2024
Checked by: RM Date: 10/2/2024

Figures

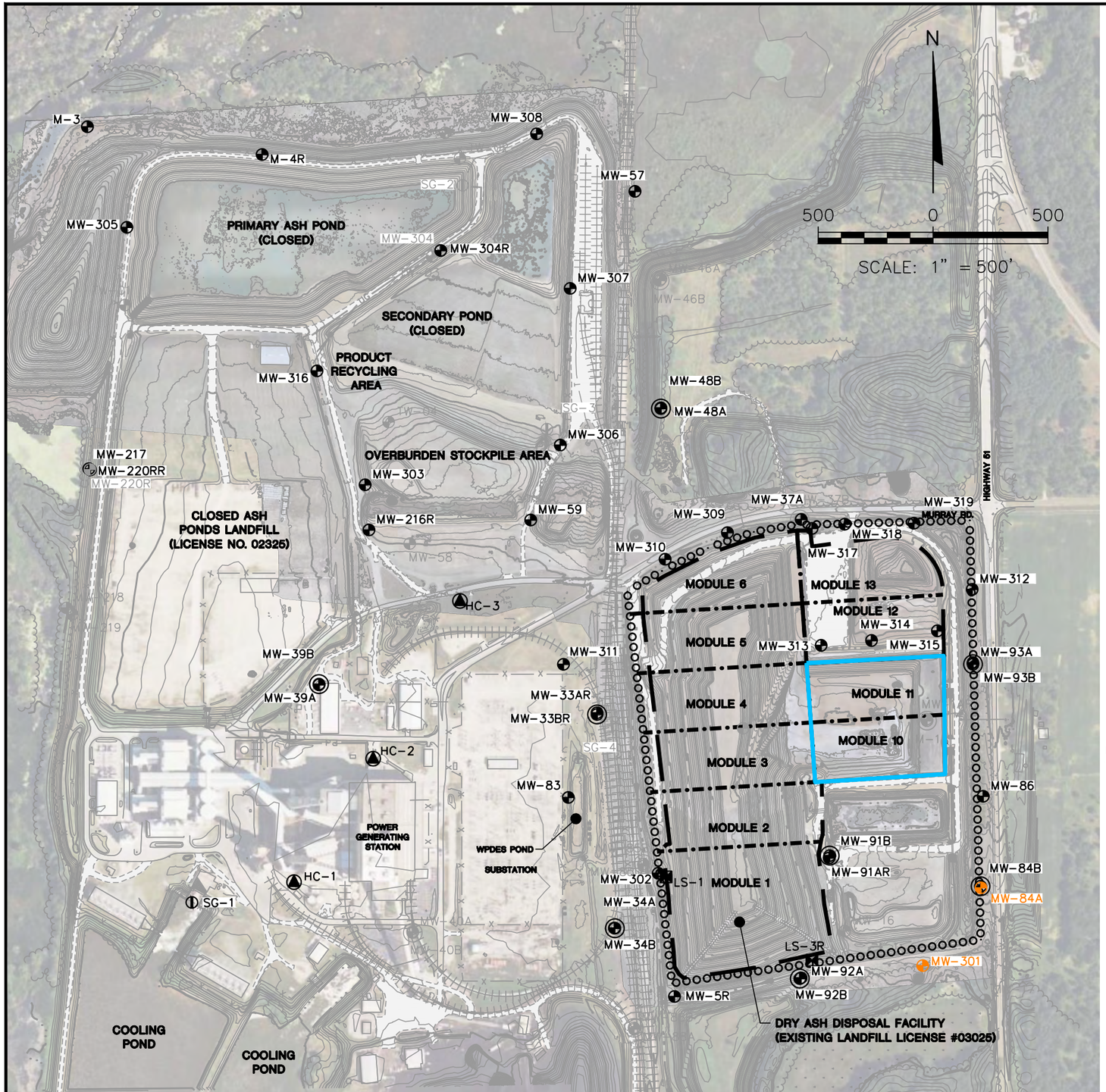


N

POYNETTE QUADRANGLE
WISCONSIN–COLUMBIA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT: ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE: ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	SITE LOCATION MAP	
PROJECT NO. 25219067.00	DRAWN BY: BSS	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE 1
DRAWN: 12/02/2019	CHECKED BY: MDB		
REVISED: 01/10/2020	APPROVED BY: TK 01/30/2020		

I:\25219067.00\Drawings\CCR 2019 Annual Report\Site Location Map.dwg, 1/30/2020 3:38:21 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GUAGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. MONITORING WELLS MW-317, MW-318, AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22, 2024.
10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	01/03/2025	CHECKED BY:	NLB
REVISED:	01/21/2025	APPROVED BY:	TK (01/21/2025)

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

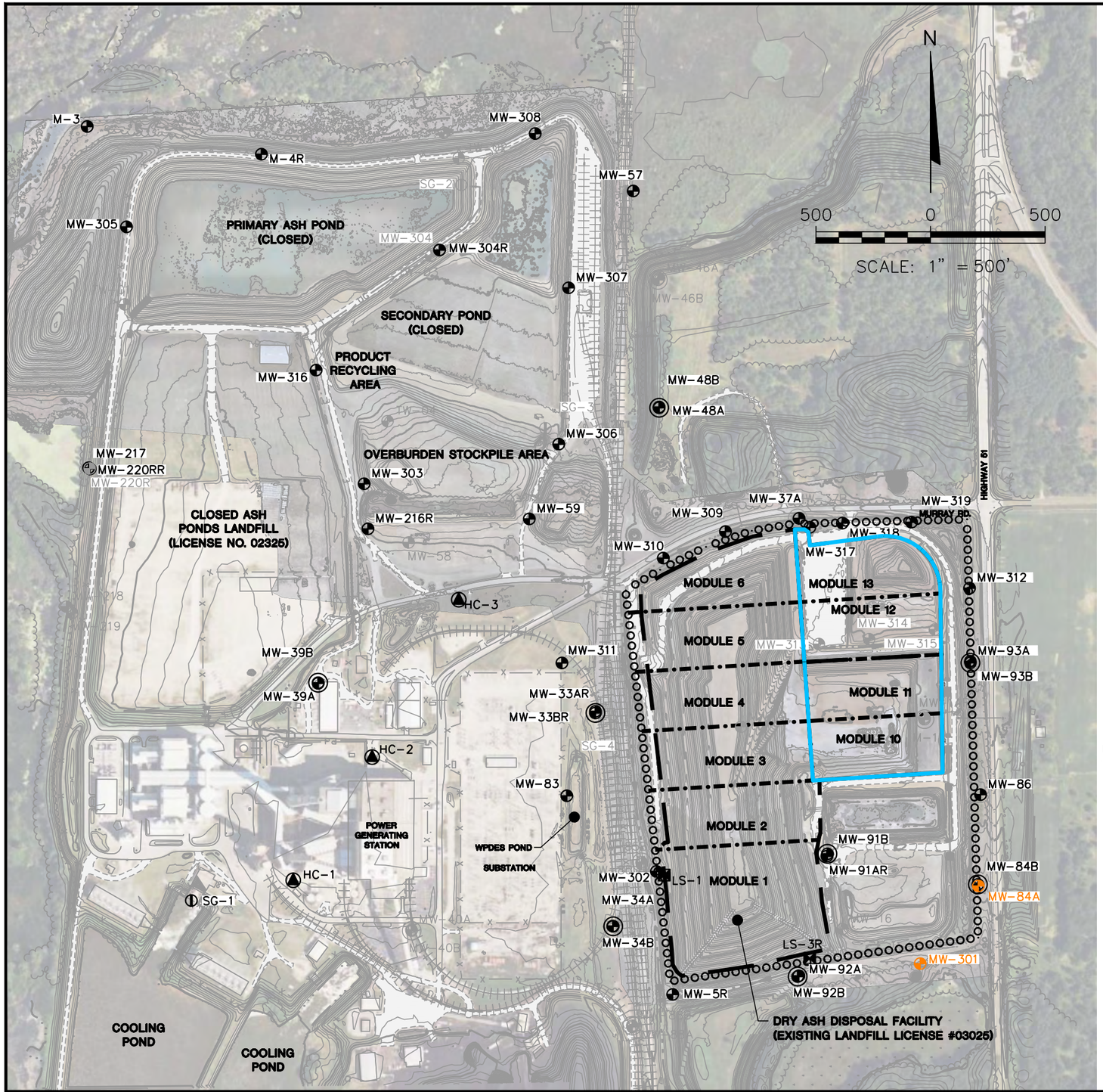
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS
COLUMBIA DRY ASH DISPOSAL FACILITY

FIGURE
2A

I:\Client\Alliant_PROJECT SITES\Columbia\CAD Master References COL\Water Table Maps\Site Plan\02_Col Site Plan Figures.dwg, 1/21/2025 2:02:01 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GUAGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. MONITORING WELLS MW-317, MW-318, AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION & EXPLORATION ON MAY 22, 2024.
10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	01/03/2025	CHECKED BY:	NLB
REVISED:	01/21/2025	APPROVED BY:	TK (01/21/2025)

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

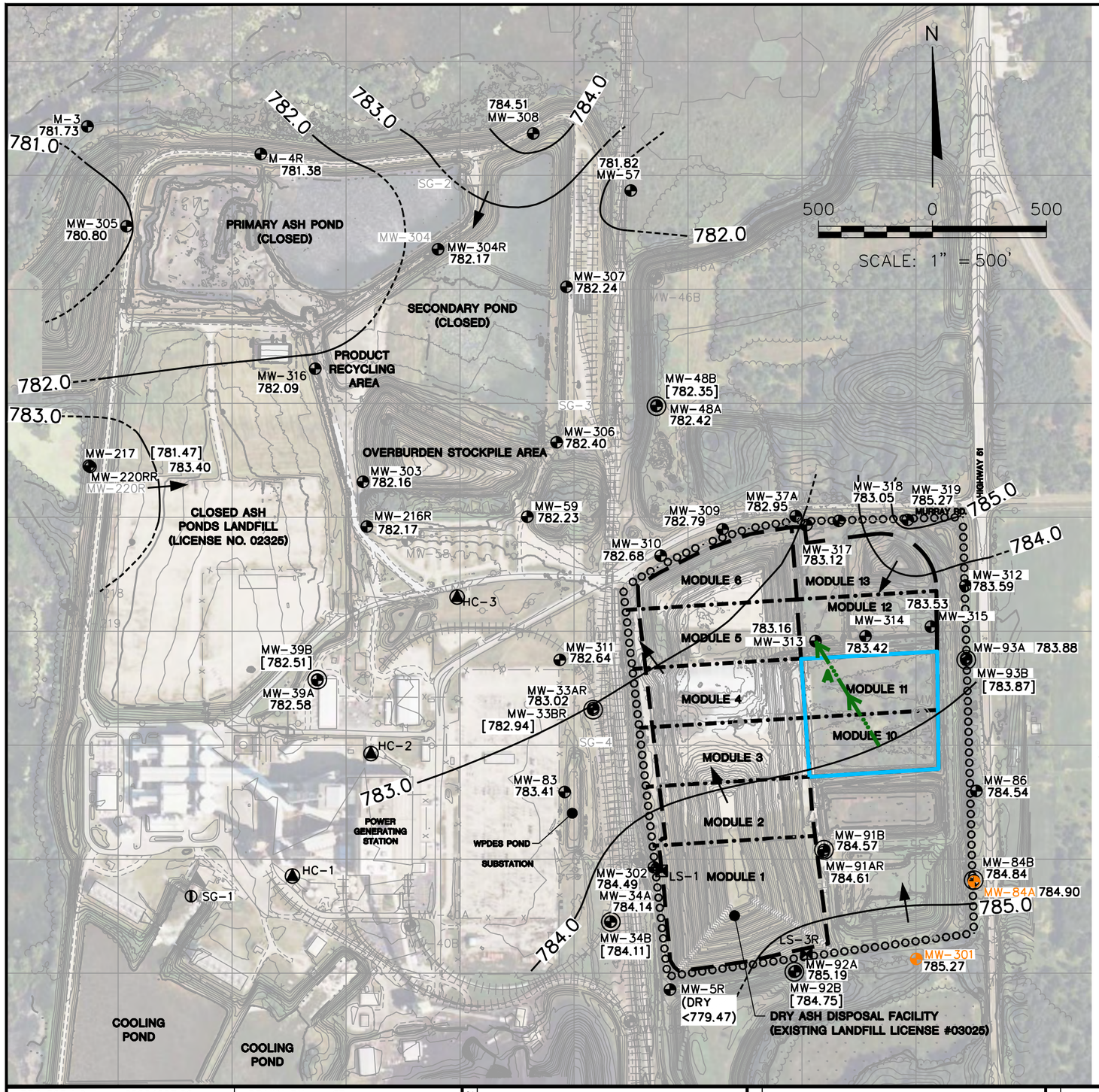
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS
COLUMBIA DRY ASH DISPOSAL FACILITY

FIGURE
2B

I:\Client\Alliant_PROJECT SITES\Columbia\CAD Master References COL\Water Table Maps\Site Plan\02_Col Site Plan Figures.dwg, 1/21/2025 2:05:12 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 783.88 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (DRY) — SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024.
11. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	11/05/2024	CHECKED BY:	NLB/BRK (01/21/2025)
REVISED:	01/21/2025	APPROVED BY:	TK (01/21/2025)

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

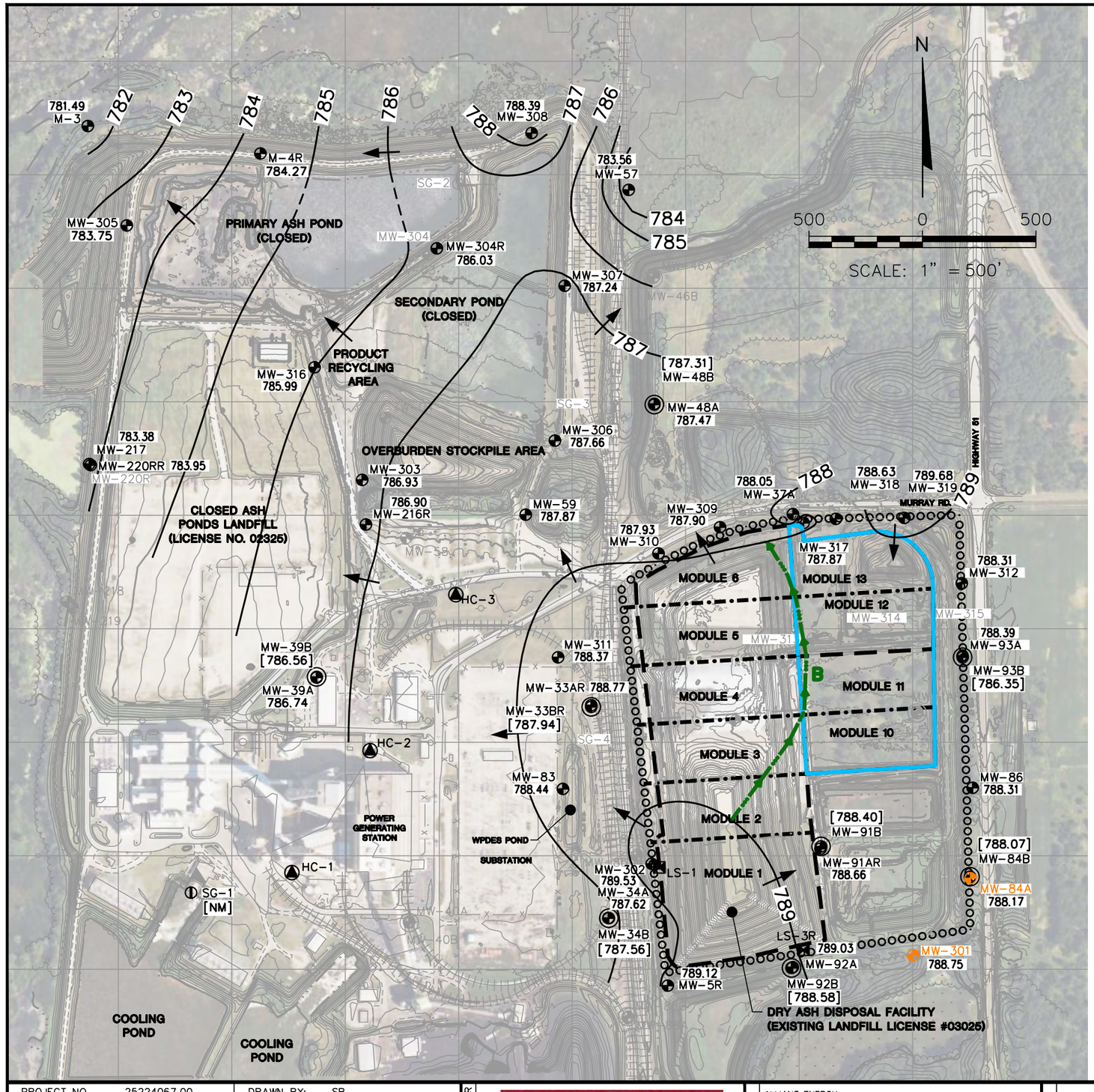
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
APRIL 15-17, 2024

FIGURE 3

I:\25224067.00\Drawings\COL April 2024 WTBL CCR Units.dwg, 1/21/2025 2:07:58 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 788.75 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- [NM] — NOT MEASURED
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	12/23/2024	CHECKED BY:	NLB/BRK (01/21/2025)
REVISED:	01/21/2025	APPROVED BY:	TK (01/21/2025)

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

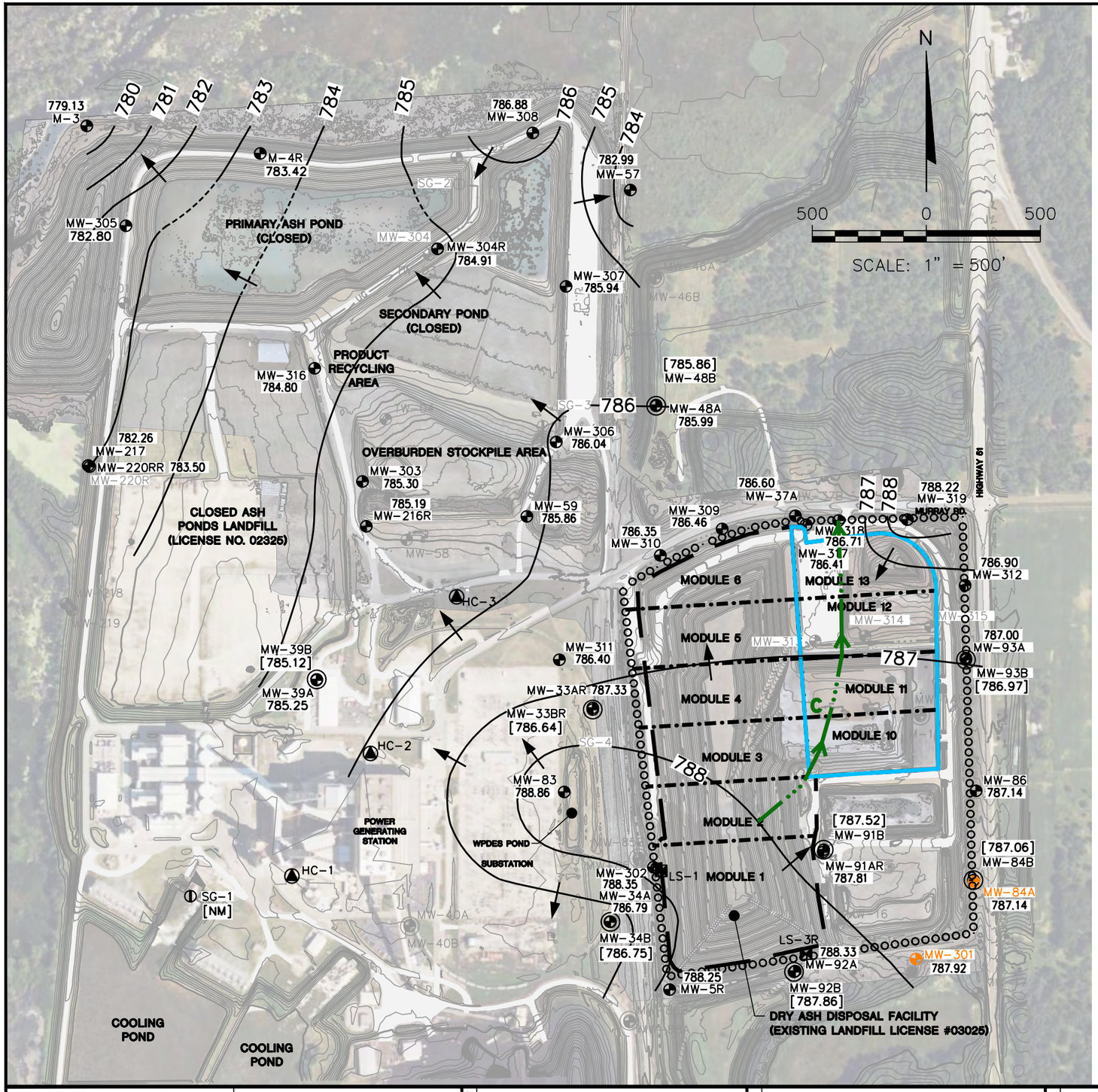
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
AUGUST 15, 2024

FIGURE
4

I:\25224067.00\Drawings\COL August 2024 WTBL CCR Units.dwg, 1/21/2025 2:10:18 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED STAFF GUAGE
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 788.75 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- [NM] — NOT MEASURED
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, PERIODIC SURVEYS BY SCS ENGINEERS AND CEDAR CREEK SURVEYING, LLC, AND DECEMBER 2023 DRONE SURVEY BY AMES.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE ABANDONED BY HORIZON CONSTRUCTION AND EXPLORATION ON MAY 22-23, 2024.
10. BACKGROUND MONITORING WELLS ARE: MW-301 AND MW-84A.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	12/23/2024	CHECKED BY:	NLB/BRK (01/21/2025)
REVISED:	01/21/2025	APPROVED BY:	TK (01/21/2025)

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
OCTOBER 1-3, 2024

FIGURE 5

I:\25224067.00\Drawings\COL October 2024 WTBL CCR Units.dwg, 1/21/2025 2:13:12 PM

Appendix A

Regional Hydrogeologic Information

Table COL-3. Regional Hydrogeologic Stratigraphy
Columbia Energy Center / SCS Engineers Project #25215053

Approximate Age	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Predominant Lithology
Quaternary (0-1 million years old)	Surficial Aquifer	0 to 300+	Holocene & Pleistocene Deposits	• Unconsolidated clay, silt, sand, gravel, cobbles, boulders, and organic matter
Ordovician (460 to 490 million years old)	Sandstone Aquifer	0 to 800+	Galena Decorah Platteville St. Peter Prairie du Chien	• Dolomite and shaley dolomite • Sandstone
Cambrian (490 to 500 million years old)			Trempeleau Franconia Galesville Eau Claire Mt. Simon	• Sandstone
Precambrian (more than 1 billion years old)	Used for domestic supply in some areas	--	Precambrian	• Igneous and metamorphic rocks

*This nomenclature and classification of rock units in this report are those of the Wisconsin Geological and Natural History Survey and do not necessarily coincide with those accepted by the U.S. Geological Survey.

Sources:

Harr, C.A., L.C. Trotta, and R.G. Borman, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.

Wisconsin Geological and Natural History Survey, Bedrock Stratigraphic Units in Wisconsin, UW Extension Educational Series 51, ISSN: 1052-2115, 2011.

I:\25215053\Reports\Report 3 - Columbia\Tables\Table_2_Regional_Hydrogeologic_Stratigraphy.doc

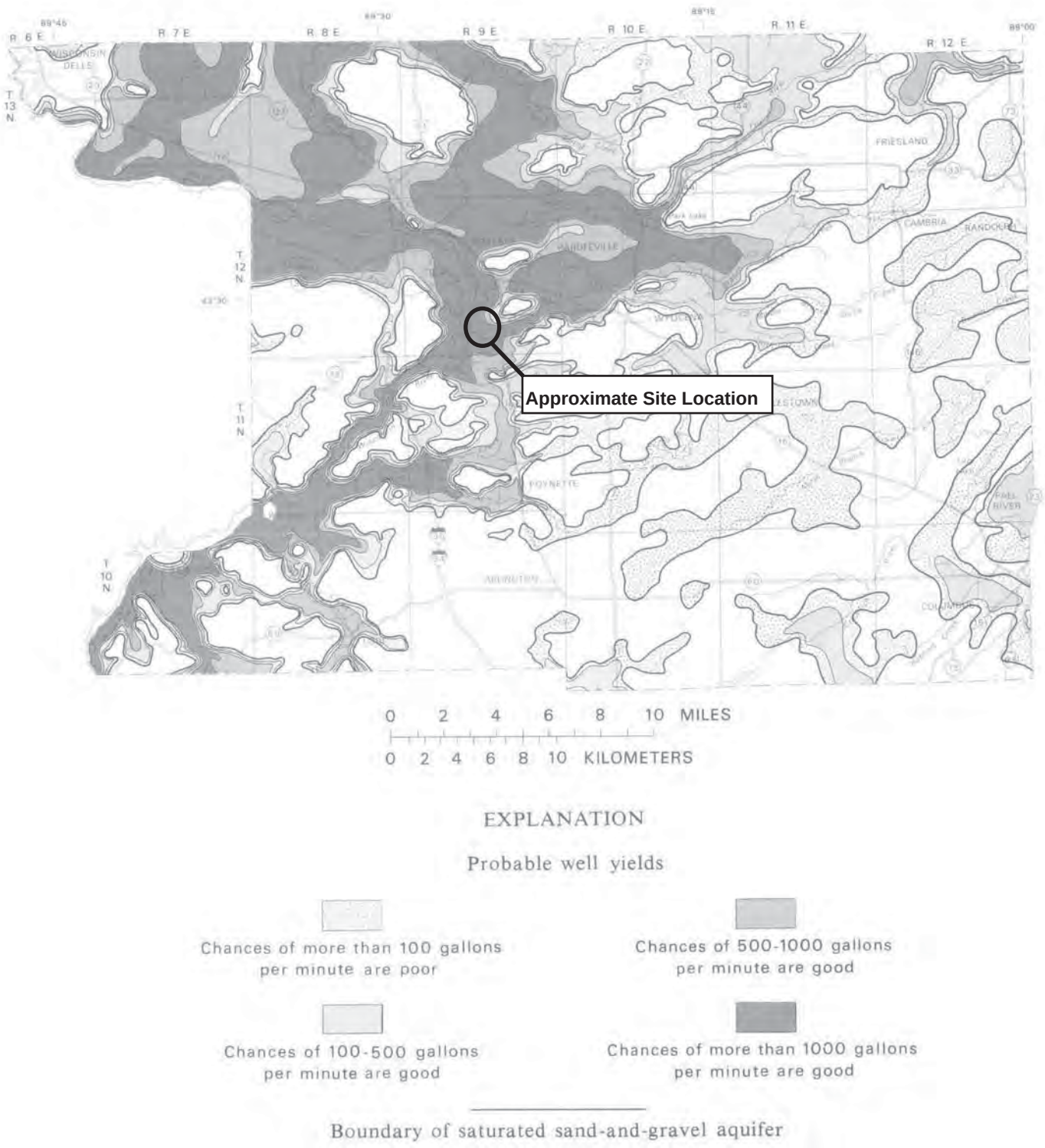
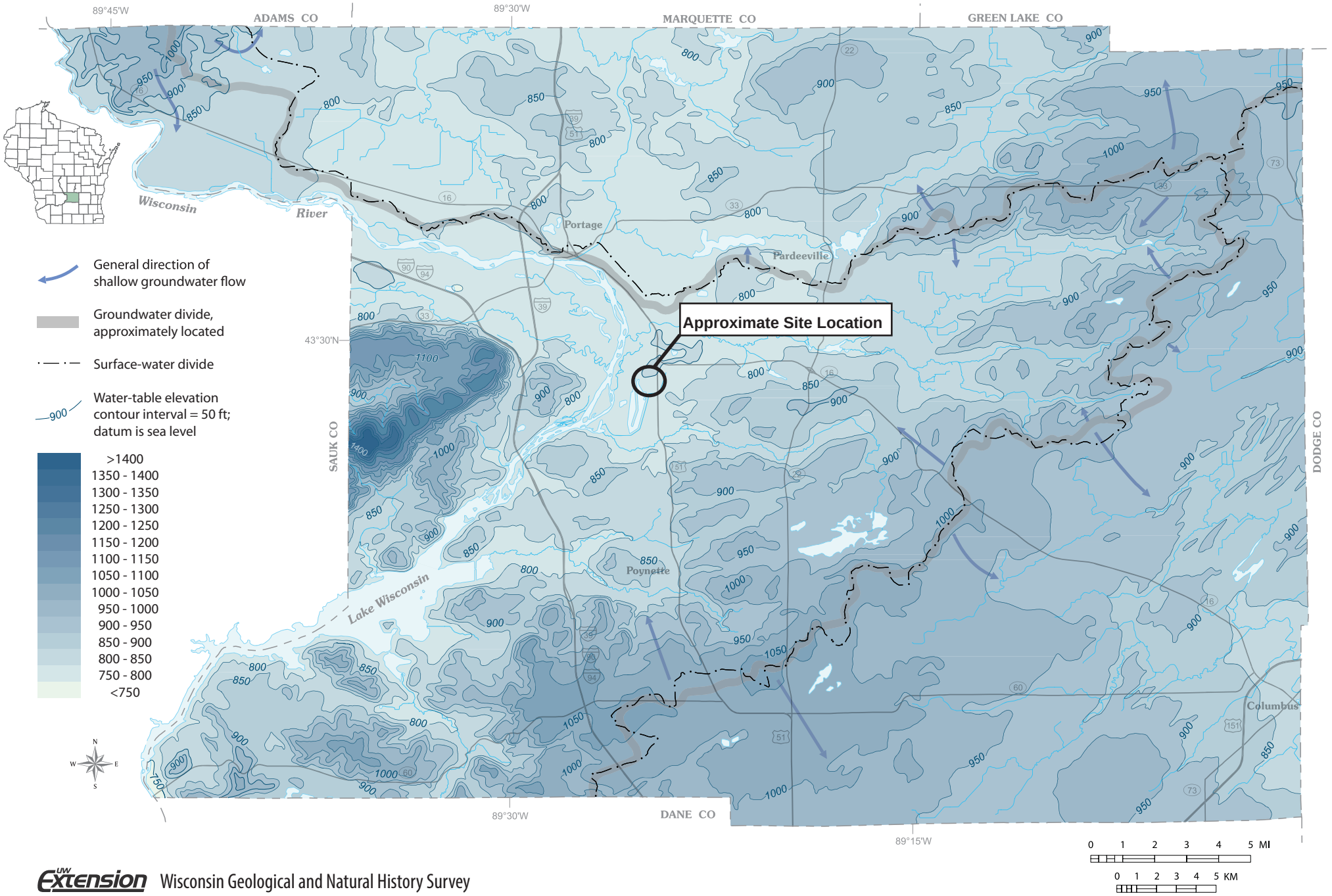


Figure 9. Probably well yields from the sand-and-gravel aquifer.

Source: Harr, C.A., L.C. Trotta, and R.G. Borman, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconisn-Extension Geological and Natural History Surevy Information Circular Number 37, 1978.

Generalized water-table elevation in Columbia County, Wisconsin



Wisconsin Geological and Natural History Survey

02/26/2025 - Classification: Internal - EGRM23462141

Source: Selkwood, Stephen M., Wisconsin Geologic and Natural History Survey, Water Table Elevation, Groundwater Resources of Columbia County Wisconsin,

Appendix B

Boring Logs and Well Construction Documentation

WARZYN ENGINEERING INC

LOG OF TEST BORING

Project: Wisconsin Power & Light

Location: Columbia Generating Station

Boring No.: MW-84A
Surface Elevation: 813.4
Job No.: C 7134
Sheet: 1 of 1

1409 EMIL STREET • P.O. BOX 9538, MADISON, WIS. 53715 • TEL. (608) 257-4848

SAMPLE						VISUAL CLASSIFICATION and Remarks	SOIL PROPERTIES				
Recovery			Moisture								
No.	Type	↓	↓	N	Depth		q_u	W	LL	PL	D
						Dark Brown Silty SAND (SM)					
					5						
						Brown Fine to Medium SAND, Little Silt, Trace to Little Gravel and Boulders (SM)					
					10						
					15						
					20						
					25						
					30						
					35						
					40	End Boring at 37'					
						Well Installed at 37'					

WATER LEVEL OBSERVATIONS

While Drilling
Upon Completion of Drilling
Time After Drilling
Depth to Water
Depth to Cave In

GENERAL NOTES

Start: 10/5/83 Complete: 10/5/83
Crew Chief: JVS Rig: B-40
Drilling Method: ED 0-37'

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL-Columbia SCS#: 25215135.00		MW-301

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Kevin Durst Badger State Drilling	11/11/2015	11/11/2015	hollow stem auger

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
VY701			Feet	803.69 Feet	8.5 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 541562.2 N, 2025001.0 E S/C/N
1/4 of 1/4 of Section 27, T 12 N, R 9 E
Lat ° ' "
Long ° ' "
Local Grid Location ☐ N ☐ E Feet ☐ S Feet ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
	Columbia	11	Portage

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S1	21	7 6 9 10	1–2	SILTY SAND, yellowish brown (10YR 5/6), fine to medium grained.						M				
S2	20	6 7 9 10	3–4	Same as above except, 10YR 5/4 (top section), 10YR 3/6 (bottom section), trace gravel.						M				
S3	22	7 6 9 6	5–7	Same as above except, 10YR 3/4 (bottom), 10YR 5/4 (top), trace little roots and sticks, trace gravel.	SM					M				
S4	21	4 5 6 5	8–10	Same as above except, 10YR (top), 10YR 4/6 (bottom), trace clay at bottom.						M				
S5	18	2 2 4 5	11–12	Same as above except, fine to coarse grained sand, little gravel, trace clay in top half, 10YR 3/6.						M				
S6	20	2 3 3 3	13–15	Same as above except, 10YR 6/8.						M				

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

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

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-301 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Pocket Penetration (tsf)	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			16	SILTY SAND, yellowish brown (10YR 5/6), fine to medium grained.										
S7	20	5 4 4 3	17							M				
			18											
			19											
S8	20	2 4 4 5	20							W				
			21											
					SM									
S9	23	4 4 3 6	22							W				
			23											
			24	Same as above except, 10YR 6/4.										
S10	21	3 2 4 10	25							W				
			26											
			27											
			28											
				End of boring at 28 ft bgs.										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25220183.00	03025	B-313X

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	12/1/2022	12/1/2022	Geoprobe/HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
			Feet MSL	Feet MSL	2.0/8.25 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☐
State Plane Located 1.5' west of MW-313 N, E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat ° ' "
Long ° ' "
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	SILTY GRAVEL, fine to medium sand, fine to coarse gravel, tan, angular gravel (base course/fill).	GM									
			2	POORLY GRADED SAND, fine to medium, medium brown (7.5Y 5/4), trace angular fine to coarse gravel, trace silt, uniform (alluvium).										
S1	44		3							M				Geoprobed to 35 ft. Overdrilled with HSA to 27ft and hit refusal.
			4											
			5											
			6											
			7											
S2	47		8		SP					M				
			9											
			10											
			11											
			12											
S3	60		13							M				
			14											
			15											

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

Signature	Firm		Tel:
	SCS Engineers	2830 Dairy Drive, Madison, WI 53718 608-224-3830	Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number B-313X Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			16											
			17											
S4	53		18							M				
			19											
			20											
			21											
			22											
S5	60		23							M				
			24											
			25		SP									
			26											
S6	30		27							M				Tough/hard drilling, only pushed 2.5 ft
			28											
S7	30		29							M				HSA refusal at approximately 27 ft; large boulder at depth
			30											
			31											
			32											
S8	60		33	Pulverized gravel at base of core.						M				Geoprobe refusal at 35 ft
			34											
			35	End of Borehole at 35 ft below ground surface. Abandoned borehole with 3/8" bentonite chips. Attempted monitoring wel MW-313 installation.										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25220183.00	03025	MW-313

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	12/19/2022	12/19/2022	rotosonic

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
WC188		MW-313	Feet MSL	~817.80 Feet MSL	6.0 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 542,957 N, 2,124,559 E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat ____ ° ____ ' ____ "
Long ____ ° ____ ' ____ "
Local Grid Location
Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1–15	Blind drilled to 32 feet below ground surface. See boring log B-313X for lithology from 0-32 feet.										

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

Signature	Firm		Tel:
	SCS Engineers	2830 Dairy Drive, Madison, WI 53718 608-224-3830	Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-313 Use only as an attachment to Form 4400-122.

Sample: Number and Type	Sample: Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			16											
			17											
			18											
			19											
			20											
			21											
			22											
			23											
			24											
			25											
			26											
			27											
			28											
			29											
			30											
			31											
			32	POORLY GRADED SAND, fine to medium, brown (7.5Y, 5/4), trace angular to sub-rounded fine to coarse gravel, trace silt, massive, (alluvium).										
			33											
			34											
			35											
			36		SP									
			37											
			38											
			39							W				Depth to water ~34-35 ft
			40											

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-313 Use only as an attachment to Form 4400-122.

Sample									Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			41		SP									
			42											
			43											
			44											
			45	End of boring at 45 feet below ground surface. Installed monitoring well MW-313 at 43 feet.										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25220183.00	03025	MW-314

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	12/1/2022	12/1/2022	Geoprobe/HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
WC199		MW-314	Feet MSL	~819.07 Feet MSL	2.0/8.25 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 542,978 N, 2,124,778 E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat ° ' "
Long ° ' "
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S1	36		1–5	POORLY GRADED SAND, fine to coarse, light brown (fill).	SP					M				Geoprobed to 45 ft, overdrilled with HSA to 45 ft
S2	36		6–10	POORLY GRADED SAND, fine to medium, light olive brown (2.5Y, 5/6), trace sub-rounded to sub-angular fine to coarse gravel (alluvium).	SP					M				
S3	32		11–15							M				

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

Signature [signature] Firm SCS Engineers 2830 Dairy Drive, Madison, WI 53718 Tel: 608-224-3830 Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-314 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
S4	36		16–40		SP					M				
S5	55									M				
S6	60									M				
S7	60									M+				Measured water at approximately 34 ft in augers
S8	60									W				Depth to water ~36 ft

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-314 Use only as an attachment to Form 4400-122.

Sample										Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S9	60		41 42 43 44 45		SP					W				
				End of borehole at 45 ft. Installed MW-314 to 43.5 ft.										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25220183.00	03025	MW-315

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	12/1/2022	12/1/2022	Geoprobe/HSA

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
PM289		MW-315	Feet MSL	~817.28 Feet MSL	2.0/8.25 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 543,020 N, 2,125,065 E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat ° ' "
Long ° ' "
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S1	42		1–5	POORLY GRADED SAND, fine to medium sand, fine to coarse gravel, medium brown (fill).	SP					M				Geoprobed to 30 ft and hit refusal. Overdrilled to 45 ft with HSA.
S2	37		6–10	POORLY GRADED SAND, fine to medium sand, light brown (7.5YR, 6/4), with fine to coarse sub-rounded to sub-angular gravel, (alluvium).	SP					M				
S3	40		11–15							M				

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

Signature	Firm		Tel:
	SCS Engineers	2830 Dairy Drive, Madison, WI 53718 608-224-3830	Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-315 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
S4	60		16–20							M				
S5	60		21–25							M				
S6	27		26–29		SP					M				Sand got more compacted and continued to get more compacted.
S7	4		30–35							W				Attempt of split spoon sample at 34 ft and hit refutal. Depth to waterat ~ 34 ft.
			36–40											

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-315 Use only as an attachment to Form 4400-122.

Sample									Soil Properties					
Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	U S C S	Graphic Log	Well Diagram	PID/FID	Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			41		SP									
			42											
			43											
			44											
			45	End of boring at 45 feet. Installed MW-315 to 43 feet.										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00	03025	MW-317

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	4/11/2024	4/11/2024	rotosonic

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
VZ439			33.0 Feet MSL	816.58 Feet MSL	6.0 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 543,466 N, 2,124,519 E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat 45° 16' 16.76"
Long -70° 24' 7.50"
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			1	ORGANIC SILT (OL), dark brown (10YR 3/3), organics (roots).	OL									
S1	33		2	POORLY GRADED SAND (SP) and gravel, dark yellowish brown (10YR 4/6), fine to coarse sand and trace fine to coarse gravel, rounded sand, subrounded to subangular gravel (fill), , broken up rock at bottom.	SP					M				Soil from 0-10' extremely hot, had to collect in bucket. Steaming when dumped on table.
			3											
			4											
			5											
			6	POORLY GRADED SAND (SP), light yellowish brown and dark yellowish brown (10YR 6/4 and 4/4), fine to medium sand, trace silt, fine to coarse gravel, rounded sand (native soil), subrounded to rounded gravel (alluvium).										
			7											
S2	60		8	Yellowish brown	SP				1.0	M				
			9											
			10	Red brown transition layer										
			11											
			12											
S3	32		13	SILTY SAND (SM), very pale brown (10YR 7/4), very fine to fine sand, silt, trace fine to coarse angular gravel.	SM				0.5	M				Samples from: 0-11", 11"-5', 5-7.5', 7.5-10', 10-12.5', 12.5-15', 15-20'
			14											
			15											

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

Signature	Firm	Tel:
Bridget Brunell	SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-317 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
S4	24		16–20		SM				1.0	M				
			20–22	POORLY GRADED SAND (SP), yellowish brown (10YR 5/4), trace silt, trace fine to coarse subround gravel.	SP									
S5	34		22–27	SILTY SAND (SM), very pale brown and light yellowish brown (10YR 7/3 and 6/4), very fine to fine sand.	SM					M				Samples from: 20-22', 22-25', 25-27', 27-30'
S6	44		27–30	LEAN CLAY (CL), light yellowish brown (10YR 6/4), trace red mottling. seam of silt and trace sand	CL					M/W				
S7	0(first attempt)/11 (second)		30–35	SILTY SAND (SM), pale brown (10YR 6/3), very fine to fine sand, clay, trace fine gravel, rounded sand, rounded gravel.	SM				0.25	M/W				30-35' fell out, likely in the saturated "silty quicksand-like zone" Going to 40' with catcher bit.
S8	47		35–40	POORLY GRADED SAND (SP), very pale brown (10YR 7/3 and 8/4), very fine to coarse sand, fine to coarse gravel and trace silt (outwash), rounded sand, rounded gravel.	SP					W				Hole sluffed back in to 33' after drilling to 40' in saturated zone.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-317 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
S9	43		41 42 43 44 45	Yellow (2.5Y 7/6), Iron and grey mottling End of boring at 45'.	SP									Had to drill to 45' to clear out way and prevent sluffing. Well to be set at 42'. Sampled from: 40-41', 41-45'.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION
Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00	03025	MW-318

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	4/10/2024	4/10/2024	rotosonic

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
VZ438			31.0 Feet MSL	818.04 Feet MSL	4.5/6 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 543,484 N, 2,124,661 E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat 45° 16' 16.27"
Long -70° 24' 0.98"
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0	ORGANIC SILT (OL), very dark greyish brown (10YR 3/2), gravel, (topsoil).	OL									
			1	POORLY GRADED SAND (SP), dark yellowish brown (10YR 4/6), trace fine to coarse gravel, silt, and roots.										
S1	35		2							M				Samples: 0-11", 11"-5', 5-10', 10-15', 15-19', 19-20'
			3											
			4											
			5	some dark yellowish brown (10YR 3/4).										
			6											
			7	trace black mottling.										
S2	33		8		SP					M				
			9											
			10	trace roots (fill).										
			11											
			12											
S3	25		13							M				
			14											
			15											

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

Signature	Firm	Tel:
Bridget Brunell	SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-318 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			16											
			17		SP									
S4	23		18							M				
			19	Very pale brown (10YR 7/4)										
			20	POORLY GRADED SAND (SP), dark yellowish brown (10YR 4/6 and 3/4) silt, and roots, trace mottling.										
			21											
			22											
S5	15		23		SP					M				Samples: 20-25', 25-27.5', 27.5-30', 30-35', 35-40' 4.5" diameter from now on using water
			24											
			25	trace gravel, fine to coarse subround black sand										
			26											
			27											
S6	37		28	POORLY GRADED SAND (SP), very pale brown (10YR 7/4), formation change with color change, very fine to fine rounded sand.	SP					M				DTW~ 31'/32' clay very soft
			29											
			30	LEAN CLAY (CL), very pale brown (10YR 7/4), silt seams.										
			31											
			32											
S7	44		33		CL				1.0	M/W				
			34	organic odor										
			35	SILT (ML), very pale brown (10YR 7/4), trace sand, very soft.										
			36											
			37											
S8	2		38		ML									35-40' almost no recovery.
			39											
			40											

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-318 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			41		ML									
S9	17		42	POORLY GRADED SAND (SP), very pale brown (10YR 7/4), fine to medium sand, fine to coarse gravel, rounded sand, rounded gravel.	SP									Samples: 40-41', 41-43'.
			43	End of boring at 43'										

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION

Form 4400-122 Rev. 7-98

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

Facility/Project Name	License/Permit/Monitoring Number	Boring Number
WPL - Columbia Dry Ash Disposal Facility SCS#: 25224152.00	03025	MW-319

Boring Drilled By: Name of crew chief (first, last) and Firm	Date Drilling Started	Date Drilling Completed	Drilling Method
Adam Sweet Horizon Construction and Exploration	4/9/2024	4/9/2024	rotosonic

WI Unique Well No.	DNR Well ID No.	Common Well Name	Final Static Water Level	Surface Elevation	Borehole Diameter
VZ437			20.0 Feet MSL	825.70 Feet MSL	4.5/6 in.

Local Grid Origin ☐ (estimated: ☐) or Boring Location ☒
State Plane 543,488 N, 2,124,963 E S/C/N
NW 1/4 of NE 1/4 of Section 27, T 12 N, R 9 E
Lat 45° 16' 14.12"
Long -70° 23' 47.49"
Local Grid Location Feet ☐ N ☐ S Feet ☐ E ☐ W

Facility ID	County	County Code	Civil Town/City/ or Village
111049180	Columbia	11	Town of Pacific

Sample Number and Type	Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200	RQD/ Comments
			0	ORGANIC SILT (OL), dark brown (10YR 3/3), trace fine rounded sand, organics (roots).	OL									
			1	POORLY GRADED SAND (SP), yellowish brown (10YR 5/8), fine to coarse sand, fine to coarse gravel, angular gravel, rounded sand, trace silt.										
S1	11		2							M				4.5" diameter rods 7' run for first run, 5' for following
			3											
			4											
			5											
			6		SP									
			7	light gray (10YR 7/2), large subround cobbles, fine to coarse angular gravel (alluvium)										
			8											
			9											
S2	11		10							M				Samples: 0-5", 5"-7', 7-12'
			11											
			12	no recovery										
			13											
			14											
S3	0		15											No recovery 12-17' or 17-22',

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

Signature	Firm	Tel:
Bridget Brunell	SCS Engineers 2830 Dairy Drive, Madison, WI 53718	Fax:

This form is authorized by Chapters 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats. Completion of this form is mandatory. Failure to file this form may result in forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be be used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-319 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			16											no water used in 12-22'.
			17											
			18											
			19											
S4	0		20											
			21											
			22	POORLY GRADED SAND (SP), pale brown (10YR 6/3), fine to medium sand, trace fine to coarse gravel, rounded sand, subangular gravel (alluvium)										
			23											
			24											
S5	21		25		SP					M				6" diameter rods 27' onward using water 22' onward
			26											
			27	SILTY SAND (SM), light yellowish brown (10YR 6/4), very fine to fine sand, trace medium to coarse sand, rounded sand.										
			28											
			29											
S6	11		30							M/W				Samples from: 22-27', 27-32' 32-37' might have hit water, going to confirm with next 5' run. Water receding very shallow only on high sensitivity, stuck in casing.
			31											
			32	no medium to coarse sand										
			33											
			34		SM									
S7	16		35							M/W				Felt very different at 38'
			36											
			37											
			38											
			39											
S8	13		40							W				DTW at 38' measured at 20',

State of Wisconsin
Department of Natural Resources

SOIL BORING LOG INFORMATION SUPPLEMENT
Form 4400-122A

Boring Number MW-319 Use only as an attachment to Form 4400-122.

Sample Number and Type	Sample Length Att. & Recovered (in)	Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties: Standard Penetration	Soil Properties: Moisture Content	Soil Properties: Liquid Limit	Soil Properties: Plasticity Index	Soil Properties: P 200	RQD/ Comments
			41											but stuck in casing
			42											
			43		SM									
			44											
S9	43		45						3.5	W				DTW revised to be believed at 35'
			46	LEAN CLAY, yellowish brown (10yr 5/4), some red mottling	CL									
			47	Original End of boring at 47', ended up dropping to 50' when pulling rods. EOB at 50'.										
			48											
			49											
			50											

WELL DETAIL INFORMATION SHEET

JOB NO. C 7134

BORING NO. MW-84A

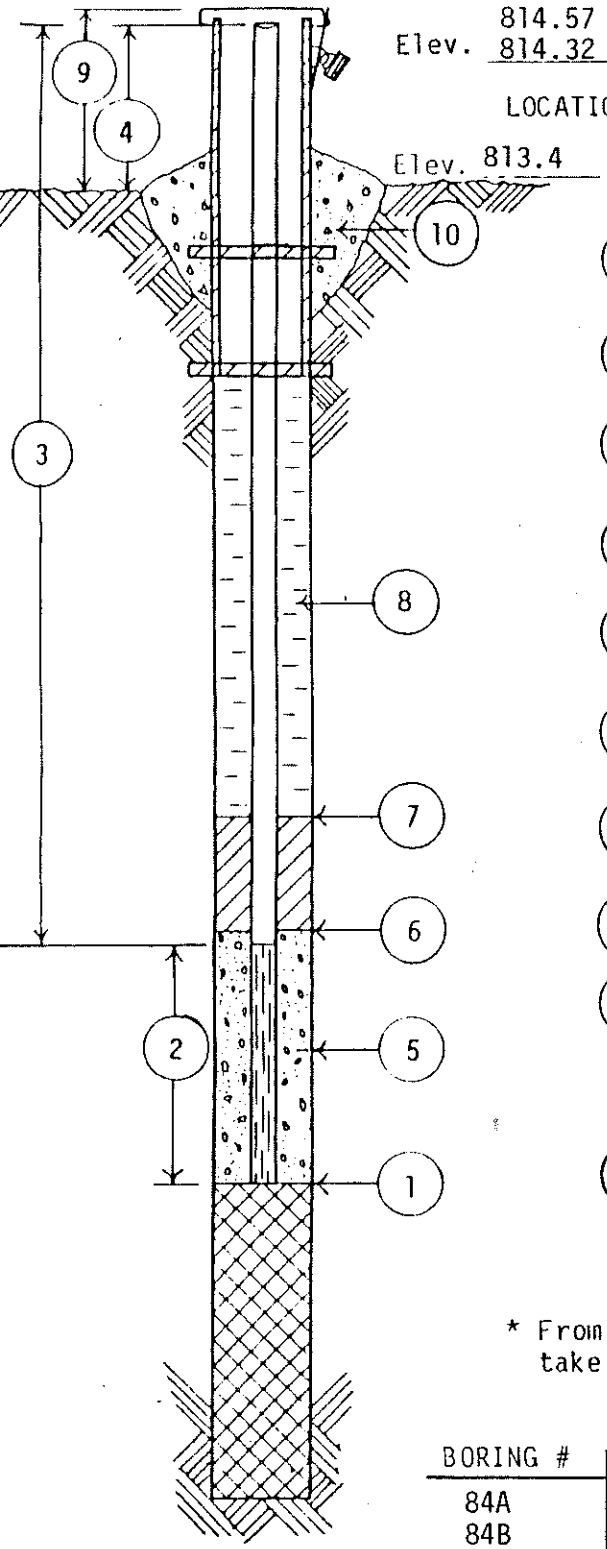
DATE 10/5/83

Elev. 814.57 Steel
814.32 PVC

CHIEF JS

LOCATION WP&L-Columbia Generating Station

All depth measurements of well detail assumed to be from ground surface unless otherwise indicated.



(1) DEPTH TO BOTTOM OF BOREHOLE
37 FEET

(2) LENGTH OF WELL POINT, (WELL SCREEN,) OR SLOTTED PIPE 10 FEET

(3) TOTAL LENGTH OF SOLID PIPE 29 FEET @ 2 IN. DIAMETER

(4) HEIGHT OF WELL CASING ABOVE GROUND
2 FEET

(5) TYPE OF FILTER MATERIAL AROUND WELL POINT OR SLOTTED PIPE Flint Sand

(6) DEPTH OF LOWER OR BOTTOM SEAL
3 FEET

(7) DEPTH OF UPPER OR TOP SEAL
0 FEET

(8) TYPE OF BACKFILL Spoils (Sand)

(9) PROTECTIVE CASING (YES) NO

HEIGHT ABOVE GROUND 2'

LOCKING CAP (YES) NO

(10) CONCRETE CAP (YES) NO

WATER LEVEL CHECKS

* From top of casing, if protective casing higher take measurement from top of protective casing.

BORING #	DATE	TIME	DEPTH TO WATER	REMARKS
84A	10/7/83	3 days	21'	
84B	10/7/83	3 days	19'6"	

WARZYN ENGINEERING INC.

SCS # 25215135

State of Wisconsin
Department of Natural Resources

Route to: Watershed/Wastewater ☐ Waste Management ☐
Remediation/Redevelopment ☐ Other ☐

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: WPL-Columbia	Local Grid Location of Well: ____ ft. ☐N. ☐S. ____ ft. ☐E. ☐W.	Well Name: MW-301
Facility License, Permit or Monitoring No.	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ° ' " Long. ° ' " or	Wis. Unique Well No.: VY701 / DNR Well ID No.:
Facility ID	St. Plane 541562.2 ft. N, 2125001 ft. E. S/C/N	Date Well Installed: 11 / 11 / 2015 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: SW 1/4 of SE 1/4 of Sec. 27, T. 12 N, R. 9 ☒E ☐W	Well Installed By: Name (first, last) and Firm: Kevin Duerst; Badger State Drilling
Distance from Waste/Source ____ ft. / Enf. Stds. Apply ☐	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number:

A. Protective pipe, top elevation 807.16 ft. MSL
B. Well casing, top elevation 806.89 ft. MSL
C. Land surface elevation 803.69 ft. MSL
D. Surface seal, bottom 791.69 ft. MSL or 12 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

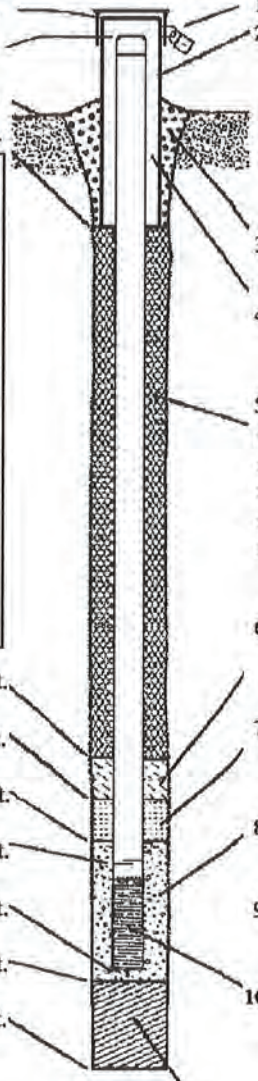
14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☒ 41 / Other ☐ ____

15. Drilling fluid used: Water ☐ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe ____

17. Source of water (attach analysis, if required):

E. Bentonite seal, top 803.69 ft. MSL or 0 ft.
F. Fine sand, top 791.69 ft. MSL or 12 ft.
G. Filter pack, top 789.69 ft. MSL or 14 ft.
H. Screen joint, top 787.69 ft. MSL or 16 ft.
I. Well bottom 777.69 ft. MSL or 26 ft.
J. Filter pack, bottom 776.69 ft. MSL or 27 ft.
K. Borehole, bottom 775.69 ft. MSL or 28 ft.
L. Borehole, diameter 8.5 in.
M. O.D. well casing 2.4 in.
N. I.D. well casing 2.0 in.



1. Cap and lock? ☐ Yes ☒ No
2. Protective cover pipe:
a. Inside diameter: 6 in.
b. Length: 5 ft.
c. Material: Steel ☒ 04 / Other ☐ ____
d. Additional protection? ☒ Yes ☐ No
If yes, describe: bumper posts
3. Surface seal: Bentonite ☒ 30 / Concrete ☐ 01 / Other ☐ ____
4. Material between well casing and protective pipe: Bentonite ☒ 30 / Other ☐ ____
Bentonite to grade, sand above
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. ____ Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☑ 32
c. 4 ft3 Other ☐ ____
7. Fine sand material: Manufacturer, product name & mesh size
a. RW Sidley Inc. #7 ☐
b. Volume added 0.5 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. RW Sidley #5 ☐
b. Volume added 2 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ ____
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ ____
b. Manufacturer Johnson
c. Slot size: 0.01 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): Native None ☐ 14 / Other ☒ ____

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

Signature: [signature] Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718-6751

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

SCS # 25220183.00

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: WPL-Columbia Dry Ash Disposal Facility	Local Grid Location of Well: ___ ft. ☐N. ☐S. ___ ft. ☐E. ☐W.	Well Name: MW-313
Facility License, Permit or Monitoring No.: 03025	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. ___ ° ___ ' ___ " Long. ___ ° ___ ' ___ " or	Wis. Unique Well No.: WC188 / DNR Well ID No.: ___
Facility ID: 111049180	St. Plane 542956.598 ft. N, 2124559.041 ft. E. S/C/N	Date Well Installed: 12 / 019 / 2022 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 09 ☒E ☐W	Well Installed By: Name (first, last) and Firm: Adam Sweet; Horizon Construction and Exploration
Distance from Waste/Source ___ ft. / Enf. Stds. Apply ☒	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☒ Downgradient n ☐ Not Known	Gov. Lot Number: ___

A. Protective pipe, top elevation ___ ft. MSL

B. Well casing, top elevation 820.30 ft. MSL

C. Land surface elevation ~817.80 ft. MSL

D. Surface seal, bottom ___ ft. MSL or ___ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☒ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☒ Rotosonic

15. Drilling fluid used: Water ☒ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe NA

17. Source of water (attach analysis, if required): Horizon's drilling shop

E. Bentonite seal, top ~817.80 ft. MSL or 0 ft.

F. Fine sand, top ~788.80 ft. MSL or 29 ft.

G. Filter pack, top ~786.80 ft. MSL or 31 ft.

H. Screen joint, top ~784.80 ft. MSL or 33 ft.

I. Well bottom ~774.80 ft. MSL or 43 ft.

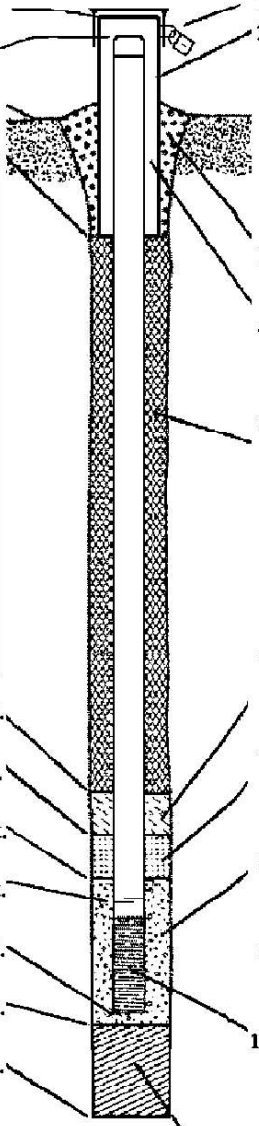
J. Filter pack, bottom ~772.80 ft. MSL or 45 ft.

K. Borehole, bottom ~772.80 ft. MSL or 45 ft.

L. Borehole, diameter 6.00 in.

M. O.D. well casing 2.31 in.

N. I.D. well casing 2.21 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4 in.
b. Length: 5 ft.
c. Material: Steel ☒ 04 / Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Three bollards

3. Surface seal: Bentonite ☒ 30 / Concrete ☐ 01 / Other ☐

4. Material between well casing and protective pipe: Bentonite ☒ 30 / Other ☒ Filter sand

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ___ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 5.22 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☐ 02 / Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. ___ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #5 ☒
b. Volume added 0.36 ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #7 ☒
b. Volume added 2.52 ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐

10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☐ 14 / Other ☒ SP- native, cave in

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

Signature: Jackie Rennebohm | Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

SCS # 25220183.00

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name WPL-Columbia Dry Ash Disposal Facility	**Local Grid Location of Well** ☐ ft. ☐ N. ☐ S. ☐ ft. ☐ E. ☐ W.	**Well Name** MW-314
Facility License, Permit or Monitoring No. 03025	**Local Grid Origin** ☐ (estimated: ☐) or **Well Location** ☐ Lat. ° ' " Long. ° ' " or	**Wis. Unique Well No.** WC199
Facility ID 111049180	**St. Plane** 542978.081 ft. N, 2124778.237 ft. E. S/C/N	**DNR Well ID No.**
Type of Well Well Code 11 / MW	**Section Location of Waste/Source** NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 09 ☒ E ☐ W	**Date Well Installed** 12 / 01 / 2022 (m m d d y y y y)
Distance from Waste/ Source ft. / **Enf. Stds. Apply** ☒	**Location of Well Relative to Waste/Source** u ☐ Upgradient s ☐ Sidegradient d ☒ Downgradient n ☐ Not Known	**Gov. Lot Number**
		Well Installed By: Name (first, last) and Firm Adam Sweet Horizon Construction and Exploration

A. Protective pipe, top elevation _____ ft. MSL

B. Well casing, top elevation 821.57 ft. MSL

C. Land surface elevation ~819.07 ft. MSL

D. Surface seal, bottom _____ ft. MSL or _____ ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☒ Yes ☐ No

14. Drilling method used: Rotary ☐ 50
Hollow Stem Auger ☒ 41
Other ☐

15. Drilling fluid used: Water ☐ 02 Air ☐ 01
Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe NA

17. Source of water (attach analysis, if required):
NA

E. Bentonite seal, top ~819.07 ft. MSL or 0 ft.

F. Fine sand, top ~789.57 ft. MSL or 29.5 ft.

G. Filter pack, top ~787.57 ft. MSL or 31.5 ft.

H. Screen joint, top ~785.57 ft. MSL or 33.5 ft.

I. Well bottom ~775.57 ft. MSL or 43.5 ft.

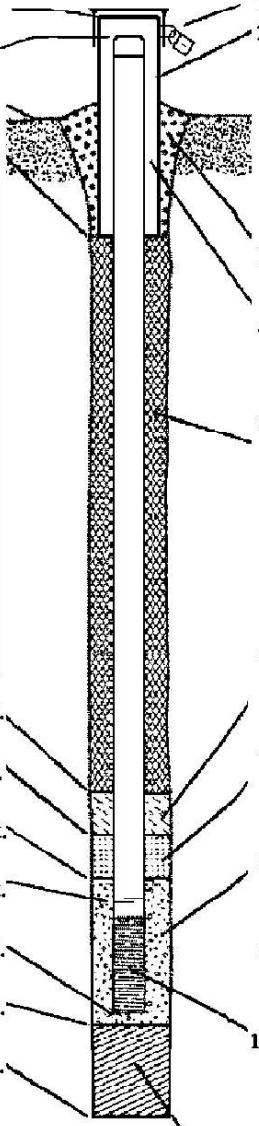
J. Filter pack, bottom ~775.57 ft. MSL or 43.5 ft.

K. Borehole, bottom ~774.07 ft. MSL or 45 ft.

L. Borehole, diameter 8.25 in.

M. O.D. well casing 2.31 in.

N. I.D. well casing 2.21 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: 4 in.
b. Length: 5 ft.
c. Material: Steel ☒ 04 Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: Three bollards
3. Surface seal: Bentonite ☒ 30 Concrete ☐ 01 Other ☐
4. Material between well casing and protective pipe:
Bentonite ☒ 30
Filter sand Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. _____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. _____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 10.47 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. _____ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #5 ☒
b. Volume added 0.71 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #7 ☒
b. Volume added 4.26 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐
10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☐ 14
SP- native, cave in Other ☒

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

Signature	Firm
Jackie Rennebohm	SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292 , 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

SCS # 25220183

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name WPL-Columbia Dry Ash Disposal Facility	**Local Grid Location of Well** ☐ ft. N. ☐ S. ☐ ft. E. ☐ W.	**Well Name** MW-315
Facility License, Permit or Monitoring No. 03025	**Local Grid Origin** ☐ (estimated: ☐) or **Well Location** ☐ Lat. ° ' " Long. ° ' " or	**Wis. Unique Well No.** PM289
Facility ID 111049180	**St. Plane** 543019.956 ft. N, 2125065.014 ft. E. S/C/N	**DNR Well ID No.**
Type of Well Well Code 11 / MW	**Section Location of Waste/Source** NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 09 ☒ E ☐ W	**Date Well Installed** 12 / 2 / 2022 (m m d d y y y y)
Distance from Waste/ Source ft. / **Enf. Stds. Apply** ☒	**Location of Well Relative to Waste/Source** u ☐ Upgradient s ☐ Sidegradient d ☒ Downgradient n ☐ Not Known	**Gov. Lot Number**
		Well Installed By: Name (first, last) and Firm Adam Sweet Horizon Construction and Exploration

A. Protective pipe, top elevation ft. MSL

B. Well casing, top elevation 819.78 ft. MSL

C. Land surface elevation ~817.28 ft. MSL

D. Surface seal, bottom ft. MSL or ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☒ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 Hollow Stem Auger ☒ 41 Other ☐

15. Drilling fluid used: Water ☐ 02 Air ☐ 01 Drilling Mud ☐ 03 None ☒ 99

16. Drilling additives used? ☐ Yes ☒ No

Describe NA

17. Source of water (attach analysis, if required):
NA

E. Bentonite seal, top ~817.28 ft. MSL or 0 ft.

F. Fine sand, top ~788.28 ft. MSL or 29 ft.

G. Filter pack, top ~786.28 ft. MSL or 31 ft.

H. Screen joint, top ~784.28 ft. MSL or 33 ft.

I. Well bottom ~774.28 ft. MSL or 43 ft.

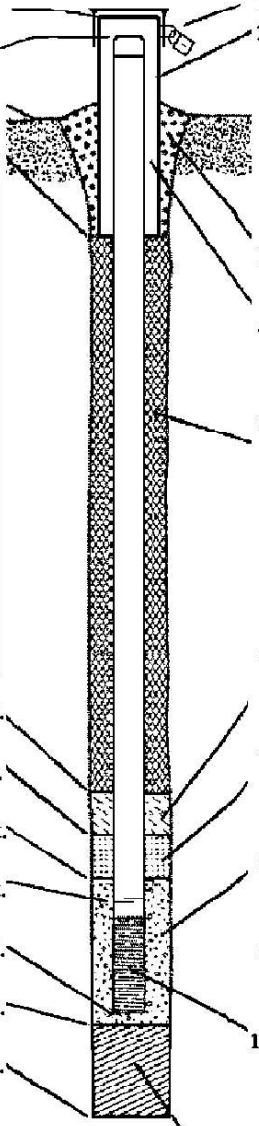
J. Filter pack, bottom ~772.28 ft. MSL or 45 ft.

K. Borehole, bottom ~772.28 ft. MSL or 45 ft.

L. Borehole, diameter 8.25 in.

M. O.D. well casing 2.31 in.

N. I.D. well casing 2.21 in.



1. Cap and lock? ☒ Yes ☐ No

2. Protective cover pipe:
a. Inside diameter: 4 in.
b. Length: 5 ft.
c. Material: Steel ☒ 04 Other ☐
d. Additional protection? ☒ Yes ☐ No
If yes, describe: three bollards

3. Surface seal: Bentonite ☒ 30 Concrete ☐ 01 Other ☐

4. Material between well casing and protective pipe:
Bentonite ☒ 30
Filter Sand Other ☒

5. Annular space seal: a. Granular/Chipped Bentonite ☒ 33
b. ____ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ____ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. ____ % Bentonite . . . . . Bentonite-cement grout ☐ 50
e. 10.23 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 Tremie pumped ☐ 02 Gravity ☒ 08

6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. ____ Other ☐

7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #5 ☒
b. Volume added 0.71 ft^3

8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #7 ☒
b. Volume added 4.97 ft^3

9. Well casing: Flush threaded PVC schedule 40 ☒ 23
Flush threaded PVC schedule 80 ☐ 24
Other ☐

10. Screen material: PVC
a. Screen type: Factory cut ☒ 11 Continuous slot ☐ 01 Other ☐
b. Manufacturer Monoflex
c. Slot size: 0.010 in.
d. Slotted length: 10 ft.

11. Backfill material (below filter pack): None ☒ 14 Other ☐

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

Signature	Firm
Jackie Rennebohm	SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

SCS # 25224152.00

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: WPL-COL Dry Ash	Local Grid Location of Well: ___ ft. ☐N. ☐S. ___ ft. ☐E. ☐W.	Well Name: MW-317
Facility License, Permit or Monitoring No.: 03025	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. 45° 16' 16.7629" Long. -70° 24' 07.5014" or St. Plane 543466.051 ft. N, 2124519.41 ft. E. S/C/N	Wis. Unique Well No.: VZ439 / DNR Well ID No.: ___
Facility ID: 111049180		Date Well Installed: 04 / 11 / 2024 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 9 ☒E ☐W	Well Installed By: Name (first, last) and Firm: Adam Sweet / Horizon
Distance from Waste/Source ___ ft. / Enf. Stds. Apply ☒	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ___

A. Protective pipe, top elevation 819.37 ft. MSL
B. Well casing, top elevation 818.88 ft. MSL
C. Land surface elevation 816.6 ft. MSL
D. Surface seal, bottom 816.6 ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☒
SM ☐ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☒ No

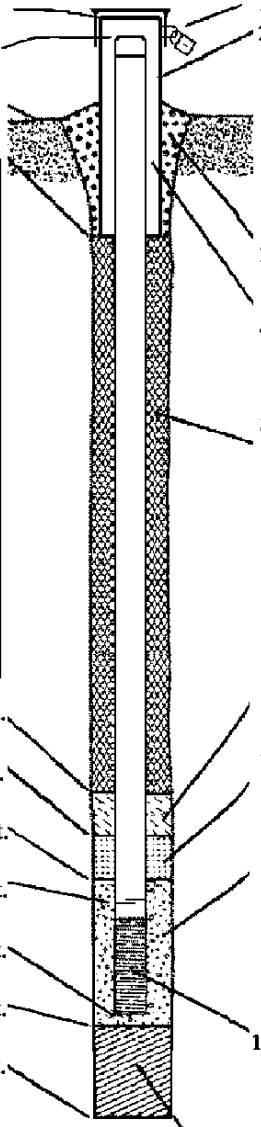
14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☒ Rotosonic

15. Drilling fluid used: Water ☒ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe ___

17. Source of water (attach analysis, if required): Tap water horizon office

E. Bentonite seal, top 793.6 ft. MSL or 23 ft.
F. Fine sand, top 788.6 ft. MSL or 28 ft.
G. Filter pack, top 786.6 ft. MSL or 30 ft.
H. Screen joint, top 784.6 ft. MSL or 32 ft.
I. Well bottom 774.6 ft. MSL or 42 ft.
J. Filter pack, bottom 771.6 ft. MSL or 45 ft.
K. Borehole, bottom 771.6 ft. MSL or 45 ft.
L. Borehole, diameter 6.0 in.
M. O.D. well casing 2.25 in.
N. I.D. well casing 2.0 in.



1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ___ in.
b. Length: ___ ft.
c. Material: anodized aluminum — Steel ☐ 04 / Other ☒
d. Additional protection? ☒ Yes ☐ No
If yes, describe: cement blocks
3. Surface seal: 3/8" bentonite chips — Bentonite ☒ 30 / Concrete ☐ 01 / Other ☐
4. Material between well casing and protective pipe: Red flint #40 — Bentonite ☐ 30 / Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. 10 % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. 5.347 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☒ 02 / Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. ___ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #15 ☐
b. Volume added 0.5 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #40 ☐
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐
10. Screen material: PVC schedule 40
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ 10 slot
b. Manufacturer Johnson
c. Slot size: 0.01 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☒ 14 / Other ☐

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

Signature	Firm
Bridget Bunnell	SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292 , 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

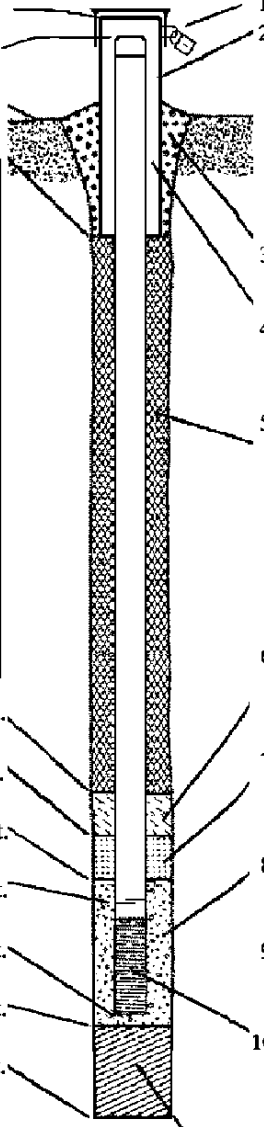
SCS # 25224152.00

State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION
Form 4400-113A Rev. 7-98

Facility/Project Name: WPL-COL Dry Ash	Local Grid Location of Well: ___ ft. ☐N. ☐S. ___ ft. ☐E. ☐W.	Well Name: MW-318
Facility License, Permit or Monitoring No.: 03025	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. 45° 16' 16.2735" Long. -70° 24' 00.9814" or	Wis. Unique Well No.: VZ438 / DNR Well ID No.: ___
Facility ID: 111049180	St. Plane 543484.464 ft. N, 2124661.211 ft. E. S/C/N	Date Well Installed: 04 / 10 / 2024 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 9 ☒E ☐W	Well Installed By: Name (first, last) and Firm: Adam Sweet / Horizon
Distance from Waste/Source ___ ft. / Enf. Stds. Apply ☒	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ___



A. Protective pipe, top elevation 820.94 ft. MSL
B. Well casing, top elevation 820.37 ft. MSL
C. Land surface elevation 818.0 ft. MSL
D. Surface seal, bottom 818.0 ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☐ SC ☐ ML ☒ MH ☐ CL ☒ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☒ ___ (rotosonic)

15. Drilling fluid used: Water ☒ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe ___

17. Source of water (attach analysis, if required): Tap water horizon office

E. Bentonite seal, top 797.0 ft. MSL or 21 ft.
F. Fine sand, top 792.0 ft. MSL or 26 ft.
G. Filter pack, top 790.0 ft. MSL or 28 ft.
H. Screen joint, top 787.4 ft. MSL or 30.6 ft.
I. Well bottom 777.4 ft. MSL or 40.6 ft.
J. Filter pack, bottom 775 ft. MSL or 43 ft.
K. Borehole, bottom 775.0 ft. MSL or 43 ft.
L. Borehole, diameter 6.0 in.
M. O.D. well casing 2.25 in.
N. I.D. well casing 2.0 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ___ in.
b. Length: ___ ft.
c. Material: anodized aluminum — Steel ☐ 04 / Other ☒ ___
d. Additional protection? ☒ Yes ☐ No
If yes, describe: cement blocks
3. Surface seal: 3/8" bentonite chips — Bentonite ☒ 30 / Concrete ☐ 01 / Other ☐ ___
4. Material between well casing and protective pipe: Red flint #40 — Bentonite ☐ 30 / Other ☒ ___
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. 10 % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. 5.347 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☒ 02 / Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. ___ Other ☐ ___
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #15 ☐
b. Volume added 0.5 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #40 ☐
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐ ___
10. Screen material: PVC schedule 40 ___
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ ___ (10 slot)
b. Manufacturer Johnson
c. Slot size: 0.01 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☒ 14 / Other ☐ ___

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

Signature	Firm
Bridget Arnell	SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292 , 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

SCS # 25224152.00

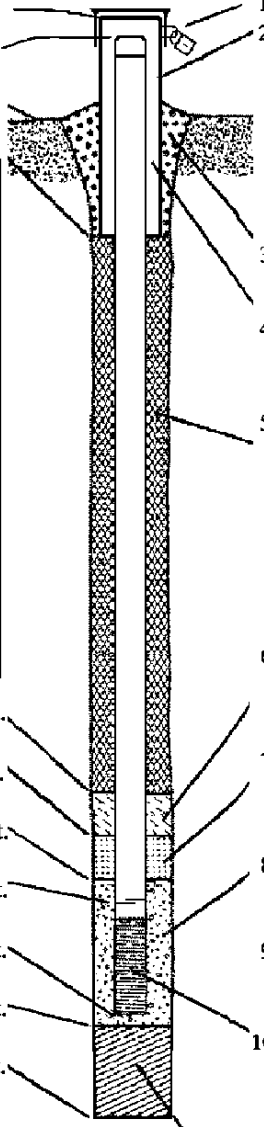
State of Wisconsin
Department of Natural Resources

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

MONITORING WELL CONSTRUCTION

Form 4400-113A Rev. 7-98

Facility/Project Name: WPL-COL Dry Ash	Local Grid Location of Well: ___ ft. ☐N. ☐S. ___ ft. ☐E. ☐W.	Well Name: MW-319
Facility License, Permit or Monitoring No.: 03025	Local Grid Origin ☐ (estimated: ☐) or Well Location ☐ Lat. 45° 16' 14.1238" Long. -70° 23' 47.4896" or	Wis. Unique Well No.: VZ437 / DNR Well ID No.: ___
Facility ID: 111049180	St. Plane 543488.425 ft. N, 2124962.822 ft. E. S/C/N	Date Well Installed: 04 / 9 / 2024 (m m d d y y y y)
Type of Well: Well Code 11 / MW	Section Location of Waste/Source: NW 1/4 of NE 1/4 of Sec. 27, T. 12 N, R. 9 ☒E ☐W	Well Installed By: Name (first, last) and Firm: Adam Sweet / Horizon
Distance from Waste/Source ___ ft. / Enf. Stds. Apply ☒	Location of Well Relative to Waste/Source: u ☐ Upgradient s ☐ Sidegradient d ☐ Downgradient n ☐ Not Known	Gov. Lot Number: ___



A. Protective pipe, top elevation 828.81 ft. MSL
B. Well casing, top elevation 828.28 ft. MSL
C. Land surface elevation 825.7 ft. MSL
D. Surface seal, bottom 825.7 ft. MSL or 0 ft.

12. USCS classification of soil near screen:
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐ SP ☐
SM ☒ SC ☐ ML ☐ MH ☐ CL ☐ CH ☐
Bedrock ☐

13. Sieve analysis performed? ☐ Yes ☐ No

14. Drilling method used: Rotary ☐ 50 / Hollow Stem Auger ☐ 41 / Other ☒ rotosonic

15. Drilling fluid used: Water ☒ 02 / Air ☐ 01 / Drilling Mud ☐ 03 / None ☐ 99

16. Drilling additives used? ☐ Yes ☒ No
Describe ___

17. Source of water (attach analysis, if required): Tap water horizon office

E. Bentonite seal, top 797.7 ft. MSL or 28 ft.
F. Fine sand, top 792.7 ft. MSL or 33 ft.
G. Filter pack, top 790.7 ft. MSL or 35 ft.
H. Screen joint, top 789.2 ft. MSL or 36.5 ft.
I. Well bottom 779.2 ft. MSL or 46.5 ft.
J. Filter pack, bottom 775.7 ft. MSL or 50 ft.
K. Borehole, bottom 775.7 ft. MSL or 50 ft.
L. Borehole, diameter 6.0 in.
M. O.D. well casing 2.25 in.
N. I.D. well casing 2.0 in.

1. Cap and lock? ☒ Yes ☐ No
2. Protective cover pipe:
a. Inside diameter: ___ in.
b. Length: ___ ft.
c. Material: anodized aluminum — Steel ☐ 04 / Other ☒
d. Additional protection? ☒ Yes ☐ No
If yes, describe: cement blocks
3. Surface seal: 3/8" bentonite chips — Bentonite ☒ 30 / Concrete ☐ 01 / Other ☐
4. Material between well casing and protective pipe: Red flint #40 — Bentonite ☐ 30 / Other ☒
5. Annular space seal: a. Granular/Chipped Bentonite ☐ 33
b. ___ Lbs/gal mud weight . . . Bentonite-sand slurry ☐ 35
c. ___ Lbs/gal mud weight . . . . . Bentonite slurry ☐ 31
d. 10 % Bentonite . . . . . Bentonite-cement grout ☒ 50
e. 5.347 Ft^3 volume added for any of the above
f. How installed: Tremie ☐ 01 / Tremie pumped ☒ 02 / Gravity ☐ 08
6. Bentonite seal: a. Bentonite granules ☐ 33
b. ☐ 1/4 in. ☒ 3/8 in. ☐ 1/2 in. Bentonite chips ☒ 32
c. ___ Other ☐
7. Fine sand material: Manufacturer, product name & mesh size
a. Red Flint #15 ☐
b. Volume added 0.5 ft^3
8. Filter pack material: Manufacturer, product name & mesh size
a. Red Flint #40 ☐
b. Volume added 1.5 ft^3
9. Well casing: Flush threaded PVC schedule 40 ☒ 23 / Flush threaded PVC schedule 80 ☐ 24 / Other ☐
10. Screen material: PVC schedule 40
a. Screen type: Factory cut ☒ 11 / Continuous slot ☐ 01 / Other ☐ 10 slot
b. Manufacturer Johnson
c. Slot size: 0.01 in.
d. Slotted length: 10 ft.
11. Backfill material (below filter pack): None ☒ 14 / Other ☐

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

Signature	Firm
Bridget Arnell	SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

Please complete both Forms 4400-113A and 4400-113B and return them to the appropriate DNR office and bureau. Completion of these reports is required by chs. 160, 281, 283, 289, 291, 292, 293, 295, and 299, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with chs. 281, 289, 291, 292, 293, 295, and 299, Wis. Stats., failure to file these forms may result in a forfeiture of between $10 and $25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on these forms is not intended to be used for any other purpose. NOTE: See the instructions for more information, including where the completed forms should be sent.

SCS # 25220183.00

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

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

Facility/Project Name	County Name	Well Name
WPL-Columbia Dry Ash Disposal Facility	Columbia	MW-313

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
03025	11	WC188	

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☒ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☐ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐

3. Time spent developing well 45 min.

4. Depth of well (from top of well casisng) 46.18 ft.

5. Inside diameter of well 2.21 in.

6. Volume of water in filter pack and well casing 10.6 gal.

7. Volume of water removed from well 110.0 gal.

8. Volume of water added (if any) ____.__ gal.

9. Source of water added NA

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☐ No

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 37.34 ft.	37.43 ft.
Date	b. 12/30/2022 (m m d d y y y y)	12/30/2022
Time	c. 3:05 ☐ a.m. ☒ p.m.	3:50 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	____.__ inches	____.__ inches
13. Water clarity	Clear ☒ 10 Turbid ☐ 15 (Describe) clear to light brown at start	Clear ☒ 20 Turbid ☐ 25 (Describe) clear

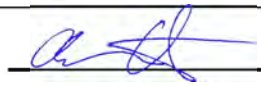
Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Adam Last Name: Watson
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:
31 degrees F and cloudy
Purge rate= 5 gallons/ 2 minutes

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Wisconsin Power and Light Co. - Alliant Energy
Street: 1919 Alliant Energy Center Way
City/State/Zip: Madison, WI 53713

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: 
Print Name: Adam Watson
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

SCS # 25220183.00

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

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

Facility/Project Name	County Name	Well Name
WPL-Columbia Dry Ash Disposal Facility	Columbia	MW-314

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
03025	11	WC199	

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☒ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☐ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐

3. Time spent developing well 132 min.

4. Depth of well (from top of well casisng) 44.96 ft.

5. Inside diameter of well 2.31 in.

6. Volume of water in filter pack and well casing 10.4 gal.

7. Volume of water removed from well 120.0 gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added NA

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☐ No

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 37.34 ft.	38.37 ft.
Date	b. 12/30/2022 (mm/dd/yyyy)	12/30/2022 (mm/dd/yyyy)
Time	c. 11:10 ☒ a.m. ☐ p.m.	1:22 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	___.__ inches	___.__ inches
13. Water clarity	Clear ☒ 10 Turbid ☐ 15 (Describe) creamy brown at start	Clear ☒ 20 Turbid ☐ 25 (Describe) clear
14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Adam Last Name: Watson
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:
31 degrees F and cloudy
Purge rate= 5.0 gallons/ 5 minutes

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Wisconsin Power and Light Co. - Alliant Energy
Street: 1919 Alliant Energy Center Way
City/State/Zip: Madison, WI 53713

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Adam Watson
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

SCS # 25220183.00

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

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

Facility/Project Name	County Name	Well Name
WPL-Columbia Dry Ash Disposal Facility	Columbia	MW-315

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
03025	11	PM289	

1. Can this well be purged dry? ☐ Yes ☒ No

2. Well development method

surged with bailer and bailed	☐ 41
surged with bailer and pumped	☒ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☐ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐

3. Time spent developing well 120 min.

4. Depth of well (from top of well casisng) 45.61 ft.

5. Inside diameter of well 2.31 in.

6. Volume of water in filter pack and well casing 10.64 gal.

7. Volume of water removed from well 120.0 gal.

8. Volume of water added (if any) ___.__ gal.

9. Source of water added NA

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☐ No

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 36.34 ft.	36.34 ft.
Date	b. 12/30/2022 (mm/dd/yyyy)	12/30/2022
Time	c. 10:40 ☒ a.m. ☐ p.m.	12:40 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	___.__ inches	___.__ inches
13. Water clarity	Clear ☒ 10 Turbid ☐ 15 (Describe) brown at start	Clear ☒ 20 Turbid ☐ 25 (Describe) clear

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	____.__ mg/l	____.__ mg/l
15. COD	____.__ mg/l	____.__ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Adam Last Name: Watson
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:
31 degrees F and cloudy
Purge rate= 1gallon/minute

Name and Address of Facility Contact /Owner/Responsible Party
First Name: _____ Last Name: _____
Facility/Firm: Wisconsin Power and Light Co. - Alliant Energy
Street: 1919 Alliant Energy Center Way
City/State/Zip: Madison, WI 53713

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: [signature]
Print Name: Adam Watson
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

SCS # 25224152.00

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

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

Facility/Project Name	County Name	Well Name
COL	Columbia	MW-317
Facility License, Permit or Monitoring Number	**County Code**	**Wis. Unique Well Number**	**DNR Well ID Number**
03025	11	VZ439	--

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☒ 41
surged with bailer and pumped	☒ 61
surged with block and bailed	☐ 42
surged with block and pumped	☐ 62
surged with block, bailed and pumped	☐ 70
compressed air	☐ 20
bailed only	☐ 10
pumped only	☐ 51
pumped slowly	☐ 50
Other _____	☐ --

3. Time spent developing well 262 min.

4. Depth of well (from top of well casisng) 44.3 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 9.2 gal.

7. Volume of water removed from well 15.0 gal.

8. Volume of water added (if any) 0.0 gal.

9. Source of water added N/A

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 35.23 ft.	43.17 ft.
Date	b. 05/20/2024 (m m / d d / y y y y)	06/05/2024 (m m / d d / y y y y)
Time	c. 1:14 ☐ a.m. ☒ p.m.	12:30 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	4.5 inches	1.5 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe) Black	Clear ☐ 20 Turbid ☒ 25 (Describe) grayish brown, very turbid, no odor

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	495.00 mg/l	-- mg/l
15. COD	-- mg/l	-- mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Bridget / Paul Last Name: Russell / Grover
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:

5/20/2024 (1314-1440): DTW: 35.23 / TD 44.3 / 4.5 inches sediment / 16 W in caring 10 ft filter pack = 9.12x10=91.2 gallons / black color and turbid / Developed for 86 min / Purged dry 3 times / Purged 4.5 gallons / light brown and turbid / DTW after: 37.64 / 0.5 inches of sediment / Bridget Russell

6/05/2024 (934-1230): DTW: -- / TD: 44.5 / volume of water in filter pack: 9.2 gallons / Developed for 176 minutes / Purged 10.5 gallons / grayish brown, very turbid, no odor / 1.5 inches of sediment / DTW 43.17 / Paul Grover

Name and Address of Facility Contact /Owner/Responsible Party
First Name: Brian Last Name: Clepper
Facility/Firm: Alliant Energy - Columbia
Street: W8375 Murray Rd
City/State/Zip: Pardeeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bridget Russell
Print Name: Bridget Russell and Paul Grover
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

SCS # 25224152.00

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

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

Facility/Project Name	County Name	Well Name
COL	Columbia	MW-318

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
03025	11	VZ438	

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☒	41
surged with bailer and pumped	☒	61
surged with block and bailed	☐	42
surged with block and pumped	☐	62
surged with block, bailed and pumped	☐	70
compressed air	☐	20
bailed only	☐	10
pumped only	☐	51
pumped slowly	☐	50
Other _____	☐	

3. Time spent developing well: 149 min.

4. Depth of well (from top of well casisng): 42.95 ft.

5. Inside diameter of well: 2.0 in.

6. Volume of water in filter pack and well casing: 8.27 gal.

7. Volume of water removed from well: 13.0 gal.

8. Volume of water added (if any): -- gal.

9. Source of water added: N/A

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

	Before Development	After Development
11. Depth to Water (from top of well casing) a.	36.6 ft.	41.97 ft.
Date b.	05/20/2024	06/05/2024
Time c.	2:55 ☐ a.m. ☒ p.m.	11:15 ☒ a.m. ☐ p.m.
12. Sediment in well bottom	14.0 inches	1.5 inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15 (Describe)	Clear ☐ 20 Turbid ☒ 25 (Describe)
	very turbid	grayish brown
	thick with sediment	very turbid
	brown	no odor
14. Total suspended solids	3410.0 mg/l	-- mg/l
15. COD	-- mg/l	-- mg/l

Fill in if drilling fluids were used and well is at solid waste facility:

16. Well developed by: Name (first, last) and Firm
First Name: Bridget / Paul Last Name: Russell / Grover
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:

5/20/2024 (1455-1524): DTW: 36.6 / TD 42.95 / 14.0 inches of sediment / 8.27 gallons rose for volume in filter pack + casing = 8.27x10=82.7 gallons / brown color, thick with sediment and very turbid / Developed for 29 min / Purged dry 3 times / Purged 2.0 gallons / brown color, thick with sediment and very turbid / DTW after: 37.12 / 2.5 inches of sediment / Bridget Russell

6/05/2024 (915-1115): DTW: -- / TD: 43.1 / volume of water in filter pack: 8.3 gallons / Developed for 120 minutes / Purged 11 gallons / grayish brown, very turbid, no odor / DTW 41.97 / 1.5 inches of sediment / Paul Grover

Name and Address of Facility Contact /Owner/Responsible Party
First Name: Brian Last Name: Clepper
Facility/Firm: Alliant Energy - Columbia
Street: W8375 Murray Rd
City/State/Zip: Pardeeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bridget Russell
Print Name: Bridget Russell and Paul Grover
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

SCS # 25224152.00

State of Wisconsin
Department of Natural Resources

MONITORING WELL DEVELOPMENT

Form 4400-113B Rev. 7-98

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

Facility/Project Name	County Name	Well Name
COL	Columbia	MW-319

Facility License, Permit or Monitoring Number	County Code	Wis. Unique Well Number	DNR Well ID Number
03025	11	VZ437	

1. Can this well be purged dry? ☒ Yes ☐ No

2. Well development method

surged with bailer and bailed	☒	41
surged with bailer and pumped	☒	61
surged with block and bailed	☐	42
surged with block and pumped	☐	62
surged with block, bailed and pumped	☐	70
compressed air	☐	20
bailed only	☒	10
pumped only	☐	51
pumped slowly	☐	50
Other _____	☐	

3. Time spent developing well 190 min.

4. Depth of well (from top of well casisng) 49.1 ft.

5. Inside diameter of well 2.0 in.

6. Volume of water in filter pack and well casing 8.0 gal.

7. Volume of water removed from well 90. gal.

8. Volume of water added (if any) -- gal.

9. Source of water added N/A

10. Analysis performed on water added? (If yes, attach results) ☐ Yes ☒ No

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. 42.10 ft.	48.37 ft.
Date	b. 05/20/2024	06/05/2024
Time	c. 3:40 ☐ a.m. ☒ p.m.	13:00 ☐ a.m. ☒ p.m.
12. Sediment in well bottom	60.0 inches	?.- inches
13. Water clarity	Clear ☐ 10 Turbid ☒ 15	Clear ☐ 20 Turbid ☒ 25
(Describe)	very turbid Lots of silt + clay chunks coming out as purged dry thick with sediment brown	grayish brown very turbid no odor

Fill in if drilling fluids were used and well is at solid waste facility:

14. Total suspended solids	13300.0 mg/l	--.- mg/l
15. COD	--.- mg/l	--.-- mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Bridget Last Name: Russell
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:

5/20/2024 (1540-1630): DTW: 42.10 / TD 44.6 (difficult to determine TD due to high sediment content) / 60 inches of sediment / 8.03 gallons for volume in filter pack + casing = 8.03x10=80.3 gallons / brown color, thick with sediment and very turbid / Developed for 50 min / Purged dry 3 times / Purged 1.5 gallons / brown color, thick with sediment, less chunks and very turbid / DTW after: 39.50 / TD after: 47.6 / 36 inches of sediment / Bridget Russell
6/05/2024 (915-1115): DTW: -- / TD: 49.1 / volume of water in filter pack: 8.0 gallons / Developed for 140 minutes / Purged 7.5 gallons / grayish brown, very turbid, no odor / DTW 48.37 / ? inches of sediment, very fine uniform SM in bottom / Paul Grover

Name and Address of Facility Contact /Owner/Responsible Party
First Name: Brian Last Name: Clepper
Facility/Firm: Alliant Energy - Columbia
Street: W8375 Murray Rd
City/State/Zip: Pardeeville, WI 53954

I hereby certify that the above information is true and correct to the best of my knowledge.
Signature: Bridget Russell
Print Name: Bridget Russell and Paul Grover
Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

NOTE: See instructions for more information including a list of county codes and well type codes.

State of Wisconsin
Department of Natural Resources
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

GROUNDWATER MONITORING WELL AND POINT INFORMATION

Form 4400-089 (R 04/19)

Use the Groundwater Monitoring Well and Point Information Form to record identification, location and construction information for groundwater monitoring wells and any other sample "points," (e.g., gas probes, lysimeters, leachate collection systems, etc.), that are part of the environmental monitoring program. **NOTE:** Not all fields will be applicable to all point types. Only **one** coordinate reference system may be used per site. Allowable coordinate systems are listed below. (Coordinates for each system require a minimum number of digits as described below.) Local grid coordinates cannot be accepted. Identify the Coordinate Reference System, Datum and Method used.

Facility Name	County	Facility ID No. (FID)	License, Permit or Monitoring No.	Date	Completed By (Name and Firm)
WPL - Columbia Energy Center	Columbia		03025	09/24/2024	Meghan Blodgett, SCS Engineers

DNR Point ID No.	Point Name[1]	WUWN[2] (if app.)	Type	Status	Gradient	*Enf. Stds. Y/N.*	Construction Date	Elevations msl (ft)		Well Casing			Well Screen Length (ft)	Well (Pt) Total Length[5] (ft)	Coordinates[6,7,8,9]	
								Ground Surface	Well Top (of casing)	Type	Diam[3] (in)	Length[4] (ft)			Y / Lat / Northing	X / Long / Easting
110	MW-313	WC188	11	P	D	Yes	12/19/2022	817.80	820.30	P	2	36.2	10	46.2	542,956	2,124,559
112	MW-314	WC199	11	P	D	Yes	12/01/2022	819.07	821.57	P	2	35.0	10	45.0	542,978	2,124,778
114	MW-315	PM289	11	P	D	Yes	12/02/2022	817.28	819.78	P	2	35.6	10	45.6	543,020	2,125,065
116	MW-317	VZ439	11	A	D	Yes	04/11/2024	816.6	818.88	P	2	34.3	10	44.3	543466	2124520
118	MW-318	VZ438	11	A	D	Yes	04/10/2024	818.0	820.37	P	2	33	10	43	543484.4	2124661
120	MW-319	VZ437	11	A	D	Yes	04/09/2024	825.7	828.28	P	2	39.1	10	49.1	543488.5	2124963
										P						
										P						
										P						
										P						
										P						

[1]Include previous name as well if one exists.

[2]Wisconsin Unique Well Number.

[3]Well Casing Diameter measures inside diameter.

[4]Length of well casing from top of casing to top of screen.

[5]Total length of well from top of casing to bottom of well. *Should equal sum of well casing length and screen length.*

[6]Identify Coordinate Reference System (only one system may be used per site):

- ○ Lat/Long (Decimal Degrees) WGS84 (min. 8 digits total w/ 6 right of decimal, e.g., -89.123456)

State Plane (min. 2 digits right of decimal)

- ○ North
- ○ Central
- ⊗ South
- ○ Wisc. Transverse Mercator WTM91 (min. 2 digits right of decimal)
- ○ Local County Coord. Sys. (WISCRS) (min. digits vary by county)

[7]Identify Projection Datum and units*

- ⊗ NAD83
- ○ NAD27
- ○ NAD83(91)
- ○ NAD83(11)
- ○ Other Describe: _____

Units used for State Plane, WTM or County Coord. Sys:

- ○ meters
- ◉ feet

*NOTE: A datum and units are not required for Lat/Long

[8]Identify the Method Used to Determine the Coordinates:

- ⊗ GPS001-Survey grade
- ○ GPS003-Mapping grade/real-time differential correction
- ○ GPS004-Mapping grade/post processing
- ○ SRV001-Classical terrestrial surveying techniques
- ○ OTH001 (Other), Describe:

[9]Y / Lat / Northing describe the vertical axis.

X / Long / Easting describe the horizontal axis.

(include "-" where needed, e.g., -89.123456)

Remarks:

This table includes CCR monitoring wells constructed and/or abandoned due to construction of landfill Modules 10-13.

Completion of this form is mandatory under chs. 281, 289 and 292, Wis. Stats., and ss. NR 110.25, NR 507.14 and NR 716.15, Wis. Admin. Code

INSTRUCTIONS FOR COMPLETING THE GROUNDWATER MONITORING WELL AND POINT INFORMATION FORM (#4400-089)

When completed, this form provides a record of information for each well or sampling point that is part of a facility's environmental monitoring program. It provides the facility or consultant with a means of presenting point information required by the Department in a consistent format. This form should be updated as new points are added to the monitoring program or new information becomes available (e.g., re-surveyed elevation for existing points).

Complete the form with the necessary information as described below:

Facility Name: Enter the name of the site or landfill.

County: Enter the county the site or landfill is located.

Facility ID Number (FID): Enter the 9-digit Facility ID (FID) assigned to the site.

License/Permit/Monitoring Number: Enter the number assigned by the Department to the facility. If unknown, leave blank.

Date: Enter the date on which the form is completed (mm/dd/yyyy).

Completed By: Enter the name and firm of person completing the form.

DNR Point ID Number: Enter the 3-digit number assigned to the point by the Department, for use by the Department.

Point Name: Enter the common name given to the point by the facility or consultant; e.g. MW-2, GP-5. If the point had a previous name, please include and identify as such.

Wisconsin Unique Well Number (WUWN): Enter the Wisconsin Unique Well Number assigned to groundwater monitoring and private wells. WUWNs are available from the Department and are to be assigned to all newly installed monitoring and private wells.

Type: Enter the Numerical code describing the type of well or sampling point. Point type codes range from 11 to 99. *See list of Point Types beginning on page 4.*

Status: Enter the status of the well using the following codes:

A	–	**A**ctively monitored point
I	–	**I**nactive point (existing point not currently being monitored)
P	–	**P**ermanently abandoned point
L	-	P**L**anned.

INSTRUCTIONS FOR COMPLETING THE GROUNDWATER MONITORING WELL AND POINT INFORMATION FORM (#4400-089)

Gradient Position: Enter the location of the well in the groundwater flow system relative to the disposal site, spill, etc. *Use one of the six letters designated below. If gradient position is not known or does not apply to the type of point, leave blank.*

U = Up gradient	D = Down gradient	Y = Side-to-down gradient
S = Side gradient	X = Side-to-up gradient	N = Not known

Enf. Stds. Apply: Enter "Y" if enforcement standards apply at this well. Enforcement standards apply to any well beyond the **D**esign **M**anagement **Z**one (DMZ) or the property boundary of the facility or to a water supply well. For spills, enforcement standards apply at every point at which groundwater is monitored. (For more information, see s. NR 140.22, Wis. Adm. Code.) *If the application of enforcement standards is not relevant to the type of point entered, leave blank.*

Construction Date: Enter the installation date of the point.

Elevations:

Ground Surface: The elevation, in feet, of the ground surface adjacent to the well using mean sea level (MSL) based on national geodetic vertical survey (i.e., NAVD88).

Well Top (of casing): The elevation, of the top of the well casing (not top of protective pipe), in feet using MSL based on national geodetic vertical survey (i.e., NAVD88).

Well Casing:

Type: The type of pipe used: plastic (P), steel (S), or other (O).

Diam: The inside diameter of the pipe used in the well construction, in inches.

Length: The length of the well casing from the top of the casing to the top of the screen, measured in feet.

Well Screen Length: The length of the screen measured in feet.

Well (Point) Total Length: The total length of the well (or point) from the top of the casing to the bottom of the well, measured in feet. *Should equal sum of well casing length and screen length.*

Point Coordinate Reference Systems: Only one coordinate reference system may be used on the form. Allowable coordinate systems are Lat/Long (in decimal degrees [DD] only), State Plane and Wisconsin Transverse Mercator (WTM91). County coordinate systems (WISCRS) may also be used. Local grid coordinates are *not* accepted. The field named "Y / Lat / Northing" describe the vertical axis and the field "X / Long / Easting" describe the horizontal axis.

INSTRUCTIONS FOR COMPLETING THE GROUNDWATER MONITORING WELL AND POINT INFORMATION FORM (#4400-089)

Identify the coordinate reference system used:

- Latitude/Longitude WGS84 (Decimal Degrees, minimum 8 digits total w/ 6 right of decimal)
- State Plane (min. 2 digits right of decimal):
  - North
  - Central
  - South
- Wisc. Transverse Mercator (WTM91, min. 2 digits right of decimal)
- Local County Coordinate System (aka Wisconsin Coordinate Reference System (WISCRS), minimum digits vary by county)

Identify the projection datum used (listed below) by checking the appropriate box on the bottom of the form. NOTE: A datum is not required for Lat/Long.

- NAD83
- NAD27
- NAD83(91)
- NAD83(11)
- Other

Identify the units used, meters or feet, for State Plane, WTM or Local County Coordinate System.

Identify the method used to determine the coordinates by checking the appropriate box on the bottom of the form. The options are:

- GPS001-Survey grade GPS
- GPS003-Mapping grade GPS with real-time differential correction
- GPS004-Mapping grade GPS with post processing differential correction
- SRV001-Classical terrestrial surveying techniques
- OTH001 (Other)

Remarks: Include any comments applicable to the submittal (e.g., Re-surveyed top of well casing elevation).

List of Point Types

11 (mw) Water table observation well (monitoring well screen intersecting the water table) (non-Subtitle D well)
12 (pz) Piezometer (monitoring well with screen sealed below the water table (non-Subtitle D well)
13 (pw) Private well - potable water supply
14 (ly) Lysimeter
15 (sp) Spring
16 (rp) Resistivity probe
17 (gc) Gradient control
18 (at) Aquifer test well
19 (pn) Private well-non potable
21 (fs) Flow or seep
22 (sw) Surface water
23 (lc) Leachate collection system
24 (lh) Leachate head well
25 (lg) Leachate and gas combo
26 (ew) Groundwater extraction well
27 (he) Horizontal groundwater extraction well

28 (hw) Horizontal monitoring well
29 (ha) Horizontal vapor extraction well
31 (us) Upstream
32 (ms) Mid-site
33 (ds) Downstream
34 (ro) Run-off
35 (im) Impounded
36 (sg) Staff gauge
41 (tr) Treated
42 (pr) Pretreated
45 (pp) Private well primary treatment
46 (ps) Private well secondary treatment
49 (sh) Settlement hub
51 (gp) Gas probe
52 (nl) Non-landfill structure
53 (ge) Gas extraction system
54 (gu) Gas utilization or destruction
55 (gc) Gas condensate
56 (sc) Site conditions collection
57 (sv) Soil venting well (includes both soil vapor extraction and bioventing, includes both extraction and unsaturated zone gas phase injection wells installed in soil or fill, but not refuse)
58 (gm) Gas sample monitoring point
59 (sc) Stone column gas extraction well
61 (ij) Injection well (injection of liquids not gases)
62 (as) In situ air sparging well (injection well to inject gases into the aquifer
63 (uv) Unterdruck Verdampfer Brunnen (UVB) wells (sparging wells where the gases remain in the well and are not injected into the aquifer)
64 (le) Groundwater and light non-aqueous phase liquid (LNAPL) extraction well
65 (de) Groundwater and dense non-aqueous phase liquid (DNAPL) extraction well
66 (ve) Vacuum enhanced groundwater extraction wells
67 (vi) Vacuum enhanced groundwater and LNAPL extraction well
68 (vd) Vacuum enhanced groundwater and DNAPL extraction well
71 (dw) Subtitle D water table observation well (see 11/mw)
72 (dp) Subtitle D piezometer (see 12/pz)
80 (mc) Municipal water supply well: cities, villages, and sanitary districts
81 (oc) Community-other-than-municipal (OTM) water supply well: mobile home parks, apartments, subdivisions, and condominium complexes
85 (nn) Noncommunity-Nontransient water supply well (schools, day care centers, and industries) A Noncommunity water system that regularly serves at least 25 of the same persons over 6 months per year
86 (tn) Noncommunity-Transient water supply well (motels, restaurants, parks, taverns, churches, and campgrounds) A Noncommunity water system that serves at least 25 people at least 60 days of the year
99 (ot) Other

State of Wis., Dept. of Natural Resources SCS No. 25224152.00
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☒ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	common well name
Columbia	P M 2 8 9	MW-315

Latitude / Longitude (see instructions)	Format Code	Method Code
43.4883708 N	☒ DD	☒ GPS008
89.4100212 W	☐ DDM	☐ SCR002 ☐ OTH001

¼ / ¼ NW	¼ SE	Section	Township	Range
or Gov't Lot #		27	12 N	9 ☒ E ☐ W

Well Street Address: W8375 Murray Rd

Well City, Village or Town	Well ZIP Code
Pardeeville, WI	53954

Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
Within landfill expansion area	

2. Facility / Owner Information

Facility Name: WPL - Columbia Energy Center

Facility ID (FID or PWS):

License/Permit/Monitoring #: License #03025, GEMS Well ID #114

Original Well Owner: Wisconsin Power and Light Company

Present Well Owner: Wisconsin Power and Light Company

Mailing Address of Present Owner: W8375 Murray Rd

City of Present Owner	State	ZIP Code
Pardeeville	WI	53954

3. Filled & Sealed Well / Drillhole / Borehole Information

☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/02/2022

If a Well Construction Report is available, please attach.

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify):

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
43	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
8.25	33

Was well annular space grouted? ☒ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)
29	33

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☒ Yes	☐ No	☐ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☒ Yes	☐ No	☐ N/A
If yes, was hole retopped?	☒ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☒ Yes	☐ No	☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☒ Bentonite Chips ☒ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	1.5	3/4 Bag	N/A
Bentonite Cement Grout	1.5	45	3 bags port. 0.25 bent.	90:10

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Adam Sweet, Horizon Construction & Exploration, LLC		05/22/2024

Street or Route	Telephone Number
764 Tower Drive	(262)692-3347

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021	SCS Engineers (on behalf of Horizon) Bridget Brunell	05/23/2024

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources SCS No. 25224152.00
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☒ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	common well name
Columbia	W C 1 8 8	MW-313

Latitude / Longitude (see instructions)	Format Code	Method Code
43.4882067 N	☒ DD	☒ GPS008
89.4119296 W	☐ DDM	☐ SCR002 ☐ OTH001

¼ / ¼ NW or Gov't Lot #	¼ SE	Section	Township	Range
		27	12 N	9 ☒ E ☐ W

Well Street Address: W8375 Murray Rd

Well City, Village or Town	Well ZIP Code
Pardeeville, WI	53954

Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
Within landfill expansion area	

2. Facility / Owner Information

Facility Name: WPL - Columbia Energy Center

Facility ID (FID or PWS):

License/Permit/Monitoring #: License #03025, GEMS Well ID #110

Original Well Owner: Wisconsin Power and Light Company

Present Well Owner: Wisconsin Power and Light Company

Mailing Address of Present Owner: W8375 Murray Rd

City of Present Owner	State	ZIP Code
Pardeeville	WI	53954

3. Filled & Sealed Well / Drillhole / Borehole Information

☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/19/2022

If a Well Construction Report is available, please attach.

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify):

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
43	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
8.25	33

Was well annular space grouted? ☒ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)
29	34

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☒ Yes	☐ No	☐ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☒ Yes	☐ No	☐ N/A
If yes, was hole retopped?	☒ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☒ Yes	☐ No	☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☒ Bentonite Chips ☒ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	1.5	3/4 Bag	N/A
Bentonite Cement Grout	1.5	47	3.5 bgs port, .5 bg. bent	90:10

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Adam Sweet, Horizon Construction & Exploration, LLC		05/22/2024

Street or Route	Telephone Number
764 Tower Drive	(262)692-3347

City	State	ZIP Code	Signature of Person Doing Work	Date Signed
Fredonia	WI	53021	SCS Engineers (on behalf of Horizon) Bridget Bruell	05/22/2024

DNR Use Only

Date Received	Noted By

Comments:

State of Wis., Dept. of Natural Resources SCS No. 25224152.00
dnr.wi.gov

Well / Drillhole / Borehole Filling & Sealing Report

Form 3300-005 (R 4/2015)

Notice: Completion of this report is required by chs. 160, 281, 283, 289, 291-293, 295, and 299, Wis. Stats., and chs. NR 141 and 812, Wis. Adm. Code. In accordance with chs. 281, 289, 291-293, 295, and 299, Wis. Stats., failure to file this form may result in a forfeiture of between $10-25,000, or imprisonment for up to one year, depending on the program and conduct involved. Personally identifiable information on this form is not intended to be used for any other purpose. Return form to the appropriate DNR office and bureau. See instructions on reverse for more information.

☐ **Verification Only of Fill and Seal**

Route to DNR Bureau:
☐ Drinking Water ☐ Watershed/Wastewater ☐ Remediation/Redevelopment
☒ Waste Management ☐ Other:

1. Well Location Information

County	WI Unique Well # of Removed Well	common well name
Columbia	W C 1 9 9	MW-314

Latitude / Longitude (see instructions)	Format Code	Method Code
43.4882614 N	☒ DD	☒ GPS008
89.4111030 W	☐ DDM	☐ SCR002 ☐ OTH001

¼ / ¼ NW	¼ SE	Section	Township	Range
or Gov't Lot #		27	12 N	9 ☒ E ☐ W

Well Street Address: W8375 Murray Rd

Well City, Village or Town	Well ZIP Code
Pardeeville, WI	53954

Subdivision Name	Lot #

Reason for Removal from Service	WI Unique Well # of Replacement Well
Within landfill expansion area	

2. Facility / Owner Information

Facility Name: WPL - Columbia Energy Center

Facility ID (FID or PWS):

License/Permit/Monitoring #: License #03025, GEMS Well ID #112

Original Well Owner: Wisconsin Power and Light Company

Present Well Owner: Wisconsin Power and Light Company

Mailing Address of Present Owner: W8375 Murray Rd

City of Present Owner	State	ZIP Code
Pardeeville	WI	53954

3. Filled & Sealed Well / Drillhole / Borehole Information

☒ Monitoring Well ☐ Water Well ☐ Borehole / Drillhole

Original Construction Date (mm/dd/yyyy): 12/01/2022

If a Well Construction Report is available, please attach.

Construction Type:
☒ Drilled ☐ Driven (Sandpoint) ☐ Dug ☐ Other (specify):

Formation Type:
☒ Unconsolidated Formation ☐ Bedrock

Total Well Depth From Ground Surface (ft.)	Casing Diameter (in.)
43.5	2

Lower Drillhole Diameter (in.)	Casing Depth (ft.)
8.25	33.5

Was well annular space grouted? ☒ Yes ☐ No ☐ Unknown

If yes, to what depth (feet)?	Depth to Water (feet)
29.5	34

4. Pump, Liner, Screen, Casing & Sealing Material

Pump and piping removed?	☒ Yes	☐ No	☐ N/A
Liner(s) removed?	☐ Yes	☐ No	☒ N/A
Liner(s) perforated?	☐ Yes	☐ No	☒ N/A
Screen removed?	☒ Yes	☐ No	☐ N/A
Casing left in place?	☐ Yes	☒ No	☐ N/A
Was casing cut off below surface?	☐ Yes	☐ No	☒ N/A
Did sealing material rise to surface?	☒ Yes	☐ No	☐ N/A
Did material settle after 24 hours?	☒ Yes	☐ No	☐ N/A
If yes, was hole retopped?	☒ Yes	☐ No	☐ N/A
If bentonite chips were used, were they hydrated with water from a known safe source?	☒ Yes	☐ No	☐ N/A

Required Method of Placing Sealing Material
☐ Conductor Pipe-Gravity ☒ Conductor Pipe-Pumped
☒ Screened & Poured (Bentonite Chips) ☐ Other (Explain):

Sealing Materials
☐ Neat Cement Grout ☐ Concrete
☐ Sand-Cement (Concrete) Grout ☐ Bentonite Chips

For Monitoring Wells and Monitoring Well Boreholes Only:
☒ Bentonite Chips ☒ Bentonite - Cement Grout
☐ Granular Bentonite ☐ Bentonite - Sand Slurry

5. Material Used to Fill Well / Drillhole

Material	From (ft.)	To (ft.)	No. Yards, Sacks Sealant or Volume (circle one)	Mix Ratio or Mud Weight
Bentonite Chips	Surface	1.5	3/4 Bag	N/A
Bentonite Cement Grout	1.5	45	3 bags port. 0.25 bent.	90:10

6. Comments

7. Supervision of Work

Name of Person or Firm Doing Filling & Sealing	License #	Date of Filling & Sealing or Verification (mm/dd/yyyy)
Adam Sweet, Horizon Construction & Exploration, LLC		05/22/2024

Street or Route	Telephone Number
764 Tower Drive	(262)692-3347

City	State	ZIP Code
Fredonia	WI	53021

Signature of Person Doing Work (SCS Engineers on behalf of Horizon): Bridget Brunell

Date Signed: 05/22/2024

DNR Use Only

Date Received	Noted By

Comments:

Appendix C

Laboratory Reports

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 30, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40269545001	**MW-313**	Water	10/11/23 11:55	10/13/23 09:15
40269545002	**MW-314**	Water	10/11/23 10:25	10/13/23 09:15
40269545003	**MW-315**	Water	10/11/23 11:10	10/13/23 09:15
40269545004	**FIELD BLANK-MOD 10-11**	Water	10/11/23 11:00	10/13/23 09:15

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40269545001	**MW-313**	EPA 6020B	KXS	2
			LB	7
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
40269545002	**MW-314**	EPA 6020B	KXS	2
			LB	7
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
40269545003	**MW-315**	EPA 6020B	KXS	2
			LB	7
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
40269545004	**FIELD BLANK-MOD 10-11**	EPA 6020B	KXS, TXW	2
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Sample: MW-313 **Lab ID: 40269545001** Collected: 10/11/23 11:55 Received: 10/13/23 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**41.3**	ug/L	10.0	3.0	1	10/19/23 06:51	10/21/23 09:25	7440-42-8	
Calcium	**66800**	ug/L	254	76.2	1	10/19/23 06:51	10/21/23 09:25	7440-70-2	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.24**	Std. Units			1		10/11/23 11:55		
Field Specific Conductance	**604.4**	umhos/cm			1		10/11/23 11:55		
Oxygen, Dissolved	**8.58**	mg/L			1		10/11/23 11:55	7782-44-7	
REDOX	**168.0**	mV			1		10/11/23 11:55		
Turbidity	**0.00**	NTU			1		10/11/23 11:55		
Static Water Level	**783.10**	feet			1		10/11/23 11:55		
Temperature, Water (C)	**11.0**	deg C			1		10/11/23 11:55		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**372**	mg/L	20.0	8.7	1		10/16/23 14:10		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.010	1		10/18/23 16:45		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**29.6**	mg/L	2.0	0.59	1		10/27/23 13:21	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		10/27/23 13:21	16984-48-8	
Sulfate	**9.0**	mg/L	2.0	0.44	1		10/27/23 13:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Sample: MW-314 **Lab ID: 40269545002** Collected: 10/11/23 10:25 Received: 10/13/23 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**12.4**	ug/L	10.0	3.0	1	10/19/23 06:51	10/21/23 10:32	7440-42-8	
Calcium	**106000**	ug/L	254	76.2	1	10/19/23 06:51	10/21/23 10:32	7440-70-2	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.21**	Std. Units			1		10/11/23 10:25		
Field Specific Conductance	**879**	umhos/cm			1		10/11/23 10:25		
Oxygen, Dissolved	**7.34**	mg/L			1		10/11/23 10:25	7782-44-7	
REDOX	**188.8**	mV			1		10/11/23 10:25		
Turbidity	**0.09**	NTU			1		10/11/23 10:25		
Static Water Level	**783.33**	feet			1		10/11/23 10:25		
Temperature, Water (C)	**11.0**	deg C			1		10/11/23 10:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**526**	mg/L	20.0	8.7	1		10/16/23 14:11		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.010	1		10/18/23 16:48		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**3.2**	mg/L	2.0	0.59	1		10/27/23 13:35	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		10/27/23 13:35	16984-48-8	
Sulfate	**3.5**	mg/L	2.0	0.44	1		10/27/23 13:35	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Sample: MW-315 **Lab ID: 40269545003** Collected: 10/11/23 11:10 Received: 10/13/23 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**15.0**	ug/L	10.0	3.0	1	10/19/23 06:51	10/21/23 10:46	7440-42-8	
Calcium	**134000**	ug/L	254	76.2	1	10/19/23 06:51	10/21/23 10:46	7440-70-2	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**6.97**	Std. Units			1		10/11/23 11:10		
Field Specific Conductance	**1008**	umhos/cm			1		10/11/23 11:10		
Oxygen, Dissolved	**2.80**	mg/L			1		10/11/23 11:10	7782-44-7	
REDOX	**159.1**	mV			1		10/11/23 11:10		
Turbidity	**0.81**	NTU			1		10/11/23 11:10		
Static Water Level	**783.59**	feet			1		10/11/23 11:10		
Temperature, Water (C)	**11.3**	deg C			1		10/11/23 11:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**602**	mg/L	20.0	8.7	1		10/16/23 14:11		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.010	1		10/18/23 16:51		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**3.1**	mg/L	2.0	0.59	1		10/27/23 13:53	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		10/27/23 13:53	16984-48-8	
Sulfate	**3.1**	mg/L	2.0	0.44	1		10/27/23 13:53	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Sample: FIELD BLANK-MOD 10-11 **Lab ID: 40269545004** Collected: 10/11/23 11:00 Received: 10/13/23 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**<3.0**	ug/L	10.0	3.0	1	10/19/23 06:51	10/21/23 10:17	7440-42-8	
Calcium	**<76.2**	ug/L	254	76.2	1	10/19/23 06:51	10/27/23 15:05	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**10.0J**	mg/L	20.0	8.7	1		10/16/23 14:11		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**6.2**	Std. Units	0.10	0.010	1		10/18/23 17:02		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**<0.59**	mg/L	2.0	0.59	1		10/27/23 14:08	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		10/27/23 14:08	16984-48-8	
Sulfate	**<0.44**	mg/L	2.0	0.44	1		10/27/23 14:08	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

QC Batch: 457975
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

METHOD BLANK: 2629994 Matrix: Water
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	10/21/23 08:41	
Calcium	ug/L	<76.2	254	10/21/23 08:41	

LABORATORY CONTROL SAMPLE: 2629995

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	234	94	80-120	
Calcium	ug/L	10000	10900	109	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2629996 2629997

Parameter	Units	40269545001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	41.3	250	250	270	266	91	90	75-125	1	20	
Calcium	ug/L	66800	10000	10000	76700	77200	99	105	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

QC Batch: 457628
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

METHOD BLANK: 2628234 Matrix: Water
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/16/23 14:07	

LABORATORY CONTROL SAMPLE: 2628235

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	587	564	96	80-120	

SAMPLE DUPLICATE: 2628236

Parameter	Units	40269514003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	542	550	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

QC Batch: 457892
QC Batch Method: EPA 9040
Analysis Method: EPA 9040
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

SAMPLE DUPLICATE: 2629567

Parameter	Units	40269529001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	0	20	H6

SAMPLE DUPLICATE: 2629568

Parameter	Units	40269609008 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.8	2	20	1q,H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

QC Batch: 458622
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

METHOD BLANK: 2633879 Matrix: Water
Associated Lab Samples: 40269545001, 40269545002, 40269545003, 40269545004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/26/23 15:42	
Fluoride	mg/L	<0.095	0.32	10/26/23 15:42	
Sulfate	mg/L	<0.44	2.0	10/26/23 15:42	

LABORATORY CONTROL SAMPLE: 2633880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.9	109	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	21.7	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2633881 2633882

Parameter	Units	40269529001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.1	20	20	23.4	23.6	107	108	90-110	1	15	
Fluoride	mg/L	<0.095	2	2	2.4	2.4	115	116	90-110	1	15	M0
Sulfate	mg/L	11.8	20	20	33.6	33.6	109	109	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2633883 2633884

Parameter	Units	40269593002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	523	400	400	935	935	103	103	90-110	0	15	
Sulfate	mg/L	277	400	400	697	694	105	104	90-110	0	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - Estimated concentration at or above the LOD and below the LOQ.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1q	Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40269545

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40269545001	**MW-313**	EPA 3010A	457975	EPA 6020B	458053
40269545002	**MW-314**	EPA 3010A	457975	EPA 6020B	458053
40269545003	**MW-315**	EPA 3010A	457975	EPA 6020B	458053
40269545004	**FIELD BLANK-MOD 10-11**	EPA 3010A	457975	EPA 6020B	458053
40269545001	**MW-313**				
40269545002	**MW-314**				
40269545003	**MW-315**				
40269545001	**MW-313**	SM 2540C	457628		
40269545002	**MW-314**	SM 2540C	457628		
40269545003	**MW-315**	SM 2540C	457628		
40269545004	**FIELD BLANK-MOD 10-11**	SM 2540C	457628		
40269545001	**MW-313**	EPA 9040	457892		
40269545002	**MW-314**	EPA 9040	457892		
40269545003	**MW-315**	EPA 9040	457892		
40269545004	**FIELD BLANK-MOD 10-11**	EPA 9040	457892		
40269545001	**MW-313**	EPA 300.0	458622		
40269545002	**MW-314**	EPA 300.0	458622		
40269545003	**MW-315**	EPA 300.0	458622		
40269545004	**FIELD BLANK-MOD 10-11**	EPA 300.0	458622		

40269545

Pace

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS ENGINEERS	Report To.	Meghan Blodgett	Attention:	
Address:	2830 Dairy Drive	Copy To.		Company Name	
Madison, WI 53718				Address:	
Email	mblodgett@scsengineers com	Purchase Order #		Pace Quote.	
Phone	608-216-7362 Fax.	Project Name	25223067 Columbia CCR Mods 10-11	Pace Project Manager	dan.milewsky@pacelabs.com,
Requested Due Date		Project #	25223067	Pace Profile #:	

Regulatory Agency

State / Location: WI

Requested Analysis Filtered (Y/N)

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Boron & Calcium	TDS and pH	Chloride,Fluoride,Sulfate	Residual Chlorine (Y/N)	
	MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	N	N	N	N	N	
1	MW-313	WT		10/11	1155				5											X	X	X		001
2	MW-314	WT		10/11	1025				5											X	X	X		002
3	MW-315	WT		10/11	1110				5											X	X	X		003
4	FIELD BLANK - MOD 10-11	WT		10/11	1100				5											X	X	X		004
5																								
6																								
7																								
8																								
9																								
10																								
11																								
12																								

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ALL SAMPLES UNFILTERED	Bridget Russell SCS	10/12	1100	[signature]	10/13/23	0915	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bridget Russell

SIGNATURE of SAMPLER: [signature] DATE Signed: 10/12/2023

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Client Name: SCS

Sample Preservation Receipt Form

Project # 40269545

All containers needing preservation have been checked and noted below: ☑Yes ☐No ☐N/A

Lab Lot# of pH paper. 1002723 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: TW Date/ Time:

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	Vials: VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001									2		2																		X			X		2.5 / 5
002									2		2																		X			X		2.5 / 5
003									2		2																		X			X		2.5 / 5
004									2		2																		X			X		2.5 / 5
005																																			2.5 / 5
006																																			2.5 / 5
007																																			2.5 / 5
008																																			2.5 / 5
009																																			2.5 / 5
010																																			2.5 / 5
011																																			2.5 / 5
012																																			2.5 / 5
013																																			2.5 / 5
014																																			2.5 / 5
015																																			2.5 / 5
016																																			2.5 / 5
017																																			2.5 / 5
018																																			2.5 / 5
019																																			2.5 / 5
020																																			2.5 / 5

10/15/23 TW

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm): ☐Yes ☐No ☒N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4
BP2Z	500 mL plastic NaOH + Zn

VG9C	40 mL clear ascorbic w/ HCl
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN 1	
GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40269545

40269545

Client Name: SCS

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used SR - 129 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 0.0 /Corr. 0.0

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 10/13/23 /Initials: TW

Labeled By Initials: YH

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume:		8.
For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	
Correct Containers Used:	☒Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☒No ☐N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: WW		
Trip Blank Present:	☐Yes ☒No ☐N/A	13.
Trip Blank Custody Seals Present	☐Yes ☒No ☐N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

November 06, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 13, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572023-03
New Hampshire/TNI Certification #: 297622
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40269529001	**MW-301**	Water	10/11/23 14:15	10/13/23 09:15
40269529002	**MW-84A**	Water	10/11/23 15:00	10/13/23 09:15

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40269529001	**MW-301**	EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40269529002	**MW-84A**	EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	TMK	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

PASI-G = Pace Analytical Services - Green Bay
PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Sample: MW-301 **Lab ID: 40269529001** Collected: 10/11/23 14:15 Received: 10/13/23 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	10/17/23 06:27	10/19/23 01:12	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	10/17/23 06:27	10/19/23 01:12	7440-38-2	
Barium	**7.3**	ug/L	2.3	0.70	1	10/17/23 06:27	10/19/23 01:12	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	10/17/23 06:27	10/19/23 01:12	7440-41-7	
Boron	**36.2**	ug/L	10.0	3.0	1	10/17/23 06:27	10/19/23 01:12	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	10/17/23 06:27	10/19/23 01:12	7440-43-9	
Calcium	**52300**	ug/L	254	76.2	1	10/17/23 06:27	10/19/23 01:12	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	10/17/23 06:27	10/19/23 01:12	7440-47-3	
Cobalt	**0.13J**	ug/L	1.0	0.12	1	10/17/23 06:27	10/19/23 01:12	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	10/17/23 06:27	10/19/23 01:12	7439-92-1	
Lithium	**0.43J**	ug/L	1.0	0.22	1	10/17/23 06:27	10/19/23 01:12	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	10/17/23 06:27	10/19/23 01:12	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	10/17/23 06:27	10/19/23 01:12	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	10/17/23 06:27	10/19/23 01:12	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	10/18/23 10:55	10/19/23 06:31	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.06**	Std. Units			1		10/11/23 14:15		
Field Specific Conductance	**536**	umhos/cm			1		10/11/23 14:15		
Oxygen, Dissolved	**0.16**	mg/L			1		10/11/23 14:15	7782-44-7	
REDOX	**23.8**	mV			1		10/11/23 14:15		
Turbidity	**0.34**	NTU			1		10/11/23 14:15		
Static Water Level	**784.67**	feet			1		10/11/23 14:15		
Temperature, Water (C)	**10.7**	deg C			1		10/11/23 14:15		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**300**	mg/L	20.0	8.7	1		10/15/23 21:57		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.2**	Std. Units	0.10	0.010	1		10/18/23 16:04		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**2.1**	mg/L	2.0	0.59	1		10/26/23 16:25	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		10/26/23 16:25	16984-48-8	M0
Sulfate	**11.8**	mg/L	2.0	0.44	1		10/26/23 16:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Sample: MW-84A **Lab ID: 40269529002** Collected: 10/11/23 15:00 Received: 10/13/23 09:15 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	10/17/23 06:27	10/19/23 01:19	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	10/17/23 06:27	10/19/23 01:19	7440-38-2	
Barium	**12.7**	ug/L	2.3	0.70	1	10/17/23 06:27	10/19/23 01:19	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	10/17/23 06:27	10/19/23 01:19	7440-41-7	
Boron	**14.0**	ug/L	10.0	3.0	1	10/17/23 06:27	10/19/23 01:19	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	10/17/23 06:27	10/19/23 01:19	7440-43-9	
Calcium	**65100**	ug/L	254	76.2	1	10/17/23 06:27	10/19/23 01:19	7440-70-2	
Chromium	**1.6J**	ug/L	3.4	1.0	1	10/17/23 06:27	10/19/23 01:19	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	10/17/23 06:27	10/19/23 01:19	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	10/17/23 06:27	10/19/23 01:19	7439-92-1	
Lithium	**0.54J**	ug/L	1.0	0.22	1	10/17/23 06:27	10/19/23 01:19	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	10/17/23 06:27	10/19/23 01:19	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	10/17/23 06:27	10/19/23 01:19	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	10/17/23 06:27	10/19/23 01:19	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	10/18/23 10:55	10/19/23 06:33	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.51**	Std. Units			1		10/11/23 15:00		
Field Specific Conductance	**599.9**	umhos/cm			1		10/11/23 15:00		
Oxygen, Dissolved	**8.44**	mg/L			1		10/11/23 15:00	7782-44-7	
REDOX	**91.2**	mV			1		10/11/23 15:00		
Turbidity	**0.03**	NTU			1		10/11/23 15:00		
Static Water Level	**784.39**	feet			1		10/11/23 15:00		
Temperature, Water (C)	**12.3**	deg C			1		10/11/23 15:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**324**	mg/L	20.0	8.7	1		10/15/23 21:58		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.6**	Std. Units	0.10	0.010	1		10/18/23 16:13		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**3.1**	mg/L	2.0	0.59	1		10/26/23 17:51	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		10/26/23 17:51	16984-48-8	
Sulfate	**1.4J**	mg/L	2.0	0.44	1		10/26/23 17:51	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 457855
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269529001, 40269529002

METHOD BLANK: 2629305 Matrix: Water
Associated Lab Samples: 40269529001, 40269529002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	10/19/23 05:49	

LABORATORY CONTROL SAMPLE: 2629306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.2	105	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2629307 2629308

Parameter	Units	40269479001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.066	5	5	5.2	4.9	103	98	85-115	6	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 457669
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269529001, 40269529002

METHOD BLANK: 2628366 Matrix: Water
Associated Lab Samples: 40269529001, 40269529002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	10/18/23 21:17	
Arsenic	ug/L	<0.28	1.0	10/18/23 21:17	
Barium	ug/L	<0.70	2.3	10/18/23 21:17	
Beryllium	ug/L	<0.25	1.0	10/18/23 21:17	
Boron	ug/L	<3.0	10.0	10/18/23 21:17	
Cadmium	ug/L	<0.15	1.0	10/18/23 21:17	
Calcium	ug/L	<76.2	254	10/18/23 21:17	
Chromium	ug/L	<1.0	3.4	10/18/23 21:17	
Cobalt	ug/L	<0.12	1.0	10/18/23 21:17	
Lead	ug/L	<0.24	1.0	10/18/23 21:17	
Lithium	ug/L	<0.22	1.0	10/18/23 21:17	
Molybdenum	ug/L	<0.44	1.5	10/18/23 21:17	
Selenium	ug/L	<0.32	1.1	10/18/23 21:17	
Thallium	ug/L	<0.14	1.0	10/18/23 21:17	

LABORATORY CONTROL SAMPLE: 2628367

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	242	97	80-120	
Arsenic	ug/L	250	242	97	80-120	
Barium	ug/L	250	236	94	80-120	
Beryllium	ug/L	250	260	104	80-120	
Boron	ug/L	250	240	96	80-120	
Cadmium	ug/L	250	245	98	80-120	
Calcium	ug/L	10000	10400	104	80-120	
Chromium	ug/L	250	232	93	80-120	
Cobalt	ug/L	250	237	95	80-120	
Lead	ug/L	250	243	97	80-120	
Lithium	ug/L	250	239	95	80-120	
Molybdenum	ug/L	250	238	95	80-120	
Selenium	ug/L	250	251	100	80-120	
Thallium	ug/L	250	240	96	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2628368 2628369

Parameter	Units	40269514001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.22J	250	250	240	241	96	96	75-125	0	20	
Arsenic	ug/L	0.42J	250	250	241	245	96	98	75-125	2	20	
Barium	ug/L	18.3	250	250	251	252	93	94	75-125	0	20	
Beryllium	ug/L	<0.25	250	250	254	258	102	103	75-125	2	20	
Boron	ug/L	106	250	250	338	335	93	92	75-125	1	20	
Cadmium	ug/L	<0.15	250	250	241	241	96	96	75-125	0	20	
Calcium	ug/L	110000	10000	10000	120000	121000	97	105	75-125	1	20	
Chromium	ug/L	2.3J	250	250	230	233	91	92	75-125	2	20	
Cobalt	ug/L	0.17J	250	250	228	232	91	93	75-125	2	20	
Lead	ug/L	<0.24	250	250	241	243	96	97	75-125	1	20	
Lithium	ug/L	13.9	250	250	250	252	95	95	75-125	1	20	
Molybdenum	ug/L	7.4	250	250	244	243	94	94	75-125	0	20	
Selenium	ug/L	1.4	250	250	247	252	98	100	75-125	2	20	
Thallium	ug/L	0.15J	250	250	238	242	95	97	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 457507
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269529001, 40269529002

METHOD BLANK: 2627853 Matrix: Water
Associated Lab Samples: 40269529001, 40269529002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/15/23 21:53	

LABORATORY CONTROL SAMPLE: 2627854

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	587	580	99	80-120	

SAMPLE DUPLICATE: 2627855

Parameter	Units	40269478001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	200	214	7	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 457892
QC Batch Method: EPA 9040
Analysis Method: EPA 9040
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269529001, 40269529002

SAMPLE DUPLICATE: 2629567

Parameter	Units	40269529001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.2	7.2	0	20	H6

SAMPLE DUPLICATE: 2629568

Parameter	Units	40269609008 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.6	7.8	2	20	1q,H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 458622
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40269529001, 40269529002

METHOD BLANK: 2633879 Matrix: Water
Associated Lab Samples: 40269529001, 40269529002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	10/26/23 15:42	
Fluoride	mg/L	<0.095	0.32	10/26/23 15:42	
Sulfate	mg/L	<0.44	2.0	10/26/23 15:42	

LABORATORY CONTROL SAMPLE: 2633880

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.9	109	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	21.7	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2633881 2633882

Parameter	Units	40269529001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	2.1	20	20	23.4	23.6	107	108	90-110	1	15	
Fluoride	mg/L	<0.095	2	2	2.4	2.4	115	116	90-110	1	15	M0
Sulfate	mg/L	11.8	20	20	33.6	33.6	109	109	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2633883 2633884

Parameter	Units	40269593002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	523	400	400	935	935	103	103	90-110	0	15	
Sulfate	mg/L	277	400	400	697	694	105	104	90-110	0	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Sample: MW-301 **Lab ID: 40269529001** Collected: 10/11/23 14:15 Received: 10/13/23 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.0576 ± 0.492 (1.00) C:NA T:85%**	pCi/L	11/01/23 14:28	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.611 ± 0.377 (0.692) C:84% T:85%**	pCi/L	10/25/23 14:33	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.611 ± 0.869 (1.69)**	pCi/L	11/02/23 11:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Sample: MW-84A **Lab ID: 40269529002** Collected: 10/11/23 15:00 Received: 10/13/23 09:15 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.292 ± 0.445 (0.766) C:NA T:84%**	pCi/L	11/01/23 14:28	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.552 ± 0.360 (0.676) C:83% T:84%**	pCi/L	10/25/23 14:33	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.844 ± 0.805 (1.44)**	pCi/L	11/02/23 11:24	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 622852
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40269529001, 40269529002

METHOD BLANK: 3036014 Matrix: Water
Associated Lab Samples: 40269529001, 40269529002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0951 ± 0.264 (0.512) C:NA T:83%	pCi/L	11/01/23 14:15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

QC Batch: 622853
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40269529001, 40269529002

METHOD BLANK: 3036016 Matrix: Water
Associated Lab Samples: 40269529001, 40269529002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.399 ± 0.328 (0.647) C:82% T:83%	pCi/L	10/25/23 14:31	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

DEFINITIONS

Act - Activity
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carr - Carrier Recovery (%)
DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above LOD.
J - Estimated concentration at or above the LOD and below the LOQ.
LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.
LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.
DL - Adjusted Method Detection Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Indicates the compound was analyzed for, but not detected at or above the adjusted LOD.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1q	Due to the sample matrix, DI water was added to this sample on a one to one basis and the sample was stirred before analysis.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR BACKGRND
Pace Project No.: 40269529

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40269529001	**MW-301**	EPA 3010A	457669	EPA 6020B	457769
40269529002	**MW-84A**	EPA 3010A	457669	EPA 6020B	457769
40269529001	**MW-301**	EPA 7470	457855	EPA 7470	457902
40269529002	**MW-84A**	EPA 7470	457855	EPA 7470	457902
40269529001	**MW-301**				
40269529002	**MW-84A**				
40269529001	**MW-301**	EPA 903.1	622852		
40269529002	**MW-84A**	EPA 903.1	622852		
40269529001	**MW-301**	EPA 904.0	622853		
40269529002	**MW-84A**	EPA 904.0	622853		
40269529001	**MW-301**	Total Radium Calculation	626730		
40269529002	**MW-84A**	Total Radium Calculation	626730		
40269529001	**MW-301**	SM 2540C	457507		
40269529002	**MW-84A**	SM 2540C	457507		
40269529001	**MW-301**	EPA 9040	457892		
40269529002	**MW-84A**	EPA 9040	457892		
40269529001	**MW-301**	EPA 300.0	458622		
40269529002	**MW-84A**	EPA 300.0	458622		

40269529

Pace

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company	SCS ENGINEERS	Report To	Meghan Blodgett	Attention	
Address	2830 Dairy Drive	Copy To		Company Name	
Madison, WI 53718				Address	
Email	mblodgett@scsengineers com	Purchase Order #		Pace Quote	
Phone	608-216-7362 Fax	Project Name	25223067 Columbia CCR Background	Pace Project Manager	dan.milewsky@pacelabs.com,
Requested Due Date		Project #	25223067	Pace Profile #:	

Regulatory Agency

State / Location: WI

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Radium 226	Radium 228	Metals	TDS and pH	Chlonde,Fluonde,Sulfate	Residual Chlonne (Y/N)	
	MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	Requested Analysis Filtered (Y/N)	N	N	N	N	N		
1	MW-301	WT		10/11	1415				6										X	X	X	X	X		001
2	MW-84A	WT		10/11	1500				6										X	X	X	X	X		002
3																									
4																									
5																									
6																									
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Full List Metals = B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li Hg, Mo, Se, Tl ALL SAMPLES UNFILTERED	Bridget Russell SCS Engs	10/12	1100							
	CS Blodgett SCS	10/13/23	0915	[signature] Pace	10/13/23	0915	1.0	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bridget Russell

SIGNATURE of SAMPLER: [signature] DATE Signed: 10/12/2023

Sample Preservation Receipt Form

Client Name: SCS Project # 402695 29

All containers needing preservation have been checked and noted below ☑Yes ☐No ☐N/A Initial when completed SB Date/ Time.

Lab Lot# of pH paper 10037723 Lab Std #ID of preservation (if pH adjusted).

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001									2		2															2	2				X			2.5 / 5
002									2		2															2	2				X			2.5 / 5
003																																		2.5 / 5
004																																		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

10/13/23 SB

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other _____ Headspace in VOA Vials (>6mm) ☐Yes ☐No ☑N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	1 body HNO3
						GN 2	

Page 1 of 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40269529

40269529

Client Name: SLS

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used SR - 109 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 1.0 /Corr: 1.0

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 12/13/22 Initials: SG

Labeled By Initials: SG

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☑Yes ☐No ☐N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: WT	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

January 04, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on December 28, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40272643001	**MW-314**	Water	12/27/23 11:00	12/28/23 09:30
40272643002	**MW-315**	Water	12/27/23 11:40	12/28/23 09:30
40272643003	**FIELD BLANK**	Water	12/27/23 11:45	12/28/23 09:30

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40272643001	**MW-314**		LB	7
		SM 2540C	TXW	1
40272643002	**MW-315**	EPA 6020B	KXS	1
			LB	7
		SM 2540C	TXW	1
40272643003	**FIELD BLANK**	EPA 6020B	KXS	1
		SM 2540C	TXW	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SUMMARY OF DETECTION

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40272643001	**MW-314**					
	Field pH	7.23	Std. Units		12/27/23 11:00	
	Field Specific Conductance	790	umhos/cm		12/27/23 11:00	
	Oxygen, Dissolved	7.00	mg/L		12/27/23 11:00	
	REDOX	176.1	mV		12/27/23 11:00	
	Turbidity	0.00	NTU		12/27/23 11:00	
	Static Water Level	783.18	feet		12/27/23 11:00	
	Temperature, Water (C)	10.9	deg C		12/27/23 11:00	
SM 2540C	Total Dissolved Solids	464	mg/L	20.0	12/29/23 12:11	
40272643002	**MW-315**					
EPA 6020B	Calcium	142000	ug/L	2540	01/02/24 21:36	P6
	Field pH	7.03	Std. Units		12/27/23 11:40	
	Field Specific Conductance	1011	umhos/cm		12/27/23 11:40	
	Oxygen, Dissolved	2.97	mg/L		12/27/23 11:40	
	REDOX	162.5	mV		12/27/23 11:40	
	Turbidity	0.42	NTU		12/27/23 11:40	
	Static Water Level	783.36	feet		12/27/23 11:40	
	Temperature, Water (C)	10.7	deg C		12/27/23 11:40	
SM 2540C	Total Dissolved Solids	618	mg/L	20.0	12/29/23 12:11	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Sample: MW-314 **Lab ID: 40272643001** Collected: 12/27/23 11:00 Received: 12/28/23 09:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.23**	Std. Units			1		12/27/23 11:00		
Field Specific Conductance	**790**	umhos/cm			1		12/27/23 11:00		
Oxygen, Dissolved	**7.00**	mg/L			1		12/27/23 11:00	7782-44-7	
REDOX	**176.1**	mV			1		12/27/23 11:00		
Turbidity	**0.00**	NTU			1		12/27/23 11:00		
Static Water Level	**783.18**	feet			1		12/27/23 11:00		
Temperature, Water (C)	**10.9**	deg C			1		12/27/23 11:00		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**464**	mg/L	20.0	8.7	1		12/29/23 12:11		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Sample: MW-315 **Lab ID: 40272643002** Collected: 12/27/23 11:40 Received: 12/28/23 09:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Calcium	**142000**	ug/L	2540	762	10	12/29/23 05:39	01/02/24 21:36	7440-70-2	P6
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.03**	Std. Units			1		12/27/23 11:40		
Field Specific Conductance	**1011**	umhos/cm			1		12/27/23 11:40		
Oxygen, Dissolved	**2.97**	mg/L			1		12/27/23 11:40	7782-44-7	
REDOX	**162.5**	mV			1		12/27/23 11:40		
Turbidity	**0.42**	NTU			1		12/27/23 11:40		
Static Water Level	**783.36**	feet			1		12/27/23 11:40		
Temperature, Water (C)	**10.7**	deg C			1		12/27/23 11:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**618**	mg/L	20.0	8.7	1		12/29/23 12:11		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Sample: FIELD BLANK **Lab ID: 40272643003** Collected: 12/27/23 11:45 Received: 12/28/23 09:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Calcium	**<76.2**	ug/L	254	76.2	1	12/29/23 05:39	01/02/24 21:21	7440-70-2	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		12/29/23 12:12		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

QC Batch: 463934
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40272643002, 40272643003

METHOD BLANK: 2661210 Matrix: Water
Associated Lab Samples: 40272643002, 40272643003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Calcium	ug/L	<76.2	254	01/02/24 21:14	

LABORATORY CONTROL SAMPLE: 2661211

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Calcium	ug/L	10000	10300	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2661212 2661213

Parameter	Units	40272643002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Calcium	ug/L	142000	10000	10000	146000	144000	45	19	75-125	2	20	P6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

QC Batch: 463991
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40272643001, 40272643002, 40272643003

METHOD BLANK: 2661459 Matrix: Water
Associated Lab Samples: 40272643001, 40272643002, 40272643003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	12/29/23 12:10	

LABORATORY CONTROL SAMPLE: 2661460

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	516	88	80-120	

SAMPLE DUPLICATE: 2661467

Parameter	Units	40272643001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	464	474	2	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR MOD10-11
Pace Project No.: 40272643

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40272643002	**MW-315**	EPA 3010A	463934	EPA 6020B	463994
40272643003	**FIELD BLANK**	EPA 3010A	463934	EPA 6020B	463994
40272643001	**MW-314**				
40272643002	**MW-315**				
40272643001	**MW-314**	SM 2540C	463991		
40272643002	**MW-315**	SM 2540C	463991		
40272643003	**FIELD BLANK**	SM 2540C	463991		

402-72643

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately

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

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	
Company SCS ENGINEERS	Report To Meghan Blodgett	Attention	
Address 2830 Dairy Drive	Copy To	Company Name	Regulatory Agency
Madison, WI 53718		Address	
Email mblodgett@scsengineers com	Purchase Order #	Pace Quote	
Phone 608-216-7362 Fax	Project Name 25223067 Columbia CCR Mod 10-11	Pace Project Manager dan milewsky@pacelabs com	State / Location
Requested Due Date	Project #. 25223067	Pace Profile #:	WI

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: Total Dissolved Solids	Calcium	Residual Chlorine (Y/N)	
																		Y/N	N	N		
1																						
2	MW-314	WT		12/27	1100				1	1									X			001
3	MW-315	WT		12/27	1140				2	1		1							X	X		002
4	Field Blank	WT		12/27	1145				2	1		1							X	X		003
5																						
6																						
7																						
8																						
9																						
10																						
11																						
12																						

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
ALL SAMPLES UNFILTERED	SCS	12/27	13:30				
	SCS LOGISTICS	12/28	930	Pace	12/28	930	2 Y Y Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Ethan Schaefer

SIGNATURE of SAMPLER: [signature] DATE Signed: 12/27/23

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Sample Preservation Receipt Form

Client Name: SCS

Project # 40272643

All containers needing preservation have been checked and noted below ☑Yes ☐No ☐N/A

Lab Lot# of pH paper 1000134 Lab Std #ID of preservation (if pH adjusted)

Initial when completed TJW Date/Time

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001									1		1																						2.5 / 5
002									1		1																				X		2.5 / 5
003									1		1																				X		2.5 / 5
004																																	2.5 / 5
005																																	2.5 / 5
006																																	2.5 / 5
007																																	2.5 / 5
008																																	2.5 / 5
009																																	2.5 / 5
010																																	2.5 / 5
011																																	2.5 / 5
012																																	2.5 / 5
013																																	2.5 / 5
014																																	2.5 / 5
015																																	2.5 / 5
016																																	2.5 / 5
017																																	2.5 / 5
018																																	2.5 / 5
019																																	2.5 / 5
020																																	2.5 / 5

12/28/23 TJW

12/28/23 TJW

Exceptions to preservation check VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other

Headspace in VOA Vials (>6mm) . ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	
						GN 2	

Page 1 of 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40272643

40272643

Client Name: SCS

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☒ yes ☐ no Seals intact: ☒ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used SR - 129 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 1.0 /Corr: 1.0

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 12/28/23 /Initials: TJW

Labeled By Initials: SG

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☒Yes ☐No MS/MSD: ☐Yes ☐No ☒N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☒Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

June 13, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 19, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay
- Pace Analytical Services - Greensburg

Report revised to include radium data for MW-84A which was missing on the original report dated May 17, 2024.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572023-03
New Hampshire/TNI Certification #: 297622
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40277089001	**MW-301**	Water	04/17/24 15:20	04/19/24 08:05
40277089002	**MW-84A**	Water	04/17/24 13:50	04/19/24 08:05

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40277089001	**MW-301**	EPA 6020B	TXW	15	PASI-G
		EPA 7470	RZA	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2320B	TMK	1	PASI-G
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
40277089002	**MW-84A**	EPA 6020B	TXW	15	PASI-G
		EPA 7470	RZA	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	LL1	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2320B	TMK	1	PASI-G
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G

PASI-G = Pace Analytical Services - Green Bay
PASI-PA = Pace Analytical Services - Greensburg

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Sample: MW-301 **Lab ID: 40277089001** Collected: 04/17/24 15:20 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	04/23/24 07:07	04/29/24 03:14	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	04/23/24 07:07	04/29/24 03:14	7440-38-2	
Barium	**8.1**	ug/L	2.3	0.70	1	04/23/24 07:07	04/29/24 03:14	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	04/23/24 07:07	04/29/24 03:14	7440-41-7	
Boron	**24.9**	ug/L	10.0	3.0	1	04/23/24 07:07	04/29/24 03:14	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	04/23/24 07:07	04/29/24 03:14	7440-43-9	
Calcium	**102000**	ug/L	254	76.2	1	04/23/24 07:07	04/29/24 03:14	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	04/23/24 07:07	04/29/24 03:14	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	04/23/24 07:07	04/29/24 03:14	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	04/23/24 07:07	04/29/24 03:14	7439-92-1	
Lithium	**0.63J**	ug/L	1.0	0.22	1	04/23/24 07:07	04/29/24 03:14	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	04/23/24 07:07	04/29/24 03:14	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	04/23/24 07:07	04/29/24 03:14	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	04/23/24 07:07	04/29/24 03:14	7440-28-0	
Total Hardness by 2340B	**455**	mg/L	1.7	0.32	1	04/23/24 07:07	04/29/24 03:14		
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	04/30/24 15:10	05/01/24 09:48	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.06**	Std. Units			1		04/17/24 15:20		
Field Specific Conductance	**781.0**	umhos/cm			1		04/17/24 15:20		
Oxygen, Dissolved	**2.53**	mg/L			1		04/17/24 15:20	7782-44-7	
REDOX	**17.90**	mV			1		04/17/24 15:20		
Turbidity	**0.00**	NTU			1		04/17/24 15:20		
Static Water Level	**785.27**	feet			1		04/17/24 15:20		
Temperature, Water (C)	**8.6**	deg C			1		04/17/24 15:20		
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**446**	mg/L	10.0	5.0	1		04/23/24 11:46		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**458**	mg/L	20.0	8.7	1		04/23/24 14:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.9**	Std. Units	0.10	0.010	1		04/22/24 18:03		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Sample: MW-301 **Lab ID: 40277089001** Collected: 04/17/24 15:20 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**1.6J**	mg/L	2.0	0.59	1		05/02/24 21:12	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		05/02/24 21:12	16984-48-8	
Sulfate	**11.5**	mg/L	2.0	0.44	1		05/02/24 21:12	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Sample: MW-84A **Lab ID: 40277089002** Collected: 04/17/24 13:50 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	04/23/24 07:07	04/29/24 03:19	7440-36-0	
Arsenic	**0.29J**	ug/L	1.0	0.28	1	04/23/24 07:07	04/29/24 03:19	7440-38-2	
Barium	**14.4**	ug/L	2.3	0.70	1	04/23/24 07:07	04/29/24 03:19	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	04/23/24 07:07	04/29/24 03:19	7440-41-7	
Boron	**11.9**	ug/L	10.0	3.0	1	04/23/24 07:07	04/29/24 03:19	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	04/23/24 07:07	04/29/24 03:19	7440-43-9	
Calcium	**73700**	ug/L	254	76.2	1	04/23/24 07:07	04/29/24 03:19	7440-70-2	
Chromium	**2.1J**	ug/L	3.4	1.0	1	04/23/24 07:07	04/29/24 03:19	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	04/23/24 07:07	04/29/24 03:19	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	04/23/24 07:07	04/29/24 03:19	7439-92-1	
Lithium	**0.67J**	ug/L	1.0	0.22	1	04/23/24 07:07	04/29/24 03:19	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	04/23/24 07:07	04/29/24 03:19	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	04/23/24 07:07	04/29/24 03:19	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	04/23/24 07:07	04/29/24 03:19	7440-28-0	
Total Hardness by 2340B	**337**	mg/L	1.7	0.32	1	04/23/24 07:07	04/29/24 03:19		
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	04/30/24 15:10	05/01/24 09:51	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.68**	Std. Units			1		04/17/24 13:50		
Field Specific Conductance	**588.1**	umhos/cm			1		04/17/24 13:50		
Oxygen, Dissolved	**7.82**	mg/L			1		04/17/24 13:50	7782-44-7	
REDOX	**0.00**	mV			1		04/17/24 13:50		
Turbidity	**0.00**	NTU			1		04/17/24 13:50		
Static Water Level	**784.90**	feet			1		04/17/24 13:50		
Temperature, Water (C)	**11.0**	deg C			1		04/17/24 13:50		
2320B Alkalinity	Analytical Method: SM 2320B Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**335**	mg/L	10.0	5.0	1		04/23/24 11:57		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**322**	mg/L	20.0	8.7	1		04/23/24 14:49		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.2**	Std. Units	0.10	0.010	1		04/22/24 18:04		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Sample: MW-84A **Lab ID: 40277089002** Collected: 04/17/24 13:50 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**3.2**	mg/L	2.0	0.59	1		05/02/24 21:26	16887-00-6	
Fluoride	**0.12J**	mg/L	0.32	0.095	1		05/02/24 21:26	16984-48-8	
Sulfate	**1.4J**	mg/L	2.0	0.44	1		05/02/24 21:26	14808-79-8	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 473092
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 2709401 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	05/01/24 09:18	

LABORATORY CONTROL SAMPLE: 2709402

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2709403 2709404

Parameter	Units	40277334002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.000066 mg/L	5	5	4.9	5.0	98	100	85-115	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 472389
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 2705531 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	04/29/24 01:38	
Arsenic	ug/L	<0.28	1.0	04/29/24 01:38	
Barium	ug/L	<0.70	2.3	04/29/24 01:38	
Beryllium	ug/L	<0.25	1.0	04/29/24 01:38	
Boron	ug/L	<3.0	10.0	04/29/24 01:38	
Cadmium	ug/L	<0.15	1.0	04/29/24 01:38	
Calcium	ug/L	<76.2	254	04/29/24 01:38	
Chromium	ug/L	<1.0	3.4	04/29/24 01:38	
Cobalt	ug/L	<0.12	1.0	04/29/24 01:38	
Lead	ug/L	<0.24	1.0	04/29/24 01:38	
Lithium	ug/L	<0.22	1.0	04/29/24 01:38	
Molybdenum	ug/L	<0.44	1.5	04/29/24 01:38	
Selenium	ug/L	<0.32	1.1	04/29/24 01:38	
Thallium	ug/L	<0.14	1.0	04/29/24 01:38	
Total Hardness by 2340B	mg/L	<0.32	1.7	04/29/24 01:38	

LABORATORY CONTROL SAMPLE: 2705532

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	255	102	80-120	
Arsenic	ug/L	250	257	103	80-120	
Barium	ug/L	250	247	99	80-120	
Beryllium	ug/L	250	255	102	80-120	
Boron	ug/L	250	239	95	80-120	
Cadmium	ug/L	250	259	104	80-120	
Calcium	ug/L	10000	9820	98	80-120	
Chromium	ug/L	250	250	100	80-120	
Cobalt	ug/L	250	254	102	80-120	
Lead	ug/L	250	248	99	80-120	
Lithium	ug/L	250	248	99	80-120	
Molybdenum	ug/L	250	253	101	80-120	
Selenium	ug/L	250	267	107	80-120	
Thallium	ug/L	250	238	95	80-120	
Total Hardness by 2340B	mg/L		65.6			

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2705533 2705534

Parameter	Units	40276984004 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.30	250	250	255	259	102	103	75-125	1	20	
Arsenic	ug/L	6.9	250	250	266	268	104	105	75-125	1	20	
Barium	ug/L	293	250	250	598	603	122	124	75-125	1	20	
Beryllium	ug/L	1.3J	250	250	255	258	101	103	75-125	1	20	
Boron	ug/L	4780	250	250	4890	4930	44	63	75-125	1	20	P6
Cadmium	ug/L	<0.30	250	250	255	258	102	103	75-125	1	20	
Calcium	ug/L	278000	10000	10000	282000	286000	32	75	75-125	2	20	P6
Chromium	ug/L	42.5	250	250	294	301	101	103	75-125	2	20	
Cobalt	ug/L	13.7	250	250	250	256	95	97	75-125	2	20	
Lead	ug/L	12.0	250	250	268	275	102	105	75-125	3	20	
Lithium	ug/L	82.8	250	250	336	340	101	103	75-125	1	20	
Molybdenum	ug/L	2630	250	250	2840	2860	82	91	75-125	1	20	
Selenium	ug/L	0.95J	250	250	270	267	108	107	75-125	1	20	
Thallium	ug/L	0.32J	250	250	255	262	102	105	75-125	3	20	
Total Hardness by 2340B	mg/L	1180			1220	1240				2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 472417
QC Batch Method: SM 2320B
Analysis Method: SM 2320B
Analysis Description: 2320B Alkalinity
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 2705612 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<5.0	10.0	04/23/24 09:58	

LABORATORY CONTROL SAMPLE: 2705613

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	200	198	99	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2705614 2705615

Parameter	Units	40276976001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	44.9	200	200	219	219	87	87	80-120	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 472469
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 2706042 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/23/24 14:46	

LABORATORY CONTROL SAMPLE: 2706043

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	616	572	93	80-120	

SAMPLE DUPLICATE: 2706044

Parameter	Units	40277009001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	618	610	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 472280
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277089001, 40277089002

SAMPLE DUPLICATE: 2705157

Parameter	Units	40276865001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.0	8.0	0	5	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 473315
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 2710784 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/02/24 19:03	
Fluoride	mg/L	<0.095	0.32	05/02/24 19:03	
Sulfate	mg/L	<0.44	2.0	05/02/24 19:03	

LABORATORY CONTROL SAMPLE: 2710785

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.8	109	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	21.8	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2710786 2710787

Parameter	Units	40277088001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	565	1000	1000	1660	1670	110	110	90-110	1	15	
Fluoride	mg/L	<4.8	100	100	95.0	95.8	95	96	90-110	1	15	
Sulfate	mg/L	1130	1000	1000	2300	2210	117	108	90-110	4	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2710788 2710789

Parameter	Units	40277096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.6	20	20	26.1	27.2	107	113	90-110	4	15	M0
Fluoride	mg/L	0.10J	2	2	2.3	2.4	109	115	90-110	5	15	M0
Sulfate	mg/L	13.8	20	20	36.0	36.6	111	114	90-110	2	15	M0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Sample: MW-301 **Lab ID: 40277089001** Collected: 04/17/24 15:20 Received: 04/19/24 08:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.252 ± 0.392 (1.00) C:NA T:87%**	pCi/L	05/10/24 13:49	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.787 ± 0.488 (1.00) C:83% T:84%**	pCi/L	05/02/24 15:58	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.04 ± 0.880 (2.00)**	pCi/L	05/16/24 15:10	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Sample: MW-84A **Lab ID: 40277089002** Collected: 04/17/24 13:50 Received: 04/19/24 08:05 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.295 ± 0.450 (1.00) C:NA T:90%**	pCi/L	05/10/24 13:49	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.290 ± 0.399 (1.00) C:77% T:84%**	pCi/L	05/02/24 15:58	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.290 ± 0.849 (2.00)**	pCi/L	05/16/24 15:10	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 664159
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 3233909 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.760 ± 0.454 (0.835) C:85% T:72%	pCi/L	05/02/24 15:55	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

QC Batch: 664158
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40277089001, 40277089002

METHOD BLANK: 3233908 Matrix: Water
Associated Lab Samples: 40277089001, 40277089002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.000 ± 0.246 (0.551) C:NA T:85%	pCi/L	05/10/24 13:23	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

DEFINITIONS

Act - Activity
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carr - Carrier Recovery (%)
DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above LOD.
J - The reported result is an estimated value.
LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.
LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.
DL - Adjusted Method Detection Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR BACKGROU
Pace Project No.: 40277089

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40277089001	**MW-301**	EPA 3010A	472389	EPA 6020B	472486
40277089002	**MW-84A**	EPA 3010A	472389	EPA 6020B	472486
40277089001	**MW-301**	EPA 7470	473092	EPA 7470	473217
40277089002	**MW-84A**	EPA 7470	473092	EPA 7470	473217
40277089001	**MW-301**				
40277089002	**MW-84A**				
40277089001	**MW-301**	EPA 903.1	664158		
40277089002	**MW-84A**	EPA 903.1	664158		
40277089001	**MW-301**	EPA 904.0	664159		
40277089002	**MW-84A**	EPA 904.0	664159		
40277089001	**MW-301**	Total Radium Calculation	669305		
40277089002	**MW-84A**	Total Radium Calculation	669305		
40277089001	**MW-301**	SM 2320B	472417		
40277089002	**MW-84A**	SM 2320B	472417		
40277089001	**MW-301**	SM 2540C	472469		
40277089002	**MW-84A**	SM 2540C	472469		
40277089001	**MW-301**	SM 4500-H+B	472280		
40277089002	**MW-84A**	SM 4500-H+B	472280		
40277089001	**MW-301**	EPA 300.0	473315		
40277089002	**MW-84A**	EPA 300.0	473315		

Sampler on 4 coolers 40277089

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Page : 1 Of 1

Section A Required Client Information:	Section B Required Project Information:	Section C Invoice Information:	
Company: SCS ENGINEERS	Report To: Meghan Blodgett	Attention:	
Address: 2830 Dairy Drive	Copy To:	Company Name:	Regulatory Agency
Madison, WI 53718		Address:	
Email: mblodgett@scsengineers.com	Purchase Order #:	Pace Quote:	
Phone: 608-216-7362 Fax:	Project Name: 25223067 Columbia CCR Background	Pace Project Manager: dan.milewsky@pacelabs.com,	State / Location
Requested Due Date:	Project #: 25223067	Pace Profile #:	WI

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Radium 226	Radium 228	Metals	TDS and pH	Chloride, Fluoride, Sulfate	Hardness	Alkalinity	Residual Chlorine (Y/N)	
	MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	Y/N	N	N	N	N	N	N	N		
1	MW-301	WT		4/17	1520														X	X	X	X	X	X	X		CU1
2	MW-84A	WT		4/17	1350														X	X	X	X	X	X	X		CU2
3																											
4																											
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Full List Metals = B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li Hg, Mo, Se, Tl ALL SAMPLES UNFILTERED	Bridget Russell	4/18	1120							
	CS Logistics 4/19/24	0805		4/19/24	0805		12.1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bridget Russell

SIGNATURE of SAMPLER: Bridget Russell DATE Signed: 4/18/2024

Client Name: SCS

Sample Preservation Receipt Form

Project # 402770089

All containers needing preservation have been checked and noted below: ☒Yes ☐No ☐N/A

Lab Lot# of pH paper: 100134 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: mlk Date/ Time:

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001									2		1																							2.5 / 5
002									2		1															2					X			2.5 / 5
003																										2					X			2.5 / 5
004																																		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

mlk 4/16/24

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm) : ☐Yes ☐No ~~☐N/A~~ *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4
BP2Z	500 mL plastic NaOH + Zn

VG9C	40 mL clear ascorbic w/ HCl
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN 1	1L Poly HNO3
GN 2	

Page 1 of 2

Qualtrax ID: 41307

Sample Condition Upon Receipt Form (SCUR)

Client Name: SCS

Project #: WO# : 40277089

40277089

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used SR - 120 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 2.1.1 /Corr: 2.1.1

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents:
Date: 4/19/24 /Initials: MH

Labeled By Initials: PV

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____
If checked, see attached form for additional comments ☐
Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

May 07, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 19, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40277092001	**MW-313**	Water	04/15/24 11:55	04/19/24 08:05
40277092002	**MW-314**	Water	04/15/24 13:45	04/19/24 08:05
40277092003	**MW-315**	Water	04/15/24 12:45	04/19/24 08:05
40277092004	**FIELD BLANK-MOD 10-11**	Water	04/15/24 12:40	04/19/24 08:05

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40277092001	**MW-313**	EPA 6020B	TXW	3
			LB	7
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40277092002	**MW-314**	EPA 6020B	TXW	3
			LB	7
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40277092003	**MW-315**	EPA 6020B	TXW	3
			LB	7
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1
40277092004	**FIELD BLANK-MOD 10-11**	EPA 6020B	TXW	3
		SM 2540C	TXW	1
		EPA 9040	HML	1
		EPA 300.0	HMB	3
		EPA 310.2	MT	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Sample: MW-313 **Lab ID: 40277092001** Collected: 04/15/24 11:55 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**22.7**	ug/L	10.0	3.0	1	04/22/24 06:49	04/28/24 18:36	7440-42-8	
Calcium	**65400**	ug/L	254	76.2	1	04/22/24 06:49	04/28/24 18:36	7440-70-2	
Total Hardness by 2340B	**323**	mg/L	1.7	0.32	1	04/22/24 06:49	04/28/24 18:36		
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.24**	Std. Units			1		04/15/24 11:55		
Field Specific Conductance	**515.2**	umhos/cm			1		04/15/24 11:55		
Oxygen, Dissolved	**8.66**	mg/L			1		04/15/24 11:55	7782-44-7	
REDOX	**67.30**	mV			1		04/15/24 11:55		
Turbidity	**2.48**	NTU			1		04/15/24 11:55		
Static Water Level	**783.16**	feet			1		04/15/24 11:55		
Temperature, Water (C)	**11.0**	deg C			1		04/15/24 11:55		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**304**	mg/L	20.0	8.7	1		04/22/24 14:29		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.5**	Std. Units	0.10	0.010	1		05/02/24 18:12		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**12.0**	mg/L	2.0	0.59	1		05/02/24 22:38	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		05/02/24 22:38	16984-48-8	
Sulfate	**7.3**	mg/L	2.0	0.44	1		05/02/24 22:38	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**279**	mg/L	25.0	7.4	1		04/23/24 14:45		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Sample: MW-314 **Lab ID: 40277092002** Collected: 04/15/24 13:45 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**13.5**	ug/L	10.0	3.0	1	04/22/24 06:49	04/28/24 18:41	7440-42-8	
Calcium	**110000**	ug/L	254	76.2	1	04/22/24 06:49	04/28/24 18:41	7440-70-2	
Total Hardness by 2340B	**522**	mg/L	1.7	0.32	1	04/22/24 06:49	04/28/24 18:41		
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**6.94**	Std. Units			1		04/15/24 13:45		
Field Specific Conductance	**831.0**	umhos/cm			1		04/15/24 13:45		
Oxygen, Dissolved	**7.18**	mg/L			1		04/15/24 13:45	7782-44-7	
REDOX	**56.80**	mV			1		04/15/24 13:45		
Turbidity	**0.33**	NTU			1		04/15/24 13:45		
Static Water Level	**783.42**	feet			1		04/15/24 13:45		
Temperature, Water (C)	**11.1**	deg C			1		04/15/24 13:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**492**	mg/L	20.0	8.7	1		04/22/24 14:29		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.6**	Std. Units	0.10	0.010	1		05/02/24 18:15		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**3.2**	mg/L	2.0	0.59	1		05/02/24 22:53	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		05/02/24 22:53	16984-48-8	
Sulfate	**4.6**	mg/L	2.0	0.44	1		05/02/24 22:53	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**498**	mg/L	25.0	7.4	1		04/23/24 14:46		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Sample: MW-315 **Lab ID: 40277092003** Collected: 04/15/24 12:45 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**20.2**	ug/L	10.0	3.0	1	04/22/24 06:49	04/28/24 18:47	7440-42-8	
Calcium	**149000**	ug/L	254	76.2	1	04/22/24 06:49	04/28/24 18:47	7440-70-2	
Total Hardness by 2340B	**704**	mg/L	1.7	0.32	1	04/22/24 06:49	04/28/24 18:47		
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**6.68**	Std. Units			1		04/15/24 12:45		
Field Specific Conductance	**1096.0**	umhos/cm			1		04/15/24 12:45		
Oxygen, Dissolved	**1.66**	mg/L			1		04/15/24 12:45	7782-44-7	
REDOX	**44.50**	mV			1		04/15/24 12:45		
Turbidity	**2.66**	NTU			1		04/15/24 12:45		
Static Water Level	**783.53**	feet			1		04/15/24 12:45		
Temperature, Water (C)	**11.0**	deg C			1		04/15/24 12:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**660**	mg/L	20.0	8.7	1		04/22/24 14:30		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.3**	Std. Units	0.10	0.010	1		05/02/24 18:16		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**2.9**	mg/L	2.0	0.59	1		05/02/24 23:50	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		05/02/24 23:50	16984-48-8	
Sulfate	**4.4**	mg/L	2.0	0.44	1		05/02/24 23:50	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**720**	mg/L	50.0	14.9	2		04/23/24 14:50		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Sample: FIELD BLANK-MOD 10-11 **Lab ID: 40277092004** Collected: 04/15/24 12:40 Received: 04/19/24 08:05 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**<3.0**	ug/L	10.0	3.0	1	04/22/24 06:49	04/28/24 16:54	7440-42-8	
Calcium	**<76.2**	ug/L	254	76.2	1	04/22/24 06:49	04/28/24 16:54	7440-70-2	
Total Hardness by 2340B	**<0.32**	mg/L	1.7	0.32	1	04/22/24 06:49	04/28/24 16:54		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**<8.7**	mg/L	20.0	8.7	1		04/22/24 14:30		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.4**	Std. Units	0.10	0.010	1		05/02/24 18:25		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**<0.59**	mg/L	2.0	0.59	1		05/03/24 00:04	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		05/03/24 00:04	16984-48-8	
Sulfate	**<0.44**	mg/L	2.0	0.44	1		05/03/24 00:04	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**<7.4**	mg/L	25.0	7.4	1		04/23/24 14:51		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

QC Batch: 472228
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

METHOD BLANK: 2705023 Matrix: Water
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	04/28/24 16:38	
Calcium	ug/L	<76.2	254	04/28/24 16:38	
Total Hardness by 2340B	mg/L	<0.32	1.7	04/28/24 16:38	

LABORATORY CONTROL SAMPLE: 2705024

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	254	102	80-120	
Calcium	ug/L	10000	10800	108	80-120	
Total Hardness by 2340B	mg/L		70.5			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2705025 2705026

Parameter	Units	40277042001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	131	250	250	391	377	104	98	75-125	4	20	
Calcium	ug/L	24400	10000	10000	33300	34000	90	96	75-125	2	20	
Total Hardness by 2340B	mg/L	165			236	235				0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

QC Batch: 472324
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

METHOD BLANK: 2705372 Matrix: Water
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/22/24 14:24	

LABORATORY CONTROL SAMPLE: 2705373

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	616	580	94	80-120	

SAMPLE DUPLICATE: 2705374

Parameter	Units	40277090002 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	686	688	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

QC Batch: 473367
QC Batch Method: EPA 9040
Analysis Method: EPA 9040
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

SAMPLE DUPLICATE: 2711047

Parameter	Units	40277042003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.5	8.5	0	20	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

QC Batch: 473315
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

METHOD BLANK: 2710784 Matrix: Water
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	05/02/24 19:03	
Fluoride	mg/L	<0.095	0.32	05/02/24 19:03	
Sulfate	mg/L	<0.44	2.0	05/02/24 19:03	

LABORATORY CONTROL SAMPLE: 2710785

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.8	109	90-110	
Fluoride	mg/L	2	2.2	108	90-110	
Sulfate	mg/L	20	21.8	109	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2710786 2710787

Parameter	Units	40277088001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	565	1000	1000	1660	1670	110	110	90-110	1	15	
Fluoride	mg/L	<4.8	100	100	95.0	95.8	95	96	90-110	1	15	
Sulfate	mg/L	1130	1000	1000	2300	2210	117	108	90-110	4	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2710788 2710789

Parameter	Units	40277096003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	4.6	20	20	26.1	27.2	107	113	90-110	4	15	M0
Fluoride	mg/L	0.10J	2	2	2.3	2.4	109	115	90-110	5	15	M0
Sulfate	mg/L	13.8	20	20	36.0	36.6	111	114	90-110	2	15	M0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

QC Batch: 472319 | Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2 | Analysis Description: 310.2 Alkalinity
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

METHOD BLANK: 2705335 Matrix: Water
Associated Lab Samples: 40277092001, 40277092002, 40277092003, 40277092004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	04/23/24 14:33	

LABORATORY CONTROL SAMPLE: 2705336

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	99.3	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2705337 2705338

Parameter	Units	40277058002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	191	100	100	294	293	103	102	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2705339 2705340

Parameter	Units	40277118020 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	660	200	200	869	867	105	104	90-110	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCRMODS10-11
Pace Project No.: 40277092

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40277092001	**MW-313**	EPA 3010A	472228	EPA 6020B	472330
40277092002	**MW-314**	EPA 3010A	472228	EPA 6020B	472330
40277092003	**MW-315**	EPA 3010A	472228	EPA 6020B	472330
40277092004	**FIELD BLANK-MOD 10-11**	EPA 3010A	472228	EPA 6020B	472330
40277092001	**MW-313**				
40277092002	**MW-314**				
40277092003	**MW-315**				
40277092001	**MW-313**	SM 2540C	472324		
40277092002	**MW-314**	SM 2540C	472324		
40277092003	**MW-315**	SM 2540C	472324		
40277092004	**FIELD BLANK-MOD 10-11**	SM 2540C	472324		
40277092001	**MW-313**	EPA 9040	473367		
40277092002	**MW-314**	EPA 9040	473367		
40277092003	**MW-315**	EPA 9040	473367		
40277092004	**FIELD BLANK-MOD 10-11**	EPA 9040	473367		
40277092001	**MW-313**	EPA 300.0	473315		
40277092002	**MW-314**	EPA 300.0	473315		
40277092003	**MW-315**	EPA 300.0	473315		
40277092004	**FIELD BLANK-MOD 10-11**	EPA 300.0	473315		
40277092001	**MW-313**	EPA 310.2	472319		
40277092002	**MW-314**	EPA 310.2	472319		
40277092003	**MW-315**	EPA 310.2	472319		
40277092004	**FIELD BLANK-MOD 10-11**	EPA 310.2	472319		

Samples in 4 coolers * * 40277092

Pace

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	SCS ENGINEERS	Report To	Meghan Blodgett	Attention	
Address	2830 Dairy Drive	Copy To		Company Name	
Madison, WI 53718				Address	Regulatory Agency
Email	mblodgett@scsengineers com	Purchase Order #		Pace Quote	
Phone	608-216-7362 Fax	Project Name	25223067 Columbia CCR Mods 10-11	Pace Project Manager	dan milewsky@pacelabs.com, State / Location
Requested Due Date		Project #	25223067	Pace Profile #:	WI

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test:	Boron & Calcium	TDS and pH	Chloride,Fluoride,Sulfate	Alkalinity	Hardness	Residual Chlorine (Y/N)	
	MATRIX CODE: Drinking Water DW; Water WT; Waste Water WW; Product P; Soil/Solid SL; Oil OL; Wipe WP; Air AR; Other OT; Tissue TS																	N		N	N	N	N	N		
1	MW-313	WT		4/15	1155															X	X	X	X	X		001
2	MW-314	WT		4/15	[redacted]		1345													X	X	X	X	X		002
3	MW-315	WT		4/15	1245															X	X	X	X	X		003
4	FIELD BLANK - MOD 10-11	WT		4/15	1240															X	X	X	X	X		004
5																										
6																										
7																										
8																										
9																										
10																										
11																										
12																										

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
ALL SAMPLES UNFILTERED	[signature] SCS	4/18	1120							
	CS Logistics	4/19/24	0805	[signature]	4/19/24	0805	1,2,1	Y	Y	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bridget Russell

SIGNATURE of SAMPLER: [signature] DATE Signed: 4/18/2024

TEMP in C | Received on Ice (Y/N) | Custody Sealed Cooler (Y/N) | Samples Intact (Y/N)

Sample Preservation Receipt Form

Client Name: SCS Project # 40277092

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☐N/A Initial when completed: mlt Date/ Time:

Lab Lot# of pH paper: 100134 Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001									2		1																				X		2.5 / 5
002									2		1																				X		2.5 / 5
003									2		1																				X		2.5 / 5
004									2		1																				X		2.5 / 5
005																																	2.5 / 5
006																																	2.5 / 5
007																																	2.5 / 5
008																																	2.5 / 5
009																																	2.5 / 5
010																																	2.5 / 5
011																																	2.5 / 5
012																																	2.5 / 5
013																																	2.5 / 5
014																																	2.5 / 5
015																																	2.5 / 5
016																																	2.5 / 5
017																																	2.5 / 5
018																																	2.5 / 5
019																																	2.5 / 5
020																																	2.5 / 5

mlt 9/19/24

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: Headspace in VOA Vials (>6mm): ☐Yes ☐No ☒N/A ***If yes look in headspace column**

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4
BP2Z	500 mL plastic NaOH + Zn

VG9C	40 mL clear ascorbic w/ HCl
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN 1	
GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40277092

40277092

Client Name: SCS

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☑ yes ☐ no Seals intact: ☑ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☑ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☑ None ☐ Other _____

Thermometer Used SR - 120 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 1,2,1,1 /Corr: 1,2,1,1

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 4/19/24 /Initials: MH

Labeled By Initials: EL

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐
Person Contacted: _____ Date/Time: _____
Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

June 03, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on May 22, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40278602001	**MW-315**	Water	05/20/24 12:50	05/22/24 09:30

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40278602001	**MW-315**	EPA 6020B	KXS	2
			AG1	7
		SM 2540C	LMB	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

Sample: MW-315 **Lab ID: 40278602001** Collected: 05/20/24 12:50 Received: 05/22/24 09:30 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Boron	**17.7**	ug/L	10.0	3.0	1	05/24/24 06:17	05/29/24 06:40	7440-42-8	
Calcium	**140000**	ug/L	254	76.2	1	05/24/24 06:17	05/29/24 06:40	7440-70-2	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**6.60**	Std. Units			1		05/20/24 12:50		
Field Specific Conductance	**1078.0**	umhos/cm			1		05/20/24 12:50		
Oxygen, Dissolved	**1.38**	mg/L			1		05/20/24 12:50	7782-44-7	
REDOX	**148.60**	mV			1		05/20/24 12:50		
Turbidity	**0.00**	NTU			1		05/20/24 12:50		
Static Water Level	**783.62**	feet			1		05/20/24 12:50		
Temperature, Water (C)	**10.9**	deg C			1		05/20/24 12:50		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**642**	mg/L	20.0	8.7	1		05/23/24 15:44		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

QC Batch: 475097
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40278602001

METHOD BLANK: 2721040 Matrix: Water
Associated Lab Samples: 40278602001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Boron	ug/L	<3.0	10.0	05/28/24 19:11	
Calcium	ug/L	<76.2	254	05/28/24 19:11	

LABORATORY CONTROL SAMPLE: 2721913

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Boron	ug/L	250	249	100	80-120	
Calcium	ug/L	10000	10100	101	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2721914 2721915

Parameter	Units	40278517003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Boron	ug/L	0.61 mg/L	250	250	866	830	104	89	75-125	4	20	
Calcium	ug/L	226 mg/L	10000	10000	243000	225000	171	-4	75-125	7	20	P6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

QC Batch: 475212
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40278602001

METHOD BLANK: 2721734 Matrix: Water
Associated Lab Samples: 40278602001

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	05/23/24 15:43	

LABORATORY CONTROL SAMPLE: 2721735

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	570	540	95	80-120	

SAMPLE DUPLICATE: 2721738

Parameter	Units	40278431001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	1020	998	2	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above LOD.

J - The reported result is an estimated value.

LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.

LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.

DL - Adjusted Method Detection Limit.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

P6	Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067COLUMBIA CCR MODS10-11
Pace Project No.: 40278602

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40278602001	**MW-315**	EPA 3010A	475097	EPA 6020B	475292
40278602001	**MW-315**				
40278602001	**MW-315**	SM 2540C	475212		

40278602

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company	SCS ENGINEERS	Report To	Meghan Blodgett	Attention	
Address	2830 Dairy Drive	Copy To		Company Name	
Madison, WI 53718				Address	
Email	mblodgett@scsengineers com	Purchase Order #		Pace Quote	
Phone	608-216-7362 Fax	Project Name	25223067 Columbia CCR Mods 10-11	Pace Project Manager	dan milewsky@pacelabs com,
Requested Due Date		Project #	25224067	Pace Profile #:	

Regulatory Agency	
State / Location	WI

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Requested Analysis Filtered (Y/N)	Residual Chlorine (Y/N)
																			Boron & Calcium; TDS	
1	MW-315	WT		5/20	1250				2	1		1							X X	001
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
ALL SAMPLES UNFILTERED	Bridget Russell	5/21	900							
	CS Logistics	5/21/24	0930	[signature]	5/21/24	0930	2.0	Y	N	Y

SAMPLER NAME AND SIGNATURE		TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
PRINT Name of SAMPLER:	Bridget Russell				
SIGNATURE of SAMPLER:	[signature] DATE Signed: 5/20/24				

Sample Preservation Receipt Form

Client Name: SCS Project # 402796602

All containers needing preservation have been checked and noted below: ☐Yes ☐No ☐N/A Initial when completed MH Date/ Time:

Lab Lot# of pH paper. 1000184 Lab Std #ID of preservation (if pH adjusted):

	Glass							Plastic						Vials						Jars				General								
Pace Lab #	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001									1		1																					X		2.5 / 5
002																																		2.5 / 5
003																																		2.5 / 5
004																																		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

MH 5/24/24

Exceptions to preservation check VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☐N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40278602

40278602

Client Name: SCS

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☐ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used SR - 120 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 2.0 /Corr. 2.0

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 5/22/24 /Initials: MH

Labeled By Initials: SS

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume: For Analysis: ☐Yes ☐No MS/MSD: ☐Yes ☒No ☐N/A		8.
Correct Containers Used:	☒Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☒Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

July 19, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on June 28, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay
- Pace Analytical Services - Greensburg

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572023-03
New Hampshire/TNI Certification #: 297622
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

Pace Analytical Services Green Bay

1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40280430001	**MW-317**	Water	06/27/24 13:40	06/28/24 09:00
40280430002	**MW-318**	Water	06/27/24 12:20	06/28/24 09:00
40280430003	**MW-319**	Water	06/27/24 10:25	06/28/24 09:00
40280430004	**FIELD BLANK-MOD 12-13**	Water	06/27/24 13:30	06/28/24 09:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40280430001	**MW-317**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	RZA	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40280430002	**MW-318**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	RZA	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40280430003	**MW-319**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	RZA	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40280430004	**FIELD BLANK-MOD 12-13**	EPA 6010D	SIS	5	PASI-G

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	RZA	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		SM 4500-H+B	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay
PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-317 **Lab ID: 40280430001** Collected: 06/27/24 13:40 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	07/01/24 05:44	07/09/24 22:56	7440-50-8	
Manganese	**363**	ug/L	5.0	1.5	1	07/01/24 05:44	07/09/24 22:56	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	07/01/24 05:44	07/09/24 22:56	7440-22-4	
Total Hardness by 2340B	**199**	mg/L	5.4	1.0	1	07/01/24 05:44	07/09/24 22:56		
Zinc	**<11.6**	ug/L	40.0	11.6	1	07/01/24 05:44	07/09/24 22:56	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**0.17J**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 17:38	7440-36-0	
Arsenic	**1.4**	ug/L	1.0	0.28	1	07/01/24 06:29	07/02/24 17:38	7440-38-2	
Barium	**51.6**	ug/L	2.3	0.70	1	07/01/24 06:29	07/02/24 17:38	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	07/01/24 06:29	07/02/24 17:38	7440-41-7	
Boron	**33.8**	ug/L	10.0	3.0	1	07/01/24 06:29	07/02/24 17:38	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 17:38	7440-43-9	
Calcium	**43800**	ug/L	254	76.2	1	07/01/24 06:29	07/02/24 17:38	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	07/01/24 06:29	07/02/24 17:38	7440-47-3	
Cobalt	**0.24J**	ug/L	1.0	0.12	1	07/01/24 06:29	07/02/24 17:38	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	07/01/24 06:29	07/02/24 17:38	7439-92-1	
Lithium	**6.6**	ug/L	1.0	0.22	1	07/01/24 06:29	07/02/24 17:38	7439-93-2	
Molybdenum	**43.8**	ug/L	1.5	0.44	1	07/01/24 06:29	07/02/24 17:38	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	07/01/24 06:29	07/02/24 17:38	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/01/24 06:29	07/02/24 17:38	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	07/09/24 12:45	07/10/24 08:15	7439-97-6	1q
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.60**	Std. Units			1		06/27/24 13:40		
Field Specific Conductance	**484.1**	umhos/cm			1		06/27/24 13:40		
Oxygen, Dissolved	**0.28**	mg/L			1		06/27/24 13:40	7782-44-7	
REDOX	**-119.4**	mV			1		06/27/24 13:40		
Turbidity	**4.31**	NTU			1		06/27/24 13:40		
Static Water Level	**786.35**	feet			1		06/27/24 13:40		
Temperature, Water (C)	**11.8**	deg C			1		06/27/24 13:40		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**318**	mg/L	20.0	8.7	1		07/02/24 13:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.2**	Std. Units	0.10	0.010	1		07/10/24 18:06		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-317 **Lab ID: 40280430001** Collected: 06/27/24 13:40 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**5.1**	mg/L	2.0	0.59	1		07/10/24 11:25	16887-00-6	
Fluoride	**0.28J**	mg/L	0.32	0.095	1		07/10/24 11:25	16984-48-8	
Sulfate	**26.4**	mg/L	2.0	0.44	1		07/10/24 11:25	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**249**	mg/L	25.0	7.4	1		07/03/24 09:52		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**<0.059**	mg/L	0.25	0.059	1		07/10/24 13:22		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-318 **Lab ID: 40280430002** Collected: 06/27/24 12:20 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	07/01/24 05:44	07/09/24 22:58	7440-50-8	
Manganese	**137**	ug/L	5.0	1.5	1	07/01/24 05:44	07/09/24 22:58	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	07/01/24 05:44	07/09/24 22:58	7440-22-4	
Total Hardness by 2340B	**561**	mg/L	5.4	1.0	1	07/01/24 05:44	07/09/24 22:58		
Zinc	**<11.6**	ug/L	40.0	11.6	1	07/01/24 05:44	07/09/24 22:58	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 17:54	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	07/01/24 06:29	07/02/24 17:54	7440-38-2	
Barium	**52.1**	ug/L	2.3	0.70	1	07/01/24 06:29	07/02/24 17:54	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	07/01/24 06:29	07/02/24 17:54	7440-41-7	
Boron	**17.2**	ug/L	10.0	3.0	1	07/01/24 06:29	07/02/24 17:54	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 17:54	7440-43-9	
Calcium	**122000**	ug/L	254	76.2	1	07/01/24 06:29	07/02/24 17:54	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	07/01/24 06:29	07/02/24 17:54	7440-47-3	
Cobalt	**0.44J**	ug/L	1.0	0.12	1	07/01/24 06:29	07/02/24 17:54	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	07/01/24 06:29	07/02/24 17:54	7439-92-1	
Lithium	**1.8**	ug/L	1.0	0.22	1	07/01/24 06:29	07/02/24 17:54	7439-93-2	
Molybdenum	**3.2**	ug/L	1.5	0.44	1	07/01/24 06:29	07/02/24 17:54	7439-98-7	
Selenium	**1.2**	ug/L	1.1	0.32	1	07/01/24 06:29	07/02/24 17:54	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/01/24 06:29	07/02/24 17:54	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	07/09/24 12:45	07/10/24 08:18	7439-97-6	1q
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.34**	Std. Units			1		06/27/24 12:20		
Field Specific Conductance	**1115**	umhos/cm			1		06/27/24 12:20		
Oxygen, Dissolved	**5.76**	mg/L			1		06/27/24 12:20	7782-44-7	
REDOX	**97.1**	mV			1		06/27/24 12:20		
Turbidity	**4.89**	NTU			1		06/27/24 12:20		
Static Water Level	**786.54**	feet			1		06/27/24 12:20		
Temperature, Water (C)	**11.7**	deg C			1		06/27/24 12:20		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**804**	mg/L	20.0	8.7	1		07/02/24 13:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.8**	Std. Units	0.10	0.010	1		07/10/24 18:11		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-318 **Lab ID: 40280430002** Collected: 06/27/24 12:20 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**44.9**	mg/L	40.0	11.8	20		07/10/24 12:08	16887-00-6	M0
Fluoride	**<0.095**	mg/L	0.32	0.095	1		07/10/24 11:36	16984-48-8	
Sulfate	**276**	mg/L	40.0	8.9	20		07/10/24 12:08	14808-79-8	M0
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**312**	mg/L	25.0	7.4	1		07/03/24 09:55		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**2.4**	mg/L	0.25	0.059	1		07/10/24 13:23		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-319 **Lab ID: 40280430003** Collected: 06/27/24 10:25 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	07/01/24 05:44	07/09/24 23:00	7440-50-8	
Manganese	**25.5**	ug/L	5.0	1.5	1	07/01/24 05:44	07/09/24 23:00	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	07/01/24 05:44	07/09/24 23:00	7440-22-4	
Total Hardness by 2340B	**541**	mg/L	5.4	1.0	1	07/01/24 05:44	07/09/24 23:00		
Zinc	**<11.6**	ug/L	40.0	11.6	1	07/01/24 05:44	07/09/24 23:00	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 18:03	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	07/01/24 06:29	07/02/24 18:03	7440-38-2	
Barium	**68.6**	ug/L	2.3	0.70	1	07/01/24 06:29	07/02/24 18:03	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	07/01/24 06:29	07/02/24 18:03	7440-41-7	
Boron	**20.4**	ug/L	10.0	3.0	1	07/01/24 06:29	07/02/24 18:03	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 18:03	7440-43-9	
Calcium	**125000**	ug/L	254	76.2	1	07/01/24 06:29	07/02/24 18:03	7440-70-2	
Chromium	**1.4J**	ug/L	3.4	1.0	1	07/01/24 06:29	07/02/24 18:03	7440-47-3	
Cobalt	**0.44J**	ug/L	1.0	0.12	1	07/01/24 06:29	07/02/24 18:03	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	07/01/24 06:29	07/02/24 18:03	7439-92-1	
Lithium	**1.4**	ug/L	1.0	0.22	1	07/01/24 06:29	07/02/24 18:03	7439-93-2	
Molybdenum	**1.1J**	ug/L	1.5	0.44	1	07/01/24 06:29	07/02/24 18:03	7439-98-7	
Selenium	**1.4**	ug/L	1.1	0.32	1	07/01/24 06:29	07/02/24 18:03	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/01/24 06:29	07/02/24 18:03	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	07/09/24 12:45	07/10/24 08:25	7439-97-6	1q
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.32**	Std. Units			1		06/27/24 10:25		
Field Specific Conductance	**1869**	umhos/cm			1		06/27/24 10:25		
Oxygen, Dissolved	**6.89**	mg/L			1		06/27/24 10:25	7782-44-7	
REDOX	**146.5**	mV			1		06/27/24 10:25		
Turbidity	**4.20**	NTU			1		06/27/24 10:25		
Static Water Level	**787.69**	feet			1		06/27/24 10:25		
Temperature, Water (C)	**12.5**	deg C			1		06/27/24 10:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**1140**	mg/L	20.0	8.7	1		07/02/24 13:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.0**	Std. Units	0.10	0.010	1		07/10/24 18:12		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-319 **Lab ID: 40280430003** Collected: 06/27/24 10:25 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**486**	mg/L	40.0	11.8	20		07/11/24 13:45	16887-00-6	
Fluoride	**<0.48**	mg/L	1.6	0.48	5		07/15/24 23:15	16984-48-8	D3
Sulfate	**26.1**	mg/L	10.0	2.2	5		07/15/24 23:15	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**336**	mg/L	25.0	7.4	1		07/03/24 09:56		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**1.8**	mg/L	0.25	0.059	1		07/10/24 13:24		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: FIELD BLANK-MOD 12-13 **Lab ID: 40280430004** Collected: 06/27/24 13:30 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	07/01/24 05:44	07/09/24 23:02	7440-50-8	
Manganese	**<1.5**	ug/L	5.0	1.5	1	07/01/24 05:44	07/09/24 23:02	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	07/01/24 05:44	07/09/24 23:02	7440-22-4	
Total Hardness by 2340B	**<1.0**	mg/L	5.4	1.0	1	07/01/24 05:44	07/09/24 23:02		
Zinc	**<11.6**	ug/L	40.0	11.6	1	07/01/24 05:44	07/09/24 23:02	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 18:07	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	07/01/24 06:29	07/02/24 18:07	7440-38-2	
Barium	**<0.70**	ug/L	2.3	0.70	1	07/01/24 06:29	07/02/24 18:07	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	07/01/24 06:29	07/02/24 18:07	7440-41-7	
Boron	**<3.0**	ug/L	10.0	3.0	1	07/01/24 06:29	07/02/24 18:07	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	07/01/24 06:29	07/02/24 18:07	7440-43-9	
Calcium	**<76.2**	ug/L	254	76.2	1	07/01/24 06:29	07/02/24 18:07	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	07/01/24 06:29	07/02/24 18:07	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	07/01/24 06:29	07/02/24 18:07	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	07/01/24 06:29	07/02/24 18:07	7439-92-1	
Lithium	**<0.22**	ug/L	1.0	0.22	1	07/01/24 06:29	07/02/24 18:07	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	07/01/24 06:29	07/02/24 18:07	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	07/01/24 06:29	07/02/24 18:07	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	07/01/24 06:29	07/02/24 18:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	07/09/24 12:45	07/10/24 08:27	7439-97-6	1q
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**10.0J**	mg/L	20.0	8.7	1		07/02/24 13:08		
4500H+ pH, Electrometric	Analytical Method: SM 4500-H+B Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**6.9**	Std. Units	0.10	0.010	1		07/10/24 18:27		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**<0.59**	mg/L	2.0	0.59	1		07/11/24 11:24	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		07/15/24 13:09	16984-48-8	
Sulfate	**<0.44**	mg/L	2.0	0.44	1		07/11/24 11:24	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**<7.4**	mg/L	25.0	7.4	1		07/03/24 10:01		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: FIELD BLANK-MOD 12-13 **Lab ID: 40280430004** Collected: 06/27/24 13:30 Received: 06/28/24 09:00 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**<0.059**	mg/L	0.25	0.059	1		07/10/24 13:25		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 479076
QC Batch Method: EPA 7470
Analysis Method: EPA 7470
Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 2743561 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	07/10/24 08:02	

LABORATORY CONTROL SAMPLE: 2743562

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	98	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2743563 2743564

Parameter	Units	40280381001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.066	5	5	4.8	4.8	97	96	85-115	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 478511
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 2740984 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	07/09/24 22:22	
Manganese	ug/L	<1.5	5.0	07/09/24 22:22	
Silver	ug/L	<3.2	10.0	07/09/24 22:22	
Total Hardness by 2340B	mg/L	<1.0	5.4	07/09/24 22:22	
Zinc	ug/L	<11.6	40.0	07/09/24 22:22	

LABORATORY CONTROL SAMPLE: 2740985

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	271	108	80-120	
Manganese	ug/L	250	271	108	80-120	
Silver	ug/L	125	131	105	80-120	
Total Hardness by 2340B	mg/L		68.6			
Zinc	ug/L	250	261	105	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2740986 2740987

Parameter	Units	40280436001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	<3.4	250	250	268	267	107	107	75-125	0	20	
Manganese	ug/L	<1.5	250	250	267	264	106	105	75-125	1	20	
Silver	ug/L	<3.2	125	125	129	129	103	103	75-125	0	20	
Total Hardness by 2340B	mg/L				605	596				2	20	
Zinc	ug/L	<11.6	250	250	258	254	102	101	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 478526
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 2741067 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	07/02/24 17:29	
Arsenic	ug/L	<0.28	1.0	07/02/24 17:29	
Barium	ug/L	<0.70	2.3	07/02/24 17:29	
Beryllium	ug/L	<0.25	1.0	07/02/24 17:29	
Boron	ug/L	<3.0	10.0	07/02/24 17:29	
Cadmium	ug/L	<0.15	1.0	07/02/24 17:29	
Calcium	ug/L	<76.2	254	07/02/24 17:29	
Chromium	ug/L	<1.0	3.4	07/02/24 17:29	
Cobalt	ug/L	<0.12	1.0	07/02/24 17:29	
Lead	ug/L	<0.24	1.0	07/02/24 17:29	
Lithium	ug/L	<0.22	1.0	07/02/24 17:29	
Molybdenum	ug/L	<0.44	1.5	07/02/24 17:29	
Selenium	ug/L	<0.32	1.1	07/02/24 17:29	
Thallium	ug/L	<0.14	1.0	07/02/24 17:29	

LABORATORY CONTROL SAMPLE: 2741068

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	246	98	80-120	
Arsenic	ug/L	250	246	98	80-120	
Barium	ug/L	250	246	99	80-120	
Beryllium	ug/L	250	247	99	80-120	
Boron	ug/L	250	219	88	80-120	
Cadmium	ug/L	250	250	100	80-120	
Calcium	ug/L	10000	9950	99	80-120	
Chromium	ug/L	250	240	96	80-120	
Cobalt	ug/L	250	236	94	80-120	
Lead	ug/L	250	248	99	80-120	
Lithium	ug/L	250	242	97	80-120	
Molybdenum	ug/L	250	246	98	80-120	
Selenium	ug/L	250	256	102	80-120	
Thallium	ug/L	250	238	95	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2741069 2741070

Parameter	Units	40280430001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	0.17J	250	250	240	243	96	97	75-125	2	20	
Arsenic	ug/L	1.4	250	250	241	246	96	98	75-125	2	20	
Barium	ug/L	51.6	250	250	289	295	95	97	75-125	2	20	
Beryllium	ug/L	<0.25	250	250	241	248	96	99	75-125	3	20	
Boron	ug/L	33.8	250	250	247	257	85	89	75-125	4	20	
Cadmium	ug/L	<0.15	250	250	238	241	95	96	75-125	1	20	
Calcium	ug/L	43800	10000	10000	52800	55000	90	112	75-125	4	20	
Chromium	ug/L	<1.0	250	250	230	234	92	93	75-125	2	20	
Cobalt	ug/L	0.24J	250	250	226	232	90	93	75-125	2	20	
Lead	ug/L	<0.24	250	250	242	246	97	98	75-125	1	20	
Lithium	ug/L	6.6	250	250	239	249	93	97	75-125	4	20	
Molybdenum	ug/L	43.8	250	250	283	291	96	99	75-125	3	20	
Selenium	ug/L	<0.32	250	250	245	249	98	99	75-125	1	20	
Thallium	ug/L	<0.14	250	250	235	238	94	95	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 478684
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 2741533 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	07/02/24 13:07	

LABORATORY CONTROL SAMPLE: 2741534

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	613	592	97	80-120	

SAMPLE DUPLICATE: 2741836

Parameter	Units	40280404001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	760	746	2	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 479190
QC Batch Method: SM 4500-H+B
Analysis Method: SM 4500-H+B
Analysis Description: 4500H+B pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

SAMPLE DUPLICATE: 2744084

Parameter	Units	40280328001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.8	7.9	2	5	H6,PI

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 478832
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002

METHOD BLANK: 2742630 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	07/10/24 10:41	
Fluoride	mg/L	<0.095	0.32	07/10/24 10:41	
Sulfate	mg/L	<0.44	2.0	07/10/24 10:41	

LABORATORY CONTROL SAMPLE: 2742631

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.6	103	90-110	
Fluoride	mg/L	2	2.0	102	90-110	
Sulfate	mg/L	20	20.8	104	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2742632 2742633

Parameter	Units	40280314001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	533	1000	1000	1530	1630	100	109	90-110	6	15	
Sulfate	mg/L	<22.2	1000	1000	1160	1260	115	125	90-110	8	15	M0

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2742634 2742635

Parameter	Units	40280430002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	44.9	400	400	484	497	110	113	90-110	3	15	M0
Fluoride	mg/L	<0.095	2	2	2.0	2.1	101	103	90-110	2	15	
Sulfate	mg/L	276	400	400	729	740	113	116	90-110	2	15	M0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 479120
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430003, 40280430004

METHOD BLANK: 2743779 Matrix: Water
Associated Lab Samples: 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	07/11/24 10:30	
Fluoride	mg/L	<0.095	0.32	07/15/24 11:57	
Sulfate	mg/L	<0.44	2.0	07/11/24 10:30	

LABORATORY CONTROL SAMPLE: 2743780

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.8	104	90-110	
Fluoride	mg/L	2	1.8	91	90-110	
Sulfate	mg/L	20	21.2	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2743781 2743782

Parameter	Units	40280430003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	486	400	400	881	884	99	99	90-110	0	15	
Fluoride	mg/L	<0.48	10	10	10.8	10.8	108	108	90-110	0	15	
Sulfate	mg/L	26.1	100	100	137	136	110	110	90-110	0	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 478688 | Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2 | Analysis Description: 310.2 Alkalinity
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 2741561 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	07/03/24 09:47	

LABORATORY CONTROL SAMPLE: 2741562

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	106	106	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2741563 2741564

Parameter	Units	40280430001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	249	100	100	347	348	98	99	90-110	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 478730
QC Batch Method: EPA 353.2
Analysis Method: EPA 353.2
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 2742071 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	07/10/24 13:13	

LABORATORY CONTROL SAMPLE: 2742072

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.4	98	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2742073 2742074

Parameter	Units	40280344001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.26	2.5	2.5	2.7	2.7	97	96	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2742075 2742076

Parameter	Units	40280503001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.56J	12.5	12.5	12.9	12.6	99	97	90-110	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-317 **Lab ID: 40280430001** Collected: 06/27/24 13:40 Received: 06/28/24 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.263 ± 0.409 (1.00) C:NA T:88%**	pCi/L	07/15/24 15:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.301 ± 0.332 (1.00) C:74% T:88%**	pCi/L	07/12/24 15:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.564 ± 0.741 (2.00)**	pCi/L	07/17/24 09:47	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-318 **Lab ID: 40280430002** Collected: 06/27/24 12:20 Received: 06/28/24 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**1.70 ± 0.941 (1.23) C:NA T:90%**	pCi/L	07/15/24 15:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.0973 ± 0.344 (1.00) C:80% T:76%**	pCi/L	07/12/24 15:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.80 ± 1.29 (2.23)**	pCi/L	07/17/24 09:47	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: MW-319 **Lab ID: 40280430003** Collected: 06/27/24 10:25 Received: 06/28/24 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.333 ± 0.348 (1.00) C:NA T:89%**	pCi/L	07/15/24 15:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.494 ± 0.400 (1.00) C:75% T:84%**	pCi/L	07/12/24 15:04	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.827 ± 0.748 (2.00)**	pCi/L	07/17/24 09:47	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Sample: FIELD BLANK-MOD 12-13 **Lab ID: 40280430004** Collected: 06/27/24 13:30 Received: 06/28/24 09:00 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.217 ± 0.619 (1.15) C:NA T:91%**	pCi/L	07/15/24 15:11	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.305 ± 0.454 (1.00) C:77% T:82%**	pCi/L	07/12/24 15:05	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.522 ± 1.07 (2.15)**	pCi/L	07/17/24 09:47	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 680084
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 3311258 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.225 ± 0.271 (0.413) C:NA T:92%	pCi/L	07/15/24 15:11	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

QC Batch: 680085
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

METHOD BLANK: 3311259 Matrix: Water
Associated Lab Samples: 40280430001, 40280430002, 40280430003, 40280430004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.560 ± 0.434 (0.861) C:78% T:82%	pCi/L	07/12/24 14:59	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

DEFINITIONS

Act - Activity
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carr - Carrier Recovery (%)
DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above LOD.
J - The reported result is an estimated value.
LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.
LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.
DL - Adjusted Method Detection Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

1q	Analyte was measured in the associated method blank at a concentration of -0.090ug/L.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.
PI	The precision between the sample and the duplicate sample exceeded laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40280430001	**MW-317**	EPA 3010A	478511	EPA 6010D	478618
40280430002	**MW-318**	EPA 3010A	478511	EPA 6010D	478618
40280430003	**MW-319**	EPA 3010A	478511	EPA 6010D	478618
40280430004	**FIELD BLANK-MOD 12-13**	EPA 3010A	478511	EPA 6010D	478618
40280430001	**MW-317**	EPA 3010A	478526	EPA 6020B	478617
40280430002	**MW-318**	EPA 3010A	478526	EPA 6020B	478617
40280430003	**MW-319**	EPA 3010A	478526	EPA 6020B	478617
40280430004	**FIELD BLANK-MOD 12-13**	EPA 3010A	478526	EPA 6020B	478617
40280430001	**MW-317**	EPA 7470	479076	EPA 7470	479141
40280430002	**MW-318**	EPA 7470	479076	EPA 7470	479141
40280430003	**MW-319**	EPA 7470	479076	EPA 7470	479141
40280430004	**FIELD BLANK-MOD 12-13**	EPA 7470	479076	EPA 7470	479141
40280430001	**MW-317**				
40280430002	**MW-318**				
40280430003	**MW-319**				
40280430001	**MW-317**	EPA 903.1	680084		
40280430002	**MW-318**	EPA 903.1	680084		
40280430003	**MW-319**	EPA 903.1	680084		
40280430004	**FIELD BLANK-MOD 12-13**	EPA 903.1	680084		
40280430001	**MW-317**	EPA 904.0	680085		
40280430002	**MW-318**	EPA 904.0	680085		
40280430003	**MW-319**	EPA 904.0	680085		
40280430004	**FIELD BLANK-MOD 12-13**	EPA 904.0	680085		
40280430001	**MW-317**	Total Radium Calculation	682974		
40280430002	**MW-318**	Total Radium Calculation	682974		
40280430003	**MW-319**	Total Radium Calculation	682974		
40280430004	**FIELD BLANK-MOD 12-13**	Total Radium Calculation	682974		
40280430001	**MW-317**	SM 2540C	478684		
40280430002	**MW-318**	SM 2540C	478684		
40280430003	**MW-319**	SM 2540C	478684		
40280430004	**FIELD BLANK-MOD 12-13**	SM 2540C	478684		
40280430001	**MW-317**	SM 4500-H+B	479190		
40280430002	**MW-318**	SM 4500-H+B	479190		
40280430003	**MW-319**	SM 4500-H+B	479190		
40280430004	**FIELD BLANK-MOD 12-13**	SM 4500-H+B	479190		
40280430001	**MW-317**	EPA 300.0	478832		
40280430002	**MW-318**	EPA 300.0	478832		
40280430003	**MW-319**	EPA 300.0	479120		
40280430004	**FIELD BLANK-MOD 12-13**	EPA 300.0	479120		
40280430001	**MW-317**	EPA 310.2	478688		
40280430002	**MW-318**	EPA 310.2	478688		
40280430003	**MW-319**	EPA 310.2	478688		
40280430004	**FIELD BLANK-MOD 12-13**	EPA 310.2	478688		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40280430

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40280430001	**MW-317**	EPA 353.2	478730		
40280430002	**MW-318**	EPA 353.2	478730		
40280430003	**MW-319**	EPA 353.2	478730		
40280430004	**FIELD BLANK-MOD 12-13**	EPA 353.2	478730		

40280430

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company	SCS ENGINEERS	Report To	Meghan Blodgett	Attention	
Address	2830 Dairy Drive	Copy To		Company Name	
Madison, WI 53718				Address	
Email	mblodgett@scsengineers com	Purchase Order #	25224067	Pace Quote	
Phone	608-224-2830 Fax 608-224-2839	Project Name	Columbia Baseline Mod 12-13	Pace Project Manager	dan milewsky@pacelabs com,
Requested Due Date		Project #	25224067	Pace Profile #:	3946-5

Regulatory Agency	
State / Location	WI

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test Y/N	Radium 226	Radium 228	Metals	TDS and pH	Chloride, Fluoride, Sulfate	Hardness	Alkalinity, total	NO2+NO3	Residual Chlorine (Y/N)	
																		Requested Analysis Filtered (Y/N)	N	N	N	N	N	N	N	N		
1	MW-317			6/27	1340														X	X	X	X	X	X	X	X		001
2	MW-318			6/27	1220														X	X	X	X	X	X	X	X		002
3	MW-319			6/27	1625														X	X	X	X	x	X	X	X		003
4	Field Blank - Mod 12-13			6/27	1330														X	X	X	X	X	X	X	X		004
5																												
6																												
7																												
8																												
9																												
10																												
11																												
12																												

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS			
Metals list B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Li, Hg, Mn, Mo, Se, Ag, Tl, Zn (All samples Unfiltered/Total)	Bridget Russell SCS	6/27	1600							
	CS Logistics	6/28/24	0900	E. Jet pac	6/28/24	0900	3.5	Y	N	Y

SAMPLER NAME AND SIGNATURE			
PRINT Name of SAMPLER:	Bridget Russell		
SIGNATURE of SAMPLER:	Bridget Russell	DATE Signed:	6/27/2024

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

Table 2. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Columbia Energy Center / SCS Engineers Project #25219067

			Landfill Modules 12-13				
		Parameter	MW-317	MW-318	MW-319	FIELD BLANK MOD12-13	TOTAL
Lab Parameters	Appendix III Parameters (Detection Monitoring)	Boron	x	x	x	x	4
		Calcium	x	x	x	x	4
		Chloride	x	x	x	x	4
		Fluoride	x	x	x	x	4
		pH	x	x	x	x	4
		Sulfate	x	x	x	x	4
		TDS	x	x	x	x	4
	Appendix IV Parameters (Assessment Monitoring)	Antimony	x	x	x	x	4
		Arsenic	x	x	x	x	4
		Barium	x	x	x	x	4
		Beryllium	x	x	x	x	4
		Cadmium	x	x	x	x	4
		Chromium	x	x	x	x	4
		Cobalt	x	x	x	x	4
		Fluoride	x	x	x	x	4
		Lead	x	x	x	x	4
		Lithium	x	x	x	x	4
		Mercury	x	x	x	x	4
		Molybdenum	x	x	x	x	4
		Selenium	x	x	x	x	4
		Thallium	x	x	x	x	4
		Radium 226+228	x	x	x	x	4
	Additional WDNR Parameters	Alkalinity	x	x	x	x	4
		Hardness	x	x	x	x	4
		Nitrate + Nitrite as N	x	x	x	x	4
		Copper	x	x	x	x	4
		Manganese	x	x	x	x	4
		Silver	x	x	x	x	4
		Zinc	x	x	x	x	4
Field Parameters	CCR Rule Field Parameters	Groundwater Elevation	x	x	x		3
		pH	x	x	x		3
	Low-Flow Sampling Field Parameters	Well Depth					0
		Specific Conductance	x	x	x		3
		Dissolved Oxygen	x	x	x		3
		ORP	x	x	x		3
		Temperature	x	x	x		3
		Turbidity	x	x	x		3
		Color	x	x	x		3
		Odor	x	x	x		3

Notes: All samples are unfiltered (total).

C:\Users\logan.bates\AppData\Local\Microsoft\Windows\INetCache\Content.Outlook\89NOGGM7\[2024 June MC

Sample Preservation Receipt Form

Client Name: SCS

Project # 460430

All containers needing preservation have been checked and noted below. ☑Yes ☐No ☐N/A

Lab Lot# of pH paper: 10D1034 Lab Std #ID of preservation (if pH adjusted).

Initial when completed: G Date/ Time:

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	Vials: VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001									2		1	1														2			X			X		2.5 / 5
002									2		1	1														2			X			X		2.5 / 5
003									2		1	1														2			X			X		2.5 / 5
004									2		1	1														2			X			X		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

EC 6/28/24

Exceptions to preservation check VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:_____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☐N/A ***If yes look in headspace column**

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	1 liter plastic HNO3
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40280430

40280430

Client Name: SCS Engineers

Courier: ☑ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☑ no Seals intact: ☐ yes ☐ no

Packing Material: ☑ Bubble Wrap ☐ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 110 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 3.5 /Corr: 3.5

Temp Blank Present: ☑ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Person examining contents:
Date: 6/28/24 /Initials: EC

Labeled By Initials: GF

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used: Correct Type: Pace Green Bay, Pace IR, Non-Pace	☑Yes ☐No	9.
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☑Yes ☐No ☐N/A	12.
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

August 27, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 01, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay
- Pace Analytical Services - Greensburg

Report revised to amend field measurements for MW-319. This replaces the report generated August 22, 2024.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572023-03
New Hampshire/TNI Certification #: 297622
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40281918001	**MW-317**	Water	07/31/24 11:25	08/01/24 09:20
40281918002	**MW-318**	Water	07/31/24 11:45	08/01/24 09:20
40281918003	**MW-319**	Water	07/31/24 13:25	08/01/24 09:20
40281918004	**FIELD BLANK**	Water	07/31/24 11:40	08/01/24 09:20

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40281918001	**MW-317**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	TXW	14	PASI-G
		EPA 7470	RZA	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40281918002	**MW-318**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	TXW	14	PASI-G
		EPA 7470	RZA	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40281918003	**MW-319**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	TXW	14	PASI-G
		EPA 7470	RZA	1	PASI-G
			AG1	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40281918004	**FIELD BLANK**	EPA 6010D	SIS	5	PASI-G

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	TXW	14	PASI-G
		EPA 7470	RZA	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	JJS1	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay
PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-317 **Lab ID: 40281918001** Collected: 07/31/24 11:25 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	08/02/24 04:55	08/02/24 16:09	7440-50-8	
Manganese	**354**	ug/L	5.0	1.5	1	08/02/24 04:55	08/02/24 16:09	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	08/02/24 04:55	08/02/24 16:09	7440-22-4	
Total Hardness by 2340B	**205**	mg/L	5.4	1.0	1	08/02/24 04:55	08/02/24 16:09		
Zinc	**<11.6**	ug/L	40.0	11.6	1	08/02/24 04:55	08/02/24 16:09	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Lithium	**5.3**	ug/L	1.0	0.22	1	08/06/24 05:35	08/07/24 05:33	7439-93-2	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	08/06/24 05:35	08/07/24 05:33	7440-41-7	
Boron	**41.7**	ug/L	10.0	3.0	1	08/06/24 05:35	08/07/24 05:33	7440-42-8	
Calcium	**44300**	ug/L	2540	762	10	08/06/24 05:35	08/07/24 05:16	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/06/24 05:35	08/07/24 05:33	7440-47-3	
Cobalt	**0.19J**	ug/L	1.0	0.12	1	08/06/24 05:35	08/07/24 05:33	7440-48-4	
Arsenic	**1.5**	ug/L	1.0	0.28	1	08/06/24 05:35	08/07/24 05:33	7440-38-2	
Selenium	**<0.32**	ug/L	1.1	0.32	1	08/06/24 05:35	08/07/24 05:33	7782-49-2	
Molybdenum	**50.7**	ug/L	1.5	0.44	1	08/06/24 05:35	08/07/24 05:33	7439-98-7	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 05:33	7440-43-9	
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 05:33	7440-36-0	
Barium	**55.2**	ug/L	2.3	0.70	1	08/06/24 05:35	08/07/24 05:33	7440-39-3	
Thallium	**0.14J**	ug/L	1.0	0.14	1	08/06/24 05:35	08/07/24 05:33	7440-28-0	
Lead	**<0.24**	ug/L	1.0	0.24	1	08/06/24 05:35	08/07/24 05:33	7439-92-1	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	08/07/24 08:50	08/07/24 17:03	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.88**	Std. Units			1		07/31/24 11:25		
Field Specific Conductance	**540**	umhos/cm			1		07/31/24 11:25		
Oxygen, Dissolved	**0.63**	mg/L			1		07/31/24 11:25	7782-44-7	
REDOX	**-143**	mV			1		07/31/24 11:25		
Turbidity	**9.97**	NTU			1		07/31/24 11:25		
Static Water Level	**788.43**	feet			1		07/31/24 11:25		
Temperature, Water (C)	**12.5**	deg C			1		07/31/24 11:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**328**	mg/L	20.0	8.7	1		08/06/24 15:59		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.6**	Std. Units	0.10	0.010	1		08/08/24 16:54		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-317 **Lab ID: 40281918001** Collected: 07/31/24 11:25 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**7.0**	mg/L	2.0	0.59	1		08/02/24 15:01	16887-00-6	
Fluoride	**0.31J**	mg/L	0.32	0.095	1		08/02/24 15:01	16984-48-8	
Sulfate	**23.5**	mg/L	2.0	0.44	1		08/02/24 15:01	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**267**	mg/L	25.0	7.4	1		08/12/24 15:09		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**<0.059**	mg/L	0.25	0.059	1		08/07/24 08:55		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-318 **Lab ID: 40281918002** Collected: 07/31/24 11:45 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	08/02/24 04:55	08/02/24 16:20	7440-50-8	
Manganese	**6.8**	ug/L	5.0	1.5	1	08/02/24 04:55	08/02/24 16:20	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	08/02/24 04:55	08/02/24 16:20	7440-22-4	
Total Hardness by 2340B	**554**	mg/L	5.4	1.0	1	08/02/24 04:55	08/02/24 16:20		
Zinc	**<11.6**	ug/L	40.0	11.6	1	08/02/24 04:55	08/02/24 16:20	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Lithium	**0.92J**	ug/L	1.0	0.22	1	08/06/24 05:35	08/07/24 05:58	7439-93-2	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	08/06/24 05:35	08/07/24 05:58	7440-41-7	
Boron	**14.5**	ug/L	10.0	3.0	1	08/06/24 05:35	08/07/24 05:58	7440-42-8	
Calcium	**110000**	ug/L	254	76.2	1	08/06/24 05:35	08/07/24 05:58	7440-70-2	
Chromium	**1.1J**	ug/L	3.4	1.0	1	08/06/24 05:35	08/07/24 05:58	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	08/06/24 05:35	08/07/24 05:58	7440-48-4	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	08/06/24 05:35	08/07/24 05:58	7440-38-2	
Selenium	**1.3**	ug/L	1.1	0.32	1	08/06/24 05:35	08/07/24 05:58	7782-49-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	08/06/24 05:35	08/07/24 05:58	7439-98-7	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 05:58	7440-43-9	
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 05:58	7440-36-0	
Barium	**12.5**	ug/L	2.3	0.70	1	08/06/24 05:35	08/07/24 05:58	7440-39-3	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/06/24 05:35	08/07/24 05:58	7440-28-0	
Lead	**<0.24**	ug/L	1.0	0.24	1	08/06/24 05:35	08/07/24 05:58	7439-92-1	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	08/07/24 08:50	08/07/24 12:33	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.57**	Std. Units			1		07/31/24 11:45		
Field Specific Conductance	**984**	umhos/cm			1		07/31/24 11:45		
Oxygen, Dissolved	**8.40**	mg/L			1		07/31/24 11:45	7782-44-7	
REDOX	**98.4**	mV			1		07/31/24 11:45		
Turbidity	**1.97**	NTU			1		07/31/24 11:45		
Static Water Level	**789.40**	feet			1		07/31/24 11:45		
Temperature, Water (C)	**13.0**	deg C			1		07/31/24 11:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**712**	mg/L	20.0	8.7	1		08/06/24 15:59		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.4**	Std. Units	0.10	0.010	1		08/08/24 16:56		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-318 **Lab ID: 40281918002** Collected: 07/31/24 11:45 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**19.7**	mg/L	2.0	0.59	1		08/02/24 15:15	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		08/02/24 15:15	16984-48-8	
Sulfate	**290**	mg/L	40.0	8.9	20		08/05/24 11:43	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**236**	mg/L	25.0	7.4	1		08/12/24 15:13		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**1.2**	mg/L	0.25	0.059	1		08/07/24 08:58		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-319 **Lab ID: 40281918003** Collected: 07/31/24 13:25 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	08/02/24 04:55	08/02/24 16:24	7440-50-8	
Manganese	**8.5**	ug/L	5.0	1.5	1	08/02/24 04:55	08/02/24 16:24	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	08/02/24 04:55	08/02/24 16:24	7440-22-4	
Total Hardness by 2340B	**564**	mg/L	5.4	1.0	1	08/02/24 04:55	08/02/24 16:24		
Zinc	**<11.6**	ug/L	40.0	11.6	1	08/02/24 04:55	08/02/24 16:24	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 06:07	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	08/06/24 05:35	08/07/24 06:07	7440-38-2	
Barium	**63.9**	ug/L	2.3	0.70	1	08/06/24 05:35	08/07/24 06:07	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	08/06/24 05:35	08/07/24 06:07	7440-41-7	
Boron	**22.5**	ug/L	10.0	3.0	1	08/06/24 05:35	08/07/24 06:07	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 06:07	7440-43-9	
Calcium	**126000**	ug/L	254	76.2	1	08/06/24 05:35	08/07/24 06:07	7440-70-2	
Chromium	**1.2J**	ug/L	3.4	1.0	1	08/06/24 05:35	08/07/24 06:07	7440-47-3	
Cobalt	**0.45J**	ug/L	1.0	0.12	1	08/06/24 05:35	08/07/24 06:07	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	08/06/24 05:35	08/07/24 06:07	7439-92-1	
Lithium	**1.3**	ug/L	1.0	0.22	1	08/06/24 05:35	08/07/24 06:07	7439-93-2	
Molybdenum	**0.86J**	ug/L	1.5	0.44	1	08/06/24 05:35	08/07/24 06:07	7439-98-7	
Selenium	**1.5**	ug/L	1.1	0.32	1	08/06/24 05:35	08/07/24 06:07	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/06/24 05:35	08/07/24 06:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	08/07/24 08:50	08/07/24 17:05	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.15**	Std. Units			1		07/31/24 13:25		
Field Specific Conductance	**2725**	umhos/cm			1		07/31/24 13:25		
Oxygen, Dissolved	**5.78**	mg/L			1		07/31/24 13:25	7782-44-7	
REDOX	**85.9**	mV			1		07/31/24 13:25		
Turbidity	**2.58**	NTU			1		07/31/24 13:25		
Static Water Level	**790.05**	feet			1		07/31/24 13:25		
Temperature, Water (C)	**12.8**	deg C			1		07/31/24 13:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**1530**	mg/L	20.0	8.7	1		08/06/24 15:59		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.4**	Std. Units	0.10	0.010	1		08/08/24 16:59		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-319 **Lab ID: 40281918003** Collected: 07/31/24 13:25 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**712**	mg/L	40.0	11.8	20		08/05/24 11:57	16887-00-6	
Fluoride	**<0.48**	mg/L	1.6	0.48	5		08/02/24 15:30	16984-48-8	D3
Sulfate	**43.6**	mg/L	10.0	2.2	5		08/02/24 15:30	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**327**	mg/L	25.0	7.4	1		08/12/24 15:14		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**2.2**	mg/L	0.25	0.059	1		08/07/24 08:59		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: FIELD BLANK **Lab ID: 40281918004** Collected: 07/31/24 11:40 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	08/02/24 04:55	08/02/24 16:26	7440-50-8	
Manganese	**<1.5**	ug/L	5.0	1.5	1	08/02/24 04:55	08/02/24 16:26	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	08/02/24 04:55	08/02/24 16:26	7440-22-4	
Total Hardness by 2340B	**2.1J**	mg/L	5.4	1.0	1	08/02/24 04:55	08/02/24 16:26		
Zinc	**<11.6**	ug/L	40.0	11.6	1	08/02/24 04:55	08/02/24 16:26	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 06:11	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	08/06/24 05:35	08/07/24 06:11	7440-38-2	
Barium	**<0.70**	ug/L	2.3	0.70	1	08/06/24 05:35	08/07/24 06:11	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	08/06/24 05:35	08/07/24 06:11	7440-41-7	
Boron	**<3.0**	ug/L	10.0	3.0	1	08/06/24 05:35	08/07/24 06:11	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	08/06/24 05:35	08/07/24 06:11	7440-43-9	
Calcium	**88.7J**	ug/L	254	76.2	1	08/06/24 05:35	08/07/24 06:11	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	08/06/24 05:35	08/07/24 06:11	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	08/06/24 05:35	08/07/24 06:11	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	08/06/24 05:35	08/07/24 06:11	7439-92-1	
Lithium	**<0.22**	ug/L	1.0	0.22	1	08/06/24 05:35	08/07/24 06:11	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	08/06/24 05:35	08/07/24 06:11	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	08/06/24 05:35	08/07/24 06:11	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	08/06/24 05:35	08/07/24 06:11	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	08/07/24 08:50	08/07/24 17:07	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**14.0J**	mg/L	20.0	8.7	1		08/06/24 15:59		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**7.0**	Std. Units	0.10	0.010	1		08/08/24 17:12		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**<0.59**	mg/L	2.0	0.59	1		08/02/24 15:44	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		08/02/24 15:44	16984-48-8	
Sulfate	**<0.44**	mg/L	2.0	0.44	1		08/02/24 15:44	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**<7.4**	mg/L	25.0	7.4	1		08/12/24 15:15		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: FIELD BLANK **Lab ID: 40281918004** Collected: 07/31/24 11:40 Received: 08/01/24 09:20 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**<0.059**	mg/L	0.25	0.059	1		08/07/24 09:00		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481313 | Analysis Method: EPA 7470
QC Batch Method: EPA 7470 | Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2756250 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	08/07/24 12:28	

LABORATORY CONTROL SAMPLE: 2756251

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2756252 2756253

Parameter	Units	40281918002 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.066	5	5	5.0	5.0	100	100	85-115	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 480981
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2754460 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	08/05/24 13:07	
Manganese	ug/L	<1.5	5.0	08/05/24 13:07	
Silver	ug/L	<3.2	10.0	08/05/24 13:07	
Total Hardness by 2340B	mg/L	<1.0	5.4	08/05/24 13:07	
Zinc	ug/L	<11.6	40.0	08/05/24 13:07	

LABORATORY CONTROL SAMPLE: 2754461

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	265	106	80-120	
Manganese	ug/L	250	269	108	80-120	
Silver	ug/L	125	130	104	80-120	
Total Hardness by 2340B	mg/L		68.4			
Zinc	ug/L	250	260	104	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2754462 2754463

Parameter	Units	40281918001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	<3.4	250	250	259	255	104	102	75-125	2	20	
Manganese	ug/L	354	250	250	591	595	95	97	75-125	1	20	
Silver	ug/L	<3.2	125	125	126	124	101	100	75-125	1	20	
Total Hardness by 2340B	mg/L	205			263	268				2	20	
Zinc	ug/L	<11.6	250	250	256	249	102	99	75-125	3	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481179
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2755702 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	08/07/24 05:08	
Arsenic	ug/L	<0.28	1.0	08/07/24 05:08	
Barium	ug/L	<0.70	2.3	08/07/24 05:08	
Beryllium	ug/L	<0.25	1.0	08/07/24 05:08	
Boron	ug/L	<3.0	10.0	08/07/24 05:08	
Cadmium	ug/L	<0.15	1.0	08/07/24 05:08	
Calcium	ug/L	<76.2	254	08/07/24 05:08	
Chromium	ug/L	<1.0	3.4	08/07/24 05:08	
Cobalt	ug/L	<0.12	1.0	08/07/24 05:08	
Lead	ug/L	<0.24	1.0	08/07/24 05:08	
Lithium	ug/L	<0.22	1.0	08/07/24 05:08	
Molybdenum	ug/L	<0.44	1.5	08/07/24 05:08	
Selenium	ug/L	<0.32	1.1	08/07/24 05:08	
Thallium	ug/L	<0.14	1.0	08/07/24 05:08	

LABORATORY CONTROL SAMPLE: 2755703

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	256	102	80-120	
Arsenic	ug/L	250	253	101	80-120	
Barium	ug/L	250	249	100	80-120	
Beryllium	ug/L	250	250	100	80-120	
Boron	ug/L	250	221	88	80-120	
Cadmium	ug/L	250	255	102	80-120	
Calcium	ug/L	10000	9770	98	80-120	
Chromium	ug/L	250	240	96	80-120	
Cobalt	ug/L	250	239	96	80-120	
Lead	ug/L	250	235	94	80-120	
Lithium	ug/L	250	240	96	80-120	
Molybdenum	ug/L	250	244	98	80-120	
Selenium	ug/L	250	259	103	80-120	
Thallium	ug/L	250	225	90	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2755704 2755705

Parameter	Units	40281918001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.15	250	250	265	265	106	106	75-125	0	20	
Arsenic	ug/L	1.5	250	250	256	260	102	103	75-125	1	20	
Barium	ug/L	55.2	250	250	304	308	100	101	75-125	1	20	
Beryllium	ug/L	<0.25	250	250	258	257	103	103	75-125	0	20	
Boron	ug/L	41.7	250	250	266	263	90	88	75-125	1	20	
Cadmium	ug/L	<0.15	250	250	255	257	102	103	75-125	1	20	
Calcium	ug/L	44300	10000	10000	53700	54200	94	99	75-125	1	20	
Chromium	ug/L	<1.0	250	250	235	235	94	94	75-125	0	20	
Cobalt	ug/L	0.19J	250	250	231	230	93	92	75-125	1	20	
Lead	ug/L	<0.24	250	250	234	235	94	94	75-125	0	20	
Lithium	ug/L	5.3	250	250	247	245	97	96	75-125	1	20	
Molybdenum	ug/L	50.7	250	250	298	298	99	99	75-125	0	20	
Selenium	ug/L	<0.32	250	250	253	256	101	102	75-125	1	20	
Thallium	ug/L	0.14J	250	250	225	224	90	90	75-125	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481238
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2755913 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	08/06/24 15:58	

LABORATORY CONTROL SAMPLE: 2755914

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	613	516	84	80-120	

SAMPLE DUPLICATE: 2755915

Parameter	Units	40281904001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	648	648	0	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481468
QC Batch Method: EPA 9040
Analysis Method: EPA 9040
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

SAMPLE DUPLICATE: 2757071

Parameter	Units	40281811001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.6	8.5	1	20	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481039
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2754692 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	08/02/24 11:25	
Fluoride	mg/L	<0.095	0.32	08/02/24 11:25	
Sulfate	mg/L	<0.44	2.0	08/02/24 11:25	

LABORATORY CONTROL SAMPLE: 2754693

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.9	99	90-110	
Fluoride	mg/L	2	1.9	95	90-110	
Sulfate	mg/L	20	20.0	100	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2754436 2754437

Parameter	Units	40281941001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	172	200	200	385	382	107	105	90-110	1	15	
Fluoride	mg/L	<0.95	20	20	21.4	21.5	103	104	90-110	1	15	
Sulfate	mg/L	122	200	200	333	332	106	105	90-110	1	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481736 | Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2 | Analysis Description: 310.2 Alkalinity
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2759039 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	08/12/24 15:07	

LABORATORY CONTROL SAMPLE: 2759040

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	102	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2759041 2759042

Parameter	Units	40281918001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	267	100	100	372	374	105	107	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2759043 2759044

Parameter	Units	40282217008 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	235	100	100	329	332	94	98	90-110	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 481307 — Analysis Method: EPA 353.2
QC Batch Method: EPA 353.2 — Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 2756229 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	08/07/24 08:38	

LABORATORY CONTROL SAMPLE: 2756230

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.3	93	90-110	

MATRIX SPIKE SAMPLE: 2756232

Parameter	Units	40281934002 Result	Spike Conc.	MS Result	MS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.59	25	25.6	102	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2756261 2756262

Parameter	Units	40281881013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	0.58	2.5	2.5	3.1	3.2	100	105	90-110	4	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-317 **Lab ID: 40281918001** Collected: 07/31/24 11:25 Received: 08/01/24 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.053 ± 0.450 (1.00) C:NA T:94%**	pCi/L	08/14/24 15:26	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.273 ± 0.406 (1.00) C:78% T:88%**	pCi/L	08/12/24 15:44	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.273 ± 0.856 (2.00)**	pCi/L	08/20/24 12:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-318 **Lab ID: 40281918002** Collected: 07/31/24 11:45 Received: 08/01/24 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.409 ± 0.307 (1.00) C:NA T:94%**	pCi/L	08/14/24 15:39	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.143 ± 0.408 (1.00) C:79% T:83%**	pCi/L	08/12/24 15:44	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.552 ± 0.715 (2.00)**	pCi/L	08/20/24 12:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: MW-319 **Lab ID: 40281918003** Collected: 07/31/24 13:25 Received: 08/01/24 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.156 ± 0.446 (1.00) C:NA T:95%**	pCi/L	08/14/24 15:39	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.748 ± 0.456 (1.00) C:83% T:85%**	pCi/L	08/12/24 15:44	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.904 ± 0.902 (2.00)**	pCi/L	08/20/24 12:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Sample: FIELD BLANK **Lab ID: 40281918004** Collected: 07/31/24 11:40 Received: 08/01/24 09:20 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.155 ± 0.507 (1.04) C:NA T:89%**	pCi/L	08/14/24 15:39	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.286 ± 0.317 (1.00) C:86% T:92%**	pCi/L	08/12/24 15:42	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.286 ± 0.824 (2.00)**	pCi/L	08/20/24 12:14	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 687064
QC Batch Method: EPA 903.1
Analysis Method: EPA 903.1
Analysis Description: 903.1 Radium-226
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 3344644 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.183 ± 0.254 (0.425) C:NA T:93%	pCi/L	08/14/24 15:12	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

QC Batch: 687067
QC Batch Method: EPA 904.0
Analysis Method: EPA 904.0
Analysis Description: 904.0 Radium 228
Laboratory: Pace Analytical Services - Greensburg
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

METHOD BLANK: 3344647 Matrix: Water
Associated Lab Samples: 40281918001, 40281918002, 40281918003, 40281918004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.255 ± 0.261 (0.534) C:85% T:92%	pCi/L	08/12/24 15:42	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

DEFINITIONS

Act - Activity
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carr - Carrier Recovery (%)
DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above LOD.
J - The reported result is an estimated value.
LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.
LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.
DL - Adjusted Method Detection Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40281918001	**MW-317**	EPA 3010A	480981	EPA 6010D	481046
40281918002	**MW-318**	EPA 3010A	480981	EPA 6010D	481046
40281918003	**MW-319**	EPA 3010A	480981	EPA 6010D	481046
40281918004	**FIELD BLANK**	EPA 3010A	480981	EPA 6010D	481046
40281918001	**MW-317**	EPA 3010A	481179	EPA 6020B	481259
40281918002	**MW-318**	EPA 3010A	481179	EPA 6020B	481259
40281918003	**MW-319**	EPA 3010A	481179	EPA 6020B	481259
40281918004	**FIELD BLANK**	EPA 3010A	481179	EPA 6020B	481259
40281918001	**MW-317**	EPA 7470	481313	EPA 7470	481365
40281918002	**MW-318**	EPA 7470	481313	EPA 7470	481365
40281918003	**MW-319**	EPA 7470	481313	EPA 7470	481365
40281918004	**FIELD BLANK**	EPA 7470	481313	EPA 7470	481365
40281918001	**MW-317**				
40281918002	**MW-318**				
40281918003	**MW-319**				
40281918001	**MW-317**	EPA 903.1	687064		
40281918002	**MW-318**	EPA 903.1	687064		
40281918003	**MW-319**	EPA 903.1	687064		
40281918004	**FIELD BLANK**	EPA 903.1	687064		
40281918001	**MW-317**	EPA 904.0	687067		
40281918002	**MW-318**	EPA 904.0	687067		
40281918003	**MW-319**	EPA 904.0	687067		
40281918004	**FIELD BLANK**	EPA 904.0	687067		
40281918001	**MW-317**	Total Radium Calculation	690594		
40281918002	**MW-318**	Total Radium Calculation	690594		
40281918003	**MW-319**	Total Radium Calculation	690594		
40281918004	**FIELD BLANK**	Total Radium Calculation	690594		
40281918001	**MW-317**	SM 2540C	481238		
40281918002	**MW-318**	SM 2540C	481238		
40281918003	**MW-319**	SM 2540C	481238		
40281918004	**FIELD BLANK**	SM 2540C	481238		
40281918001	**MW-317**	EPA 9040	481468		
40281918002	**MW-318**	EPA 9040	481468		
40281918003	**MW-319**	EPA 9040	481468		
40281918004	**FIELD BLANK**	EPA 9040	481468		
40281918001	**MW-317**	EPA 300.0	481039		
40281918002	**MW-318**	EPA 300.0	481039		
40281918003	**MW-319**	EPA 300.0	481039		
40281918004	**FIELD BLANK**	EPA 300.0	481039		
40281918001	**MW-317**	EPA 310.2	481736		
40281918002	**MW-318**	EPA 310.2	481736		
40281918003	**MW-319**	EPA 310.2	481736		
40281918004	**FIELD BLANK**	EPA 310.2	481736		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25219067 COLUMBIA LF MOD 12-13
Pace Project No.: 40281918

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40281918001	**MW-317**	EPA 353.2	481307		
40281918002	**MW-318**	EPA 353.2	481307		
40281918003	**MW-319**	EPA 353.2	481307		
40281918004	**FIELD BLANK**	EPA 353.2	481307		

Pace® Location Requested (City/State):
Pace Analytical Green Bay
1241 Bellevue Street, Suite 9
Green Bay, WI 54302

CHAIN-OF-CUSTODY Analytical Request Document

Chain-of-Custody is a LEGAL DOCUMENT - Complete all relevant fields

LAB USE ONLY- Affix Workorder/Login Label Here

40281918

Scan QR Code for instructions

Company Name: SCS ENGINEERS
Street Address: 2830 Dairy Drive, Madison, WI 53718
Contact/Report To: Meghan Blodgett
Phone #: 608-216-7362
E-Mail: mblodgett@scsengineers.com
Cc E-Mail:
Customer Project #:
Project Name: 25219067 COLUMBIA LF MOD 12-13 CCR
Invoice To: Accounts Payable
Invoice E-Mail: aradunzel@scsengineers.com
Site Collection Info/Facility ID (as applicable):
Purchase Order # (if applicable):
Quote #:
Time Zone Collected: [ ] AK [ ] PT [ ] MT [X] CT [ ] ET
County / State origin of sample(s): Wisconsin
Data Deliverables: [ ] Level II [ ] Level III [ ] Level IV [ ] EQUIS [ ] Other
Regulatory Program (DW, RCRA, etc.) as applicable: Reportable [ ] Yes [ ] No
Rush (Pre-approval required): [ ] Same Day [ ] 1 Day [ ] 2 Day [ ] 3 Day [ ] Other
DW PWSID # or WW Permit # as applicable:
Date Results Requested:
Field Filtered (if applicable): [ ] Yes [X] No
Analysis:

Specify Container Size **: 3 3 3 1 3
Identify Container Preservative Type***: 1 2 3 2 1

**Container Size: (1) 1L, (2) 500mL, (3) 250mL, (4) 125mL, (5) 100mL, (6) 40mL vial, (7) EnCore, (8) TerraCore, (9) 90mL, (10) Other

*** Preservative Types: (1) None, (2) HNO3, (3) H2SO4, (4) HCl, (5) NaOH, (6) Zn Acetate, (7) NaHSO4, (8) Sod. Thiosulfate, (9) Ascorbic Acid, (10) MeOH, (11) Other

Lab Use Only: Proj. Mgr: Dan Milewsky; AcctNum / Client ID:; Table #:; Profile / Template: 3946; Prelog / Bottle Ord. ID: EZ 3141912

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Waste Water (WW), Product (P), Soil/Solid (SS), Oil (OL), Wipe (WP), Tissue (TS), Bioassay (B), Vapor (V), Surface Water (SW), Sediment (SED), Sludge (SL), Caulk (CK), Leachate (LL), Biosolid (BS), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Composite Start Date	Composite Start Time	Collected or Composite End Date	Collected or Composite End Time	# Cont.	Res. Chlorine Results	Res. Chlorine Units	Boron	Chloride/Fluoride/Sulfate	Metals and Hardness	NO2+NO3	Radium 226 & 228	TDS, pH, Alkalinity	Sample Comment	Preservation non-conformance identified for sample.
MW-317	WT	grab			7/31/24	1125	6				X	X	X	X	X	001	
MW-318	WT	↓			↓	1145	6				X	X	X	X	X	002	
MW-319	WT	↓			↓	1325	6				X	X	X	X	X	003	
FIELD BLANK	WT	↓			↓	1140	6				X	X	X	X	X	004	
~~MW-34A~~	~~WT~~									~~X~~							

Additional Instructions from Pace®:
Metals=6020 B,Ca,Sb,As,Ba,Be,Cd,Cr,Co,Pb,Li,Mo,Se,Tl
6010 Cu,Mn,Ag,Zn+hardness
Mercury

Collected By: (Printed Name)
Signature:

Customer Remarks / Special Conditions / Possible Hazards:

# Coolers	Thermometer ID	Correction Factor (°C)	Obs. Temp (°C)	Corrected Temp. (°C)	On Ice
1	129	0.0	0.0	0.0	Y

Relinquished by/Company (Signature)	Date/Time	Received by/Company (Signature)	Date/Time
[signature] SCS Engineers	7/31/2024 330		
[signature] CS Logistics	08/01/24 0920	[signature] Pace	08/01/24 0920

Tracking Number:
Delivered by: [ ] In-Person [ ] Courier [ ] FedEX [ ] UPS [ ] Other

Page: 1 of 1

Client Name: SCS Engineers

Sample Preservation Receipt Form

Project # 40281918

All containers needing preservation have been checked and noted below: ☑Yes ☐No ☐N/A

Initial when completed: KW Date/ Time:

Lab Lot# of pH paper: 10D3733 Lab Std #ID of preservation (if pH adjusted):

Pace Lab #	Glass: AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	Plastic: BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	Vials: VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	Jars: JGFU	JG9U	WGFU	WPFU	General: SP5T	ZPLC	GN 1	GN 2	VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
001									2		1	1														2		X			X		2.5 / 5
002									2		1	1														2		X			X		2.5 / 5
003									2		1	1														2		X			X		2.5 / 5
004									2		1	1														2		X			X		2.5 / 5
005																																		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																											08/24/24		SKW					2.5 / 5
020																																		2.5 / 5

Exceptions to preservation check VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other: _____ Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☑N/A *If yes look in headspace column

AG1U	1 liter amber glass	BP1U	1 liter plastic unpres	VG9C	40 mL clear ascorbic w/ HCl	JGFU	4 oz amber jar unpres
BG1U	1 liter clear glass	BP3U	250 mL plastic unpres	DG9T	40 mL amber Na Thio	JG9U	9 oz amber jar unpres
AG1H	1 liter amber glass HCL	BP3B	250 mL plastic NaOH	VG9U	40 mL clear vial unpres	WGFU	4 oz clear jar unpres
AG4S	125 mL amber glass H2SO4	BP3N	250 mL plastic HNO3	VG9H	40 mL clear vial HCL	WPFU	4 oz plastic jar unpres
AG5U	100 mL amber glass unpres	BP3S	250 mL plastic H2SO4	VG9M	40 mL clear vial MeOH	SP5T	120 mL plastic Na Thiosulfate
AG2S	500 mL amber glass H2SO4	BP2Z	500 mL plastic NaOH + Zn	VG9D	40 mL clear vial DI	ZPLC	ziploc bag
BG3U	250 mL clear glass unpres					GN 1	1 Liter Poly HNO3
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO# : 40281918

40281918

Client Name: SCS Engineers

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco ☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☒ Bubble Wrap ☒ Bubble Bags ☐ None ☐ Other _____

Thermometer Used SR - 129 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr. 0.0 /Corr: 0.0

Temp Blank Present: ☒ yes ☐ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 08/01/24 /Initials: SEW

Labeled By Initials: SA

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☑Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☑Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☑Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC: 08/01/24 SW	☑Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☑Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☑No	6.
Rush Turn Around Time Requested:	☐Yes ☑No	7.
Sufficient Volume: For Analysis: ☑Yes ☐No MS/MSD: ☐Yes ☑No ☐N/A		8.
Correct Containers Used:	☑Yes ☐No	9.
Correct Type: Pace Green Bay, Pace IR, Non-Pace		
Containers Intact:	☑Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☑N/A	11.
Sample Labels match COC: -Includes date/time/ID/Analysis Matrix: W	☐Yes ☒No ☐N/A	12. 002- Literal collect times - 08/01/24 SW
Trip Blank Present:	☐Yes ☐No ☑N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☑N/A	
Pace Trip Blank Lot # (if purchased): _____		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Page 2 of 2

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

October 01, 2024

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on August 31, 2024. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Green Bay
- Pace Analytical Services - Greensburg

Report revised to correct the Method 6020 metals list. This replaces the report generated on September 25, 2024.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Dan Milewsky
dan.milewsky@pacelabs.com
(920)469-2436
Project Manager

Enclosures

cc: Matt Bizjack, Alliant Energy
Natalie Burris, SCS ENGINEERS
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

CERTIFICATIONS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Pace Analytical Services Pennsylvania
1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
ANABISO/IEC 17025:2017 Rad Cert#: L24170
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 2950
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA010
Louisiana DEQ/TNI Certification #: 04086
Maine Certification #: 2023021
Maryland Certification #: 308
Massachusetts Certification #: M-PA1457
Michigan/PADEP Certification #: 9991
Missouri Certification #: 235
Montana Certification #: Cert0082
Nebraska Certification #: NE-OS-29-14
Nevada Certification #: PA014572023-03
New Hampshire/TNI Certification #: 297622
New Jersey/TNI Certification #: PA051
New Mexico Certification #: PA01457
New York/TNI Certification #: 10888
North Carolina Certification #: 42706
North Dakota Certification #: R-190
Ohio EPA Rad Approval: #41249
Oregon/TNI Certification #: PA200002-015
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: TN02867
Texas/TNI Certification #: T104704188-22-18
Utah/TNI Certification #: PA014572223-14
USDA Soil Permit #: 525-23-67-77263
Vermont Dept. of Health: ID# VT-0282
Virgin Island/PADEP Certification
Virginia/VELAP Certification #: 460198
Washington Certification #: C868
West Virginia DEP Certification #: 143
West Virginia DHHR Certification #: 9964C
Wisconsin Approve List for Rad

Pace Analytical Services Green Bay
1241 Bellevue Street, Green Bay, WI 54302
Florida/NELAP Certification #: E87948
Illinois Certification #: 200050
Kentucky UST Certification #: 82
Louisiana Certification #: 04168
Minnesota Certification #: 055-999-334
New York Certification #: 12064
North Dakota Certification #: R-150
South Carolina Certification #: 83006001
Texas Certification #: T104704529-21-8
Virginia VELAP Certification ID: 11873
Wisconsin Certification #: 405132750
Wisconsin DATCP Certification #: 105-444
USDA Soil Permit #: P330-21-00008
Federal Fish & Wildlife Permit #: 51774A

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE SUMMARY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40283441001	**MW-317**	Water	08/30/24 10:10	08/31/24 08:45
40283441002	**MW-318**	Water	08/30/24 11:25	08/31/24 08:45
40283441003	**MW-319**	Water	08/30/24 12:45	08/31/24 08:45
40283441004	**FIELD BLANK**	Water	08/30/24 12:10	08/31/24 08:45

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40283441001	**MW-317**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40283441002	**MW-318**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40283441003	**MW-319**	EPA 6010D	SIS	5	PASI-G
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G
40283441004	**FIELD BLANK**	EPA 6010D	SIS	5	PASI-G

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SAMPLE ANALYTE COUNT

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
		EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
		EPA 903.1	CLM	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	LMB	1	PASI-G
		EPA 9040	HML	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		EPA 310.2	MT	1	PASI-G
		EPA 353.2	MT	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay
PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SUMMARY OF DETECTION

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40283441001	**MW-317**					
EPA 6010D	Manganese	322	ug/L	5.0	09/06/24 15:12	
EPA 6010D	Total Hardness by 2340B	200	mg/L	5.4	09/06/24 15:12	
EPA 6020B	Arsenic	1.3	ug/L	1.0	09/05/24 14:07	
EPA 6020B	Barium	54.5	ug/L	2.3	09/05/24 14:07	
EPA 6020B	Boron	49.3	ug/L	10.0	09/05/24 14:07	
EPA 6020B	Calcium	44600	ug/L	254	09/05/24 14:07	
EPA 6020B	Cobalt	0.13J	ug/L	1.0	09/05/24 14:07	
EPA 6020B	Lithium	4.5	ug/L	1.0	09/05/24 14:07	
EPA 6020B	Molybdenum	52.4	ug/L	1.5	09/05/24 14:07	
	Field pH	7.44	Std. Units		08/30/24 10:10	
	Field Specific Conductance	546	umhos/cm		08/30/24 10:10	
	Oxygen, Dissolved	0.13	mg/L		08/30/24 10:10	
	REDOX	-130.2	mV		08/30/24 10:10	
	Turbidity	3.37	NTU		08/30/24 10:10	
	Static Water Level	787.76	feet		08/30/24 10:10	
	Temperature, Water (C)	12.7	deg C		08/30/24 10:10	
EPA 903.1	Radium-226	0.000 ± 0.497 (1.00) C:NA T:92%	pCi/L		09/16/24 14:23	
EPA 904.0	Radium-228	0.450 ± 0.435 (1.00) C:81% T:84%	pCi/L		09/13/24 11:21	
Total Radium Calculation	Total Radium	0.450 ± 0.932 (2.00)	pCi/L		09/16/24 16:34	
SM 2540C	Total Dissolved Solids	334	mg/L	20.0	09/04/24 12:23	
EPA 9040	pH at 25 Degrees C	8.3	Std. Units	0.10	09/04/24 16:04	H6
EPA 300.0	Chloride	6.1	mg/L	2.0	09/10/24 00:48	
EPA 300.0	Fluoride	0.28J	mg/L	0.32	09/10/24 15:18	
EPA 300.0	Sulfate	13.5	mg/L	2.0	09/10/24 00:48	
EPA 310.2	Alkalinity, Total as CaCO3	286	mg/L	25.0	09/03/24 15:15	
EPA 353.2	Nitrogen, NO2 plus NO3	0.095J	mg/L	0.25	09/11/24 11:41	
40283441002	**MW-318**					
EPA 6010D	Manganese	13.2	ug/L	5.0	09/09/24 14:40	
EPA 6010D	Total Hardness by 2340B	476	mg/L	5.4	09/09/24 14:40	
EPA 6020B	Barium	11.8	ug/L	2.3	09/05/24 14:24	
EPA 6020B	Boron	23.5	ug/L	10.0	09/05/24 14:24	
EPA 6020B	Calcium	101000	ug/L	254	09/05/24 14:24	
EPA 6020B	Chromium	2.0J	ug/L	3.4	09/05/24 14:24	
EPA 6020B	Cobalt	0.31J	ug/L	1.0	09/05/24 14:24	
EPA 6020B	Lithium	0.95J	ug/L	1.0	09/05/24 14:24	
EPA 6020B	Molybdenum	0.45J	ug/L	1.5	09/05/24 14:24	
EPA 6020B	Selenium	1.1	ug/L	1.1	09/05/24 14:24	
	Field pH	7.22	Std. Units		08/30/24 11:25	
	Field Specific Conductance	969	umhos/cm		08/30/24 11:25	
	Oxygen, Dissolved	8.05	mg/L		08/30/24 11:25	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SUMMARY OF DETECTION

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40283441002	**MW-318**					
	REDOX	95.3	mV		08/30/24 11:25	
	Turbidity	4.08	NTU		08/30/24 11:25	
	Static Water Level	788.35	feet		08/30/24 11:25	
	Temperature, Water (C)	13.4	deg C		08/30/24 11:25	
EPA 903.1	Radium-226	0.285 ± 0.603 (1.07) C:NA T:88%	pCi/L		09/16/24 14:23	
EPA 904.0	Radium-228	0.442 ± 0.438 (1.00) C:82% T:78%	pCi/L		09/13/24 11:21	
Total Radium Calculation	Total Radium	0.727 ± 1.04 (2.07)	pCi/L		09/16/24 16:34	
SM 2540C	Total Dissolved Solids	694	mg/L	20.0	09/04/24 12:23	
EPA 9040	pH at 25 Degrees C	8.1	Std. Units	0.10	09/04/24 16:06	H6
EPA 300.0	Chloride	31.8	mg/L	2.0	09/10/24 01:02	
EPA 300.0	Sulfate	272	mg/L	20.0	09/10/24 16:30	
EPA 310.2	Alkalinity, Total as CaCO3	248	mg/L	25.0	09/03/24 15:16	
EPA 353.2	Nitrogen, NO2 plus NO3	0.87	mg/L	0.25	09/11/24 11:42	
40283441003	**MW-319**					
EPA 6010D	Manganese	6.2	ug/L	5.0	09/06/24 15:27	
EPA 6010D	Total Hardness by 2340B	579	mg/L	5.4	09/06/24 15:27	
EPA 6020B	Barium	51.4	ug/L	2.3	09/05/24 14:32	
EPA 6020B	Boron	42.2	ug/L	10.0	09/05/24 14:32	
EPA 6020B	Calcium	131000	ug/L	254	09/05/24 14:32	
EPA 6020B	Chromium	1.7J	ug/L	3.4	09/05/24 14:32	
EPA 6020B	Cobalt	0.37J	ug/L	1.0	09/05/24 14:32	
EPA 6020B	Lithium	1.5	ug/L	1.0	09/05/24 14:32	
EPA 6020B	Molybdenum	1.6	ug/L	1.5	09/05/24 14:32	
EPA 6020B	Selenium	1.4	ug/L	1.1	09/05/24 14:32	
	Field pH	7.43	Std. Units		08/30/24 12:45	
	Field Specific Conductance	2948	umhos/cm		08/30/24 12:45	
	Oxygen, Dissolved	7.67	mg/L		08/30/24 12:45	
	REDOX	107.4	mV		08/30/24 12:45	
	Turbidity	4.39	NTU		08/30/24 12:45	
	Static Water Level	789.66	feet		08/30/24 12:45	
	Temperature, Water (C)	12.3	deg C		08/30/24 12:45	
EPA 903.1	Radium-226	-0.345 ± 0.778 (1.59) C:NA T:94%	pCi/L		09/16/24 14:23	
EPA 904.0	Radium-228	1.30 ± 0.491 (1.00) C:87% T:86%	pCi/L		09/13/24 11:21	
Total Radium Calculation	Total Radium	1.30 ± 1.27 (2.59)	pCi/L		09/16/24 16:34	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

SUMMARY OF DETECTION

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab Sample ID / Method	Client Sample ID / Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40283441003	**MW-319**					
SM 2540C	Total Dissolved Solids	1700	mg/L	20.0	09/04/24 12:23	
EPA 9040	pH at 25 Degrees C	8.2	Std. Units	0.10	09/04/24 16:09	H6
EPA 300.0	Chloride	802	mg/L	100	09/10/24 16:50	
EPA 300.0	Sulfate	70.9J	mg/L	100	09/10/24 16:50	D3
EPA 310.2	Alkalinity, Total as CaCO3	350	mg/L	25.0	09/03/24 15:20	
EPA 353.2	Nitrogen, NO2 plus NO3	2.2	mg/L	0.25	09/11/24 11:42	
40283441004	**FIELD BLANK**					
EPA 6020B	Boron	13.9	ug/L	10.0	09/05/24 13:59	
EPA 6020B	Calcium	314	ug/L	254	09/05/24 13:59	B
EPA 903.1	Radium-226	0.0552 ± 0.446 (1.00) C:NA T:93%	pCi/L		09/16/24 14:23	
EPA 904.0	Radium-228	0.486 ± 0.402 (1.00) C:84% T:86%	pCi/L		09/13/24 11:22	
Total Radium Calculation	Total Radium	0.541 ± 0.848 (2.00)	pCi/L		09/16/24 16:34	
SM 2540C	Total Dissolved Solids	16.0J	mg/L	20.0	09/05/24 17:15	B
EPA 9040	pH at 25 Degrees C	8.4	Std. Units	0.10	09/04/24 16:17	H6
EPA 300.0	Sulfate	0.51J	mg/L	2.0	09/10/24 18:45	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-317 **Lab ID: 40283441001** Collected: 08/30/24 10:10 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	09/05/24 07:00	09/06/24 15:12	7440-50-8	
Manganese	**322**	ug/L	5.0	1.5	1	09/05/24 07:00	09/06/24 15:12	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	09/05/24 07:00	09/06/24 15:12	7440-22-4	
Total Hardness by 2340B	**200**	mg/L	5.4	1.0	1	09/05/24 07:00	09/06/24 15:12		
Zinc	**<11.6**	ug/L	40.0	11.6	1	09/05/24 07:00	09/06/24 15:12	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 14:07	7440-36-0	
Arsenic	**1.3**	ug/L	1.0	0.28	1	09/03/24 11:28	09/05/24 14:07	7440-38-2	
Barium	**54.5**	ug/L	2.3	0.70	1	09/03/24 11:28	09/05/24 14:07	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	09/03/24 11:28	09/05/24 14:07	7440-41-7	
Boron	**49.3**	ug/L	10.0	3.0	1	09/03/24 11:28	09/05/24 14:07	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 14:07	7440-43-9	
Calcium	**44600**	ug/L	254	76.2	1	09/03/24 11:28	09/05/24 14:07	7440-70-2	
Chromium	**<1.0**	ug/L	3.4	1.0	1	09/03/24 11:28	09/05/24 14:07	7440-47-3	
Cobalt	**0.13J**	ug/L	1.0	0.12	1	09/03/24 11:28	09/05/24 14:07	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	09/03/24 11:28	09/05/24 14:07	7439-92-1	
Lithium	**4.5**	ug/L	1.0	0.22	1	09/03/24 11:28	09/05/24 14:07	7439-93-2	
Molybdenum	**52.4**	ug/L	1.5	0.44	1	09/03/24 11:28	09/05/24 14:07	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	09/03/24 11:28	09/05/24 14:07	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/03/24 11:28	09/05/24 14:07	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	09/09/24 07:01	09/09/24 11:41	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.44**	Std. Units			1		08/30/24 10:10		
Field Specific Conductance	**546**	umhos/cm			1		08/30/24 10:10		
Oxygen, Dissolved	**0.13**	mg/L			1		08/30/24 10:10	7782-44-7	
REDOX	**-130.2**	mV			1		08/30/24 10:10		
Turbidity	**3.37**	NTU			1		08/30/24 10:10		
Static Water Level	**787.76**	feet			1		08/30/24 10:10		
Temperature, Water (C)	**12.7**	deg C			1		08/30/24 10:10		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**334**	mg/L	20.0	8.7	1		09/04/24 12:23		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.3**	Std. Units	0.10	0.010	1		09/04/24 16:04		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-317 **Lab ID: 40283441001** Collected: 08/30/24 10:10 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**6.1**	mg/L	2.0	0.59	1		09/10/24 00:48	16887-00-6	
Fluoride	**0.28J**	mg/L	0.32	0.095	1		09/10/24 15:18	16984-48-8	
Sulfate	**13.5**	mg/L	2.0	0.44	1		09/10/24 00:48	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**286**	mg/L	25.0	7.4	1		09/03/24 15:15		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**0.095J**	mg/L	0.25	0.059	1		09/11/24 11:41		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-318 **Lab ID: 40283441002** Collected: 08/30/24 11:25 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	09/05/24 07:00	09/09/24 14:40	7440-50-8	
Manganese	**13.2**	ug/L	5.0	1.5	1	09/05/24 07:00	09/09/24 14:40	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	09/05/24 07:00	09/09/24 14:40	7440-22-4	
Total Hardness by 2340B	**476**	mg/L	5.4	1.0	1	09/05/24 07:00	09/09/24 14:40		
Zinc	**<11.6**	ug/L	40.0	11.6	1	09/05/24 07:00	09/09/24 14:40	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 14:24	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	09/03/24 11:28	09/05/24 14:24	7440-38-2	
Barium	**11.8**	ug/L	2.3	0.70	1	09/03/24 11:28	09/05/24 14:24	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	09/03/24 11:28	09/05/24 14:24	7440-41-7	
Boron	**23.5**	ug/L	10.0	3.0	1	09/03/24 11:28	09/05/24 14:24	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 14:24	7440-43-9	
Calcium	**101000**	ug/L	254	76.2	1	09/03/24 11:28	09/05/24 14:24	7440-70-2	
Chromium	**2.0J**	ug/L	3.4	1.0	1	09/03/24 11:28	09/05/24 14:24	7440-47-3	
Cobalt	**0.31J**	ug/L	1.0	0.12	1	09/03/24 11:28	09/05/24 14:24	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	09/03/24 11:28	09/05/24 14:24	7439-92-1	
Lithium	**0.95J**	ug/L	1.0	0.22	1	09/03/24 11:28	09/05/24 14:24	7439-93-2	
Molybdenum	**0.45J**	ug/L	1.5	0.44	1	09/03/24 11:28	09/05/24 14:24	7439-98-7	
Selenium	**1.1**	ug/L	1.1	0.32	1	09/03/24 11:28	09/05/24 14:24	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/03/24 11:28	09/05/24 14:24	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	09/09/24 07:01	09/09/24 11:44	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.22**	Std. Units			1		08/30/24 11:25		
Field Specific Conductance	**969**	umhos/cm			1		08/30/24 11:25		
Oxygen, Dissolved	**8.05**	mg/L			1		08/30/24 11:25	7782-44-7	
REDOX	**95.3**	mV			1		08/30/24 11:25		
Turbidity	**4.08**	NTU			1		08/30/24 11:25		
Static Water Level	**788.35**	feet			1		08/30/24 11:25		
Temperature, Water (C)	**13.4**	deg C			1		08/30/24 11:25		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**694**	mg/L	20.0	8.7	1		09/04/24 12:23		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.1**	Std. Units	0.10	0.010	1		09/04/24 16:06		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-318 **Lab ID: 40283441002** Collected: 08/30/24 11:25 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**31.8**	mg/L	2.0	0.59	1		09/10/24 01:02	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		09/10/24 15:33	16984-48-8	
Sulfate	**272**	mg/L	20.0	4.4	10		09/10/24 16:30	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**248**	mg/L	25.0	7.4	1		09/03/24 15:16		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**0.87**	mg/L	0.25	0.059	1		09/11/24 11:42		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-319 **Lab ID: 40283441003** Collected: 08/30/24 12:45 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	09/05/24 07:00	09/06/24 15:27	7440-50-8	
Manganese	**6.2**	ug/L	5.0	1.5	1	09/05/24 07:00	09/06/24 15:27	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	09/05/24 07:00	09/06/24 15:27	7440-22-4	
Total Hardness by 2340B	**579**	mg/L	5.4	1.0	1	09/05/24 07:00	09/06/24 15:27		
Zinc	**<11.6**	ug/L	40.0	11.6	1	09/05/24 07:00	09/06/24 15:27	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 14:32	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	09/03/24 11:28	09/05/24 14:32	7440-38-2	
Barium	**51.4**	ug/L	2.3	0.70	1	09/03/24 11:28	09/05/24 14:32	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	09/03/24 11:28	09/05/24 14:32	7440-41-7	
Boron	**42.2**	ug/L	10.0	3.0	1	09/03/24 11:28	09/05/24 14:32	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 14:32	7440-43-9	
Calcium	**131000**	ug/L	254	76.2	1	09/03/24 11:28	09/05/24 14:32	7440-70-2	
Chromium	**1.7J**	ug/L	3.4	1.0	1	09/03/24 11:28	09/05/24 14:32	7440-47-3	
Cobalt	**0.37J**	ug/L	1.0	0.12	1	09/03/24 11:28	09/05/24 14:32	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	09/03/24 11:28	09/05/24 14:32	7439-92-1	
Lithium	**1.5**	ug/L	1.0	0.22	1	09/03/24 11:28	09/05/24 14:32	7439-93-2	
Molybdenum	**1.6**	ug/L	1.5	0.44	1	09/03/24 11:28	09/05/24 14:32	7439-98-7	
Selenium	**1.4**	ug/L	1.1	0.32	1	09/03/24 11:28	09/05/24 14:32	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/03/24 11:28	09/05/24 14:32	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	09/09/24 07:01	09/09/24 11:46	7439-97-6	
Field Data	Analytical Method: Pace Analytical Services - Green Bay								
Field pH	**7.43**	Std. Units			1		08/30/24 12:45		
Field Specific Conductance	**2948**	umhos/cm			1		08/30/24 12:45		
Oxygen, Dissolved	**7.67**	mg/L			1		08/30/24 12:45	7782-44-7	
REDOX	**107.4**	mV			1		08/30/24 12:45		
Turbidity	**4.39**	NTU			1		08/30/24 12:45		
Static Water Level	**789.66**	feet			1		08/30/24 12:45		
Temperature, Water (C)	**12.3**	deg C			1		08/30/24 12:45		
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**1700**	mg/L	20.0	8.7	1		09/04/24 12:23		
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.2**	Std. Units	0.10	0.010	1		09/04/24 16:09		H6

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-319 **Lab ID: 40283441003** Collected: 08/30/24 12:45 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**802**	mg/L	100	29.6	50		09/10/24 16:50	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		09/10/24 15:47	16984-48-8	
Sulfate	**70.9J**	mg/L	100	22.2	50		09/10/24 16:50	14808-79-8	D3
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**350**	mg/L	25.0	7.4	1		09/03/24 15:20		
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**2.2**	mg/L	0.25	0.059	1		09/11/24 11:42		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: FIELD BLANK **Lab ID: 40283441004** Collected: 08/30/24 12:10 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
6010D MET ICP	Analytical Method: EPA 6010D Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Copper	**<3.4**	ug/L	10.0	3.4	1	09/05/24 07:00	09/06/24 15:29	7440-50-8	
Manganese	**<1.5**	ug/L	5.0	1.5	1	09/05/24 07:00	09/06/24 15:29	7439-96-5	
Silver	**<3.2**	ug/L	10.0	3.2	1	09/05/24 07:00	09/06/24 15:29	7440-22-4	
Total Hardness by 2340B	**<1.0**	mg/L	5.4	1.0	1	09/05/24 07:00	09/06/24 15:29		
Zinc	**<11.6**	ug/L	40.0	11.6	1	09/05/24 07:00	09/06/24 15:29	7440-66-6	
6020B MET ICPMS	Analytical Method: EPA 6020B Preparation Method: EPA 3010A Pace Analytical Services - Green Bay								
Antimony	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 13:59	7440-36-0	
Arsenic	**<0.28**	ug/L	1.0	0.28	1	09/03/24 11:28	09/05/24 13:59	7440-38-2	
Barium	**<0.70**	ug/L	2.3	0.70	1	09/03/24 11:28	09/05/24 13:59	7440-39-3	
Beryllium	**<0.25**	ug/L	1.0	0.25	1	09/03/24 11:28	09/05/24 13:59	7440-41-7	
Boron	**13.9**	ug/L	10.0	3.0	1	09/03/24 11:28	09/05/24 13:59	7440-42-8	
Cadmium	**<0.15**	ug/L	1.0	0.15	1	09/03/24 11:28	09/05/24 13:59	7440-43-9	
Calcium	**314**	ug/L	254	76.2	1	09/03/24 11:28	09/05/24 13:59	7440-70-2	B
Chromium	**<1.0**	ug/L	3.4	1.0	1	09/03/24 11:28	09/05/24 13:59	7440-47-3	
Cobalt	**<0.12**	ug/L	1.0	0.12	1	09/03/24 11:28	09/05/24 13:59	7440-48-4	
Lead	**<0.24**	ug/L	1.0	0.24	1	09/03/24 11:28	09/05/24 13:59	7439-92-1	
Lithium	**<0.22**	ug/L	1.0	0.22	1	09/03/24 11:28	09/05/24 13:59	7439-93-2	
Molybdenum	**<0.44**	ug/L	1.5	0.44	1	09/03/24 11:28	09/05/24 13:59	7439-98-7	
Selenium	**<0.32**	ug/L	1.1	0.32	1	09/03/24 11:28	09/05/24 13:59	7782-49-2	
Thallium	**<0.14**	ug/L	1.0	0.14	1	09/03/24 11:28	09/05/24 13:59	7440-28-0	
7470 Mercury	Analytical Method: EPA 7470 Preparation Method: EPA 7470 Pace Analytical Services - Green Bay								
Mercury	**<0.066**	ug/L	0.20	0.066	1	09/09/24 07:01	09/09/24 11:48	7439-97-6	
2540C Total Dissolved Solids	Analytical Method: SM 2540C Pace Analytical Services - Green Bay								
Total Dissolved Solids	**16.0J**	mg/L	20.0	8.7	1		09/05/24 17:15		B
9040 pH	Analytical Method: EPA 9040 Pace Analytical Services - Green Bay								
pH at 25 Degrees C	**8.4**	Std. Units	0.10	0.010	1		09/04/24 16:17		H6
300.0 IC Anions	Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay								
Chloride	**<0.59**	mg/L	2.0	0.59	1		09/10/24 18:45	16887-00-6	
Fluoride	**<0.095**	mg/L	0.32	0.095	1		09/10/24 18:45	16984-48-8	
Sulfate	**0.51J**	mg/L	2.0	0.44	1		09/10/24 18:45	14808-79-8	
310.2 Alkalinity	Analytical Method: EPA 310.2 Pace Analytical Services - Green Bay								
Alkalinity, Total as CaCO3	**<7.4**	mg/L	25.0	7.4	1		09/03/24 15:23		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: FIELD BLANK **Lab ID: 40283441004** Collected: 08/30/24 12:10 Received: 08/31/24 08:45 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
353.2 Nitrogen, NO2/NO3 pres.	Analytical Method: EPA 353.2 Pace Analytical Services - Green Bay								
Nitrogen, NO2 plus NO3	**<0.059**	mg/L	0.25	0.059	1		09/11/24 11:43		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483780 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 2769974 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	09/09/24 11:09	

LABORATORY CONTROL SAMPLE: 2769975

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.8	95	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2769976 2769977

Parameter	Units	40283479001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Mercury	ug/L	<0.066	5	5	4.2	3.8	84	77	85-115	8	20	M0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483600
QC Batch Method: EPA 3010A
Analysis Method: EPA 6010D
Analysis Description: 6010D MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 2768402 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<3.4	10.0	09/06/24 15:01	
Manganese	ug/L	<1.5	5.0	09/06/24 15:01	
Silver	ug/L	<3.2	10.0	09/06/24 15:01	
Total Hardness by 2340B	mg/L	<1.0	5.4	09/06/24 15:01	
Zinc	ug/L	<11.6	40.0	09/06/24 15:01	

LABORATORY CONTROL SAMPLE: 2768403

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	250	258	103	80-120	
Manganese	ug/L	250	259	104	80-120	
Silver	ug/L	125	127	102	80-120	
Total Hardness by 2340B	mg/L		66.8			
Zinc	ug/L	250	258	103	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2768434 2768435

Parameter	Units	40283441001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	<3.4	250	250	256	260	102	104	75-125	2	20	
Manganese	ug/L	322	250	250	576	582	101	104	75-125	1	20	
Silver	ug/L	<3.2	125	125	126	129	101	103	75-125	2	20	
Total Hardness by 2340B	mg/L	200			262	265				1	20	
Zinc	ug/L	<11.6	250	250	252	258	100	102	75-125	2	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483423
QC Batch Method: EPA 3010A
Analysis Method: EPA 6020B
Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 2767724 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	09/05/24 13:25	
Arsenic	ug/L	<0.28	1.0	09/05/24 13:25	
Barium	ug/L	<0.70	2.3	09/05/24 13:25	
Beryllium	ug/L	<0.25	1.0	09/05/24 13:25	
Boron	ug/L	<3.0	10.0	09/05/24 13:25	
Cadmium	ug/L	<0.15	1.0	09/05/24 13:25	
Calcium	ug/L	80.8J	254	09/05/24 13:25	
Chromium	ug/L	<1.0	3.4	09/05/24 13:25	
Cobalt	ug/L	<0.12	1.0	09/05/24 13:25	
Lead	ug/L	<0.24	1.0	09/05/24 13:25	
Lithium	ug/L	<0.22	1.0	09/05/24 13:25	
Molybdenum	ug/L	<0.44	1.5	09/05/24 13:25	
Selenium	ug/L	<0.32	1.1	09/05/24 13:25	
Thallium	ug/L	<0.14	1.0	09/05/24 13:25	

LABORATORY CONTROL SAMPLE: 2767725

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	244	97	80-120	
Arsenic	ug/L	250	242	97	80-120	
Barium	ug/L	250	244	97	80-120	
Beryllium	ug/L	250	251	100	80-120	
Boron	ug/L	250	235	94	80-120	
Cadmium	ug/L	250	247	99	80-120	
Calcium	ug/L	10000	10100	101	80-120	
Chromium	ug/L	250	239	96	80-120	
Cobalt	ug/L	250	245	98	80-120	
Lead	ug/L	250	249	100	80-120	
Lithium	ug/L	250	245	98	80-120	
Molybdenum	ug/L	250	248	99	80-120	
Selenium	ug/L	250	244	98	80-120	
Thallium	ug/L	250	242	97	80-120	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2767726 2767727

Parameter	Units	40283441001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Antimony	ug/L	<0.15	250	250	246	245	98	98	75-125	1	20	
Arsenic	ug/L	1.3	250	250	242	242	96	96	75-125	0	20	
Barium	ug/L	54.5	250	250	290	291	94	95	75-125	0	20	
Beryllium	ug/L	<0.25	250	250	252	250	101	100	75-125	1	20	
Boron	ug/L	49.3	250	250	280	282	92	93	75-125	1	20	
Cadmium	ug/L	<0.15	250	250	242	244	97	97	75-125	1	20	
Calcium	ug/L	44600	10000	10000	53400	53100	88	85	75-125	0	20	
Chromium	ug/L	<1.0	250	250	235	235	94	94	75-125	0	20	
Cobalt	ug/L	0.13J	250	250	232	232	93	93	75-125	0	20	
Lead	ug/L	<0.24	250	250	244	245	97	98	75-125	0	20	
Lithium	ug/L	4.5	250	250	243	244	95	96	75-125	1	20	
Molybdenum	ug/L	52.4	250	250	301	302	99	100	75-125	1	20	
Selenium	ug/L	<0.32	250	250	241	239	96	96	75-125	1	20	
Thallium	ug/L	<0.14	250	250	239	241	96	96	75-125	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483502
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003

METHOD BLANK: 2767904 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	16.0J	20.0	09/04/24 12:19	

LABORATORY CONTROL SAMPLE: 2767905

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	582	100	80-120	

SAMPLE DUPLICATE: 2767911

Parameter	Units	40283261001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	730	726	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483641
QC Batch Method: SM 2540C
Analysis Method: SM 2540C
Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441004

METHOD BLANK: 2768563 Matrix: Water
Associated Lab Samples: 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	14.0J	20.0	09/05/24 17:14	

LABORATORY CONTROL SAMPLE: 2768564

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	634	109	80-120	

SAMPLE DUPLICATE: 2768565

Parameter	Units	40283452001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	764	772	1	10	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483555
QC Batch Method: EPA 9040
Analysis Method: EPA 9040
Analysis Description: 9040 pH
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

SAMPLE DUPLICATE: 2768234

Parameter	Units	40283263001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	8.3	8.3	0	20	H6

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483692
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003

METHOD BLANK: 2768975 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	09/09/24 18:20	
Fluoride	mg/L	<0.095	0.32	09/10/24 11:57	
Sulfate	mg/L	<0.44	2.0	09/09/24 18:20	

LABORATORY CONTROL SAMPLE: 2768976

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.2	106	90-110	
Fluoride	mg/L	2	2.0	100	90-110	
Sulfate	mg/L	20	21.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2768977 2768978

Parameter	Units	40283542001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	373	400	400	799	787	107	104	90-110	2	15	
Sulfate	mg/L	21.9J	400	400	462	429	110	102	90-110	7	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2768979 2768980

Parameter	Units	40283441003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	802	1000	1000	1850	1860	104	106	90-110	1	15	
Fluoride	mg/L	<0.095	2	2	2.1	2.1	105	106	90-110	1	15	
Sulfate	mg/L	70.9J	1000	1000	1110	1120	104	105	90-110	1	15	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483760
QC Batch Method: EPA 300.0
Analysis Method: EPA 300.0
Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441004

METHOD BLANK: 2769780 Matrix: Water
Associated Lab Samples: 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.59	2.0	09/10/24 18:16	
Fluoride	mg/L	<0.095	0.32	09/10/24 18:16	
Sulfate	mg/L	<0.44	2.0	09/10/24 18:16	

LABORATORY CONTROL SAMPLE: 2769781

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.1	106	90-110	
Fluoride	mg/L	2	2.2	109	90-110	
Sulfate	mg/L	20	21.1	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2769782 2769783

Parameter	Units	40283424001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	5.2	20	20	26.8	26.8	108	108	90-110	0	15	
Fluoride	mg/L	<0.095	2	2	2.3	2.3	114	114	90-110	0	15	M0
Sulfate	mg/L	1.4J	20	20	22.6	22.5	106	106	90-110	0	15	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2769784 2769785

Parameter	Units	40283503001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Chloride	mg/L	203	100	100	297	294	94	91	90-110	1	15	
Sulfate	mg/L	<2.2	100	100	115	115	115	115	90-110	0	15	M0

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 483455 Analysis Method: EPA 310.2
QC Batch Method: EPA 310.2 Analysis Description: 310.2 Alkalinity
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 2767773 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Alkalinity, Total as CaCO3	mg/L	<7.4	25.0	09/03/24 14:53	

LABORATORY CONTROL SAMPLE: 2767774

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Alkalinity, Total as CaCO3	mg/L	100	103	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2767775 2767776

Parameter	Units	40283339001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	173	100	100	272	275	99	102	90-110	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2767777 2767778

Parameter	Units	40283441003 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Alkalinity, Total as CaCO3	mg/L	350	100	100	442	444	92	94	90-110	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch: 484042
QC Batch Method: EPA 353.2
Analysis Method: EPA 353.2
Analysis Description: 353.2 Nitrate + Nitrite, preserved
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 2771260 Matrix: Water
Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	<0.059	0.25	09/11/24 11:35	

LABORATORY CONTROL SAMPLE: 2771261

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Nitrogen, NO2 plus NO3	mg/L	2.5	2.6	103	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2771262 2771263

Parameter	Units	40283616001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	<0.12	5	5	4.8	4.8	96	96	90-110	0	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2771264 2771265

Parameter	Units	40283536001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Nitrogen, NO2 plus NO3	mg/L	6.7	12.5	12.5	19.1	19.1	99	99	90-110	0	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-317 **Lab ID: 40283441001** Collected: 08/30/24 10:10 Received: 08/31/24 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.000 ± 0.497 (1.00) C:NA T:92%**	pCi/L	09/16/24 14:23	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.450 ± 0.435 (1.00) C:81% T:84%**	pCi/L	09/13/24 11:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.450 ± 0.932 (2.00)**	pCi/L	09/16/24 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-318 **Lab ID: 40283441002** Collected: 08/30/24 11:25 Received: 08/31/24 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.285 ± 0.603 (1.07) C:NA T:88%**	pCi/L	09/16/24 14:23	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.442 ± 0.438 (1.00) C:82% T:78%**	pCi/L	09/13/24 11:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.727 ± 1.04 (2.07)**	pCi/L	09/16/24 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: MW-319 **Lab ID: 40283441003** Collected: 08/30/24 12:45 Received: 08/31/24 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**-0.345 ± 0.778 (1.59) C:NA T:94%**	pCi/L	09/16/24 14:23	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**1.30 ± 0.491 (1.00) C:87% T:86%**	pCi/L	09/13/24 11:21	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**1.30 ± 1.27 (2.59)**	pCi/L	09/16/24 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Sample: FIELD BLANK **Lab ID: 40283441004** Collected: 08/30/24 12:10 Received: 08/31/24 08:45 Matrix: Water
PWS: Site ID: Sample Type:

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
	Pace Analytical Services - Greensburg					
Radium-226	EPA 903.1	**0.0552 ± 0.446 (1.00) C:NA T:93%**	pCi/L	09/16/24 14:23	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	**0.486 ± 0.402 (1.00) C:84% T:86%**	pCi/L	09/13/24 11:22	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	**0.541 ± 0.848 (2.00)**	pCi/L	09/16/24 16:34	7440-14-4	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch:	693999	Analysis Method:	EPA 904.0
QC Batch Method:	EPA 904.0	Analysis Description:	904.0 Radium 228
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 3379518 Matrix: Water

Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.530 ± 0.334 (0.620) C:78% T:91%	pCi/L	09/13/24 11:16	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

QC Batch:	693998	Analysis Method:	EPA 903.1
QC Batch Method:	EPA 903.1	Analysis Description:	903.1 Radium-226
		Laboratory:	Pace Analytical Services - Greensburg

Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

METHOD BLANK: 3379517 Matrix: Water

Associated Lab Samples: 40283441001, 40283441002, 40283441003, 40283441004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0833 ± 0.200 (0.387) C:NA T:100%	pCi/L	09/16/24 14:09	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALIFIERS

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

DEFINITIONS

Act - Activity
Unc - Uncertainty: SDWA = 1.96 sigma count uncertainty, all other matrices = Expanded Uncertainty (95% confidence interval). Gamma Spec = Expanded Uncertainty (95.4% Confidence Interval)
(MDC) - Minimum Detectable Concentration
Trac - Tracer Recovery (%)
Carr - Carrier Recovery (%)
DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.
ND - Not Detected at or above LOD.
J - The reported result is an estimated value.
LOD - Limit of Detection adjusted for dilution factor, percent moisture, initial weight and final volume.
LOQ - Limit of Quantitation adjusted for dilution factor, percent moisture, initial weight and final volume.
DL - Adjusted Method Detection Limit.
S - Surrogate
1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.
Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.
LCS(D) - Laboratory Control Sample (Duplicate)
MS(D) - Matrix Spike (Duplicate)
DUP - Sample Duplicate
RPD - Relative Percent Difference
NC - Not Calculable.
SG - Silica Gel - Clean-Up
U - Analyte was not detected and is reported as less than the LOD or as defined by the customer.
N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.
Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.
TNI - The NELAC Institute.

ANALYTE QUALIFIERS

B	Analyte was detected in the associated method blank.
D3	Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.
H6	Analysis initiated outside of the 15 minute EPA required holding time.
M0	Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits.

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40283441001	**MW-317**	EPA 3010A	483600	EPA 6010D	483679
40283441002	**MW-318**	EPA 3010A	483600	EPA 6010D	483679
40283441003	**MW-319**	EPA 3010A	483600	EPA 6010D	483679
40283441004	**FIELD BLANK**	EPA 3010A	483600	EPA 6010D	483679
40283441001	**MW-317**	EPA 3010A	483423	EPA 6020B	483495
40283441002	**MW-318**	EPA 3010A	483423	EPA 6020B	483495
40283441003	**MW-319**	EPA 3010A	483423	EPA 6020B	483495
40283441004	**FIELD BLANK**	EPA 3010A	483423	EPA 6020B	483495
40283441001	**MW-317**	EPA 7470	483780	EPA 7470	483820
40283441002	**MW-318**	EPA 7470	483780	EPA 7470	483820
40283441003	**MW-319**	EPA 7470	483780	EPA 7470	483820
40283441004	**FIELD BLANK**	EPA 7470	483780	EPA 7470	483820
40283441001	**MW-317**				
40283441002	**MW-318**				
40283441003	**MW-319**				
40283441001	**MW-317**	EPA 903.1	693998		
40283441002	**MW-318**	EPA 903.1	693998		
40283441003	**MW-319**	EPA 903.1	693998		
40283441004	**FIELD BLANK**	EPA 903.1	693998		
40283441001	**MW-317**	EPA 904.0	693999		
40283441002	**MW-318**	EPA 904.0	693999		
40283441003	**MW-319**	EPA 904.0	693999		
40283441004	**FIELD BLANK**	EPA 904.0	693999		
40283441001	**MW-317**	Total Radium Calculation	696381		
40283441002	**MW-318**	Total Radium Calculation	696381		
40283441003	**MW-319**	Total Radium Calculation	696381		
40283441004	**FIELD BLANK**	Total Radium Calculation	696381		
40283441001	**MW-317**	SM 2540C	483502		
40283441002	**MW-318**	SM 2540C	483502		
40283441003	**MW-319**	SM 2540C	483502		
40283441004	**FIELD BLANK**	SM 2540C	483641		
40283441001	**MW-317**	EPA 9040	483555		
40283441002	**MW-318**	EPA 9040	483555		
40283441003	**MW-319**	EPA 9040	483555		
40283441004	**FIELD BLANK**	EPA 9040	483555		
40283441001	**MW-317**	EPA 300.0	483692		
40283441002	**MW-318**	EPA 300.0	483692		
40283441003	**MW-319**	EPA 300.0	483692		
40283441004	**FIELD BLANK**	EPA 300.0	483760		
40283441001	**MW-317**	EPA 310.2	483455		
40283441002	**MW-318**	EPA 310.2	483455		
40283441003	**MW-319**	EPA 310.2	483455		
40283441004	**FIELD BLANK**	EPA 310.2	483455		

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
1241 Bellevue Street - Suite 9
Green Bay, WI 54302
(920)469-2436

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25224067COLUMBIA BASELINE12-13
Pace Project No.: 40283441

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40283441001	**MW-317**	EPA 353.2	484042		
40283441002	**MW-318**	EPA 353.2	484042		
40283441003	**MW-319**	EPA 353.2	484042		
40283441004	**FIELD BLANK**	EPA 353.2	484042		

40283441

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

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

Page : 1 Of 1

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company	SCS ENGINEERS	Report To	Meghan Blodgett	Attention	
Address	2830 Dairy Drive	Copy To		Company Name	
Madison, WI 53718				Address	Regulatory Agency
Email	mblodgett@scsengineers com	Purchase Order #	25224067	Pace Quote	
Phone	608-224-2830 Fax 608-224-2839	Project Name	Columbia Baseline Mod 12-13	Pace Project Manager	dan milewsky@pacelabs com, State / Location
Requested Due Date		Project #	25224067	Pace Profile #:	3946-5 WI

ITEM #	SAMPLE ID (One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique)	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N)	Analyses Test: Radium 226	Radium 228	Metals	TDS and pH	Chloride, Fluoride, Sulfate	Hardness	Alkalinity, total	NO2+NO3	Residual Chlorine (Y/N)	
	MATRIX: Drinking Water DW, Water WT, Waste Water WW, Product P, Soil/Solid SL, Oil OL, Wipe WP, Air AR, Other OT, Tissue TS																	Y/N	N	N	N	N	N	N	N		
1	MW-317			8/30	1010														X	X	X	X	X	X	X	X	001
2	MW-318			8/30	1125														X	X	X	X	X	X	X	X	002
3	MW-319			8/30	1245														X	X	X	X	x	X	X	X	003
4	Field Blank - Mod 12-13			8/30	1210														X	X	X	X	X	X	X	X	004
5																											
6																											
7																											
8																											
9																											
10																											
11																											
12																											

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS: TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
Metals list B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Cu, Pb, Li, Hg, Mn, Mo, Se, Ag, Tl, Zn (All samples Unfiltered/Total)	Bridget Russell SCS	8/30	1430							
	CS logistics	8/31/24	0845	pace	8/31/24	0845	0.5	Y	N	Y

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Bridget Russell

SIGNATURE of SAMPLER: Bridget Russell DATE Signed: 8/30/2024

4028344 1

Table 2. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Columbia Energy Center / SCS Engineers Project #25219067

			Landfill Modules 12-13				
		Parameter	MW-317	MW-318	MW-319	FIELD BLANK-MOD12-13	TOTAL
Lab Parameters	Appendix III Parameters (Detection Monitoring)	Boron	x	x	x	x	4
		Calcium	x	x	x	x	4
		Chloride	x	x	x	x	4
		Fluoride	x	x	x	x	4
		pH	x	x	x	x	4
		Sulfate	x	x	x	x	4
		TDS	x	x	x	x	4
	Appendix IV Parameters (Assessment Monitoring)	Antimony	x	x	x	x	4
		Arsenic	x	x	x	x	4
		Barium	x	x	x	x	4
		Beryllium	x	x	x	x	4
		Cadmium	x	x	x	x	4
		Chromium	x	x	x	x	4
		Cobalt	x	x	x	x	4
		Fluoride	x	x	x	x	4
		Lead	x	x	x	x	4
		Lithium	x	x	x	x	4
		Mercury	x	x	x	x	4
		Molybdenum	x	x	x	x	4
		Selenium	x	x	x	x	4
		Thallium	x	x	x	x	4
		Radium 226+228	x	x	x	x	4
	Additional WDNR Parameters	Alkalinity	x	x	x	x	4
		Hardness	x	x	x	x	4
		Nitrate + Nitrite as N	x	x	x	x	4
		Copper	x	x	x	x	4
		Manganese	x	x	x	x	4
		Silver	x	x	x	x	4
		Zinc	x	x	x	x	4
Field Parameters	CCR Rule Field Parameters	Groundwater Elevation	x	x	x		3
		pH	x	x	x		3
	Low-Flow Sampling Field Parameters	Well Depth					0
		Specific Conductance	x	x	x		3
		Dissolved Oxygen	x	x	x		3
		ORP	x	x	x		3
		Temperature	x	x	x		3
		Turbidity	x	x	x		3
		Color	x	x	x		3
		Odor	x	x	x		3

Notes: All samples are unfiltered (total).

I:\25224067.00\Data and Calculations\Field Work Requests\[2024 June MOD12-13_COL CCR_bottle order.xls]Sheet

Client Name: SCS Engineers

Sample Preservation Receipt Form

Project # 402834411

All containers needing preservation have been checked and noted below: ☑Yes ☐No ☐N/A

Lab Lot# of pH paper: 10D3733 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: NK Date/Time:

Pace Lab #	Glass							Plastic						Vials						Jars				General				VOA Vials (>6mm) *	H2SO4 pH ≤2	NaOH+Zn Act pH ≥9	NaOH pH ≥12	HNO3 pH ≤2	pH after adjusted	Volume (mL)
	AG1U	BG1U	AG1H	AG4S	AG5U	AG2S	BG3U	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T	ZPLC	GN 1	GN 2							
001									2		1	1																					2.5 / 5
002									2		1	1														2			X			X		2.5 / 5
003									2		1	1														2			X			X		2.5 / 5
004									2		1	1														2			X			X		2.5 / 5
005																										2			X			X		2.5 / 5
006																																		2.5 / 5
007																																		2.5 / 5
008																																		2.5 / 5
009																																		2.5 / 5
010																																		2.5 / 5
011																																		2.5 / 5
012																																		2.5 / 5
013																																		2.5 / 5
014																																		2.5 / 5
015																																		2.5 / 5
016																																		2.5 / 5
017																																		2.5 / 5
018																																		2.5 / 5
019																																		2.5 / 5
020																																		2.5 / 5

8/31/24 NK

Exceptions to preservation check: VOA, Coliform, TOC, TOX, TOH, O&G, WI DRO, Phenolics, Other:

Headspace in VOA Vials (>6mm) : ☐Yes ☐No ☒N/A *If yes look in headspace column

AG1U	1 liter amber glass
BG1U	1 liter clear glass
AG1H	1 liter amber glass HCL
AG4S	125 mL amber glass H2SO4
AG5U	100 mL amber glass unpres
AG2S	500 mL amber glass H2SO4
BG3U	250 mL clear glass unpres

BP1U	1 liter plastic unpres
BP3U	250 mL plastic unpres
BP3B	250 mL plastic NaOH
BP3N	250 mL plastic HNO3
BP3S	250 mL plastic H2SO4
BP2Z	500 mL plastic NaOH + Zn

VG9C	40 mL clear ascorbic w/ HCl
DG9T	40 mL amber Na Thio
VG9U	40 mL clear vial unpres
VG9H	40 mL clear vial HCL
VG9M	40 mL clear vial MeOH
VG9D	40 mL clear vial DI

JGFU	4 oz amber jar unpres
JG9U	9 oz amber jar unpres
WGFU	4 oz clear jar unpres
WPFU	4 oz plastic jar unpres
SP5T	120 mL plastic Na Thiosulfate
ZPLC	ziploc bag
GN 1	1 liter poly HNO3
GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #: WO# : 40283441

Client Name: SCS Engineers

Courier: ☒ CS Logistics ☐ Fed Ex ☐ Speedee ☐ UPS ☐ Waltco
☐ Client ☐ Pace Other: _____

Tracking #: _____

Custody Seal on Cooler/Box Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Custody Seal on Samples Present: ☐ yes ☒ no Seals intact: ☐ yes ☐ no

Packing Material: ☐ Bubble Wrap ☐ Bubble Bags ☒ None ☐ Other _____

Thermometer Used SR-134 **Type of Ice:** (Wet) Blue Dry None ☐ Meltwater Only

Cooler Temperature Uncorr: 0.5 /Corr: 0.5

Temp Blank Present: ☐ yes ☒ no **Biological Tissue is Frozen:** ☐ yes ☐ no

Person examining contents: Date: 8/31/24 /Initials: NK

Labeled By Initials: MJN

Temp should be above freezing to 6°C.
Biota Samples may be received at ≤ 0°C if shipped on Dry Ice.

Chain of Custody Present:	☒Yes ☐No ☐N/A	1.
Chain of Custody Filled Out:	☒Yes ☐No ☐N/A	2.
Chain of Custody Relinquished:	☒Yes ☐No ☐N/A	3.
Sampler Name & Signature on COC:	☒Yes ☐No ☐N/A	4.
Samples Arrived within Hold Time:	☒Yes ☐No	5.
- DI VOA Samples frozen upon receipt	☐Yes ☐No	Date/Time:
Short Hold Time Analysis (<72hr):	☐Yes ☒No	6.
Rush Turn Around Time Requested:	☐Yes ☒No	7.
Sufficient Volume:		8.
For Analysis: ☒Yes ☐No MS/MSD:	☐Yes ☒No ☐N/A	
Correct Containers Used:	☒Yes ☐No	9.
Correct Type: ~~Pace Green Bay~~, Pace IR, Non-Pace		
Containers Intact:	☒Yes ☐No	10.
Filtered volume received for Dissolved tests	☐Yes ☐No ☒N/A	11.
Sample Labels match COC:	☒Yes ☐No ☐N/A	12.
-Includes date/time/ID/Analysis Matrix: W		
Trip Blank Present:	☐Yes ☐No ☒N/A	13.
Trip Blank Custody Seals Present	☐Yes ☐No ☒N/A	
Pace Trip Blank Lot # (if purchased):		

Client Notification/ Resolution: If checked, see attached form for additional comments ☐

Person Contacted: _____ Date/Time: _____

Comments/ Resolution: _____

PM Review is documented electronically in LIMs. By releasing the project, the PM acknowledges they have reviewed the sample logi

Appendix D

Historical Monitoring Results

Single Location
Name: WPL - Columbia

Location ID: MW-84A
Number of Sampling Dates: 26

Parameter Name	Units	12/22/2015	4/5/2016	7/8/2016	7/28/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/24/2017	4/25/2018	8/8/2018	10/24/2018	4/3/2019	10/9/2019
Boron	ug/L	11.9	14	14.7	--	11.1	14.7	16.1	12.9	14.8	22.9	13.8	25	12.8	10.1	13.6	12
Calcium	ug/L	74000	72200	67600	--	74000	76000	70800	73200	76100	74900	77500	76600	76000	74000	80100	73500
Chloride	mg/L	4.9	4.7	5.1	--	4.3	4.7	4.6	4.9	5.5	5.5	5.1	4.8	4.9	4.2	3.6	3.9
Fluoride	mg/L	<0.2	<0.2	<0.2	--	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Field pH	Std. Units	7.6	7.61	7.45	7.34	7.91	7.25	6.99	7.8	7.28	7.23	7.68	7.45	7.38	7.24	7.03	7.23
Sulfate	mg/L	4.9	4.3	3.7	--	2.6	2.7	3	2.8	2.7	2	2.2	2.8	1.9	1.6	1.4	1.3
Total Dissolved Solids	mg/L	316	322	316	--	324	316	328	342	344	342	314	328	372	330	318	310
Antimony	ug/L	<0.073	0.084	0.1	--	<0.073	<0.073	<0.073	<0.073	<0.15	<0.15	--	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.15	0.29	0.14	--	0.35	0.19	0.35	<0.099	<0.28	0.28	--	<0.28	<0.28	0.33	<0.28	0.46
Barium	ug/L	15.3	12.7	12.2	--	14.2	18.4	13.8	14.1	13.4	14	--	14.6	13.7	14.5	14.7	13.2
Beryllium	ug/L	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	<0.18	<0.18	<0.18	<0.25
Cadmium	ug/L	<0.089	<0.089	<0.089	--	<0.089	<0.089	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	<0.15	<0.15
Chromium	ug/L	2.5	1.9	1.8	--	2	2	1.9	2.4	2	1.6	--	2.4	1.5	1.6	1.8	1.6
Cobalt	ug/L	0.095	<0.036	0.053	--	<0.036	<0.036	<0.036	<0.036	<0.085	<0.085	--	<0.085	<0.085	<0.12	<0.12	<0.12
Lead	ug/L	0.16	<0.04	0.39	--	0.049	0.11	<0.04	0.041	<0.2	<0.2	--	<0.2	--	<0.24	<0.24	<0.24
Lithium	ug/L	0.72	0.44	0.5	--	0.56	0.56	0.56	0.55	0.46	0.58	--	0.5	0.4	0.49	0.56	0.52
Mercury	ug/L	<0.1	<0.1	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	<0.084
Molybdenum	ug/L	<0.07	<0.07	0.073	--	0.12	<0.07	<0.07	<0.07	<0.44	<0.44	--	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.21	<0.21	<0.21	--	<0.21	<0.21	<0.21	<0.21	<0.32	<0.32	--	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.593	0.0809	--	1.37	0.825	0.404	1.39	0.0929	0.676	0.509	--	0.526	0.529	0.62	0.681	0.247
Radium-226	pCi/L	0.156	-0.088	--	-0.058	0.132	0.168	0.624	0.0768	0.27	0.242	--	0.155	-0.203	0.313	0.199	0.247
Radium-228	pCi/L	0.437	0.0809	--	1.37	0.693	0.236	0.766	0.0161	0.406	0.267	--	0.371	0.529	0.307	0.482	-0.024
Field Specific Conductance	umhos/cm	599	427	574.8	579.3	1002	578.2	489	948	535.3	557.2	491	581.7	617.1	609	637.2	614.1
Oxygen, Dissolved	mg/L	9.7	9.37	3.78	5.11	9.61	8.94	6.48	9.28	9.46	7.5	9.3	3.94	8.84	10.01	9.49	11.36
Field Oxidation Potential	mV	154	165.1	139.9	138.3	82.7	87	192.9	102	123.6	204.7	210	53.3	142.7	71.5	103.4	181.7
Groundwater Elevation	feet	785.31	786.3	785.89	785.61	787.22	786.63	786.7	787.16	787.63	786.68	785.32	785.88	786.55	788.32	787.35	787.79
Temperature	deg C	10.4	10.2	11.3	11	11.5	10.8	10.9	10.6	11.3	11.2	11.1	10.2	12	11.6	10.2	11.8
Turbidity	NTU	--	0.86	2.75	0.17	0.3	0.25	0.33	0.04	0.56	0.08	2.93	0.81	0.71	3.79	1.9	2.41
pH at 25 Degrees C	Std. Units	7.5	7.4	7.4	--	7.3	7.4	7.3	7.7	7.6	7.4	7.6	7.6	7.4	7.5	7.4	7.5

Single Location
Name: WPL - Columbia

Location ID: MW-84A
Number of Sampling Dates: 26

Parameter Name	Units	2/3/2020	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024
Boron	ug/L	15.7	10	9.7	14.3	11.1	10.5	12.2	10.3	14	11.9
Calcium	ug/L	72700	77600	69200	69100	75300	75100	78400	68600	65100	73700
Chloride	mg/L	3.7	3.7	4.3	4.4	3.5	5.2	3.4	3	3.1	3.2
Fluoride	mg/L	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	0.12
Field pH	Std. Units	7.51	7.34	7.49	7.34	7.42	7.34	7.31	7.01	7.51	7.68
Sulfate	mg/L	<2.2	1.5	1.3	1.4	1.3	1.4	1.1	1.3	1.4	1.4
Total Dissolved Solids	mg/L	316	340	320	328	326	334	302	326	324	322
Antimony	ug/L	--	<0.15	<0.15	0.55	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.38	0.34	0.49	0.91	0.41	0.31	0.72	<0.28	<0.28	0.29
Barium	ug/L	14	13.9	12.6	13.4	12.9	13.5	13.7	12.6	12.7	14.4
Beryllium	ug/L	--	<0.25	<0.25	0.47	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	--	<0.15	<0.15	0.53	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	1.6	1.7	1.6	2.6	1.9	2.2	2.2	1.7	1.6	2.1
Cobalt	ug/L	<0.12	<0.12	<0.12	0.52	0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Lead	ug/L	--	<0.24	<0.24	0.55	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	0.58	0.4	0.39	1	0.28	0.36	0.41	0.71	0.54	0.67
Mercury	ug/L	--	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	<0.44	<0.44	<0.44	0.62	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.32	<0.32	<0.32	0.48	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	0.66	0.19	<0.14	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.1	0.395	0.39	0.285	0.243	0.611	0.673	0.326	0.844	--
Radium-226	pCi/L	0.1	0.368	0	-0.289	0	0.254	0.267	0	0.292	--
Radium-228	pCi/L	-0.153	0.0273	0.39	0.285	0.243	0.357	0.406	0.326	0.552	--
Field Specific Conductance	umhos/cm	618.4	613.7	610.1	610.9	598.9	600.2	585.2	556.6	599.9	588.1
Oxygen, Dissolved	mg/L	8.43	9.81	9.39	9.8	9.25	9.33	8.31	9.37	8.44	7.82
Field Oxidation Potential	mV	121.5	135	153.2	95.6	89.7	200.6	39.9	103.4	91.2	0
Groundwater Elevation	feet	786.5	787.02	786.1	785.84	784.96	785.02	784.57	786.97	784.39	784.9
Temperature	deg C	10.3	10.6	11.9	10.2	12.5	9.9	11.7	10.7	12.3	11
Turbidity	NTU	1.23	2.15	0	2.45	3.41	0	0	0.72	0.03	0
pH at 25 Degrees C	Std. Units	7.4	7.6	7.6	7.6	7.8	7.6	7.4	7.6	7.6	8.2

Single Location
Name: WPL - Columbia

Location ID: MW-301
Number of Sampling Dates: 25

Parameter Name	Units	12/22/2015	4/5/2016	7/8/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/23/2017	4/25/2018	8/8/2018	10/24/2018	4/2/2019	10/9/2019	2/3/2020
Boron	ug/L	26.5	25.2	23.6	30.6	32.8	32.6	28.8	21.3	30.6	34.3	24.3	22.8	27.8	26.9	35.9	27.9
Calcium	ug/L	126000	115000	108000	118000	129000	124000	120000	111000	108000	87200	112000	105000	101000	126000	114000	113000
Chloride	mg/L	3.7	4	3.5	2.2	2	1.5	2	3.5	5.5	4	2.3	5.2	3.2	0.79	1.7	1.3
Fluoride	mg/L	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Field pH	Std. Units	6.85	7.01	6.87	7.28	6.63	7.1	7.11	6.7	6.75	7.37	6.76	6.91	6.79	6.62	6.67	6.89
Sulfate	mg/L	9.3	15.3	15	13.9	12.3	6.5	10.3	17.1	31.6	27.5	8.6	21.6	19.2	4.4	8.4	7.2
Total Dissolved Solids	mg/L	478	486	464	490	444	514	502	458	462	362	464	502	424	462	418	462
Antimony	ug/L	0.15	0.094	0.13	<0.073	0.4	<0.073	<0.073	<0.15	<0.15	--	<0.15	0.36	<0.15	0.32	<0.15	--
Arsenic	ug/L	0.26	0.26	0.19	0.24	0.4	0.13	0.18	<0.28	<0.28	--	<0.28	0.45	<0.28	0.4	0.42	<0.28
Barium	ug/L	20.2	11.1	11.6	15.6	15	13.5	13.2	11.3	11.8	--	9.3	10.2	11.5	11.8	10	10.9
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	0.19	<0.13	<0.13	<0.18	<0.18	--	<0.18	0.37	<0.18	0.28	<0.25	--
Cadmium	ug/L	<0.089	<0.089	<0.089	<0.089	0.32	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	0.21	<0.15	--
Chromium	ug/L	2.1	0.58	0.59	<0.39	0.7	0.53	0.7	2.3	<1	--	<1	<1	<1	<1	<1	<1
Cobalt	ug/L	1.4	0.25	0.22	0.041	0.38	0.071	0.064	0.13	0.12	--	<0.085	0.28	<0.12	0.35	<0.12	0.17
Lead	ug/L	0.9	0.077	0.48	<0.04	0.34	<0.04	<0.04	<0.2	<0.2	--	<0.2	--	<0.24	0.3	<0.24	--
Lithium	ug/L	1.3	0.58	0.69	0.6	0.87	0.67	0.68	0.62	0.6	--	0.55	0.85	0.52	0.9	0.61	0.67
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	<0.084	--
Molybdenum	ug/L	0.35	0.15	0.14	0.12	0.38	<0.07	<0.07	<0.44	<0.44	--	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	0.3	0.21	0.39	<0.21	0.26	<0.21	<0.21	<0.32	<0.32	--	<0.32	0.71	<0.32	0.49	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.48	<0.14	<0.14	<0.14	<0.14	--	<0.14	0.3	<0.14	0.48	<0.14	<0.14
Total Radium	pCi/L	1.31	1.11	0.89	0.631	1.01	2.42	1.35	1.3	1.74	--	0.882	0.0351	0.652	0.552	0.701	0.502
Radium-226	pCi/L	0.655	0.294	0.404	-0.067	0.108	1.46	0.513	0.287	1.09	--	0.122	-0.06	0.247	0	0.252	0.136
Radium-228	pCi/L	0.651	0.82	0.486	0.631	0.905	0.964	0.833	1.01	0.647	--	0.76	0.0351	0.405	0.552	0.449	0.366
Field Specific Conductance	umhos/cm	897	573	796	1464	859	1018	1354	698.4	691.7	561	774	799	767	883	801	868
Oxygen, Dissolved	mg/L	1.7	2.71	1.47	1.99	1.34	1.24	1.44	1.81	1.43	1.1	2.35	2.14	2.49	2.2	1.67	1.07
Field Oxidation Potential	mV	135	123.7	133.9	100.8	95.8	226.1	100.9	115.1	187.4	204	74.3	126.5	77.9	152.1	173	132.3
Groundwater Elevation	feet	785.56	768.12	786.31	787.64	787.37	787.27	787.89	788.25	787.34	785.89	785.29	787.06	788.98	787.04	788.47	787.24
Temperature	deg C	9.7	7.7	10	11.2	10.1	8.8	7.7	8.9	10.2	11.1	7.4	10.6	11.1	7.5	11.3	8.5
Turbidity	NTU	--	1.52	3.89	0.59	0.74	0.42	0.1	0.22	0.18	1.52	1.12	0.46	3.3	2.02	2.12	1.41
pH at 25 Degrees C	Std. Units	7	7	6.8	6.8	6.9	6.9	7.1	7	7	7.3	7	7	7.1	6.8	7	6.8

Single Location
Name: WPL - Columbia

Location ID: MW-301
Number of Sampling Dates: 25

Parameter Name	Units	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024
Boron	ug/L	21.3	28.8	22.2	31.4	28.7	37.5	20.1	36.2	24.9
Calcium	ug/L	112000	93000	117000	67800	97300	62800	120000	52300	102000
Chloride	mg/L	2	3.4	1.5	2.7	1.9	2.3	1.5	2.1	1.6
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Field pH	Std. Units	6.73	6.95	6.66	7.01	6.6	6.8	6.65	7.06	7.06
Sulfate	mg/L	11.5	25.1	8.5	17.4	12.7	11.6	12.3	11.8	11.5
Total Dissolved Solids	mg/L	452	412	472	334	422	282	526	300	458
Antimony	ug/L	<0.15	0.33	<0.15	<0.15	0.31	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.33	0.62	<0.28	0.35	0.47	0.3	<0.28	<0.28	<0.28
Barium	ug/L	9.8	9.4	8.9	7.7	7.8	7.5	9.8	7.3	8.1
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.15	0.19	<0.15	<0.15	0.3	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/L	<0.12	0.29	<0.12	0.34	0.32	0.52	<0.12	0.13	<0.12
Lead	ug/L	<0.24	0.25	<0.24	<0.24	3.1	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	0.47	0.46	0.58	0.46	0.56	0.37	0.62	0.43	0.63
Mercury	ug/L	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	0.3	<0.14	0.17	0.32	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.193	0.38	1.16	0.172	0.179	0.00292	0.417	0.611	1.04
Radium-226	pCi/L	0	0.0511	0.418	0.172	0	-0.169	0	-0.0576	0.252
Radium-228	pCi/L	0.193	0.329	0.739	-0.0327	0.179	0.00292	0.417	0.611	0.787
Field Specific Conductance	umhos/cm	797	760	857	597.2	747	507.5	857	536	781
Oxygen, Dissolved	mg/L	2	1.22	3.9	0.25	2.47	0.1	6.5	0.16	2.53
Field Oxidation Potential	mV	118.7	183.9	102.9	57.8	207.5	80.9	95.3	23.8	17.9
Groundwater Elevation	feet	787.77	786.53	786.5	785.28	785.44	784.91	787.57	784.67	785.27
Temperature	deg C	8.1	11	7.4	11.1	7.1	10.8	8	10.7	8.6
Turbidity	NTU	0	0	2.41	3.21	0	0	0	0.34	0
pH at 25 Degrees C	Std. Units	7	7.2	6.9	7.3	7	7.1	6.9	7.2	7.9

Single Location
Name: WPL - Columbia

Location ID: MW-313
Number of Sampling Dates: 10

Parameter Name	Units	1/24/2023	2/23/2023	3/27/2023	4/26/2023	5/30/2023	6/29/2023	7/31/2023	8/31/2023	10/11/2023	4/15/2024
Boron	ug/L	25.1	46.6	67.1	108	191	189	97.1	62.3	41.3	22.7
Calcium	ug/L	66800	62900	63300	63900	69100	71900	70000	68600	66800	65400
Chloride	mg/L	1.4	<0.43	1.3	2.3	10	22.8	27	34.3	29.6	12
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	0.61	0.19	<0.095	<0.095	<0.095	<0.095
Field pH	Std. Units	7.43	7.35	7.4	7.06	7.55	7.41	7.4	7.25	7.24	7.24
Sulfate	mg/L	5.7	7.1	8.7	11	16.5	19.9	15.4	12.7	9	7.3
Total Dissolved Solids	mg/L	298	278	320	318	334	408	354	354	372	304
Antimony	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Arsenic	ug/L	<0.28	0.35	<0.28	<0.28	<0.28	<0.28	0.34	<0.28	--	--
Barium	ug/L	70.5	55.9	47.3	44.3	47.8	47	38.9	36.7	--	--
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	--	--
Cadmium	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--
Chromium	ug/L	5.2	<1	<1	1.2	1.2	1.4	1.3	1.3	--	--
Cobalt	ug/L	0.4	0.16	<0.12	<0.12	<0.12	<0.12	0.18	<0.12	--	--
Lead	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--	--
Lithium	ug/L	0.75	0.46	0.46	0.67	0.68	1	0.82	0.75	--	--
Mercury	ug/L	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	--	--
Molybdenum	ug/L	4.3	2	1.4	1.3	1.5	1.3	1.1	0.63	--	--
Selenium	ug/L	0.41	0.55	0.49	0.58	0.59	0.65	0.64	0.74	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.21	<0.14	<0.14	<0.14	--	--
Total Radium	pCi/L	0.345	0.346	0	0.677	0.0341	0.35	0.894	0.217	--	--
Radium-226	pCi/L	-0.326	-0.13	-0.562	0.294	-0.257	-0.132	0.273	-0.199	--	--
Radium-228	pCi/L	0.345	0.346	-0.00854	0.383	0.0341	0.35	0.621	0.217	--	--
Field Specific Conductance	umhos/cm	509.5	557.9	490.5	552.6	520.9	632	622.8	657.8	604.4	515.2
Oxygen, Dissolved	mg/L	4.08	5.51	7.03	7.96	7.38	7.17	8.16	9.5	8.58	8.66
Field Oxidation Potential	mV	82.6	56.9	51.5	103.2	177	249.4	240	151.5	168	67.3
Groundwater Elevation	feet	783.36	783.59	784.12	785.21	785.24	784.67	783.96	783.55	783.1	783.16
Temperature	deg C	9.4	10	10	10.1	10.4	11.2	10.9	11.2	11	11
Turbidity	NTU	0	1.25	0	1.02	2.52	0	0	0	0	2.48
pH at 25 Degrees C	Std. Units	7.5	7.4	7.5	7.6	7.5	7.6	7.5	8.3	7.4	8.5

Single Location
Name: WPL - Columbia

Location ID: MW-314
Number of Sampling Dates: 11

Parameter Name	Units	1/24/2023	2/23/2023	3/27/2023	4/26/2023	5/30/2023	6/29/2023	7/31/2023	8/31/2023	10/11/2023	12/27/2023	4/15/2024
Boron	ug/L	14.2	13	15.2	15.5	16.9	15.4	12.4	13	12.4	--	13.5
Calcium	ug/L	95000	96200	99300	92400	102000	103000	109000	109000	106000	--	110000
Chloride	mg/L	1.8	2.2	2.6	3.2	2.3	2.4	3	3.1	3.2	--	3.2
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	0.62	<0.095	<0.095	--	<0.095
Field pH	Std. Units	7.23	7.23	7.25	7.21	7.34	7.2	7.45	7.12	7.21	7.23	6.94
Sulfate	mg/L	4.2	4.2	5	4.6	3.4	3.2	3.9	4	3.5	--	4.6
Total Dissolved Solids	mg/L	380	396	412	418	444	470	464	464	526	464	492
Antimony	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	--
Arsenic	ug/L	<0.28	0.41	<0.28	<0.28	<0.28	<0.28	0.32	<0.28	--	--	--
Barium	ug/L	48.7	43.4	43.3	42.7	46	41.3	34.9	33.2	--	--	--
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	--	--	--
Cadmium	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	--
Chromium	ug/L	<1	1	<1	1.1	<1	<1	1.1	1.1	--	--	--
Cobalt	ug/L	0.31	0.22	<0.12	<0.12	<0.12	0.14	<0.12	<0.12	--	--	--
Lead	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	--	--	--
Lithium	ug/L	0.33	0.58	0.69	0.4	0.34	0.94	0.71	0.66	--	--	--
Mercury	ug/L	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	--	--	--
Molybdenum	ug/L	1.7	1.4	1.5	1.5	1.7	1.3	0.87	0.77	--	--	--
Selenium	ug/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	--	--
Total Radium	pCi/L	0.436	0.247	0.666	0	0.162	0.422	0.359	0.371	--	--	--
Radium-226	pCi/L	0.436	0.233	-0.164	-0.186	-0.0795	0.0476	-0.0704	0.0586	--	--	--
Radium-228	pCi/L	-0.00229	0.0135	0.666	-0.0181	0.162	0.374	0.359	0.312	--	--	--
Field Specific Conductance	umhos/cm	654.9	804	667.3	735	674.5	807	862	839	879	790	831
Oxygen, Dissolved	mg/L	6.21	5.8	5.51	6.15	6.46	6.53	7.65	9.39	7.34	7	7.18
Field Oxidation Potential	mV	78	125.3	45.6	121.6	167.5	254	158.3	294.6	188.8	176.1	56.8
Groundwater Elevation	feet	783.63	783.82	784.41	785.43	785.55	784.95	784.26	783.83	783.33	783.18	783.42
Temperature	deg C	10.3	9.9	10	10	10.4	11	11	11.3	11	10.9	11.1
Turbidity	NTU	7.3	2.62	0	1.8	1.21	0	0.7	1.19	0.09	0	0.33
pH at 25 Degrees C	Std. Units	7.5	7.4	7.2	7.4	7.3	7.3	7.2	8.6	7.2	--	8.6

Single Location
Name: WPL - Columbia

Location ID: MW-315
Number of Sampling Dates: 12

Parameter Name	Units	1/24/2023	2/23/2023	3/27/2023	4/26/2023	5/30/2023	6/29/2023	7/31/2023	8/31/2023	10/11/2023	12/27/2023	4/15/2024	5/20/2024
Boron	ug/L	11.7	9.3	11.9	12	13.6	13.3	12.3	12.6	15	--	20.2	17.7
Calcium	ug/L	107000	100000	106000	101000	108000	110000	121000	125000	134000	142000	149000	140000
Chloride	mg/L	4.9	5.6	6	5.3	3.9	3.3	3.2	3.1	3.1	--	2.9	--
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	--	<0.095	--
Field pH	Std. Units	7.13	7.16	7.21	7.18	7.34	7.13	6.97	6.91	6.97	7.03	6.68	6.6
Sulfate	mg/L	9.2	8.7	10.7	10.1	8.8	7	5.2	4.3	3.1	--	4.4	--
Total Dissolved Solids	mg/L	436	448	480	452	456	482	486	526	602	618	660	642
Antimony	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	--	--
Arsenic	ug/L	<0.28	0.49	0.45	0.39	0.37	0.38	<0.28	<0.28	--	--	--	--
Barium	ug/L	57.5	46.4	36.6	31.7	47.7	52.7	50.4	48.5	--	--	--	--
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	--	--	--	--
Cadmium	ug/L	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	--	--
Chromium	ug/L	1.2	1.7	1.8	1.9	1.7	1.6	1.4	1.6	--	--	--	--
Cobalt	ug/L	0.24	0.12	0.13	<0.12	0.22	0.21	<0.12	<0.12	--	--	--	--
Lead	ug/L	<0.24	<0.24	<0.24	<0.24	<0.24	0.32	<0.24	<0.24	--	--	--	--
Lithium	ug/L	0.62	0.73	0.85	0.8	0.45	1.2	0.75	0.9	--	--	--	--
Mercury	ug/L	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	<0.066	--	--	--	--
Molybdenum	ug/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	--	--	--	--
Selenium	ug/L	0.4	0.52	0.41	<0.32	0.36	0.58	<0.32	<0.32	--	--	--	--
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	--	--	--
Total Radium	pCi/L	0.351	0.373	0.385	0.257	0.666	0.464	1.35	0.515	--	--	--	--
Radium-226	pCi/L	-0.0798	0.149	-0.173	-0.174	-0.0827	-0.117	0.334	0.405	--	--	--	--
Radium-228	pCi/L	0.351	0.224	0.385	0.257	0.666	0.464	1.02	0.11	--	--	--	--
Field Specific Conductance	umhos/cm	748	892	711	776	716	834	876	926	1008	1011	1096	1078
Oxygen, Dissolved	mg/L	7.65	7.28	7.83	8.46	7.02	5.4	4.17	4.62	2.8	2.97	1.66	1.38
Field Oxidation Potential	mV	38.4	118.2	45.8	123.4	116	230.7	233.3	279.3	159.1	162.5	44.5	148.6
Groundwater Elevation	feet	783.77	783.96	784.57	785.59	785.77	785.17	784.49	783.97	783.59	783.36	783.53	783.62
Temperature	deg C	10.5	10	10.1	10.3	10.8	11	11.1	11.4	11.3	10.7	11	10.9
Turbidity	NTU	6.43	2.7	0	2.66	2.83	0	0	2.38	0.81	0.42	2.66	0
pH at 25 Degrees C	Std. Units	7.4	7.3	7.4	7.3	7.3	7.1	7	8.5	6.9	--	8.3	--

Single Location
Name: WPL - Columbia

Location ID: MW-84A
Number of Sampling Dates: 26

Parameter Name	Units	12/22/2015	4/5/2016	7/8/2016	7/28/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/24/2017	4/25/2018	8/8/2018	10/24/2018	4/3/2019	10/9/2019
Boron	ug/L	11.9	14	14.7	--	11.1	14.7	16.1	12.9	14.8	22.9	13.8	25	12.8	10.1	13.6	12
Calcium	ug/L	74000	72200	67600	--	74000	76000	70800	73200	76100	74900	77500	76600	76000	74000	80100	73500
Chloride	mg/L	4.9	4.7	5.1	--	4.3	4.7	4.6	4.9	5.5	5.5	5.1	4.8	4.9	4.2	3.6	3.9
Fluoride	mg/L	<0.2	<0.2	<0.2	--	<0.1	<0.1	0.12	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Field pH	Std. Units	7.6	7.61	7.45	7.34	7.91	7.25	6.99	7.8	7.28	7.23	7.68	7.45	7.38	7.24	7.03	7.23
Sulfate	mg/L	4.9	4.3	3.7	--	2.6	2.7	3	2.8	2.7	2	2.2	2.8	1.9	1.6	1.4	1.3
Total Dissolved Solids	mg/L	316	322	316	--	324	316	328	342	344	342	314	328	372	330	318	310
Antimony	ug/L	<0.073	0.084	0.1	--	<0.073	<0.073	<0.073	<0.073	<0.15	<0.15	--	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.15	0.29	0.14	--	0.35	0.19	0.35	<0.099	<0.28	0.28	--	<0.28	<0.28	0.33	<0.28	0.46
Barium	ug/L	15.3	12.7	12.2	--	14.2	18.4	13.8	14.1	13.4	14	--	14.6	13.7	14.5	14.7	13.2
Beryllium	ug/L	<0.13	<0.13	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	<0.18	<0.18	<0.18	<0.25
Cadmium	ug/L	<0.089	<0.089	<0.089	--	<0.089	<0.089	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	<0.15	<0.15
Chromium	ug/L	2.5	1.9	1.8	--	2	2	1.9	2.4	2	1.6	--	2.4	1.5	1.6	1.8	1.6
Cobalt	ug/L	0.095	<0.036	0.053	--	<0.036	<0.036	<0.036	<0.036	<0.085	<0.085	--	<0.085	<0.085	<0.12	<0.12	<0.12
Lead	ug/L	0.16	<0.04	0.39	--	0.049	0.11	<0.04	0.041	<0.2	<0.2	--	<0.2	--	<0.24	<0.24	<0.24
Lithium	ug/L	0.72	0.44	0.5	--	0.56	0.56	0.56	0.55	0.46	0.58	--	0.5	0.4	0.49	0.56	0.52
Mercury	ug/L	<0.1	<0.1	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	<0.084
Molybdenum	ug/L	<0.07	<0.07	0.073	--	0.12	<0.07	<0.07	<0.07	<0.44	<0.44	--	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.21	<0.21	<0.21	--	<0.21	<0.21	<0.21	<0.21	<0.32	<0.32	--	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	<0.14	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.593	0.0809	--	1.37	0.825	0.404	1.39	0.0929	0.676	0.509	--	0.526	0.529	0.62	0.681	0.247
Radium-226	pCi/L	0.156	-0.088	--	-0.058	0.132	0.168	0.624	0.0768	0.27	0.242	--	0.155	-0.203	0.313	0.199	0.247
Radium-228	pCi/L	0.437	0.0809	--	1.37	0.693	0.236	0.766	0.0161	0.406	0.267	--	0.371	0.529	0.307	0.482	-0.024
Field Specific Conductance	umhos/cm	599	427	574.8	579.3	1002	578.2	489	948	535.3	557.2	491	581.7	617.1	609	637.2	614.1
Oxygen, Dissolved	mg/L	9.7	9.37	3.78	5.11	9.61	8.94	6.48	9.28	9.46	7.5	9.3	3.94	8.84	10.01	9.49	11.36
Field Oxidation Potential	mV	154	165.1	139.9	138.3	82.7	87	192.9	102	123.6	204.7	210	53.3	142.7	71.5	103.4	181.7
Groundwater Elevation	feet	785.31	786.3	785.89	785.61	787.22	786.63	786.7	787.16	787.63	786.68	785.32	785.88	786.55	788.32	787.35	787.79
Temperature	deg C	10.4	10.2	11.3	11	11.5	10.8	10.9	10.6	11.3	11.2	11.1	10.2	12	11.6	10.2	11.8
Turbidity	NTU	--	0.86	2.75	0.17	0.3	0.25	0.33	0.04	0.56	0.08	2.93	0.81	0.71	3.79	1.9	2.41
pH at 25 Degrees C	Std. Units	7.5	7.4	7.4	--	7.3	7.4	7.3	7.7	7.6	7.4	7.6	7.6	7.4	7.5	7.4	7.5

Single Location
Name: WPL - Columbia

Location ID: MW-84A
Number of Sampling Dates: 26

Parameter Name	Units	2/3/2020	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024
Boron	ug/L	15.7	10	9.7	14.3	11.1	10.5	12.2	10.3	14	11.9
Calcium	ug/L	72700	77600	69200	69100	75300	75100	78400	68600	65100	73700
Chloride	mg/L	3.7	3.7	4.3	4.4	3.5	5.2	3.4	3	3.1	3.2
Fluoride	mg/L	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	0.12
Field pH	Std. Units	7.51	7.34	7.49	7.34	7.42	7.34	7.31	7.01	7.51	7.68
Sulfate	mg/L	<2.2	1.5	1.3	1.4	1.3	1.4	1.1	1.3	1.4	1.4
Total Dissolved Solids	mg/L	316	340	320	328	326	334	302	326	324	322
Antimony	ug/L	--	<0.15	<0.15	0.55	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.38	0.34	0.49	0.91	0.41	0.31	0.72	<0.28	<0.28	0.29
Barium	ug/L	14	13.9	12.6	13.4	12.9	13.5	13.7	12.6	12.7	14.4
Beryllium	ug/L	--	<0.25	<0.25	0.47	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	--	<0.15	<0.15	0.53	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	1.6	1.7	1.6	2.6	1.9	2.2	2.2	1.7	1.6	2.1
Cobalt	ug/L	<0.12	<0.12	<0.12	0.52	0.12	<0.12	<0.12	<0.12	<0.12	<0.12
Lead	ug/L	--	<0.24	<0.24	0.55	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	0.58	0.4	0.39	1	0.28	0.36	0.41	0.71	0.54	0.67
Mercury	ug/L	--	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	<0.44	<0.44	<0.44	0.62	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.32	<0.32	<0.32	0.48	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	0.66	0.19	<0.14	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.1	0.395	0.39	0.285	0.243	0.611	0.673	0.326	0.844	--
Radium-226	pCi/L	0.1	0.368	0	-0.289	0	0.254	0.267	0	0.292	--
Radium-228	pCi/L	-0.153	0.0273	0.39	0.285	0.243	0.357	0.406	0.326	0.552	--
Field Specific Conductance	umhos/cm	618.4	613.7	610.1	610.9	598.9	600.2	585.2	556.6	599.9	588.1
Oxygen, Dissolved	mg/L	8.43	9.81	9.39	9.8	9.25	9.33	8.31	9.37	8.44	7.82
Field Oxidation Potential	mV	121.5	135	153.2	95.6	89.7	200.6	39.9	103.4	91.2	0
Groundwater Elevation	feet	786.5	787.02	786.1	785.84	784.96	785.02	784.57	786.97	784.39	784.9
Temperature	deg C	10.3	10.6	11.9	10.2	12.5	9.9	11.7	10.7	12.3	11
Turbidity	NTU	1.23	2.15	0	2.45	3.41	0	0	0.72	0.03	0
pH at 25 Degrees C	Std. Units	7.4	7.6	7.6	7.6	7.8	7.6	7.4	7.6	7.6	8.2

Single Location
Name: WPL - Columbia

Location ID: MW-301
Number of Sampling Dates: 25

Parameter Name	Units	12/22/2015	4/5/2016	7/8/2016	10/13/2016	12/29/2016	1/25/2017	4/11/2017	6/6/2017	8/8/2017	10/23/2017	4/25/2018	8/8/2018	10/24/2018	4/2/2019	10/9/2019	2/3/2020
Boron	ug/L	26.5	25.2	23.6	30.6	32.8	32.6	28.8	21.3	30.6	34.3	24.3	22.8	27.8	26.9	35.9	27.9
Calcium	ug/L	126000	115000	108000	118000	129000	124000	120000	111000	108000	87200	112000	105000	101000	126000	114000	113000
Chloride	mg/L	3.7	4	3.5	2.2	2	1.5	2	3.5	5.5	4	2.3	5.2	3.2	0.79	1.7	1.3
Fluoride	mg/L	<0.2	<0.2	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	--
Field pH	Std. Units	6.85	7.01	6.87	7.28	6.63	7.1	7.11	6.7	6.75	7.37	6.76	6.91	6.79	6.62	6.67	6.89
Sulfate	mg/L	9.3	15.3	15	13.9	12.3	6.5	10.3	17.1	31.6	27.5	8.6	21.6	19.2	4.4	8.4	7.2
Total Dissolved Solids	mg/L	478	486	464	490	444	514	502	458	462	362	464	502	424	462	418	462
Antimony	ug/L	0.15	0.094	0.13	<0.073	0.4	<0.073	<0.073	<0.15	<0.15	--	<0.15	0.36	<0.15	0.32	<0.15	--
Arsenic	ug/L	0.26	0.26	0.19	0.24	0.4	0.13	0.18	<0.28	<0.28	--	<0.28	0.45	<0.28	0.4	0.42	<0.28
Barium	ug/L	20.2	11.1	11.6	15.6	15	13.5	13.2	11.3	11.8	--	9.3	10.2	11.5	11.8	10	10.9
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	0.19	<0.13	<0.13	<0.18	<0.18	--	<0.18	0.37	<0.18	0.28	<0.25	--
Cadmium	ug/L	<0.089	<0.089	<0.089	<0.089	0.32	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	0.21	<0.15	--
Chromium	ug/L	2.1	0.58	0.59	<0.39	0.7	0.53	0.7	2.3	<1	--	<1	<1	<1	<1	<1	<1
Cobalt	ug/L	1.4	0.25	0.22	0.041	0.38	0.071	0.064	0.13	0.12	--	<0.085	0.28	<0.12	0.35	<0.12	0.17
Lead	ug/L	0.9	0.077	0.48	<0.04	0.34	<0.04	<0.04	<0.2	<0.2	--	<0.2	--	<0.24	0.3	<0.24	--
Lithium	ug/L	1.3	0.58	0.69	0.6	0.87	0.67	0.68	0.62	0.6	--	0.55	0.85	0.52	0.9	0.61	0.67
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	<0.084	--
Molybdenum	ug/L	0.35	0.15	0.14	0.12	0.38	<0.07	<0.07	<0.44	<0.44	--	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	0.3	0.21	0.39	<0.21	0.26	<0.21	<0.21	<0.32	<0.32	--	<0.32	0.71	<0.32	0.49	<0.32	<0.32
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	0.48	<0.14	<0.14	<0.14	<0.14	--	<0.14	0.3	<0.14	0.48	<0.14	<0.14
Total Radium	pCi/L	1.31	1.11	0.89	0.631	1.01	2.42	1.35	1.3	1.74	--	0.882	0.0351	0.652	0.552	0.701	0.502
Radium-226	pCi/L	0.655	0.294	0.404	-0.067	0.108	1.46	0.513	0.287	1.09	--	0.122	-0.06	0.247	0	0.252	0.136
Radium-228	pCi/L	0.651	0.82	0.486	0.631	0.905	0.964	0.833	1.01	0.647	--	0.76	0.0351	0.405	0.552	0.449	0.366
Field Specific Conductance	umhos/cm	897	573	796	1464	859	1018	1354	698.4	691.7	561	774	799	767	883	801	868
Oxygen, Dissolved	mg/L	1.7	2.71	1.47	1.99	1.34	1.24	1.44	1.81	1.43	1.1	2.35	2.14	2.49	2.2	1.67	1.07
Field Oxidation Potential	mV	135	123.7	133.9	100.8	95.8	226.1	100.9	115.1	187.4	204	74.3	126.5	77.9	152.1	173	132.3
Groundwater Elevation	feet	785.56	768.12	786.31	787.64	787.37	787.27	787.89	788.25	787.34	785.89	785.29	787.06	788.98	787.04	788.47	787.24
Temperature	deg C	9.7	7.7	10	11.2	10.1	8.8	7.7	8.9	10.2	11.1	7.4	10.6	11.1	7.5	11.3	8.5
Turbidity	NTU	--	1.52	3.89	0.59	0.74	0.42	0.1	0.22	0.18	1.52	1.12	0.46	3.3	2.02	2.12	1.41
pH at 25 Degrees C	Std. Units	7	7	6.8	6.8	6.9	6.9	7.1	7	7	7.3	7	7	7.1	6.8	7	6.8

Single Location
Name: WPL - Columbia

Location ID: MW-301
Number of Sampling Dates: 25

Parameter Name	Units	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023	10/11/2023	4/17/2024
Boron	ug/L	21.3	28.8	22.2	31.4	28.7	37.5	20.1	36.2	24.9
Calcium	ug/L	112000	93000	117000	67800	97300	62800	120000	52300	102000
Chloride	mg/L	2	3.4	1.5	2.7	1.9	2.3	1.5	2.1	1.6
Fluoride	mg/L	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
Field pH	Std. Units	6.73	6.95	6.66	7.01	6.6	6.8	6.65	7.06	7.06
Sulfate	mg/L	11.5	25.1	8.5	17.4	12.7	11.6	12.3	11.8	11.5
Total Dissolved Solids	mg/L	452	412	472	334	422	282	526	300	458
Antimony	ug/L	<0.15	0.33	<0.15	<0.15	0.31	<0.15	<0.15	<0.15	<0.15
Arsenic	ug/L	0.33	0.62	<0.28	0.35	0.47	0.3	<0.28	<0.28	<0.28
Barium	ug/L	9.8	9.4	8.9	7.7	7.8	7.5	9.8	7.3	8.1
Beryllium	ug/L	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.15	0.19	<0.15	<0.15	0.3	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt	ug/L	<0.12	0.29	<0.12	0.34	0.32	0.52	<0.12	0.13	<0.12
Lead	ug/L	<0.24	0.25	<0.24	<0.24	3.1	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	0.47	0.46	0.58	0.46	0.56	0.37	0.62	0.43	0.63
Mercury	ug/L	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44	<0.44
Selenium	ug/L	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	0.3	<0.14	0.17	0.32	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.193	0.38	1.16	0.172	0.179	0.00292	0.417	0.611	1.04
Radium-226	pCi/L	0	0.0511	0.418	0.172	0	-0.169	0	-0.0576	0.252
Radium-228	pCi/L	0.193	0.329	0.739	-0.0327	0.179	0.00292	0.417	0.611	0.787
Field Specific Conductance	umhos/cm	797	760	857	597.2	747	507.5	857	536	781
Oxygen, Dissolved	mg/L	2	1.22	3.9	0.25	2.47	0.1	6.5	0.16	2.53
Field Oxidation Potential	mV	118.7	183.9	102.9	57.8	207.5	80.9	95.3	23.8	17.9
Groundwater Elevation	feet	787.77	786.53	786.5	785.28	785.44	784.91	787.57	784.67	785.27
Temperature	deg C	8.1	11	7.4	11.1	7.1	10.8	8	10.7	8.6
Turbidity	NTU	0	0	2.41	3.21	0	0	0	0.34	0
pH at 25 Degrees C	Std. Units	7	7.2	6.9	7.3	7	7.1	6.9	7.2	7.9

Single Location
Name: WPL - Columbia

Location ID: MW-317
Number of Sampling Dates: 3

Parameter Name	Units	6/27/2024	7/31/2024	8/30/2024
Boron	ug/L	33.8	41.7	49.3
Calcium	ug/L	43800	44300	44600
Chloride	mg/L	5.1	7	6.1
Fluoride	mg/L	0.28	0.31	0.28
Field pH	Std. Units	7.6	7.88	7.44
Sulfate	mg/L	26.4	23.5	13.5
Total Dissolved Solids	mg/L	318	328	334
Antimony	ug/L	0.17	<0.15	<0.15
Arsenic	ug/L	1.4	1.5	1.3
Barium	ug/L	51.6	55.2	54.5
Beryllium	ug/L	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.15	<0.15	<0.15
Chromium	ug/L	<1	<1	<1
Cobalt	ug/L	0.24	0.19	0.13
Lead	ug/L	<0.24	<0.24	<0.24
Lithium	ug/L	6.6	5.3	4.5
Mercury	ug/L	<0.066	<0.066	<0.066
Molybdenum	ug/L	43.8	50.7	52.4
Selenium	ug/L	<0.32	<0.32	<0.32
Thallium	ug/L	<0.14	0.14	<0.14
Total Radium	pCi/L	0.564	0.273	0.45
Radium-226	pCi/L	0.263	-0.053	0
Radium-228	pCi/L	0.301	0.273	0.45
Field Specific Conductance	umhos/cm	484.1	540	546
Oxygen, Dissolved	mg/L	0.28	0.63	0.13
Field Oxidation Potential	mV	-119.4	-143	-130.2
Groundwater Elevation	feet	785.87	787.95	787.28
Temperature	deg C	11.8	12.5	12.7
Turbidity	NTU	4.31	9.97	3.37
pH at 25 Degrees C	Std. Units	8.2	8.6	8.3

Single Location
Name: WPL - Columbia

Location ID: MW-318
Number of Sampling Dates: 3

Parameter Name	Units	6/27/2024	7/31/2024	8/30/2024
Boron	ug/L	17.2	14.5	23.5
Calcium	ug/L	122000	110000	101000
Chloride	mg/L	44.9	19.7	31.8
Fluoride	mg/L	<0.095	<0.095	<0.095
Field pH	Std. Units	7.34	7.57	7.22
Sulfate	mg/L	276	290	272
Total Dissolved Solids	mg/L	804	712	694
Antimony	ug/L	<0.15	<0.15	<0.15
Arsenic	ug/L	<0.28	<0.28	<0.28
Barium	ug/L	52.1	12.5	11.8
Beryllium	ug/L	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.15	<0.15	<0.15
Chromium	ug/L	<1	1.1	2
Cobalt	ug/L	0.44	<0.12	0.31
Lead	ug/L	<0.24	<0.24	<0.24
Lithium	ug/L	1.8	0.92	0.95
Mercury	ug/L	<0.066	<0.066	<0.066
Molybdenum	ug/L	3.2	<0.44	0.45
Selenium	ug/L	1.2	1.3	1.1
Thallium	ug/L	<0.14	<0.14	<0.14
Total Radium	pCi/L	1.8	0.552	0.727
Radium-226	pCi/L	1.7	0.409	0.285
Radium-228	pCi/L	0.0973	0.143	0.442
Field Specific Conductance	umhos/cm	1115	984	969
Oxygen, Dissolved	mg/L	5.76	8.4	8.05
Field Oxidation Potential	mV	97.1	98.4	95.3
Groundwater Elevation	feet	785.97	788.83	787.78
Temperature	deg C	11.7	13	13.4
Turbidity	NTU	4.89	1.97	4.08
pH at 25 Degrees C	Std. Units	7.8	8.4	8.1

Single Location
Name: WPL - Columbia

Location ID: MW-319
Number of Sampling Dates: 3

Parameter Name	Units	6/27/2024	7/31/2024	8/30/2024
Boron	ug/L	20.4	22.5	42.2
Calcium	ug/L	125000	126000	131000
Chloride	mg/L	486	712	802
Fluoride	mg/L	<0.48	<0.48	<0.095
Field pH	Std. Units	7.32	7.15	7.43
Sulfate	mg/L	26.1	43.6	70.9
Total Dissolved Solids	mg/L	1140	1530	1700
Antimony	ug/L	<0.15	<0.15	<0.15
Arsenic	ug/L	<0.28	<0.28	<0.28
Barium	ug/L	68.6	63.9	51.4
Beryllium	ug/L	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.15	<0.15	<0.15
Chromium	ug/L	1.4	1.2	1.7
Cobalt	ug/L	0.44	0.45	0.37
Lead	ug/L	<0.24	<0.24	<0.24
Lithium	ug/L	1.4	1.3	1.5
Mercury	ug/L	<0.066	<0.066	<0.066
Molybdenum	ug/L	1.1	0.86	1.6
Selenium	ug/L	1.4	1.5	1.4
Thallium	ug/L	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.827	0.904	1.3
Radium-226	pCi/L	0.333	0.156	-0.345
Radium-228	pCi/L	0.494	0.748	1.3
Field Specific Conductance	umhos/cm	1869	2725	2948
Oxygen, Dissolved	mg/L	6.89	5.78	7.67
Field Oxidation Potential	mV	146.5	85.9	107.4
Groundwater Elevation	feet	787.2	789.56	789.17
Temperature	deg C	12.5	12.8	12.3
Turbidity	NTU	4.2	2.58	4.39
pH at 25 Degrees C	Std. Units	8	8.4	8.2

Appendix E

Alternative Source Demonstrations

E1 October 2023 Detection Monitoring Alternative Source Demonstration

Alternative Source Demonstration
October 2023 Detection Monitoring

Dry Ash Disposal Facility, Modules 10 -11
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:

SCS ENGINEERS

25224067.00 | July 6, 2024

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

Table of Contents

Tables

Figures

Appendices

I:\25224067.00\Deliverables\COL Mod 10-11 - Oct 2023 ASD\240703_COL_10-11 LF_Oct23 ASD_Final.docx

PE CERTIFICATION

I, Sherren Clark, hereby certify that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Dry Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.

7/6/2024

(signature) (date)

Sherren Clark

(printed or typed name)

License number E-29863

My license renewal date is July 31, 2024.

Pages or sheets covered by this seal:
Alternative Source Demonstration, October 2023 Detection Monitoring, Dry Ash Disposal Facility, Modules 10-11 Columbia Energy Center, Pardeeville, Wisconsin (Entire Document)

[This page left blank intentionally]

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 (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 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

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 indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs for calcium and total dissolved solids (TDS) observed in the statistical evaluation of the October 2023 detection monitoring event and the December 2023 resampling event at the Columbia Energy Center (COL) Dry Ash Disposal Facility, Modules 10-11 CCR Unit (Mod 10-11).

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). The COL site is an active coal-burning generating station, which has been burning coal and disposing of CCR on site since the mid-1970s. The layout of the site is shown on **Figure 2**. The COL property includes two areas of CCR storage and disposal. These are the Dry Ash Disposal Facility (ADF) and the Ash Ponds Facility. This ASD evaluates the conditions at the site for Mod 10-11 of the ADF only. The Module 10-11 CCR Unit became operational in 2023. The ADF is operated under the Wisconsin Department of Natural Resources (WDNR) License No. 3025.

The groundwater monitoring system at the COL Mod 10-11 facility monitors a single CCR Unit:

- COL Dry Ash Disposal Facility – Modules 10-11

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided on **Figure 2**. Separate monitoring systems have been established for the other CCR Units at COL, which include Modules 1-3 of the COL ADF, Modules 4-6 of the COL ADF, the Primary Ash Pond, and the Secondary Ash Pond.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

The statistical evaluation was completed in accordance with 40 CFR 257.93(f)(3) using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the Upper Prediction Limit (UPL) to evaluate whether an SSI has occurred. The evaluation was based on an intrawell UPL with 1-of-2 retesting, calculated using Sanitas software. The retesting approach results in a slightly lower UPL, but only 1 of 2 samples collected for the event (original and retest) must meet the UPL to demonstrate compliance. The intrawell UPLs, the October 2023 sampling results, and the December 2023 resampling results are summarized in the attached **Table 1**.

The October 2023 SSIs include the following parameters and wells:

- Calcium: MW-315
- TDS: MW-315

Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**)
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**)
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**)
- ASD conclusions (**Section 5.0**)
- Monitoring recommendations (**Section 6.0**)

Historical monitoring results from background and compliance sampling for the CCR Rule constituent results with an SSI are provided in **Table 2**. The laboratory reports for the October 2023 detection monitoring event and December 2023 resampling event will be included in the 2024 Annual Groundwater Monitoring and Corrective Action Report to be submitted in January 2025. Complete laboratory reports for the background monitoring events were included in previous annual groundwater monitoring and corrective action reports.

2.0 BACKGROUND

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

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL ADF. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer.

Additional details on the regional geology and hydrogeology were provided in the 2023 Annual Groundwater Monitoring and Corrective Action Report for the Modules 10-11 CCR Unit (SCS, 2024).

2.1.2 Site Information and Groundwater Flow

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc. [Warzyn], 1978). During drilling of CCR wells MW-301, MW-313, MW-314, and MW-315, the unconsolidated materials were identified as consisting primarily of silty sand and sand. The boring log for previously installed monitoring well MW-84A shows silty sand and sand as the primary unconsolidated materials at these locations. CCR monitoring wells MW-84A and MW-301 are screened within the unconsolidated sand unit.

Shallow groundwater at the site generally flows to the northwest across the existing landfill area, then generally flows west toward the Wisconsin River. A groundwater flow map for October 2023 is shown on Figure 3. The groundwater elevation data for the state and CCR monitoring program wells are provided in Table 3. A time series plot of groundwater elevations at the Mod 10-11 wells is provided in Appendix A.

Historically, localized groundwater mounding was associated with the ash ponds; however, flow in the ash ponds area changed in 2022 and 2023 as the ponds were closed and CCR was removed. In 2022, dewatering wells located around the Secondary Ash Pond lowered the water table near the Secondary Ash Pond and discharged groundwater to the Primary Ash Pond. Beginning in spring 2023, dewatering activities switched to the Primary Ash Pond area, and groundwater pumped from dewatering wells around the Primary Ash Pond was discharged to the large cooling pond south of the generating station. The October 2023 groundwater flow map shows flow toward the east end of the Primary Pond, which may reflect the recently terminated dewatering activities, and flow to the west from the west end of the Primary Pond. Groundwater dewatering in the Primary Ash Pond was completed shortly before the October 2023 sampling event.

Dewatering for ash pond closures may have affected water levels and groundwater flow directions in the Mod 10-11 area.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells. The background wells include MW-301 and MW-84A. The downgradient wells include MW-313, MW-314, and MW-315. The background wells are shared with the other COL CCR Units. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 26 to 43.5 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at COL as part of the monitoring systems developed for the state monitoring program and for the other CCR Units.

Monitoring wells for the state monitoring program are installed in the unconsolidated sand and gravel unit, which is the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells and mid-depth piezometers. Well depths range from approximately 14 to 76 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, 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 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

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed SSIs. 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 any indication of potential contamination from sampling equipment or containers.

SCS collected samples on October 11, 2023. Retest samples were collected on December 27, 2023. Field parameter results were compiled by SCS and provided to the laboratory for inclusion in the laboratory report. SCS did not identify issues with the sample collection based on review of the data and field notes.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the October 2023 detection monitoring event and the December 2023 resampling event were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to observed SSIs for calcium and TDS. 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.

Following the evaluation of the October 2023 sampling results, SCS resampled MW-314 and MW-315 for specific parameters on December 27, 2023. The resampling was performed on select parameters that exceeded UPLs in the October 2023 event, including TDS at MW-314 and calcium and TDS at MW-315. Based on the review of the laboratory reports, SCS did not identify any laboratory quality control flags or issues in the laboratory reports that affect the usability of the data for detection monitoring.

A time series plot of the calcium and TDS analytical data was also reviewed for any 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 A**. The calcium and TDS concentrations observed are within the range of historical concentrations for the COL ADF as a whole and no anomalous results were identified.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Statistical method and process for each SSI

Based on the October 2023 sampling results and the December 2023 retest results, SSIs for calcium and TDS occurred for MW-315 for the October 2023 semiannual event. The intrawell UPL at MW-314 was exceeded for TDS in October 2023, but the resample result in December 2023 was below the UPL; therefore, based on the 1-of-2 retesting approach, there was no SSI for TDS at MW-314 in October 2023.

Based on the review of the statistical evaluation, SCS did not identify any errors in the statistical evaluation that caused or contributed to the determination of intrawell SSIs for calcium and TDS at MW-315. However, the small size of the intrawell background data set (eight samples per well) and the short timeframe over which they were collected (8 months) may have contributed to the identification of the October 2023 results as SSIs. The small background data set collected from January through August 2023 likely does not represent the full range of variability in background concentrations at the compliance monitoring wells. The Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (U.S. EPA, 2009; Section 5.3.1) recommends periodic updating of background for both intrawell and interwell analyses; however, newer data with SSIs cannot be added to the background data set unless and until the newer data has been confirmed to represent background variability and not a release from the CCR unit.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the October 2023 monitoring event based on the methodology and analysis review, and no errors or issues caused or contributed to the reported SSIs.

4.0 ALTERNATIVE SOURCES

This section discusses the potential alternative sources for the calcium and TDS SSIs at downgradient monitoring well MW-315, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an intrawell approach, comparing the October 2023 detection monitoring results to the UPLs calculated based on background sampling of the compliance wells (MW-313, MW-314, and MW-315). If concentrations of a constituent that is present in the aquifer vary with time, then the potential exists that the compliance sampling concentrations may be higher than background concentrations due to natural temporal variation.

Temporal variation can occur seasonally or due to longer-term events such as changes in infiltration patterns and groundwater flow directions caused by wet or dry years.

Background sampling at the three Mod 10-11 compliance wells was performed prior to disposal of CCR in Mod 10-11. Because the background sampling at the three compliance wells was performed after other potential man-made sources of calcium and TDS had been in operation for many years, it is difficult to determine how much of the variation in calcium and TDS concentrations is due to natural sources versus man-made alternative sources associated with the long-term use of the property, as discussed in Section 4.1.2. Based on comparison to the two upgradient wells, it appears likely that calcium and TDS may reflect man-made sources. Regardless of the source, natural temporal variations in infiltration and groundwater flow direction may have contributed to the SSIs for calcium and TDS at MW-315.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the calcium and TDS SSIs could include the closed ash pond landfill, the active and inactive ash ponds (currently in the closure process), the surface water/leachate collection pond for the ADF, the former ash pond effluent ditch, the coal storage area, railroad operations, road salt use, storm water runoff from the plant entrance road, and/or other plant operations.

Historically, groundwater flow directions have varied significantly at the site due to changes in water and ash management, making it difficult to identify a specific source for calcium and TDS in the area of the Mod 10-11 compliance monitoring wells. Furthermore, recent dewatering activities around the Secondary Ash Pond (2022) and the Primary Ash Pond (2023) likely also affected groundwater flow, further complicating the evaluation of historic sources. Nevertheless, there are several lines of evidence indicating that the October 2023 SSIs for calcium and TDS are not due to a release from the Mod 10-11 CCR unit.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for calcium and TDS in compliance well MW-315, relative to the intrawell background sampling, are due to one or more alternative sources including:

1. The Mod 10-11 CCR Unit was constructed with a composite liner system and leachate collection system. Modules 10-11 have only been receiving CCR since mid-2023; therefore, it is very unlikely that a release from Mod 10-11 could have reached MW-315 by October 2023. More information about the composite liner is presented in Section 4.2.1.

2. The calcium and TDS concentrations at MW-315 in October and December 2023 were within the range of results observed historically at nearby state and CCR wells. More information on background concentrations for these parameters is provided in Section 4.2.2.

3. Higher temporal variability in 2023 is expected in these wells because active groundwater pumping for dewatering in the ash pond area likely induced changes in groundwater levels and flow patterns. The influence of dewatering is discussed in Section 4.2.3.

4. Columbia County experienced drought conditions from June 2023 through the spring of 2024. Lower than normal precipitation likely contributed to the observed decrease in water levels and may have contributed to increasing concentrations of calcium and TDS in groundwater. The potential influence of the drought is discussed in Section 4.2.4.

5. As discussed in Section 3.3, the small background data set was collected over a short period of time from January through August 2023, and likely does not represent the full range of temporal variability in background concentrations at the compliance monitoring wells.

These lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Mod 10-11 Composite Liner

The Mod 10-11 CCR Unit was constructed with a composite liner system and a leachate collection system, and has only been receiving CCR since June 2023. Given the short active timeframe, it is very unlikely that a release from Mod 10-11 could have reached MW-315 by October 2023. The liner system includes the following:

- Two feet of compacted clay
- Geosynthetic clay liner (GCL)
- Sixty-mil high density polyethylene (HDPE) geomembrane
- Leachate collection drainage layer
- Leachate collection piping

The Modules 10-11 liner construction was completed in 2023, and CCR placement in Modules 10-11 began in June 2023.

Given the liner system in place, a release from Mod 10-11 would have to penetrate the HDPE liner at a flaw, flow vertically through the GCL and compacted clay liner, and travel with the groundwater approximately 100 feet north to MW-315 from Modules 10-11 in less than half of a year. Based on the hydraulic conductivity of the liner clay (10^{-8} centimeters/second) and the lack of any evidence of a flaw in the HDPE liner, it is very unlikely that changes in calcium and TDS concentrations at MW-315 reflect a release from Mod 10-11. Extensive testing was performed as part of the WDNR-approved construction documentation (SCS, 2023) to document the proper construction of the liner.

4.2.2 Calcium and TDS Concentrations at Other Wells

The concentrations of calcium and TDS of the October 2023 sampling and December 2023 resampling events are within the range of historical results at other state program and CCR program wells at Columbia.

The historical calcium and TDS concentrations from the three Mod 10-11 wells and the two background wells are shown in **Table 2** and on the time series plots in **Appendix A.** Additional historical data from other wells on site is included in **Appendix B**.

Calcium and TDS are not required parameters for the state monitoring wells, but calcium was sampled for at several wells in the period from 1984 through 1989. Calcium concentrations above the concentrations observed at MW-315 were reported for several wells. For example, results for upgradient well MW-86 ranged from 76 to 143 mg/L.

TDS results for monitoring wells associated with other CCR units at COL have exceeded the TDS concentrations observed at MW-315 and were not attributed to releases from the CCR units. For example, the intrawell UPLs established based on background monitoring at MW-309 and MW-310, which monitor the COL MOD 4-6 CCR Unit, are higher than the MW-315 TDS results. The intrawell UPLs are 1,730 mg/L for MW-309 and 759 mg/L for MW-310.

The results from other wells indicate that, while the calcium and TDS concentrations have increased at MW-315 since the background monitoring was completed, they are within the range of values that have been identified as background at the site.

4.2.3 Influence of Dewatering Well Pumping

Higher temporal variability in 2023 is expected because active groundwater pumping for dewatering in the ash pond area likely induced changes in groundwater levels and flow patterns. In 2022, dewatering wells were installed around the Secondary Pond, and groundwater was pumped to lower the water table below the pond to facilitate CCR removal and pond closure. Pumped groundwater was discharged to the Primary Ash Pond. In 2023, groundwater was pumped from dewatering wells installed around the Primary Ash Pond to lower the water table below the pond to facilitate CCR removal and pond closure. The pumped groundwater was discharged to the large cooling pond south of the generating station.

In the area of MOD 10-11, the October 2023 groundwater flow map (**Figure 3**) shows flow toward the northwest. Near the ash ponds, flow is toward the east end of the Primary Pond, which may reflect the recently terminated dewatering activities, and flow is to the west from the west end of the Primary Pond. The dewatering activities at the Primary Ash Pond were completed in September 2023, and excavation of CCR material from the Primary Ash Pond was completed the week prior to water level measurements for the October 2023 sampling event.

Water table maps for the previous two semiannual monitoring events for the COL CCR Units (**Appendix C**) show variations in flow directions associated with dewatering. In October 2022, flow in the MOD 10-11 area was to the northwest. In April 2023, flow in the MOD 10-11 area was more directly north. These variations in flow direction between the background monitoring period (January to August 2023) and the October 2023 monitoring event may have contributed to temporal variability in the calcium and TDS concentrations at MW-315.

The time series plot of groundwater elevations (**Appendix A**) shows a decrease in water levels from spring of 2023 through December 2023. The plot shows water levels at the two upgradient background wells, located further from the pond closure area, and the three compliance wells, located closer to the pond closure area. From the time Modules 10-11 began accepting CCR in mid-2023, water levels at all five wells followed a generally decreasing trend. The decreasing trend may reflect a combination of the effects of dewatering at the Primary Pond and the effects of the drought conditions at the site as discussed below.

The variability in water levels and flow directions associated with the dewatering activities likely contributed to temporal variability in calcium and TDS concentrations at MW-315. Conditions during 2023 were variable, and conditions in October were not the same as those during the short background monitoring period used to develop the intrawell UPLs.

4.2.4 Drought Conditions in 2023

Beginning in early summer of 2023 and lasting into early 2024, Columbia County was under drought conditions. Most of the county was under Severe to Extreme Drought conditions from June until early October as shown on the plot of drought conditions in **Appendix D**. These conditions likely contributed to the decrease in groundwater levels and may also have contributed to the increase in calcium and TDS concentrations, due to the lack of precipitation.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for calcium and TDS at MW-315 demonstrate that the SSIs are likely due to sources other than the Mod 10-11 CCR Unit.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the COL Mod 10-11 CCR Unit may continue with detection monitoring based on this ASD. The ASD report will be included in the 2024 Annual Report due January 31, 2025.

7.0 REFERENCES

SCS Engineers (SCS), 2023, 2022 Modules 10 and 11 Construction Documentation Report, Columbia Energy Center, Dry Ash Disposal Facility, Pardeeville, WI, February 8, 2023.

SCS, 2024, 2023 Annual Groundwater Monitoring and Corrective Action Report, Columbia Energy Center, Dry Ash Disposal Facility, Modules 10-11, Pardeeville, WI, January 31, 2024.

U.S. EPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

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

Warzyn Engineering, Inc., 1978, Feasibility Study, Proposed Fly Ash and/or Scrubber Sludge Disposal Facility – Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

Warzyn Engineering, Inc., 1981, Water Table Contour Map 2/4/81, Drawing No. C7134-94.

[This page left blank intentionally]

Tables

Table 1. Groundwater Analytical Results Summary - Assessment Monitoring
Columbia Generating Station - Modules 10-11 / SCS Engineers Project #25223067.00

	Background Wells			Compliance Wells							
Parameter Name	**MW-84A**	**MW-301**		**MW-313**		**MW-314**			**MW-315**		
	10/11/2023	10/11/2023		Intrawell UPL	10/11/2023	Intrawell UPL	10/11/2023	12/27/2023	Intrawell UPL	10/11/2023	12/27/2023
Groundwater Elevation, ft amsl	784.39	784.67			783.10		783.33	783.18		783.59	783.36
Appendix III											
Boron, ug/L	14.0	36.2		252	41.3	18.3	12.4	--	15.3	15	--
Calcium, ug/L	65,100	52,300		75,400	66,800	116,000	106,000	--	132,000	134,000	142,000
Chloride, mg/L	3.1	2.1		45.9	29.6	3.78	3.2	--	7.30	3.1	--
Fluoride, mg/L	<0.095	<0.095	M0	0.610	<0.095	0.620	<0.095	--	0.095	<0.095	--
Field pH, Std. Units	7.51	7.06		7.71	7.24	7.50	7.21	7.23	7.46	6.97	7.03
Sulfate, mg/L	1.4 J	11.8		24.2	9	5.51	3.5	--	13.6	3.1	--
Total Dissolved Solids, mg/L	324	300		431	372	515	526	464	541	602	618

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

Abbreviations:

mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase
UPL = Upper Prediction Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation

Lab Notes:
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits

Notes:

1. Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
2. Intrawell UPLs were calculated from background sampling results for the compliance wells from January 2023 through August 2023.

Created by:	RM	Date:	8/15/2022
Last revision by:	SCC	Date:	3/21/2024
Checked by:	RM	Date:	3/22/2024
Proj Mgr QA/QC:	TK	Date:	3/29/2024

Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 10-11

Well Group	Well	Collection Date	Calcium (µg/L)	Total Dissolved Solids (mg/L)
Background	MW-301	12/22/2015	126,000	478
		4/5/2016	115,000	486
		7/8/2016	108,000	464
		10/13/2016	118,000	490
		12/29/2016	129,000	444
		1/25/2017	124,000	514
		4/11/2017	120,000	502
		6/6/2017	111,000	458
		8/8/2017	108,000	462
		10/23/2017	87,200	362
		4/25/2018	112,000	464
		8/8/2018	105,000	502
		10/24/2018	101,000	424
		4/2/2019	126,000	462
		10/9/2019	114,000	418
		2/3/2020	113,000	462
		5/29/2020	112,000	452
		10/8/2020	93,000	412
		4/14/2021	117,000	472
		10/14/2021	67,800	334
		4/13/2022	97,300	422
		10/27/2022	62,800	282
		4/27/2023	120,000	526
		10/11/2023	52,300	300
	MW-84A	12/22/2015	74,000	316
		4/5/2016	72,200	322
		7/8/2016	67,600	316
		10/13/2016	74,000	324
		12/29/2016	76,000	316
		1/25/2017	70,800	328
		4/11/2017	73,200	342
		6/6/2017	76,100	344
		8/8/2017	74,900	342
		10/24/2017	77,500	314
		4/25/2018	76,600	328
		8/8/2018	76,000	372
		10/24/2018	74,000	330
		4/3/2019	80,100	318
		10/9/2019	73,500	310
		2/3/2020	72,700	316
		5/29/2020	77,600	340
		10/8/2020	69,200	320
		4/14/2021	69,100	328
		10/14/2021	75,300	326
		4/13/2022	75,100	334
		10/27/2022	78,400	302
		4/27/2023	68,600	326
		10/11/2023	65,100	324

Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 10-11

Well Group	Well	Collection Date	Calcium (µg/L)	Total Dissolved Solids (mg/L)
Compliance	MW-313	1/24/2023	66,800	298
		2/23/2023	62,900	278
		3/27/2023	63,300	320
		4/26/2023	63,900	318
		5/30/2023	69,100	334
		6/29/2023	71,900	408
		7/31/2023	70,000	354
		8/31/2023	68,600	354
		10/11/2023	66,800	372
	MW-314	1/24/2023	95,000	380
		2/23/2023	96,200	396
		3/27/2023	99,300	412
		4/26/2023	92,400	418
		5/30/2023	102,000	444
		6/29/2023	103,000	470
		7/31/2023	109,000	464
		8/31/2023	109,000	464
		10/11/2023	106,000	526
		12/27/2023	--	464
	MW-315	1/24/2023	107,000	436
		2/23/2023	100,000	448
		3/27/2023	106,000	480
		4/26/2023	101,000	452
		5/30/2023	108,000	456
		6/29/2023	110,000	482
		7/31/2023	121,000	486
		8/31/2023	125,000	526
		10/11/2023	134,000	602
		12/27/2023	142,000	618

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = Not analyzed

Note:
(1) Complete laboratory reports included in the Annual Groundwater Monitoring and Corrective Action Reports.

Created by:	RM	Date:	5/31/2024
Last revision by:	RM	Date:	5/31/2024
Checked by:	NLB	Date:	6/4/2024
PM QC Check:	TK	Date:	7/3/2024

I:\25224067.00\Deliverables\COL Mod 10-11 - Oct 2023 ASD\Tables\[Table 2 - Historical Analytical Results with SSIs.xlsx]Table 2. Analy. Rslts- CCR

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
	Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
	Screen Length (ft)																	10	5	10
	Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
	Top of Well Screen Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	787.19	750.21	784.29
	Measurement Date																			
	October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
	April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
	October 8, 2013													785.66	785.42	785.97	785.52	NI	NI	NI
	October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
	April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
	October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
	April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
	October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
	April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
	October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
	April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
	October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
	October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 [6]	NM	NM	NM	NM	NM	NM	NI	NI	NI
Dry Ash Facility (Facility ID #03025)	February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
	April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
	October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
	April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
	October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
	May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
	October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
	February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	c	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
	June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
	October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
	October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
	February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
	March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
	May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
	May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
	October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
	Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

	Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR	SG-1	SG-2	SG-3	SG-4
	Top of Casing Elevation (feet amsl)	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90	792.06	795.25	808.60	805.36
	Screen Length (ft)															
	Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96	--	--	--	--
	Top of Well Screen Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94	--	--	--	--
	Measurement Date															
	October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55	#VALUE!	-1.82	dry	dry
	April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02	789.5 [1]	NM	dry	dry
	October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36	789.5 [1]	-0.88	dry	dry
	October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM	NM	NM	NM	NM
	April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87	788.90	dry	dry	dry
	October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03	NM	dry	dry	dry
	April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42	789.3	-0.15	dry	dry
	October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26	788.48	1.20	dry	dry
	April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36	NM	1.80	dry	dry
	October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09	788.32	#VALUE!	dry	dry
Ash Pond Facility (Facility ID #02325)	April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09	788.31	-0.08	dry	dry
	October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61	788.3	0.05	dry	dry
	April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45	788.38	>795.25	dry	dry
	October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52	787.76	1.25	dry	dry
	April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46	788.40	#VALUE!	dry	dry
	October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42	748.48	1.85	dry	dry
	May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89	748.48	>795.25	dry	dry
	October 7-8 &17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49	788.34	1.85	dry	NM
	April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49	788.03	1.85	below gauge	dry
	October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66	788.59	1.85	dry	dry
	April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83	788.4	1.85	dry	dry
	June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM	NM	NM	NM	NM
	October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49				
	March 27-28, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM				
	April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30				
	May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03				
	October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43				
	Bottom of Well Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94				

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

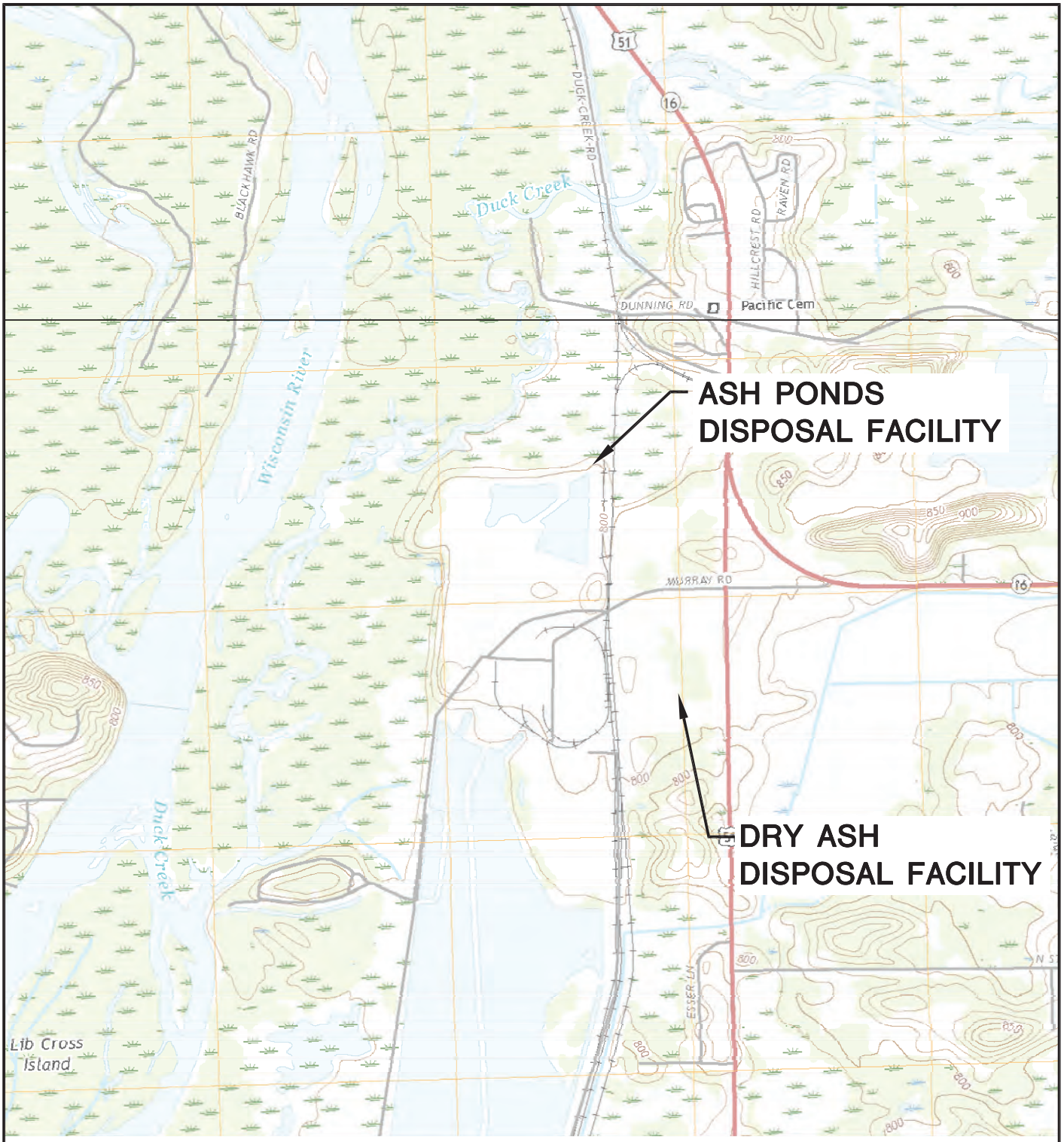
CCR Rule Wells (cont.)

Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	819.36	820.94	828.77
Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	785.1	787.9	791.2
Measurement Date																								
December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI	NI	NI	NI
April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI	NI	NI	NI	NI	NI	NI
April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI	NI	NI	NI	NI	NI	NI
June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI	NI	NI	NI
June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
December 13, 2019	--	--	--	--	NI	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
December 23, 2019	--	--	--	--	NI	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI	NI	NI	NI
January 17, 2020	--	--	785.58	--	NI	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
January 24, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.73	783.36	783.63	783.77	NI	NI	NI	NI
February 20-23, 2023	785.56	784.98	NM	NM	NI	NM	NM	NM	NM	NM	783.04	782.91	785.32	783.31	783.34	783.40	783.50	783.59	783.82	783.96	NI	NI	NI	NI
March 27-28, 2023	786.83	785.87	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.84	783.98	784.43	NM	784.12	784.41	784.57	NI	NI	NI	NI
April 24-27, 2023	787.57	786.87	784.38	784.03	NI	NM	782.59	785.79	786.22	786.97	784.82	784.25	787.75	785.05	785.18	785.69	NM	785.21	785.43	785.59	NI	NI	NI	NI
May 5, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.55	NM	NM	NM	780.49	NI	NI	NI
May 16, 2023	787.43	787.07	783.88	784.12	NI	dry	781.64	785.64	786.06	786.88	784.65	783.89	786.88	785.15	785.11	785.39	785.97	785.46	785.68	785.88	780.48	NI	NI	NI
May 30-31, 2023	787.04	786.89	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	784.90	784.69	784.97	NM	785.24	785.55	785.77	NM	NI	NI	NI
June 29-30, 2023	786.32	786.39	NM	NM	NI	NM	NM	784.32	785.04	785.92	NM	NM	NM	784.12	783.84	783.97	NM	784.67	784.95	785.17	NM	NI	NI	NI
July 31, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.96	784.26	784.49	NM	NI	NI	NI
August 31, 2023	NM	785.30	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.47	NM	NM	783.55	783.83	783.97	NM	NI	NI	NI
October 9-11, 2023	784.67	784.65	781.21	780.09	NI	779.93	780.54	782.57	783.55	784.39	NM	NM	783.09	782.58	782.32	782.22	783.69	783.10	783.33	783.59	780.30	NI	NI	NI
November 9, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.76	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
December 27, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.18	783.36	NM	NI	NI	NI
Bottom of Well Elevation (ft)	777.49	779.40	775.72	779.72	773.61	780.72	766.52	777.21	770.52	774.07	780.63	780.39	778.90	775.60	775.21	773.55	774.29	774.10	776.61	774.18	764.79	775.06	777.94	781.17

Notes:
NM = not measured
NI = not installed
aband = abandoned
(1) The depth to water at MW-84A was not measured prior to purging for sampling during the October 3-5, 2017 sampling event. The level was allowed to return to static and was measured on October 10, 2017.
(2) MW-303 was extended in 2022 due to regrading. Prior to October 2022, the TOC elevation was 811.52'. For events in October 2022 and later, the TOC elevation is 815.72'.

Created by: MDB Date: 5/6/2013
Last revision by: RM Date: 6/3/2024
Checked by: GK Date: 6/5/2024

Figures

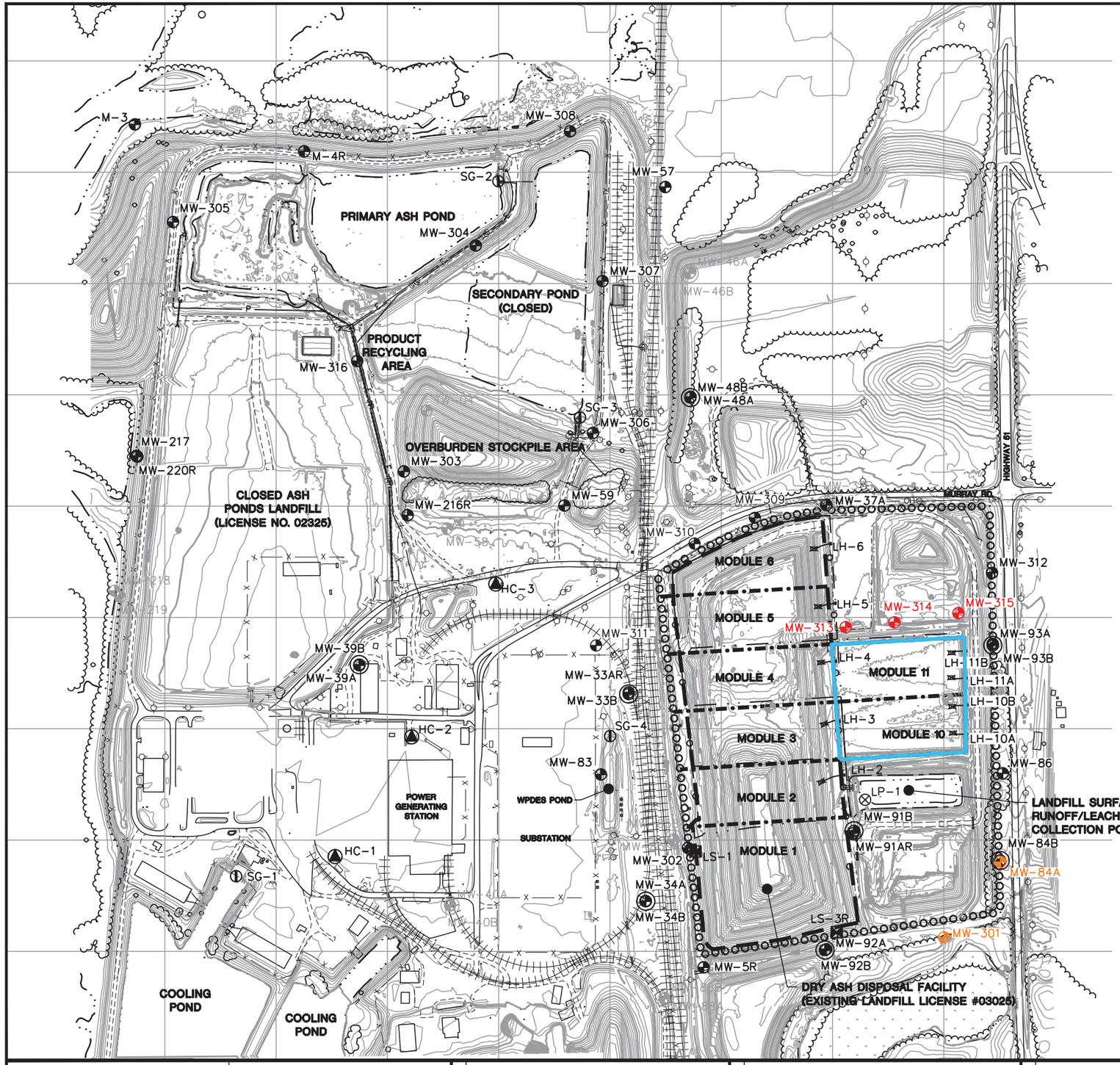


N

POYNETTE QUADRANGLE
WISCONSIN–COLUMBIA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT: ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE: ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	SITE LOCATION MAP	
PROJECT NO. 25220067.00	DRAWN BY: BSS	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718–6751 PHONE: (608) 224–2830	FIGURE 1
DRAWN: 12/02/2019	CHECKED BY: MDB		
REVISED: 01/10/2020	APPROVED BY: TK 04/10/2020		

I:\25220067.00\Drawings\ASD Mod 1-3 LF\Site Location Map.dwg, 4/12/2020 7:05:09 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- SURFACE WATER SAMPLE LOCATION
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- LEACHATE HEADWELL
- CCR UNIT
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016, AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 WERE INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 23-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. BACKGROUND MONITORING WELLS FOR THE MODULES 10-11 DRY ASH DISPOSAL FACILITY ARE: MW-301 AND MW-84A.

500 0 500

SCALE: 1" = 500'

PROJECT NO.	25224067.00	DRAWN BY:	KP/SB
DRAWN:	12/02/2019	CHECKED BY:	RM
REVISED:	06/04/2024	APPROVED BY:	

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

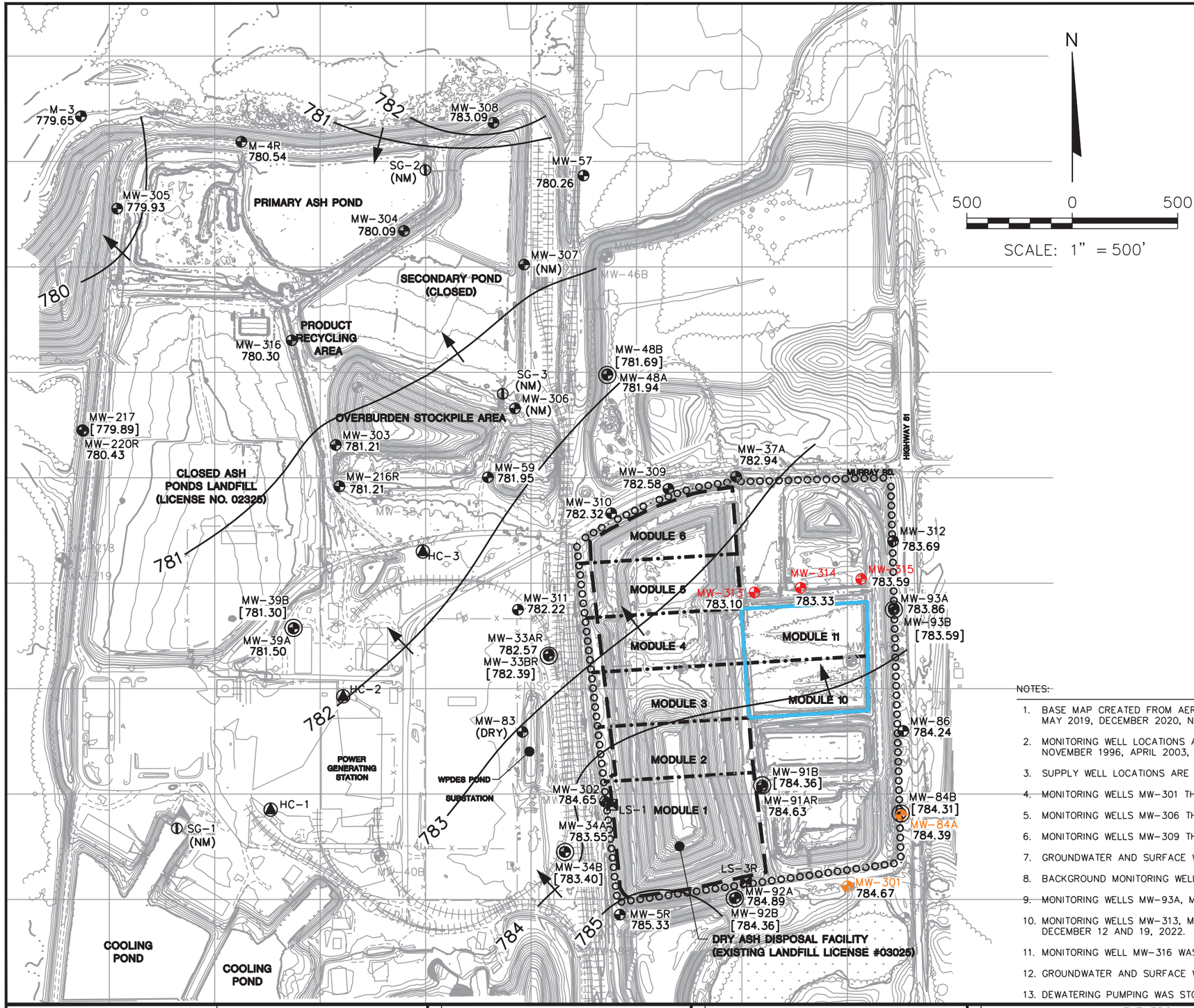
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 10-11 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS

FIGURE 2

I:\25224067.00\Drawings\Modules 10-11\Site Plan and Monitoring Well Locations.dwg, 6/4/2024 2:46:39 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR UNIT
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 10-11 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
10. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
11. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
12. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED OCTOBER 2023.
13. DEWATERING PUMPING WAS STOPPED SEPTEMBER 11, 2023.

PROJECT NO.	25224067.00	DRAWN BY:	KP/SB
DRAWN:	11/13/2023	CHECKED BY:	
REVISED:	06/04/2024	APPROVED BY:	

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 10-11 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
OCTOBER 2023

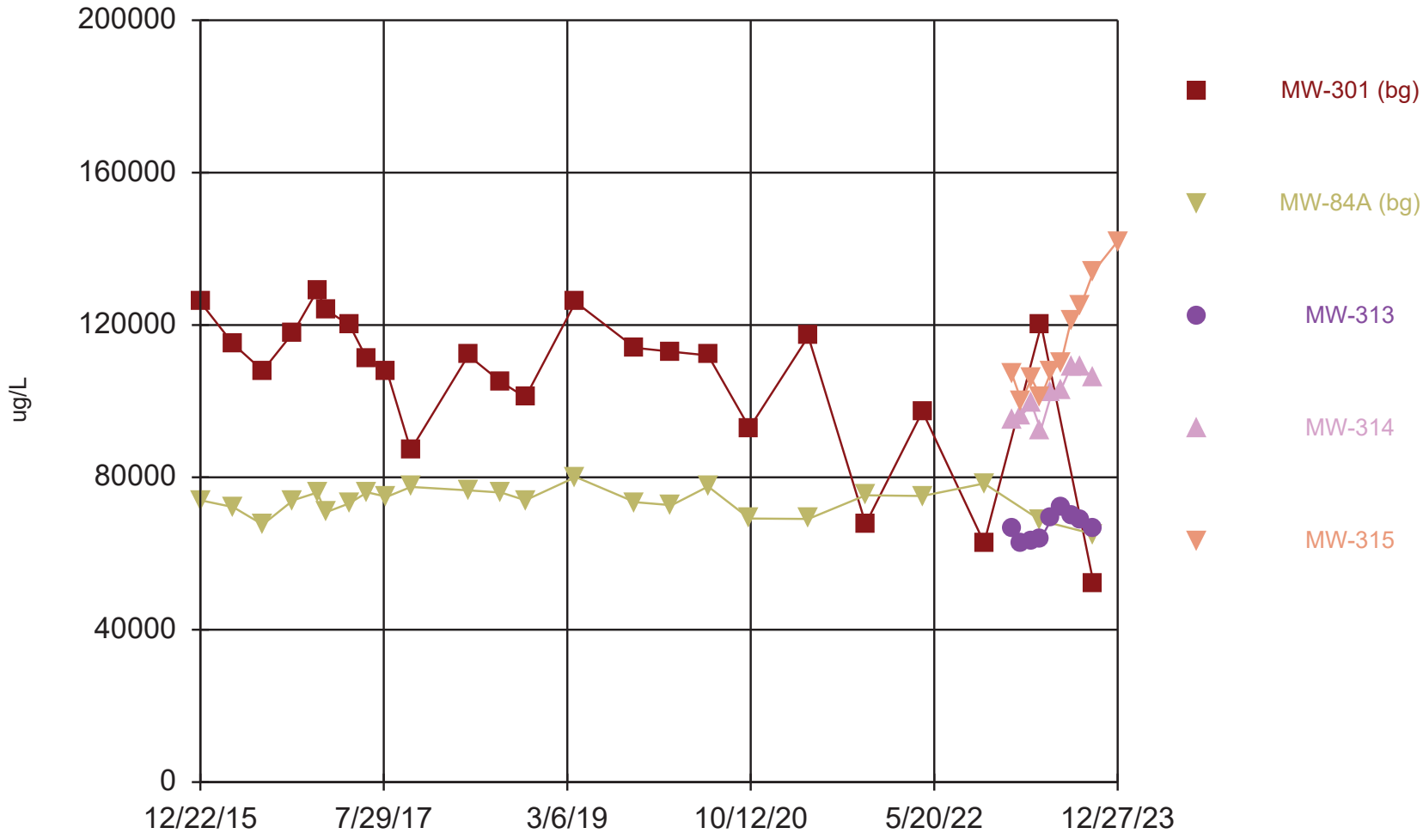
FIGURE
3

I:\25224067.00\Drawings\Modules 10-11\Water Table Map-October 2023.dwg, 6/4/2024 12:29:40 PM

Appendix A

Trend Plots for CCR Wells

Calcium



Time Series Analysis Run 6/20/2024 1:03 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

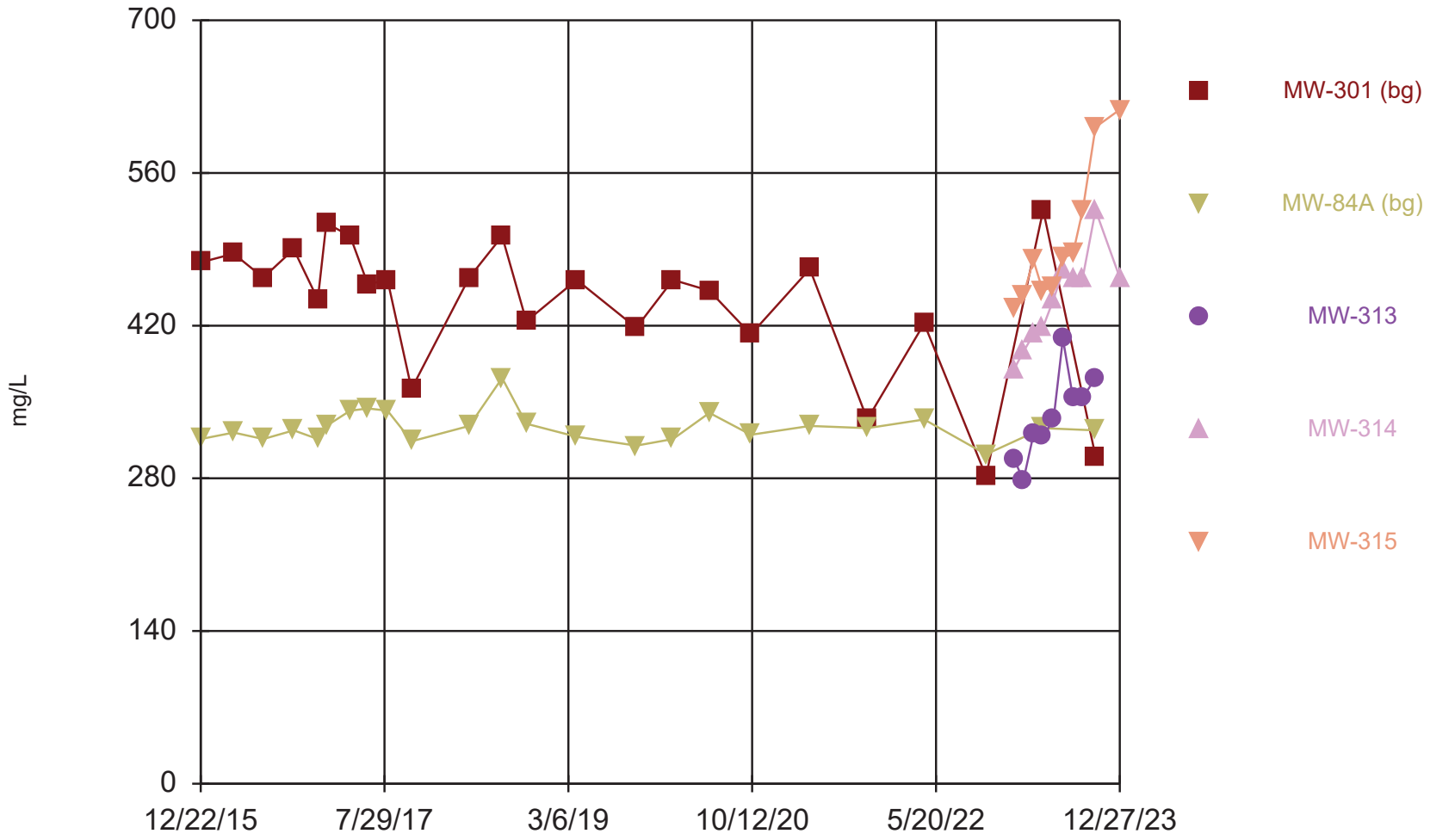
Time Series

Constituent: Calcium (ug/L) Analysis Run 6/20/2024 1:04 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
12/22/2015	126000	74000			
4/5/2016	115000	72200			
7/8/2016	108000	67600			
10/13/2016	118000	74000			
12/29/2016	129000	76000			
1/25/2017	124000	70800			
4/11/2017	120000	73200			
6/6/2017	111000	76100			
8/8/2017	108000	74900			
10/23/2017	87200				
10/24/2017		77500			
4/25/2018	112000	76600			
8/8/2018	105000	76000			
10/24/2018	101000	74000			
4/2/2019	126000				
4/3/2019		80100			
10/9/2019	114000	73500			
2/3/2020	113000	72700			
5/29/2020	112000	77600			
10/8/2020	93000	69200			
4/14/2021	117000	69100			
10/14/2021	67800	75300			
4/13/2022	97300	75100			
10/27/2022	62800	78400			
1/24/2023			66800	95000	107000
2/23/2023			62900	96200	100000
3/27/2023			63300	99300	106000
4/26/2023			63900	92400	101000
4/27/2023	120000	68600			
5/30/2023			69100	102000	108000
6/29/2023			71900	103000	110000
7/31/2023			70000	109000	121000
8/31/2023			68600	109000	125000
10/11/2023	52300	65100	66800	106000	134000
12/27/2023					142000

Total Dissolved Solids



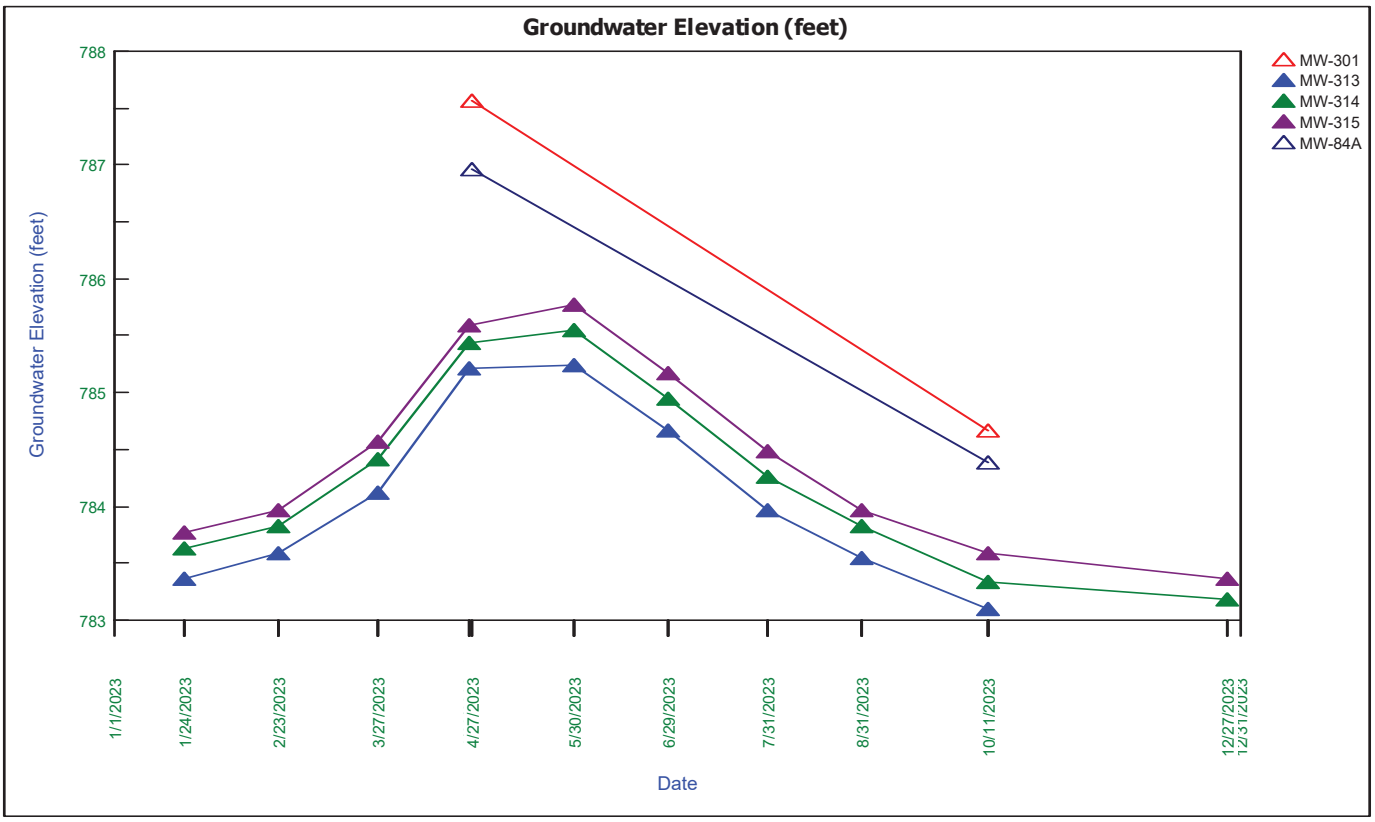
Time Series Analysis Run 6/20/2024 1:03 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 6/20/2024 1:04 PM View: Mod 10-11
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
12/22/2015	478	316			
4/5/2016	486	322			
7/8/2016	464	316			
10/13/2016	490	324			
12/29/2016	444	316			
1/25/2017	514	328			
4/11/2017	502	342			
6/6/2017	458	344			
8/8/2017	462	342			
10/23/2017	362				
10/24/2017		314			
4/25/2018	464	328			
8/8/2018	502	372			
10/24/2018	424	330			
4/2/2019	462				
4/3/2019		318			
10/9/2019	418	310			
2/3/2020	462	316			
5/29/2020	452	340			
10/8/2020	412	320			
4/14/2021	472	328			
10/14/2021	334	326			
4/13/2022	422	334			
10/27/2022	282	302			
1/24/2023			298	380	436
2/23/2023			278	396	448
3/27/2023			320	412	480
4/26/2023			318	418	452
4/27/2023	526	326			
5/30/2023			334	444	456
6/29/2023			408	470	482
7/31/2023			354	464	486
8/31/2023			354	464	526
10/11/2023	300	324	372	526	602
12/27/2023				464	618



Appendix B

Historical Calcium and Total Dissolved Solids Data

Lic#	Point Name	Parm Code	Parameter Description	Sample Date	Result Value	Result Unit
3025	LS-2	916	CALCIUM, TOTAL (MG/L CA)	06/07/1994	100	mg/L
3025	LS-2	916	CALCIUM, TOTAL (MG/L CA)	03/15/1994	99	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	49.6	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/27/2022	87.3	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/12/2022	77	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/12/2021	58.1	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/13/2021	61.6	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	61.3	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	05/28/2020	58.7	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/08/2019	78.8	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	67.5	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/22/2018	70.1	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/24/2018	69.6	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/24/2017	69.6	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	08/07/2017	67.3	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	06/06/2017	66.9	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/11/2017	66.3	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	01/25/2017	58.9	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	12/29/2016	62.8	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	10/13/2016	55.6	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	07/07/2016	60	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	04/05/2016	63.5	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	12/21/2015	65.3	mg/L
3025	MW34A	916	CALCIUM, TOTAL (MG/L CA)	12/21/2015	65.2	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/27/2023	68.6	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	10/27/2022	78.4	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/13/2022	75.1	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	10/14/2021	75.3	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/14/2021	69.1	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	69.2	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	05/29/2020	77.6	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	02/03/2020	72.7	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	10/09/2019	73.5	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/03/2019	80.1	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	08/08/2018	76	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/25/2018	76.6	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	10/24/2017	77.5	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	08/08/2017	74.9	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	06/06/2017	76.1	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/11/2017	73.2	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	01/25/2017	70.8	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	12/29/2016	76	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	10/13/2016	74	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	07/08/2016	67.6	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	04/05/2016	72.2	mg/L
3025	MW84A	916	CALCIUM, TOTAL (MG/L CA)	12/22/2015	74	mg/L
3025	LS-3R	916	CALCIUM, TOTAL (MG/L CA)	09/05/1995	47	mg/L
3025	LS-3R	916	CALCIUM, TOTAL (MG/L CA)	06/06/1995	49	mg/L
3025	LS-3R	916	CALCIUM, TOTAL (MG/L CA)	03/07/1995	43	mg/L
3025	LS-3R	916	CALCIUM, TOTAL (MG/L CA)	12/06/1994	48	mg/L

3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/27/2023	55.3	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/27/2022	77	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/12/2022	80	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/12/2021	53.7	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/13/2021	51.6	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	57.1	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	05/28/2020	58.4	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/08/2019	121	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	131	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/22/2018	66.9	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/24/2018	99.8	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/24/2017	98.2	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	08/07/2017	84.8	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	06/06/2017	80.7	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/11/2017	66.8	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	01/25/2017	57.5	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	12/29/2016	63.1	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	10/13/2016	79	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	07/07/2016	50.5	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	04/05/2016	48.9	mg/L
3025	MW-33AR	916	CALCIUM, TOTAL (MG/L CA)	12/21/2015	50	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/27/2023	120	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/27/2022	62.8	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/13/2022	97.3	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/14/2021	67.8	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/14/2021	117	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	93	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	05/29/2020	112	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	02/03/2020	113	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/09/2019	114	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	126	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/24/2018	101	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	08/08/2018	105	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/25/2018	112	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/23/2017	87.2	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	08/08/2017	108	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	06/06/2017	111	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/11/2017	120	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	01/25/2017	124	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	12/29/2016	129	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	10/13/2016	118	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	07/08/2016	108	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	04/05/2016	115	mg/L
3025	MW-301	916	CALCIUM, TOTAL (MG/L CA)	12/22/2015	126	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/27/2023	66.5	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/27/2022	91.2	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/12/2022	91.6	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/14/2021	84.1	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/13/2021	82.4	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	80.6	mg/L

3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	05/29/2020	90.5	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/09/2019	61.4	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	62.4	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/22/2018	56.9	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/24/2018	110	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/24/2017	94.4	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	08/08/2017	87.1	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	06/06/2017	88.9	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/11/2017	79.6	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	01/25/2017	75.4	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	12/29/2016	76.1	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	10/13/2016	71.7	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	07/07/2016	66.9	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	04/05/2016	65.9	mg/L
3025	MW-302	916	CALCIUM, TOTAL (MG/L CA)	12/22/2015	68.8	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	35.5	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	11/30/2022	153	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	10/26/2022	162	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	04/12/2022	80.2	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	10/14/2021	83.1	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	04/13/2021	62.3	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	65.3	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	05/29/2020	51.6	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	10/08/2019	46.9	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	45.3	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	09/21/2018	55.2	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	08/22/2018	93.6	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	07/23/2018	63.8	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	06/23/2018	67.6	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	05/24/2018	52.7	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	04/23/2018	39.6	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	03/23/2018	41.8	mg/L
3025	MW-309	916	CALCIUM, TOTAL (MG/L CA)	02/21/2018	42.7	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	36.8	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	11/30/2022	55.5	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	10/26/2022	68.9	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	04/12/2022	31.9	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	10/14/2021	38.9	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	04/13/2021	49.3	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	12/11/2020	56.8	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	62	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	05/29/2020	41.1	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	12/23/2019	55.4	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	10/08/2019	57.6	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	38.8	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	09/21/2018	54.1	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	08/22/2018	38.8	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	07/23/2018	39.7	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	06/23/2018	34.3	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	05/24/2018	32.1	mg/L

3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	04/23/2018	32.1	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	03/23/2018	33.4	mg/L
3025	MW-310	916	CALCIUM, TOTAL (MG/L CA)	02/21/2018	32.4	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	52.8	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	10/27/2022	66.3	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	04/12/2022	61.8	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	10/14/2021	61	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	04/14/2021	59	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	10/08/2020	73.4	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	05/29/2020	62.2	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	10/08/2019	63.9	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	04/02/2019	65.6	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	09/21/2018	75.4	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	08/22/2018	65.7	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	07/23/2018	76.8	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	06/23/2018	70.7	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	05/24/2018	62.5	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	04/23/2018	56.6	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	03/23/2018	61	mg/L
3025	MW-311	916	CALCIUM, TOTAL (MG/L CA)	02/21/2018	58	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	08/31/2023	68.6	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	07/31/2023	70	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	06/29/2023	71.9	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	05/30/2023	69.1	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	63.9	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	03/27/2023	63.3	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	02/23/2023	62.9	mg/L
3025	MW-313	916	CALCIUM, TOTAL (MG/L CA)	01/24/2023	66.8	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	08/31/2023	109	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	07/31/2023	109	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	06/29/2023	103	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	05/30/2023	102	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	92.4	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	03/27/2023	99.3	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	02/23/2023	96.2	mg/L
3025	MW-314	916	CALCIUM, TOTAL (MG/L CA)	01/24/2023	95	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	08/31/2023	125	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	07/31/2023	121	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	06/29/2023	110	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	05/30/2023	108	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	04/26/2023	101	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	03/27/2023	106	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	02/23/2023	100	mg/L
3025	MW-315	916	CALCIUM, TOTAL (MG/L CA)	01/24/2023	107	mg/L

Lic#	Point Name	Parm Code	Parameter Description	Sample Date	Result Value	Result Unit
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	55	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	63	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	56	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	77.1	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	67.1	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	60	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	56.6	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	58.9	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	56.4	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	63.5	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	64.4	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	62	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	48	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	64	mg/L
3025	HC-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	61	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	54	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	59	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	06/29/1989	61	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	74.8	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	64.8	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	74.8	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	81.1	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	82.8	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	86.8	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	85.3	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	81.4	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	74	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	58	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	71	mg/L
3025	HC-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	69	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	53	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	55	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	45	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	74.5	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	64.5	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	57.6	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	59.1	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	53	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	40	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	55	mg/L
3025	HC-3	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	54	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	71	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/29/1989	64	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	52	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	78.9	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	55.6	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	48.6	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	47.2	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	33.3	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	56.2	mg/L

3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	32.6	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/04/1987	32.6	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	31	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	03/24/1987	22	mg/L
3025	LS-1	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	36	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	37.1	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	37.6	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	44.6	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	26.8	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	22.6	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	37	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	21.6	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	18	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	12/21/1986	19	mg/L
3025	LS-2	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	20	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	30	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	09/29/1989	41	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	06/26/1989	36	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	40.3	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	40.3	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	33.1	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	58.8	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	24	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	22	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	12/21/1986	17	mg/L
3025	LS-3	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	28	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	109	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	09/08/1989	108	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	125	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	95.8	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	119	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	115	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	126	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	118	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	120	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	93	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	109	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	107	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	98	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	93	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	92	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	99	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	101	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	100	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	MW1A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	95	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	103	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	09/08/1989	93	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	99	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	174	mg/L

3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	95.7	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	92.4	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	102	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	100	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	103	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	109	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	90	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	82	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	95	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	105	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	98	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	108	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	109	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	112	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	123	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	126	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	143	mg/L
3025	MW1B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	117	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	126	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	09/08/1989	130	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	148	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	170.1	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	160.1	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	150	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	144	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	163	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	142	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	145	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	146	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	138	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	125	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	144	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	143	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	130	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	137	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	134	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	139	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	148	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	144	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	143	mg/L
3025	MW4	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	140	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	129	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	110	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	124	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	110	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	104	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	115	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	88	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	82	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	112	mg/L

3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	125	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	117	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	116	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	95	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	105	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	104	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	93	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	MW5	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	84	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	63	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	09/27/1989	64	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	50.2	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	47.1	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	46.1	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	53.5	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	59.6	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	63.1	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	48.4	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	49.5	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	43.4	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	45	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	37	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	46	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	48	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	43	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	48	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	52	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	51	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	57	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	54	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	52	mg/L
3025	MW16	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	52	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	106	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	96.1	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	107	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	107	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	79	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	52	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	106	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	105	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	101	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	112	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	100	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	99	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	102	mg/L
3025	MW25	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1985	105	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	58	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	97	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	113.5	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	57.2	mg/L

3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	57.2	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	101	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	175	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	190	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	93.4	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	72.3	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	185	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	163	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	96	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	192	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	217	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	237	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	86	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	50	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	77	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	128	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	147	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	MW34A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	127	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	61	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	57	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	61.1	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	49.4	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	49.4	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	85	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	114	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	89.3	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	73.1	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	78.3	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	64.7	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	155	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	65	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	83	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	71	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	85	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	79	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	44	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	41	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	51	mg/L
3025	MW34B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	112	mg/L
3025	MW37A	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	65	mg/L
3025	MW37A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	66	mg/L
3025	MW37A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	64	mg/L
3025	MW37A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	64	mg/L
3025	MW37A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	MW37A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	51	mg/L
3025	MW37B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	39	mg/L
3025	MW37B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	60	mg/L
3025	MW37B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	72	mg/L
3025	MW37B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	62	mg/L

3025	MW37B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	50	mg/L
3025	MW37B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	34	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	45	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	48	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	52.8	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	90.7	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	90.6	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	52.4	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	58.4	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	71	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	54.8	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	53.7	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	55	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	52	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	55	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	66	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	62	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	68	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	64	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	59	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	61	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	64	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	63	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	59	mg/L
3025	MW80A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	61	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1989	52	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	57	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	57.5	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	71.5	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	61.5	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	60.2	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	65.6	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	74.3	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	63	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	65.8	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	70	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	62	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	48	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	63	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	59	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	58	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	53	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	59	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	58	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	60	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	60	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	MW80B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	56	mg/L
3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1987	85	mg/L
3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	88	mg/L

3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	88	mg/L
3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	88	mg/L
3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	93	mg/L
3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	90	mg/L
3025	MW81	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	91	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	80.2	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	81	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	82.8	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	64.3	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	74.5	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	70.2	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	77	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	0.32	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	71	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	74	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	69	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	80	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	93	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	112	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	132	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	124	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	128	mg/L
3025	MW82A	915	CALCIUM, DISSOLVED (MG/L CA)	07/09/1984	132	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	66.4	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	69.7	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	93.8	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	84.2	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	92	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	85	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	115	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	90	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	117	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	121	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	118	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	120	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	105	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	101	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	88	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	77	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	69	mg/L
3025	MW82B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	67	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	57	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	71	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	65.8	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	53.3	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	53.3	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	65.8	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	67	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	77.3	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	61.9	mg/L

3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	62.6	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	58.6	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	57	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	42	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	58	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	56	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	53	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	60	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	68	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	58	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	59	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	60	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	56	mg/L
3025	MW84A	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	54	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	58	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	58	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	52.1	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	77	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	66	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	62.5	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	61.8	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	71.2	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	55.2	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	55.6	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	54	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	58	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	42	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	56	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	55	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	53	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	51	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	54	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	52	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	60	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	58	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	57	mg/L
3025	MW84B	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	55	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	65	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	09/27/1989	66	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	79.7	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	121	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	87	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	78.8	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	100	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	70.6	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	76.6	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	82.6	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	84	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	69	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	85	mg/L

3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	88	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	69	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	87	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	93	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	114	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	130	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	89	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	93	mg/L
3025	MW85	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	87	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	103	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1989	99	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	115	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	142.7	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	142.7	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	102	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	101	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	108	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	98.8	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	95.8	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	100	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	114	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	80	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	102	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	107	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	98	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	105	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	100	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	114	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	89	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	127	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	98	mg/L
3025	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	09/07/1984	76	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	89	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	92	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	119	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	108.7	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	108.6	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	89.2	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	119	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	148	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	124	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	105	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	149	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	131	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	110	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	133	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	168	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	140	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	199	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	194	mg/L

3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	160	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	254	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	241	mg/L
3025	MW88A	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	294	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	104	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	120	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	114	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	03/22/1989	93.7	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	93.7	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	12/07/1988	123	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1988	121	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	06/07/1988	122	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	03/10/1988	129	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	12/09/1987	124	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	09/09/1987	106	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	06/05/1987	102	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	03/20/1987	82	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	12/19/1986	103	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1986	98	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	06/20/1986	95	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1986	95	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	12/12/1985	88	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	09/18/1985	79	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	06/14/1985	85	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	03/07/1985	75	mg/L
3025	MW88B	915	CALCIUM, DISSOLVED (MG/L CA)	12/17/1984	86	mg/L
3025	MW-85B	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	59	mg/L
3025	MW-85B	915	CALCIUM, DISSOLVED (MG/L CA)	09/27/1989	56	mg/L
3025	MW-85B	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	60.8	mg/L
3025	MW-85B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	77.3	mg/L
3025	MW-89A	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	105	mg/L
3025	MW-89A	915	CALCIUM, DISSOLVED (MG/L CA)	09/08/1989	90	mg/L
3025	MW-89A	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	102	mg/L
3025	MW-89A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	108	mg/L
3025	MW-89B	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	44	mg/L
3025	MW-89B	915	CALCIUM, DISSOLVED (MG/L CA)	09/08/1989	49	mg/L
3025	MW-89B	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	52.2	mg/L
3025	MW-89B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	80.8	mg/L
3025	MW-90A	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	62	mg/L
3025	MW-90A	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	55	mg/L
3025	MW-90A	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	84.2	mg/L
3025	MW-90A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	91.5	mg/L
3025	MW-90B	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	66	mg/L
3025	MW-90B	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	84	mg/L
3025	MW-90B	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	86.6	mg/L
3025	MW-90B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	128	mg/L
3025	MW-91A	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	54	mg/L
3025	MW-91A	915	CALCIUM, DISSOLVED (MG/L CA)	09/27/1989	37	mg/L
3025	MW-91A	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	33	mg/L
3025	MW-91A	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	74.1	mg/L
3025	MW-91B	915	CALCIUM, DISSOLVED (MG/L CA)	12/06/1989	55	mg/L
3025	MW-91B	915	CALCIUM, DISSOLVED (MG/L CA)	09/27/1989	58	mg/L
3025	MW-91B	915	CALCIUM, DISSOLVED (MG/L CA)	06/15/1989	48.3	mg/L
3025	MW-91B	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	59	mg/L
3025	MW-5R	915	CALCIUM, DISSOLVED (MG/L CA)	12/05/1989	83	mg/L
3025	MW-5R	915	CALCIUM, DISSOLVED (MG/L CA)	09/06/1989	117	mg/L
3025	MW-5R	915	CALCIUM, DISSOLVED (MG/L CA)	06/16/1989	132	mg/L
3025	MW-5R	915	CALCIUM, DISSOLVED (MG/L CA)	03/21/1989	114	mg/L

Lic#	Point Name	Parm Code	Parameter Description	Sample Date	Result Value	Result Unit
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	302	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/27/2022	436	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/12/2022	402	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/12/2021	278	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2021	290	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	306	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/28/2020	284	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2019	314	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	310	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/22/2018	392	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	09/21/2018	460	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/24/2018	412	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/24/2017	340	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/07/2017	358	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/06/2017	366	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/11/2017	330	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/25/2017	310	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/29/2016	242	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/13/2016	288	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/07/2016	304	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/05/2016	298	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/21/2015	300	mg/L
3025	MW34A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/21/2015	324	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/27/2023	326	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/27/2022	302	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2022	334	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/14/2021	326	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/14/2021	328	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	320	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/29/2020	340	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/03/2020	316	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/09/2019	310	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/03/2019	318	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/08/2018	372	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/25/2018	328	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/24/2017	314	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/08/2017	342	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/06/2017	344	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/11/2017	342	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/25/2017	328	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/29/2016	316	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/13/2016	324	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/08/2016	316	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/05/2016	322	mg/L
3025	MW84A	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/22/2015	316	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/27/2023	394	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/27/2022	440	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/12/2022	506	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/12/2021	374	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2021	362	mg/L

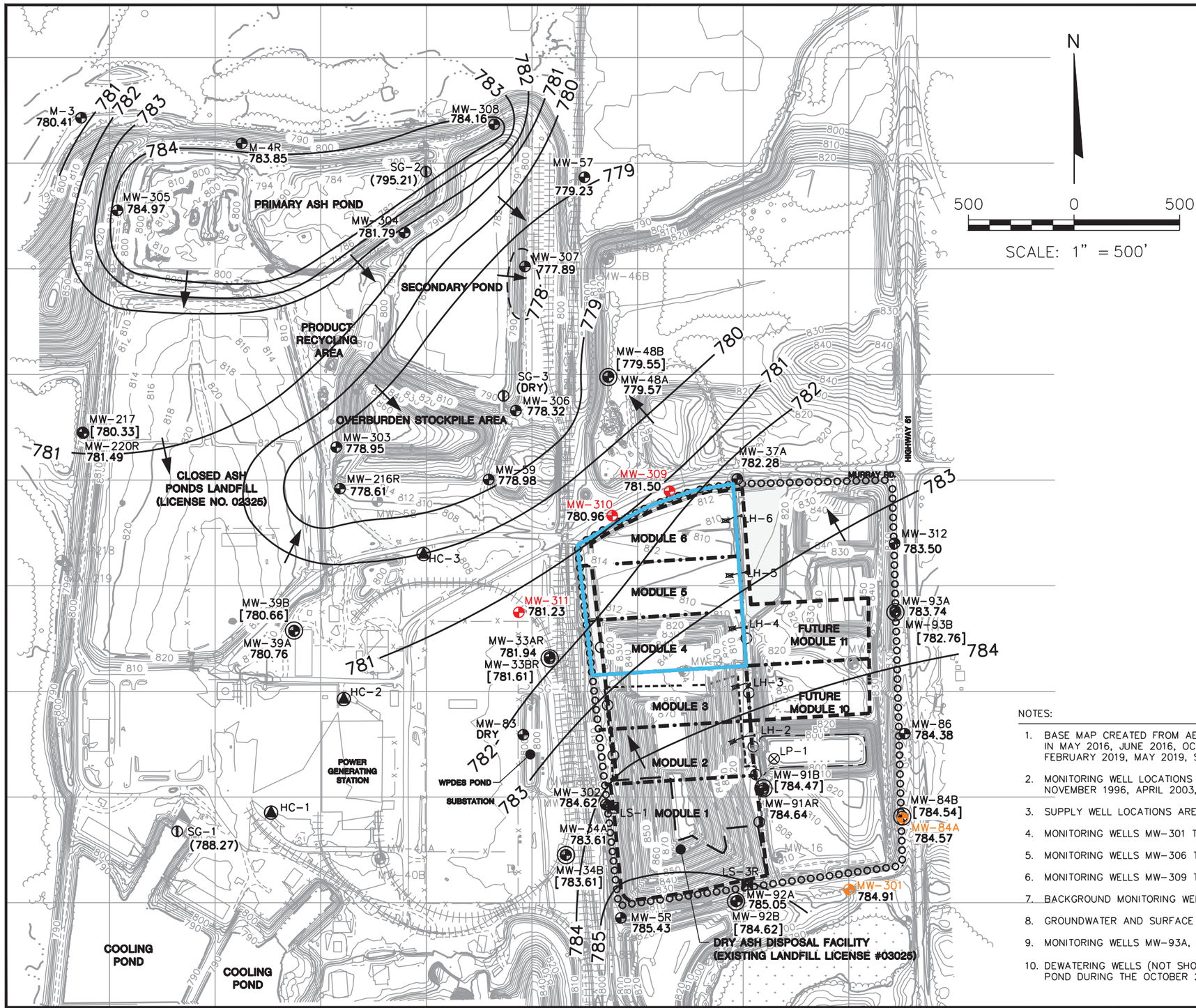
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	270	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/28/2020	376	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2019	634	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	784	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/22/2018	388	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	09/21/2018	466	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/24/2018	692	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/24/2017	606	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/07/2017	598	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/06/2017	492	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/11/2017	446	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/25/2017	426	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/29/2016	440	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/13/2016	456	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/07/2016	364	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/05/2016	354	mg/L
3025	MW-33AR	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/21/2015	356	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/27/2023	526	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/27/2022	282	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2022	422	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/14/2021	334	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/14/2021	472	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	412	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/29/2020	452	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/03/2020	462	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/09/2019	418	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	462	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/24/2018	424	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/08/2018	502	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/25/2018	464	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/23/2017	362	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/08/2017	462	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/06/2017	458	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/11/2017	502	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/25/2017	514	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/29/2016	444	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/13/2016	490	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/08/2016	464	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/05/2016	486	mg/L
3025	MW-301	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/22/2015	478	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/27/2023	352	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/27/2022	348	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/12/2022	398	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/14/2021	394	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2021	370	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	378	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/29/2020	404	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/09/2019	274	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	290	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/22/2018	288	mg/L

3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	09/21/2018	280	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/24/2018	598	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/24/2017	446	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/08/2017	470	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/06/2017	466	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/11/2017	436	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/25/2017	384	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/29/2016	330	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/13/2016	360	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/07/2016	344	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/05/2016	312	mg/L
3025	MW-302	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/22/2015	312	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	1250	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/26/2022	1670	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/12/2022	764	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/14/2021	1110	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2021	916	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	1160	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/29/2020	960	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2019	370	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	548	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	09/21/2018	830	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/22/2018	1570	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/23/2018	1210	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/23/2018	548	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/24/2018	478	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/23/2018	562	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	03/23/2018	552	mg/L
3025	MW-309	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/21/2018	576	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	654	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/26/2022	750	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/12/2022	416	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/14/2021	498	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/13/2021	654	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	12/11/2020	700	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	846	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/29/2020	582	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2019	650	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	470	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	09/21/2018	736	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/22/2018	526	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/23/2018	532	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/23/2018	438	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/24/2018	436	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/23/2018	396	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	03/23/2018	398	mg/L
3025	MW-310	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/21/2018	406	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	292	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/27/2022	268	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/12/2022	278	mg/L

3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/14/2021	276	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/14/2021	270	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2020	380	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/29/2020	326	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	10/08/2019	272	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/02/2019	276	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	09/21/2018	424	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/22/2018	332	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/23/2018	372	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/23/2018	352	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/24/2018	304	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/23/2018	262	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	03/23/2018	274	mg/L
3025	MW-311	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/21/2018	260	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/31/2023	354	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/31/2023	354	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/29/2023	408	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/30/2023	334	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	318	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	03/27/2023	320	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/23/2023	278	mg/L
3025	MW-313	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/24/2023	298	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/31/2023	464	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/31/2023	464	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/29/2023	470	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/30/2023	444	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	418	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	03/27/2023	412	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/23/2023	396	mg/L
3025	MW-314	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/24/2023	380	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	08/31/2023	526	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	07/31/2023	486	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	06/29/2023	482	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	05/30/2023	456	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	04/26/2023	452	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	03/27/2023	480	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	02/23/2023	448	mg/L
3025	MW-315	70300	RESIDUE, TOTAL FILTRABLE (TDS) DRIED AT 180C, MG/L	01/24/2023	436	mg/L

Appendix C

Previous Water Table Maps



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- SURFACE WATER SAMPLE LOCATION
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- LEACHATE HEADWELL
- CCR UNIT
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, MAY 2019, SEPTEMBER 2020, AUGUST 2021, AND NOVEMBER 2021.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
8. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON OCTOBER 25-27, 2022.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
10. DEWATERING WELLS (NOT SHOWN) AROUND THE SECONDARY POND WERE PUMPING AND DISCHARGING TO THE PRIMARY POND DURING THE OCTOBER 2022 SAMPLING EVENT.

PROJECT NO.	25224067.00	DRAWN BY:	KP
DRAWN:	12/15/2022	CHECKED BY:	MDB
REVISED:	04/24/2024	APPROVED BY:	

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

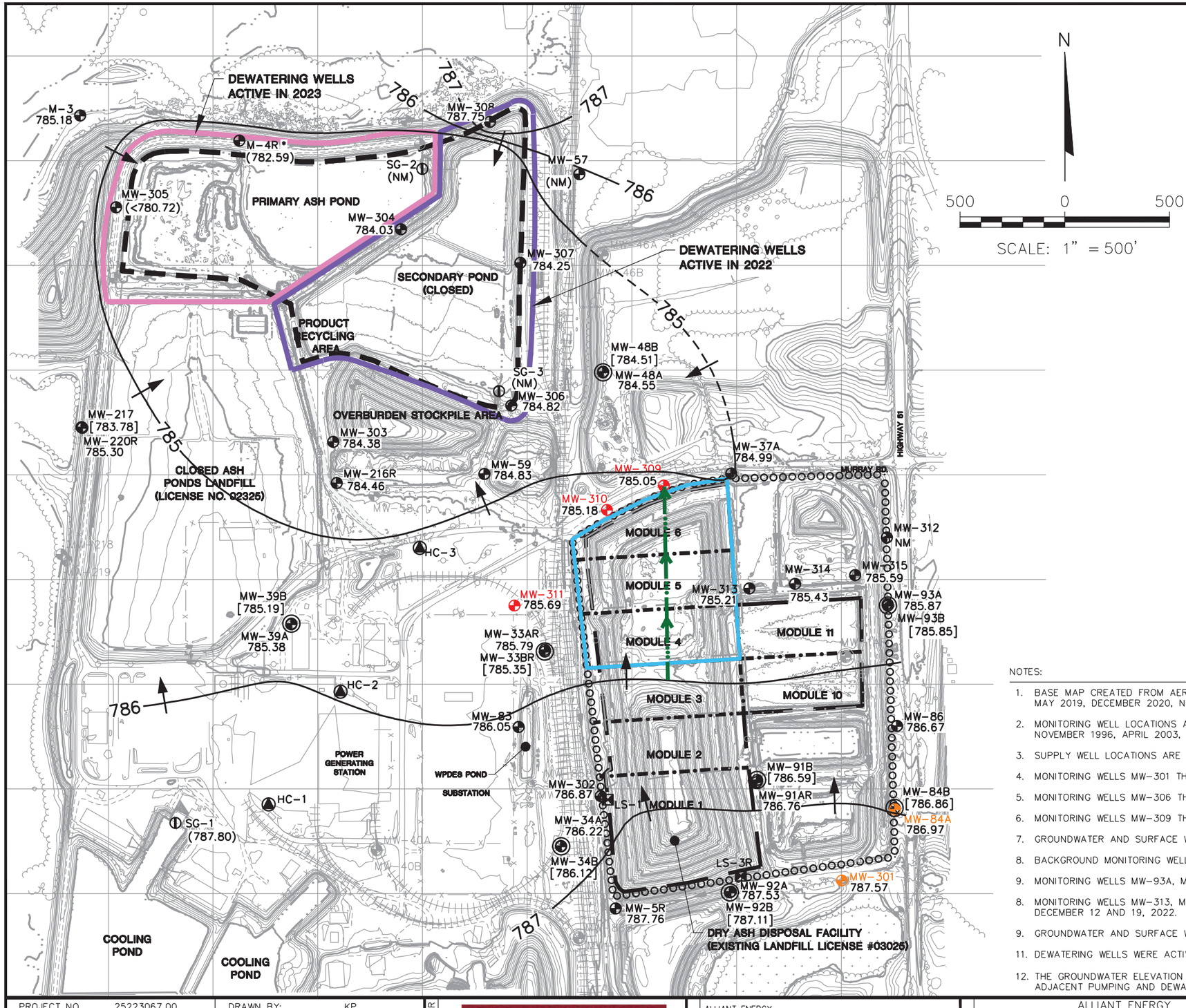
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
OCTOBER 2022

FIGURE
4

I:\25224067.00\Drawings\Modules 4-6\Water Table Map-October 2022.dwg, 4/25/2024 7:38:39 AM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR UNIT
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PRIMARY POND DEWATERING WELLS ACTIVE IN 2023
- SECONDARY POND DEWATERING WELLS ACTIVE IN 2022

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 24-27, 2023.
11. DEWATERING WELLS WERE ACTIVE AROUND THE PRIMARY POND DURING THE APRIL 2023 SAMPLING EVENT.
12. THE GROUNDWATER ELEVATION FOR M-4R (*) WAS NOT USED FOR CONTOURING OF THE WATER TABLE (SHALLOW) DUE TO ADJACENT PUMPING AND DEWATERING ACTIVITIES.

PROJECT NO.	25223067.00	DRAWN BY:	KP
DRAWN:	10/12/2023	CHECKED BY:	NLB
REVISED:	01/22/2024	APPROVED BY:	TK 1/29/2024

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
APRIL 2023

FIGURE
3

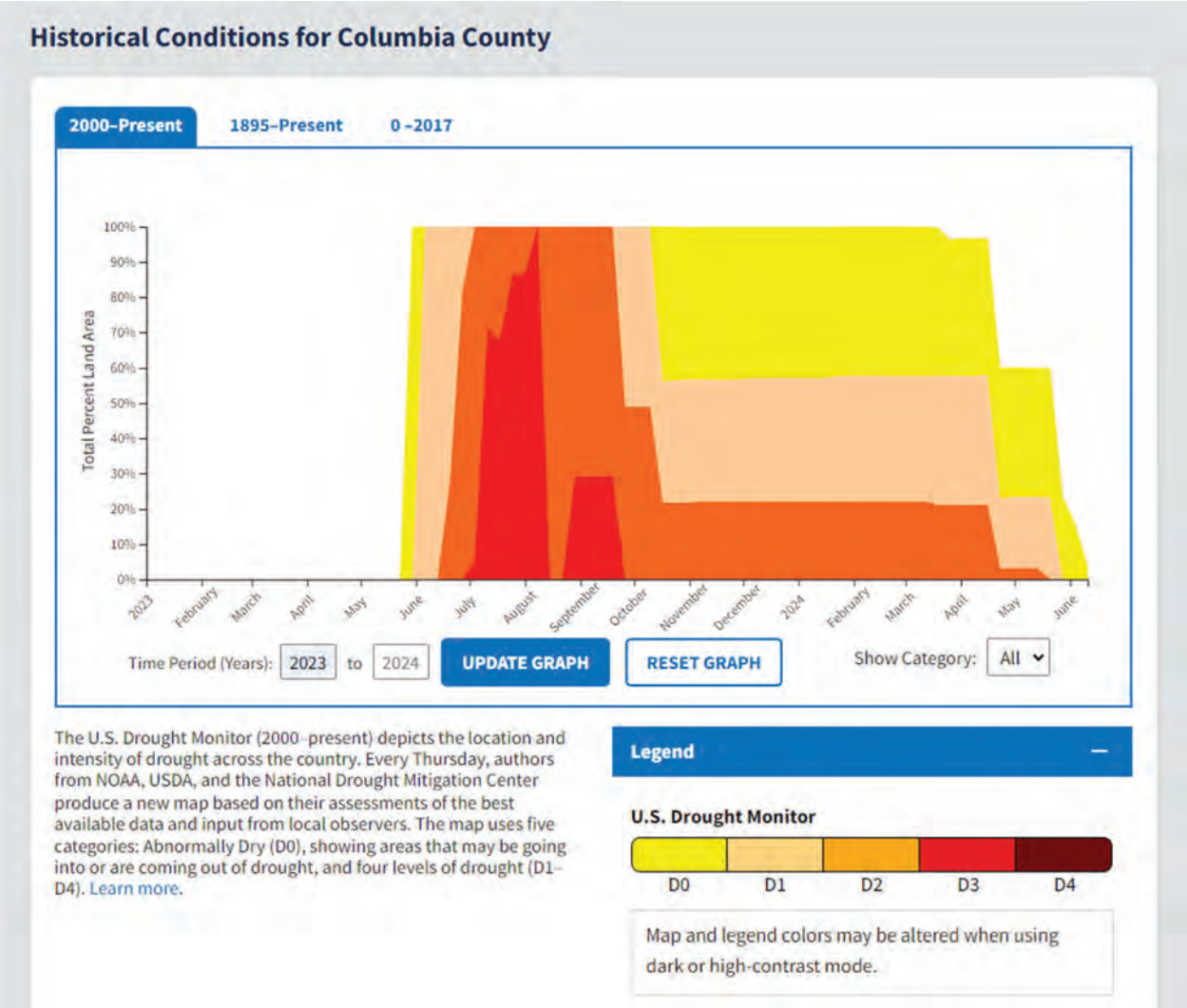
I:\25223067.00\Drawings\Module 4\Water Table Map-April 2023.dwg, 1/22/2024 9:41:17 AM

Appendix D

Drought Conditions Plot

Drought Conditions in Columbia County, Wisconsin, 1/2023 – 6/2024

Source: https://www.drought.gov/states/wisconsin/county/columbia



E2 April 2024 Detection Monitoring Alternative Source Demonstration

Alternative Source Demonstration
April 2024 Detection Monitoring

Dry Ash Disposal Facility, Modules 10 -11
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:

Alliant Energy

SCS ENGINEERS

25224067.00 | December 10, 2024

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

Table of Contents

Tables

Figures

Appendices

I:\25224067.00\Deliverables\COL Mod 10-11 - April 2024 ASD\241210_COL_10-11 LF_Apr24 ASD_Final.docx

PE CERTIFICATION

I, Sherren Clark, hereby certify that the information in this alternate source demonstration is accurate and meets the requirements of 40 CFR 257.94(e)(2). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Dry Ash Disposal Facility. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.

December 10, 2024

(signature) (date)

Sherren Clark, PE

(printed or typed name)

License number E-29863

My license renewal date is July 31, 2026.

Pages or sheets covered by this seal:
Alternative Source Demonstration, April 2024 Detection Monitoring, Dry Ash Disposal Facility, Modules 10-11 Columbia Energy Center, Pardeeville, Wisconsin (Entire Document)

[This page left blank intentionally]

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 (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 CFR 257.94(e)(2). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.94(E)(2) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

The owner and operator may demonstrate that a source other than the CCR Unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels.

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 indicating a statistically significant increase (SSI) over background levels during detection monitoring under the CCR Rule.

This ASD report is evaluating the SSIs for calcium and total dissolved solids (TDS) observed in the statistical evaluation of the April 2024 detection monitoring event and the May 2024 resampling event at the Columbia Energy Center (COL) Dry Ash Disposal Facility, Modules 10-11 CCR Unit (Mod 10-11).

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). The COL site is an active coal-burning generating station, which has been burning coal and disposing of CCR on site since the mid-1970s. The layout of the site is shown on **Figure 2**. The COL property includes two areas of CCR storage and disposal. These are the Dry Ash Disposal Facility (ADF) and the Ash Ponds Facility. This ASD evaluates the conditions at the site for Mod 10-11 of the ADF only. The Module 10-11 CCR Unit became operational in 2023. The ADF is operated under the Wisconsin Department of Natural Resources (DNR) License No. 3025.

The groundwater monitoring system at the COL Mod 10-11 facility monitors a single CCR Unit:

- COL Dry Ash Disposal Facility – Modules 10-11

A map showing the CCR Unit and all background (or upgradient) and downgradient monitoring wells with identification numbers for the CCR groundwater monitoring program and the state monitoring program is provided on **Figure 2**. Separate monitoring systems have been established for the other CCR Units at COL, which include Modules 1-3 of the COL ADF, Modules 4-6 of the COL ADF, the Primary Ash Pond, and the Secondary Ash Pond.

1.3 STATISTICALLY SIGNIFICANT INCREASES IDENTIFIED

The statistical evaluation was completed in accordance with 40 CFR 257.93(f)(3) using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the Upper Prediction Limit (UPL) to evaluate whether an SSI has occurred. The evaluation was based on an intrawell UPL with 1-of-2 retesting, calculated using Sanitas software. The retesting approach results in a slightly lower UPL, but only 1 of 2 samples collected for the event (original and retest) must meet the UPL to demonstrate compliance. The intrawell UPLs, the April 2024 sampling results, and the May 2024 resampling results are summarized in the attached **Table 1**.

The Apirl 2024 SSIs include the following parameters and wells:

- Boron: MW-315
- Calcium: MW-315
- TDS: MW-315

Concentration trends for the parameters with SSIs are shown in **Appendix A**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**).
- Evaluation of potential that SSIs are due to methodology or analysis (**Section 3.0**).
- Evaluation of potential that SSIs are due to natural sources or man-made sources other than the CCR Units (**Section 4.0**).
- ASD conclusions (**Section 5.0**).
- Monitoring recommendations (**Section 6.0**).

Historical monitoring results from background and compliance sampling for the CCR Rule constituent results with an SSI are provided in **Table 2**. The laboratory reports for the April 2024 detection monitoring event and the May 2024 resampling event will be included in the 2024 Annual Groundwater Monitoring and Corrective Action Report to be submitted in January 2025. Complete laboratory reports for the background monitoring events were included in previous annual groundwater monitoring and corrective action reports.

2.0 BACKGROUND

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

- Geologic and hydrogeologic setting
- CCR Rule monitoring system
- Other monitoring wells

2.1 REGIONAL GEOLOGY AND HYDROGEOLOGY

2.1.1 Regional Information

For the purposes of groundwater monitoring, the surficial sand and gravel aquifer is considered to be the uppermost aquifer unit, as defined under 40 CFR 257.53, at the COL ADF. Immediately underlying the surficial sand and gravel aquifer is the Cambrian-Ordovician sandstone aquifer.

Additional details on the regional geology and hydrogeology were provided in the 2023 Annual Groundwater Monitoring and Corrective Action Report for the Modules 10-11 CCR Unit (SCS, 2024).

2.1.2 Site Information and Groundwater Flow

Soils at the site are primarily sand to a depth of approximately 50 to 100 feet and overlie sandstone bedrock. Soils encountered during the site feasibility study for the COL ADF were described as generally sandy with interbedded silty clay lenses up to 20 feet thick (Warzyn Engineering, Inc. [Warzyn], 1978). During drilling of CCR wells MW-301, MW-313, MW-314, and MW-315, the unconsolidated materials were identified as consisting primarily of silty sand and sand. The boring log for previously installed monitoring well MW-84A shows silty sand and sand as the primary unconsolidated materials at these locations. CCR monitoring wells MW-84A and MW-301 are screened within the unconsolidated sand unit.

Shallow groundwater at the site generally flows to the northwest across the existing landfill area, then generally flows west toward the Wisconsin River. A groundwater flow map for April 2024 is shown on **Figure 3.** The April 2024 groundwater monitoring event was the first semi-annual monitoring event including water level measurements from new monitoring wells MW-317, MW-318, and MW-319. Flow in the vicinity of the new monitoring wells is to the southwest. The groundwater elevation data for the state and CCR monitoring program wells are provided in **Table 3**. A time series plot of groundwater elevations at the Mod 10-11 wells is provided in **Appendix A**.

Historically, localized groundwater mounding was associated with the ash ponds; however, flow in the ash ponds area changed in 2022 and 2023 as the ponds were closed and CCR was removed. In 2022, dewatering wells located around the Secondary Ash Pond lowered the water table near the Secondary Ash Pond and discharged groundwater to the Primary Ash Pond. Beginning in spring 2023, dewatering activities switched to the Primary Ash Pond area, and groundwater pumped from dewatering wells around the Primary Ash Pond was discharged to the large cooling pond south of the generating station. Groundwater dewatering in the Primary Ash Pond was completed in September 2023.

Dewatering for ash pond closures may have affected water levels and groundwater flow directions in the Mod 10-11 area.

2.2 CCR RULE MONITORING SYSTEM

The groundwater monitoring system established in accordance with the CCR Rule consists of two upgradient (background) monitoring wells and three downgradient monitoring wells. The background wells include MW-301 and MW-84A. The downgradient wells include MW-313, MW-314, and MW-315. These wells were abandoned in May 2024 to accommodate the construction of new Modules 12 and 13. The network will be re-certified with new monitoring wells. The background wells are shared with the other COL CCR Units. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 26 to 43.5 feet, measured from the top of the well casing.

2.3 OTHER MONITORING WELLS

Additional groundwater monitoring wells currently exist at COL as part of the monitoring systems developed for the state monitoring program and for the other CCR Units.

Monitoring wells for the state monitoring program are installed in the unconsolidated sand and gravel unit, which is the uppermost aquifer as defined under 40 CFR 257.53. This shallow monitoring system includes water table wells and mid-depth piezometers. Well depths range from approximately 14 to 76 feet, measured from the top of the well casing.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSI is due to a source other than the regulated CCR Unit, 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 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

Field notes and sampling results were reviewed to determine if any sampling error may have caused or contributed to the observed SSIs. 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 any indication of potential contamination from sampling equipment or containers.

SCS collected samples on April 15 and 17, 2024. Retest samples were collected on May 20, 2024. Field parameter results were compiled by SCS and provided to the laboratory for inclusion in the laboratory report. SCS did not identify issues with the sample collection based on review of the data and field notes.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the April 2024 detection monitoring event and the May 2024 resampling event were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to observed SSIs for boron, calcium, and TDS. 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.

Following the evaluation of the April 2024 sampling results, SCS resampled MW-315 for the parameters that exceeded UPLs at MW-315 in the April 2024 event, including boron, calcium, and TDS. Based on the review of the laboratory reports, SCS did not identify any laboratory quality control flags or issues in the laboratory reports that affect the usability of the data for detection monitoring.

Time series plots of the boron, calcium, and TDS analytical data were also reviewed for any anomalous results that might indicate a possible sampling or laboratory error (e.g., dilution error or incorrect sample labeling). The time series plots are provided in Appendix A. The boron, calcium, and TDS concentrations observed are generally similar to previous results and no anomalous results were identified.

3.3 STATISTICAL EVALUATION REVIEW

The review of the statistical results and methods included a quality control check of the following:

- Input analytical data vs. laboratory analytical reports
- Statistical method and process for each SSI

Based on the April 2024 sampling results and the May 2024 retest results, SSIs for boron, calcium, and TDS occurred for MW-315 for the April 2024 semiannual event.

Based on the review of the statistical evaluation, SCS did not identify any errors in the statistical evaluation that caused or contributed to the determination of intrawell SSIs for boron, calcium, and TDS at MW-315. However, the small size of the intrawell background data set (eight samples per well) and the short timeframe over which they were collected (8 months) may have contributed to the identification of the April 2024 results as SSIs. The small background data set collected from January through August 2023 likely does not represent the full range of variability in background concentrations at the compliance monitoring wells. The Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (U.S. EPA, 2009; Section 5.3.1) recommends periodic updating of background for both intrawell and interwell analyses; however, newer data with SSIs cannot be added to the background data set unless and until the newer data has been confirmed to represent background variability and not a release from the CCR unit.

There is also evidence that the limited background boron dataset used to calculate the intrawell UPL at MW-315 does not capture variation of background boron at the site. The April and May 2024 boron concentrations for samples from MW-315 were both below the interwell UPL calculated for the COL Mod 1-3 CCR unit using the shared background wells, MW-84A and MW-301. The interwell boron UPL is 35.6 micrograms per liter (µg/L); therefore, if interwell statistics were used for boron, the concentrations detected at MW-315 would not represent an SSI (see Mod 1-3 results table in Appendix B for interwell UPLs).

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, there were no changes to the SSI determinations for the April 2024 monitoring event based on the methodology and analysis review, and no errors caused or contributed to the reported SSIs. The use of intrawell statistics rather than interwell statistics contributed to the SSI for boron.

4.0 ALTERNATIVE SOURCES

This section discusses the potential alternative sources for the boron, calcium, and TDS SSIs at downgradient monitoring well MW-315, identifies the most likely alternative source(s), and presents the lines of evidence indicating that an alternative source is the most likely cause of the observed SSIs.

4.1 POTENTIAL CAUSES OF SSI

4.1.1 Natural Variation

The statistical analysis was completed using an intrawell approach, comparing the April 2024 detection monitoring results to the UPLs calculated based on background sampling of the compliance wells (MW-313, MW-314, and MW-315). If concentrations of a constituent that is present in the aquifer vary with time, then the potential exists that the compliance sampling concentrations may be higher than background concentrations due to natural temporal variation.

Temporal variation can occur seasonally or due to longer-term events such as changes in infiltration patterns and groundwater flow directions caused by wet or dry years.

Background sampling at the three Mod 10-11 compliance wells was performed prior to disposal of CCR in Mod 10-11. Because the background sampling at the three compliance wells was performed after other potential man-made sources of boron, calcium, and TDS had been in operation for many years, it is difficult to determine how much of the variation in boron, calcium, and TDS concentrations is due to natural sources versus man-made alternative sources associated with the long-term use of the property, as discussed in Section 4.1.2. Based on comparison to the two upgradient wells, it appears likely that calcium and TDS may reflect man-made sources. As discussed in Section 3.3, the boron concentration is within the range of upgradient background concentrations and likely reflects natural variation. Regardless of the source, natural temporal variations in infiltration and groundwater flow direction may have contributed to the SSIs for boron, calcium, and TDS at MW-315.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the boron, calcium, and TDS SSIs could include the closed ash pond landfill, the active and inactive ash ponds (currently in the closure process), the surface water/leachate collection pond for the ADF, the former ash pond effluent ditch, the coal storage area, railroad operations, road salt use, storm water runoff from the plant entrance road, and/or other plant operations.

Historically, groundwater flow directions have varied significantly at the site due to changes in water and ash management, making it difficult to identify a specific source for boron, calcium, and TDS in the area of the Mod 10-11 compliance monitoring wells. Furthermore, recent dewatering activities around the Secondary Ash Pond (2022) and the Primary Ash Pond (2023) likely also affected groundwater flow, further complicating the evaluation of historic sources. Nevertheless, there are several lines of evidence indicating that the April 2024 SSIs for boron, calcium, and TDS are not due to a release from the Mod 10-11 CCR unit.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSIs for boron, calcium, and TDS in compliance well MW-315, relative to the intrawell background sampling, are due to one or more alternative sources including:

1. The Mod 10-11 CCR Unit was constructed with a composite liner system and leachate collection system. Modules 10-11 have only been receiving CCR since mid-2023; therefore, it is very unlikely that a release from Mod 10-11 could have reached MW-315 by April 2024. More information about the composite liner is presented in Section 4.2.1.

2. The boron, calcium, and TDS concentrations at MW-315 in April and May 2024 were within the range of results observed historically at nearby state and CCR wells. More information on background concentrations for these parameters is provided in Section 4.2.2.

3. Temporal variability between background sampling during 2023 and detection monitoring in April and May 2024 is expected because active groundwater pumping for dewatering in the ash pond area likely induced changes in groundwater levels and flow patterns. The influence of dewatering is discussed in Section 4.2.3.

4. Columbia County experienced drought conditions from June 2023 through the spring of 2024. Lower than normal precipitation likely contributed to the observed decrease in water levels and may have contributed to increasing concentrations of boron, calcium, and TDS in groundwater. The potential influence of the drought is discussed in Section 4.2.4.

5. As discussed in Section 3.3, the small background data set was collected over a short period of time from January through August 2023, and likely does not represent the full range of spatial and temporal variability in background concentrations at the site.

These lines of evidence and the supporting data are discussed in more detail in the following sections.

4.2.1 Mod 10-11 Composite Liner

The Mod 10-11 CCR Unit was constructed with a composite liner system and a leachate collection system, and has only been receiving CCR since June 2023. Given the short active timeframe, it is very unlikely that a release from Mod 10-11 could have reached MW-315 by April 2024. The liner system includes the following:

- Two feet of compacted clay
- Geosynthetic clay liner (GCL)
- Sixty-mil high density polyethylene (HDPE) geomembrane
- Leachate collection drainage layer
- Leachate collection piping

The Modules 10-11 liner construction was completed in 2023, and CCR placement in Modules 10-11 began in June 2023. Extensive testing was performed as part of the DNR-approved construction documentation (SCS, 2023) to document the proper construction of the liner.

Given the liner system in place, a release from Mod 10-11 would have to penetrate the HDPE liner at a flaw, flow vertically through the GCL and compacted clay liner, and travel with the groundwater approximately 100 feet north to MW-315 from Modules 10-11 in less than a year. Based on the hydraulic conductivity of the liner clay (10^{-8} centimeters/second) and the lack of any evidence of a flaw in the HDPE liner, it is very unlikely that changes in boron, calcium, and TDS concentrations at MW-315 reflect a release from Mod 10-11.

4.2.2 Boron, Calcium, and TDS Concentrations at Other Wells

The concentrations of boron, calcium, and TDS of the April 2024 sampling and May 2024 resampling events are within the range of historical results at other state program and CCR program wells at Columbia.

The historical boron, calcium, and TDS concentrations from the three Mod 10-11 wells and the two background wells are shown in **Table 2** and on the time series plots in **Appendix A.** Additional historical data from other wells on site is included in **Appendix B**.

The April 2024 boron result for MW-315 was lower than the result for upgradient background well MW-301 (**Table 1**). The boron result was also less than the intrawell background monitoring results at well MW-313 in 2023 (**Table 2** and **Appendix A**).

Calcium and TDS are not required parameters for the state monitoring wells, but calcium was sampled for at several wells in the period from 1984 through 1989. Calcium concentrations above the concentrations observed at MW-315 were reported for several wells. For example, results for upgradient well MW-86 ranged from 76.0 to 142.7 milligrams per liter (mg/L) (**Appendix B**).

TDS results for monitoring wells associated with other CCR units at COL have exceeded the TDS concentrations observed at MW-315 and were not attributed to releases from the CCR units. For example, the intrawell UPLs established based on background monitoring at MW-309 and MW-310, which monitor the COL MOD 4-6 CCR Unit, are higher than the MW-315 TDS results. The intrawell UPLs are 1,600 mg/L for MW-309 and 773 mg/L for MW-310 (see Mod 4-6 results table in **Appendix B**).

The results from other wells indicate that, while the boron, calcium, and TDS concentrations have increased at MW-315 since the short period of background monitoring was completed, they are within the range of values that have been identified as background at the site.

4.2.3 Influence of Dewatering Well Pumping

Temporal variability between background sampling during 2023 and detection monitoring in April and May 2024 is expected because changing conditions in the ash pond area in 2022 and 2023 likely induced changes in groundwater levels and flow patterns. Historically, the ash ponds were a source of infiltration and groundwater flow maps showed a groundwater mound in the pond area. In 2022, dewatering wells were installed around the Secondary Pond, and groundwater was pumped to lower the water table below the pond to facilitate CCR removal and pond closure. Pumped groundwater was discharged to the Primary Ash Pond. In 2023, groundwater was pumped from dewatering wells installed around the Primary Ash Pond to lower the water table below the pond to facilitate CCR removal and pond closure. The pumped groundwater was discharged to the large cooling pond south of the generating station.

In the area of MOD 10-11, the April 2024 groundwater flow map (**Figure 3**) shows flow toward the northwest. The dewatering activities at the Primary Ash Pond were completed in September 2023, and excavation of CCR material from the Primary Ash Pond was completed in early October 2023. With the completion of closure activities for the Primary and Secondary Ash Ponds, this area is no longer a source or sink for groundwater flow.

Water table maps for the previous two semiannual monitoring events for the COL CCR Units (**Appendix C**) show variations in flow directions associated with dewatering. In April 2023, when background monitoring was in progress, flow in the MOD 10-11 area was north. Flow during the October 2023 event showed flow to the northwest.

The water table map for the April 2024 event also shows flow to the northwest; however, the addition of monitoring wells to monitor the new MOD 12-13 area changes the apparent flow directions in the northeast corner of the ADF. With the new wells added, MW-315 appears to be in an

area of converging flow to the northwest and southwest, with the local flow direction near MW-315 being to the west. If the flow is to the west, then MW-315 may not have been downgradient from the MOD 10-11 CCR Unit in the April 2024 monitoring event and changes in water quality may reflect changes in upgradient conditions.

The variations in flow direction between the background monitoring period (January to August 2023) and the October 2023 and April 2024 monitoring events may have contributed to temporal variability in the boron, calcium, and TDS concentrations at MW-315.

The time series plot of groundwater elevations (**Appendix A**) shows a decrease in water levels from spring of 2023 through December 2023 and only a slight increase in levels by the time of the April 2024 sampling event. The plot shows water levels at the two upgradient background wells, located further from the pond closure area, and the three compliance wells, located closer to the pond closure area. From the time Modules 10-11 began accepting CCR in mid-2023, water levels at all five wells followed a generally decreasing trend. The decreasing trend may reflect a combination of the effects of dewatering at the Primary Pond and the effects of the drought conditions at the site as discussed below.

The variability in water levels and flow directions associated with the dewatering activities likely contributed to temporal variability in boron, calcium, and TDS concentrations at MW-315. Conditions during 2023 were variable, and conditions in October 2023 and April 2024 were not the same as those during the short background monitoring period used to develop the intrawell UPLs.

4.2.4 Drought Conditions in 2023 and 2024

Beginning in early summer of 2023 and lasting into early 2024, Columbia County was under drought conditions. Most of the county was under Severe to Extreme Drought conditions from June until early October as shown on the plot of drought conditions in **Appendix D**. Drought conditions continued beyond the April 2024 sampling event. These conditions likely contributed to the decrease in groundwater levels and may also have contributed to the increase in boron, calcium, and TDS concentrations, due to the lack of precipitation.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSIs reported for boron, calcium, and TDS at MW-315 demonstrate that the SSIs are likely due to sources other than the Mod 10-11 CCR Unit.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.94(e)(2) of the CCR Rule, the COL Mod 10-11 CCR Unit may continue with detection monitoring based on this ASD. The ASD report will be included in the 2024 Annual Report due January 31, 2025.

7.0 REFERENCES

SCS Engineers (SCS), 2023, 2022 Modules 10 and 11 Construction Documentation Report, Columbia Energy Center, Dry Ash Disposal Facility, Pardeeville, WI, February 8, 2023.

SCS, 2024, 2023 Annual Groundwater Monitoring and Corrective Action Report, Columbia Energy Center, Dry Ash Disposal Facility, Modules 10-11, Pardeeville, WI, January 31, 2024.

U.S. EPA, 2009, Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance, EPA 530-R-09-007, March 2009.

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

Warzyn Engineering, Inc., 1978, Feasibility Study, Proposed Fly Ash and/or Scrubber Sludge Disposal Facility – Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

Warzyn Engineering, Inc., 1981, Water Table Contour Map 2/4/81, Drawing No. C7134-94.

Tables

Table 1. Groundwater Analytical Results Summary - Assessment Monitoring
Columbia Generating Station - Modules 10-11 / SCS Engineers Project #25224067.00

	Background Wells		Compliance Wells						
Parameter Name	**MW-84A**	**MW-301**	**MW-313**		**MW-314**		**MW-315**		
	4/17/2024	4/17/2024	Intrawell UPL	4/15/2024	Intrawell UPL	4/15/2024	Intrawell UPL	4/15/2024	5/20/2024
Groundwater Elevation, ft amsl	784.90	785.27		783.16		783.42		783.53	783.62
Appendix III									
Boron, ug/L	11.9	24.9	252	22.7	18.3	13.5	15.3	20.2	17.7
Calcium, ug/L	73,700	102,000	75,400	65,400	116,000	110,000	132,000	149,000	140,000
Chloride, mg/L	3.2	1.6 J	45.9	12.0	3.78	3.2	7.30	2.9	--
Fluoride, mg/L	0.12 J	<0.095	0.610	<0.095	0.620	<0.095	0.095	<0.095	--
Field pH, Std. Units	7.68	7.06	7.71	7.24	7.50	6.94	7.46	6.68	6.60
Sulfate, mg/L	1.4 J	11.5	24.2	7.3	5.51	4.6	13.6	4.4	--
Total Dissolved Solids, mg/L	322	458	431	304	515	492	541	660	642

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

Abbreviations:
mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase
UPL = Upper Prediction Limit
LOD = Limit of Detection
LOQ = Limit of Quantitation
-- = Not Analyzed

Lab Notes:
J = Estimated concentration at or above the LOD and below the LOQ.

Notes:
1. Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
2. Intrawell UPLs were calculated from background sampling results for the compliance wells from January 2023 through August 2023.

Created by:	RM	Date:	8/15/2022
Last revision by:	RM	Date:	6/3/2024
Checked by:	GK	Date:	7/1/2024
Proj Mgr QA/QC:	TK	Date:	8/9/2024

Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 10-11

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Total Dissolved Solids (mg/L)
Background	MW-301	12/22/2015	26.5	126,000	478
		4/5/2016	25.2	115,000	486
		7/8/2016	23.6	108,000	464
		10/13/2016	30.6	118,000	490
		12/29/2016	32.8	129,000	444
		1/25/2017	32.6	124,000	514
		4/11/2017	28.8	120,000	502
		6/6/2017	21.3	111,000	458
		8/8/2017	30.6	108,000	462
		10/23/2017	34.3	87,200	362
		4/25/2018	24.3	112,000	464
		8/8/2018	22.8	105,000	502
		10/24/2018	27.8	101,000	424
		4/2/2019	26.9	126,000	462
		10/9/2019	35.9	114,000	418
		2/3/2020	27.9	113,000	462
		5/29/2020	21.3	112,000	452
		10/8/2020	28.8	93,000	412
		4/14/2021	22.2	117,000	472
		10/14/2021	31.4	67,800	334
		4/13/2022	28.7	97,300	422
		10/27/2022	37.5	62,800	282
		4/27/2023	20.1	120,000	526
		10/11/2023	36.2	52,300	300
		4/17/2024	24.9	102,000	458
	MW-84A	12/22/2015	11.9	74,000	316
		4/5/2016	14.0	72,200	322
		7/8/2016	14.7	67,600	316
		10/13/2016	11.1	74,000	324
		12/29/2016	14.7	76,000	316
		1/25/2017	16.1	70,800	328
		4/11/2017	12.9	73,200	342
		6/6/2017	14.8	76,100	344
		8/8/2017	22.9	74,900	342
		10/24/2017	13.8	77,500	314
		4/25/2018	25.0	76,600	328
		8/8/2018	12.8	76,000	372
		10/24/2018	10.1	74,000	330
		4/3/2019	13.6	80,100	318
		10/9/2019	12.0	73,500	310
		2/3/2020	15.7	72,700	316
		5/29/2020	10.0	77,600	340
		10/8/2020	9.7	69,200	320
		4/14/2021	14.3	69,100	328
		10/14/2021	11.1	75,300	326
		4/13/2022	10.5	75,100	334
		10/27/2022	12.2	78,400	302
		4/27/2023	10.3	68,600	326
		10/11/2023	14.0	65,100	324
		4/17/2024	11.9	73,700	322

Table 2. Historical Analytical Results for Parameters with SSIs
Columbia Dry ADF, Modules 10-11

Well Group	Well	Collection Date	Boron (µg/L)	Calcium (µg/L)	Total Dissolved Solids (mg/L)
Compliance	MW-313	1/24/2023	25.1	66,800	298
		2/23/2023	46.6	62,900	278
		3/27/2023	67.1	63,300	320
		4/26/2023	108.0	63,900	318
		5/30/2023	191.0	69,100	334
		6/29/2023	189.0	71,900	408
		7/31/2023	97.1	70,000	354
		8/31/2023	62.3	68,600	354
		10/11/2023	41.3	66,800	372
		4/15/2024	22.7	65,400	304
	MW-314	1/24/2023	14.2	95,000	380
		2/23/2023	13.0	96,200	396
		3/27/2023	15.2	99,300	412
		4/26/2023	15.5	92,400	418
		5/30/2023	16.9	102,000	444
		6/29/2023	15.4	103,000	470
		7/31/2023	12.4	109,000	464
		8/31/2023	13.0	109,000	464
		10/11/2023	12.4	106,000	526
		12/27/2023	--	--	464
		4/15/2024	13.5	110,000	492
	MW-315	1/24/2023	11.7	107,000	436
		2/23/2023	9.3	100,000	448
		3/27/2023	11.9	106,000	480
		4/26/2023	12.0	101,000	452
		5/30/2023	13.6	108,000	456
		6/29/2023	13.3	110,000	482
		7/31/2023	12.3	121,000	486
		8/31/2023	12.6	125,000	526
		10/11/2023	15.0	134,000	602
		12/27/2023	--	142,000	618
		4/15/2024	20.2	149,000	660
		5/20/2024	17.7	140,000	642

Abbreviations:
µg/L = micrograms per liter or parts per billion (ppb)
mg/L = milligrams per liter or parts per million (ppm)
-- = Not analyzed

Note:
(1) Complete laboratory reports included in the Annual Groundwater Monitoring and Corrective Action Reports.

Created by: RM Date: 5/31/2024
Last revision by: RM Date: 10/3/2024
Checked by: NLB Date: 11/21/2024

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	MW-1AR	MW-4	MW-5R	MW-33AR	MW-33BR	MW-34A	MW-34B	MW-37A	MW-83	MW-84A	MW-84B	MW-86	MW-91AR	MW-91B	MW-92A	MW-92B	MW-93A	MW-93B	MW-312
	Top of Casing Elevation (feet amsl)	822.55	819.74	805.44	808.29	808.39	805.95	806.05	813.04	807.96	814.28	814.26	824.79	809.03	808.45	808.47	808.41	827.89	827.71	826.79
	Screen Length (ft)																	10	5	10
	Total Depth (ft from top of casing)	44.40	39.58	25.97	31.08	57.50	35.43	56.95	31.80	25.42	40.21	52.02	45.43	32.90	52.38	28.94	51.75	50.7	82.5	52.5
	Top of Well Screen Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	787.19	750.21	784.29
	Measurement Date																			
	October 2, 2012	783.41	783.70	784.96	782.38	782.23	783.03	782.99	782.66	dry	783.84	783.94	783.81	784.09	783.90	784.49	784.06	NI	NI	NI
	April 15, 2013	785.44	784.02	786.09	784.16	784.14	784.74	784.79	783.87	784.49	785.83	785.76	785.22	785.14	785.01	785.75	785.34	NI	NI	NI
	October 8, 2013													785.66	785.42	785.97	785.52	NI	NI	NI
	October 15, 2013	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.66	785.42	785.97	785.52	NI	NI	NI
	April 14, 2014	784.95	784.09	785.63	783.74	783.91	784.63	784.70	783.45	783.73	785.58	785.52	784.96	785.04	784.96	785.99	785.54	NI	NI	NI
	October 2-3, 2014	785.03	785.39	786.08	784.37	784.28	784.57	784.54	784.56	dry	785.24	785.18	785.19	785.47	785.28	785.75	785.33	NI	NI	NI
	April 13-14, 2015	783.96	783.63	785.25	783.01	782.74	783.65	783.95	782.87	dry	784.43	784.51	784.17	784.48	784.37	785.07	784.66	NI	NI	NI
	October 6-7, 2015	784.28	784.44	785.72	783.68	783.33	784.05	784.02	783.66	dry	784.80	784.76	784.66	784.89	784.70	785.20	784.76	NI	NI	NI
	April 4-6, 2016	785.82	aband	787.02	785.29	785.07	785.63	785.67	784.76	785.43	786.37	786.26	785.89	786.05	785.95	786.61	786.21	NI	NI	NI
	October 11-13, 2016	786.64	aband	788.00	787.36	786.46	786.45	786.32	786.40	786.81	787.22	787.11	786.96	787.17	786.81	787.68	787.25	NI	NI	NI
	April 10-13, 2017	786.96	aband	788.13	786.39	785.99	786.30	786.28	786.34	786.23	787.16	787.06	786.96	787.24	787.03	787.90	787.60	NI	NI	NI
	October 3-5, 2017	785.48	aband	786.66	784.51	784.22	784.67	784.63	784.86	784.29	NM	786.49	785.58	786.08	785.83	786.47	786.02	NI	NI	NI
	October 9-10, 2017	NM	aband	NM	NM	NM	NM	NM	NM	NM	785.56 (6)	NM	NM	NM	NM	NM	NM	NI	NI	NI
Dry Ash Facility (Facility ID #03025	February 21, 2018	783.97	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.68	784.46	NM	NM	NI	NI	NI
	April 23-25, 2018	783.99	aband	785.36	783.09	786.36	781.77	780.79	783.28	783.32	785.88	784.91	782.54	784.71	784.53	785.23	784.81	NI	NI	NI
	October 23-25, 2018	788.25	aband	789.71	788.77	787.96	787.88	787.73	787.62	788.26	788.32	788.19	788.21	788.59	788.31	789.32	788.87	NI	NI	NI
	April 1-4, 2019	787.05	aband	788.64	786.63	786.54	786.82	786.92	786.47	786.78	787.35	787.34	787.16	787.45	787.18	788.04	787.63	NI	NI	NI
	October 7-9, 2019	787.26	aband	789.23	788.26	787.64	787.92	787.74	786.77	788.90	787.79	787.73	787.44	787.78	787.62	788.63	788.17	NI	NI	NI
	May 27-28, 2020	786.92	aband	788.34	786.01	785.75	785.98	785.99	786.22	786.03	787.02	786.99	786.94	787.26	787.05	787.86	787.47	NI	NI	NI
	October 7-8, 2020	785.95	aband	787.76	785.91	785.45	785.70	785.68	785.52	785.72	786.10	786.06	786.10	786.55	786.33	786.85	786.38	NI	NI	NI
	February 25, 2021	NM	aband	NM	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	April 14, 2021	778.12	aband	787.29	784.27	784.05	784.77	784.77	784.46	c	785.84	785.81	785.60	785.86	785.69	786.47	786.06	NI	NI	NI
	June 11, 2021	NM	aband	NM	784.19	NM	784.66	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	October 11-12, 14, 2021	784.47	aband	786.78	783.73	783.60	784.42	784.41	783.88	783.87	784.96	784.88	784.79	785.14	784.94	785.55	785.11	NI	NI	NI
	October 17, 2021	NM	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	April 1, 2022	aband	aband	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 11-13, 2022	aband	aband	785.52	783.27	783.45	784.30	784.42	783.26	783.78	785.02	785.00	784.70	784.83	784.72	785.45	785.02	783.99	783.97	783.73
	October 24-28, 2022	aband	aband	785.43	781.94	781.61	783.61	783.61	782.28	dry	784.57	784.54	784.38	784.64	784.47	785.05	784.62	783.74	782.76	783.50
	February 20-23, 2023	aband	aband	NM	783.57	NM	784.48	NM	NM	NM	785.25	NM	NM	NM	NM	NM	NM	NM	NM	NM
	March 27-28, 2023	aband	aband	NM	784.52	NM	785.23	NM	NM	NM	786.21	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 24-27, 2023	aband	aband	787.76	785.79	785.35	786.22	786.12	784.99	786.05	786.97	786.86	786.67	786.76	786.59	787.53	787.11	785.87	785.85	785.55
	May 16, 2023	aband	aband	787.79	785.64	785.25	786.06	786.05	785.39	785.77	786.88	786.79	786.74	786.95	786.75	787.47	787.05	786.23	786.21	785.97
	May 30-31, 2023	aband	aband	NM	785.23	NM	785.70	NM	NM	NM	786.57	NM	NM	NM	NM	NM	NM	NM	NM	NM
	October 9-11, 2023	aband	aband	785.33	782.57	782.39	783.55	783.40	782.94	dry	784.39	784.31	784.24	784.63	784.36	784.89	784.36	783.86	783.59	783.69
	April 15-17, 2024	aband	aband	dry	783.02	782.94	784.14	784.11	782.95	783.41	784.90	784.84	784.54	784.61	784.57	785.19	784.75	783.88	783.87	783.59
	April 19, 2024	aband	aband	785.47	783.06	783.02	784.28	784.30	783.05	dry	785.05	785.01	784.67	784.74	784.62	785.63	785.16	783.95	783.95	783.68
	Bottom of Well Elevation (ft)	778.15	780.16	779.47	777.21	750.89	770.52	749.10	781.24	782.54	774.07	762.24	779.36	776.13	756.07	779.53	756.66	777.19	745.21	774.29

Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
Ash Pond Facility (Facility ID #02325)	Top of Casing Elevation (feet amsl)	788.23	806.10	809.62	809.50	828.86	828.84	786.29	815.48	814.21	791.55	792.90
	Screen Length (ft)											
	Total Depth (ft from top of casing)	16.90	25.55	34.80	76.07	51.88	75.80	14.40	38.50	37.85	37.37	18.96
	Top of Well Screen Elevation (ft)	771.33	780.55	774.82	733.43	776.98	753.04	771.89	776.98	776.36	754.18	773.94
	Measurement Date											
	October 2, 2012	780.13	786.76	781.49	781.34	782.03	781.93	780.58	779.88	781.91	780.95	780.55
	April 15, 2013	785.16	788.39	783.97	784.00	783.77	783.78	784.69	783.66	784.09	784.75	785.02
	October 8, 2013	781.22	786.67	NM	NM	783.69	783.58	NM	NM	783.39	782.27	782.36
	October 15, 2013	NM	NM	782.94	782.81	NM	NM	782.47	783.49	NM	NM	NM
	April 14, 2014	786.04	788.96	783.57	783.68	783.56	783.57	785.51	783.41	783.73	785.25	785.87
	October 1-3, 2014	781.16	787.55	783.42	783.32	784.05	783.94	782.32	783.55	783.79	782.63	783.03
	April 13-14, 2015	783.08	786.83	782.77	782.68	782.80	782.82	782.81	782.83	782.93	783.34	783.42
	October 6-7, 2015	780.66	786.12	782.97	782.81	783.10	783.01	781.82	783.25	783.18	781.95	782.26
	April 4-6, 2016	784.21	789.09	785.27	785.27	784.79	784.76	783.21	784.97	785.68	785.02	784.36
	October 11-13, 2016	781.88	787.88	785.75	785.52	785.73	785.61	783.12	786.51	786.16	783.75	784.09
	April 10-13, 2017	782.94	787.95	785.44	785.20	785.82	785.69	782.77	786.09	785.95	784.29	784.09
	October 3-5, 2017	780.93	787.04	783.35	783.18	784.30	784.19	782.37	784.23	783.89	782.48	782.61
	April 23-25, 2018	782.89	790.43	782.86	782.87	783.14	783.09	783.04	783.02	783.23	783.26	783.45
	October 23-25, 2018	782.95	788.47	787.12	786.88	787.12	786.99	783.48	787.73	787.49	784.90	784.52
	April 1-4, 2019	785.68	789.44	786.28	786.31	786.56	786.45	785.27	787.39	786.53	786.33	785.46
	October 7-9, 2019	785.33	790.65	787.10	787.02	786.68	786.65	785.29	786.68	787.07	786.01	785.42
	May 27-29, 2020	781.80	787.73	785.12	784.92	785.74	785.59	783.11	785.89	785.60	783.41	783.89
	October 7-8 &17, 2020	781.42	787.74	784.74	784.64	785.03	784.96	782.83	785.43	785.10	783.06	783.49
	April 12, 2021	782.30	786.34	783.66	783.65	784.13	784.08	782.79	784.08	783.97	783.15	783.49
	October 11-12, 14, 2021	781.03	786.33	782.94	782.85	783.09	783.03	781.94	783.11	783.04	782.15	782.66
	April 11-13, 2022	783.95	788.26	783.37	783.34	783.10	783.10	NM	782.99	783.40	783.93	783.83
	June 3, 2022	NM	NM	NM	NM	NM	NM	782.13	NM	NM	NM	NM
	October 25, 26, 28, 2022	780.41	783.85	780.76	780.66	779.57	779.55	779.23	778.98	778.61	780.33	781.49
	March 27-28, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	April 24-27, 2023	785.18	782.59	785.38	785.19	784.55	784.51	NM	784.83	784.46	783.78	785.30
	May 16, 2023	782.79	781.64	784.70	784.58	784.60	784.49	782.80	784.68	783.94	782.07	784.03
	October 9-11, 2023	779.65	780.54	781.50	781.30	781.94	781.69	780.26	781.95	781.21	779.89	780.43
	April 15-17, 2024	781.73	781.38	782.58	782.51	782.42	782.35	781.82	782.23	782.17	781.47	783.40
	April 19, 2024	NM	dry	782.78	782.80	782.57	782.56	NM	782.35	782.29	781.65	783.48

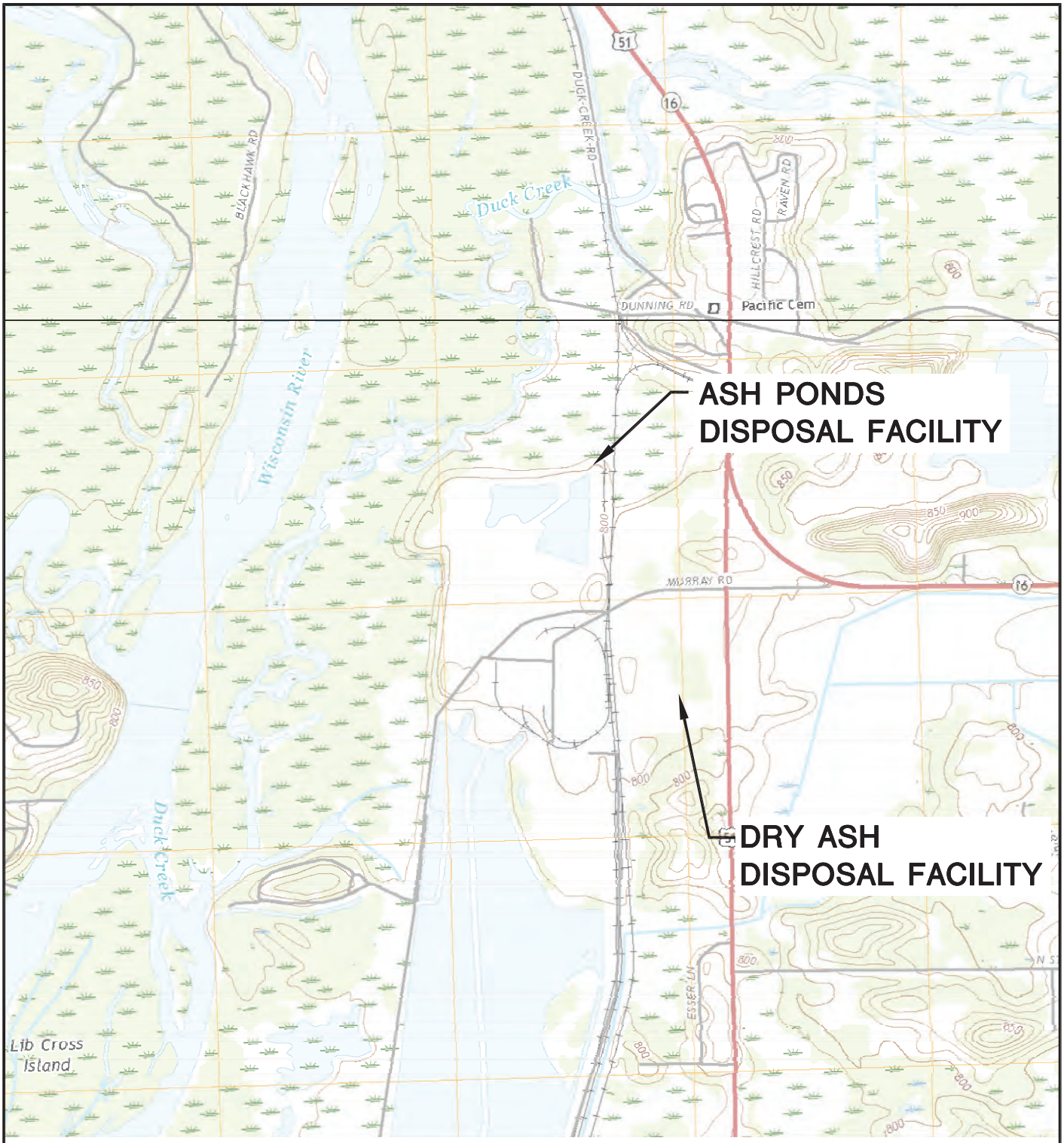
Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25224067.00

	Well Number	MW-301	MW-302	MW-303	MW-304	MW-304R	MW-305	M-4R	MW-33AR	MW-34A	MW-84A	MW-306	MW-307	MW-308	MW-309	MW-310	MW-311	MW-312	MW-313	MW-314	MW-315	MW-316	MW-317	MW-318	MW-319
	Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	804.34	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.3	821.57	819.78	808.49	819.36	820.94	828.77
	Screen Length (ft)	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
	Total Depth (ft from top of casing)	29.40	33.6	35.80	25.7	30.73	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5	46.2	45.0	45.6	43.7	44.3	43	47.6
	Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	783.61	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29	784.1	786.6	784.2	774.79	785.1	787.9	791.2
	Measurement Date																								
	December 21-22, 2015	785.56	784.78	784.11	786.13	NI	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	April 4-5, 2016	786.78	785.81	785.48	788.08	NI	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	July 7-8, 2016	786.31	786.28	784.60	787.36	NI	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	July 28, 2016	NM	NM	784.35	NM	NI	NM	NM	NM	784.86	785.61	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	October 11-13, 2016	787.64	787.76	786.18	788.18	NI	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	December 29, 2016	787.37	787.05	NM	NM	NI	NM	NM	785.66	785.72	786.63	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	January 25-26, 2017	787.27	786.89	785.28	789.34	NI	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	April 10 & 11, 2017	787.89	787.55	786.00	788.22	NI	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	June 6, 2017	788.25	788.37	786.49	788.58	NI	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	August 7-9, 2017	787.34	787.55	785.42	789.52	NI	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	October 23-24, 2017	785.89	785.94	783.92	788.97	NI	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	February 21, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI	NI	NI	NI
	March 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI	NI	NI	NI
	April 23-25, 2018	785.29	784.37	783.27	789.69	NI	787.67	790.43	783.09	781.77	785.88	783.24	783.65	782.65	783.07	782.97	781.83	NI	NI	NI	NI	NI	NI	NI	NI
	May 24, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI	NI	NI	NI
	June 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI	NI	NI	NI
	July 23, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI	NI	NI	NI
	August 7, 2018	787.06	NM	785.20	788.25	NI	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	August 22, 2018	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI	NI	NI	NI
	September 21, 2018	NM	788.37	786.50	NM	NI	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI	NI	NI	NI
	October 22-24, 2018	788.98	789.16	787.51	789.05	NI	790.04	788.47	788.77	787.88	788.32	787.66	786.57	787.81	787.99	788.18	788.64	NI	NI	NI	NI	NI	NI	NI	NI
	April 1-4, 2019	787.04	787.56	786.52	789.72	NI	790.07	789.44	786.63	786.82	787.35	786.72	786.71	787.53	786.30	786.38	786.38	NI	NI	NI	NI	NI	NI	NI	NI
	June 12, 2019	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI	NI	NI	NI
	June 19, 2019	NM	NM	786.81	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 7-9, 2019	788.47	788.31	787.02	790.41	NI	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI	NI	NI	NI
	December 13, 2019	--	--	--	--	NI	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	December 23, 2019	--	--	--	--	NI	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI	NI	NI	NI
CCR Rule Wells	January 17, 2020	--	--	785.58	--	NI	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI	NI	NI	NI
	February 3, 2020	787.24	NM	NM	NM	NI	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	May 27-29, 2020	787.77	787.29	785.56	789.30	NI	787.78	787.73	786.01	785.98	787.02	785.77	785.35	786.28	785.98	785.81	785.85	NI	NI	NI	NI	NI	NI	NI	NI
	June 30, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	August 6, 2020	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 7-8, 2020	786.53	786.74	785.16	788.52	NI	787.96	787.74	785.91	785.70	786.10	785.39	784.71	785.68	785.47	785.56	785.83	NI	NI	NI	NI	NI	NI	NI	NI
	December 11, 2020	NM	NM	NM	NM	NI	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI	NI	NI	NI
	February 25, 2021	NM	NM	784.27	NM	NI	788.36	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	April 12, 2021	786.50	785.77	784.07	787.99	NI	788.11	786.34	784.27	784.77	785.84	784.32	784.21	785.55	784.29	784.24	784.15	NI	NI	NI	NI	NI	NI	NI	NI
	June 11, 2021	NM	NM	NM	NM	NI	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI	NI	NI	NI
	July 20, 2021	NM	NM	783.64	NM	NI	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 11-12, 14, 2021	785.28	785.09	783.09	787.78	NI	787.75	786.33	783.73	784.42	784.96	782.93	782.44	783.76	783.65	783.48	783.48	NI	NI	NI	NI	NI	NI	NI	NI
	December 21, 2021	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	February 24, 2022	NM	NM	782.34	NM	NI	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	April 11-13, 2022	785.44	784.42	783.40	788.20	NI	787.87	788.26	783.27	784.30	785.02	783.11	783.32	784.19	783.14	783.19	783.04	NI	NI	NI	NI	NI	NI	NI	NI
	July 27, 2022	NM	NM	783.07	NM	NI	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	October 25-27, 2022	784.91	784.62	778.94	781.79	NI	784.97	783.85	781.94	783.61	784.57	778.32	777.89	784.16	781.50	780.96	781.23	NI	NI	NI	NI	NI	NI	NI	NI
	November 30, 2022	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI	NI	NI	NI
	December 2, 2022	785.12	784.48	NM	783.97	NI	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI	NI	NI
	January 12-13, 2023	785.20	784.55	NM	NM	NI	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI	NI	NI	NI
	January 20, 2023	NM	NM	NM	788.08	NI	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
	January 24, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.73	783.36	783.63	783.77	NI	NI	NI	NI
	February 20-23, 2023	785.56	784.98	NM	NM	NI	NM	NM	NM	NM	NM	783.04	782.91	785.32	783.31	783.34	783.40	783.50	783.59	783.82	783.96	NI	NI	NI	NI
	March 27-28, 2023	786.83	785.87	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	783.84	783.98	784.43	NM	784.12	784.41	784.57	NI	NI	NI	NI
	April 24-27, 2023	787.57	786.87	784.38	784.03	NI	NM	782.59	785.79	786.22	786.97	784.82	784.25	787.75	785.05	785.18	785.69	NM	785.21	785.43	785.59	NI	NI	NI	NI
	May 5, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.55	NM	NM	NM	780.49	NI	NI	NI
	May 16, 2023	787.43	787.07	783.88	784.12	NI	dry	781.64	785.64	786.06	786.88	784.65	783.89	786.88	785.15	785.11	785.39	785.97	785.46	785.68	785.88	780.48	NI	NI	NI
	May 30-31, 2023	787.04	786.89	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	784.90	784.69	784.97	NM	785.24	785.55	785.77	NM	NI	NI	NI
	June 29-30, 2023	786.32	786.39	NM	NM	NI	NM	NM	784.32	785.04	785.92	NM	NM	NM	784.12	783.84	783.97	NM	784.67	784.95	785.17	NM	NI	NI	NI
	July 31, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.96	784.26	784.49	NM	NI	NI	NI
	August 31, 2023	NM	785.30	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.47	NM	NM	783.55	783.83	783.97	NM	NI	NI	NI
	October 9-11, 2023	784.67	784.65	781.21	780.09	NI	779.93	780.54	782.57	783.55	784.39	NM	NM	783.09	782.58	782.32	782.22	783.69	783.10	783.33	783.59	780.30	NI	NI	NI
	November 9, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	782.76	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	November 20, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	781.97	781.45	782.85	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI
	December 27, 2023	NM	NM	NM	NM	NI	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.18	783.36	NM	NI	NI	NI
	April 15-17, 2024	785.27	784.49	782.16	aband	782.17	780.80	781.38	783.02	784.14	784.90	782.40	782.24	784.51	782.79	782.68	782.64	783.59	783.16	783.42	783.53	782.09	783.60	783.62	785.76
	April 19, 2024	785.51	784.55	782.26	aband	782.23	dry	dry	783.06	784.28	785.05	NM	782.64	784.69	782.90	782.82	782.74	783.68	783.30	783.49	783.62	782.15	NM	NM	NM
	Bottom of Well Elevation (ft)	777.49	779.40	775.72	779.72	773.61	780.72	766.52	777.21	770.52	774.07	780.63	780.39	778.90	775.60	775.21	773.55	774.29	774.10	776.61	774.18	764.79	775.06	777.94	781.17

Notes:
NM = not measured
NI = not installed
aband = abandoned
(1) The depth to water at MW-84A was not measured prior to purging for sampling during the October 3-5, 2017 sampling event. The level was allowed to return to static and was measured on October 10, 2017.
(2) MW-303 was extended in 2022 due to regrading. Prior to October 2022, the TOC elevation was 811.52'. For events in October 2022 and later, the TOC elevation is 815.72'.
(3) A supplemental water level measurement event was conducted on April 19, 2024.

Created by: MDB Date: 5/6/2013
Last revision by: RM Date: 8/19/2024
Checked by: BLR Date: 8/21/2024

Figures



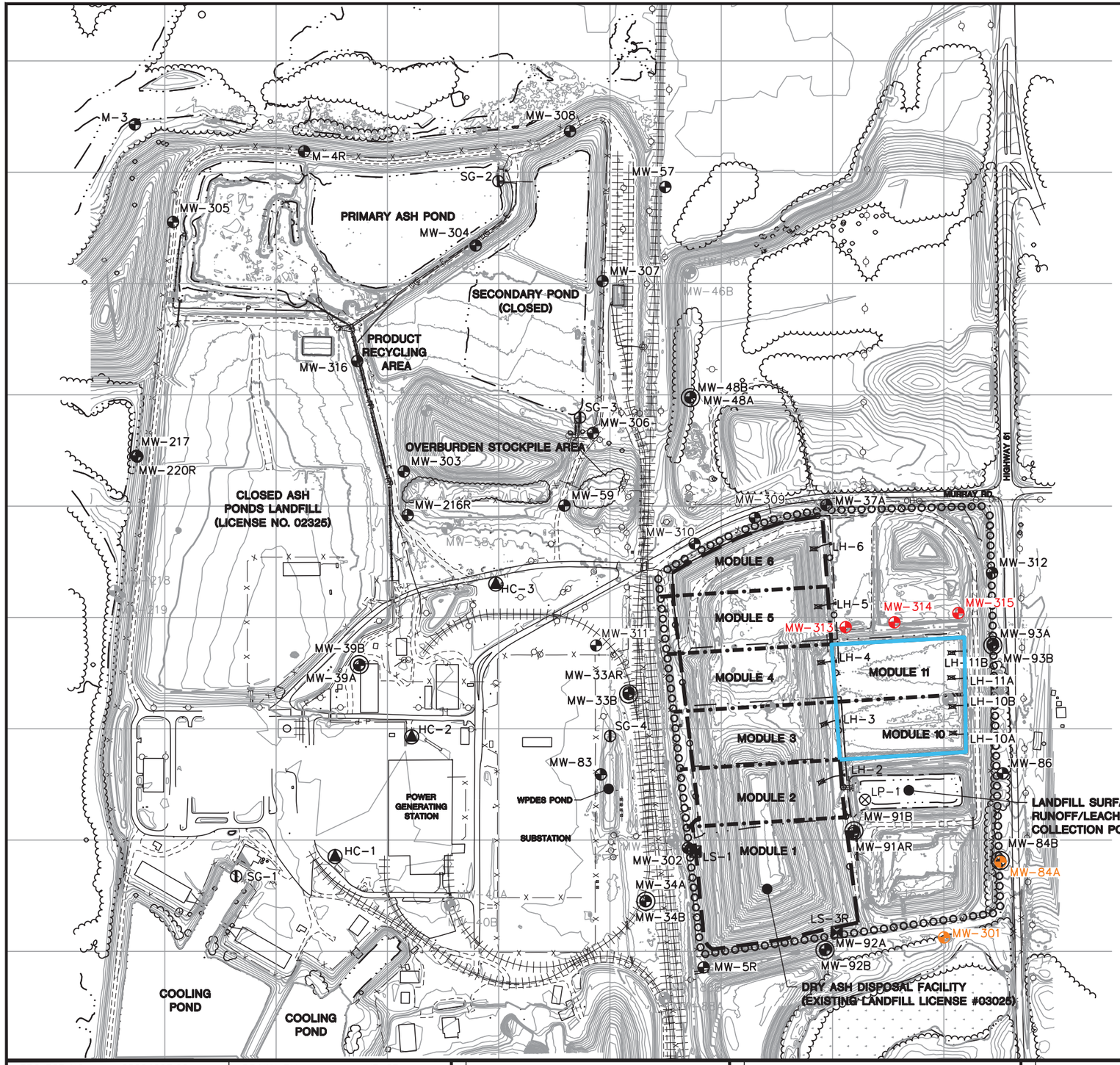
N

POYNETTE QUADRANGLE
WISCONSIN–COLUMBIA CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
2018
SCALE: 1" = 2,000'

CLIENT: ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	SITE: ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI	SITE LOCATION MAP	

PROJECT NO.	25220067.00	DRAWN BY:	BSS	ENGINEER: SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718–6751 PHONE: (608) 224–2830	FIGURE 1
DRAWN:	12/02/2019	CHECKED BY:	MDB		
REVISED:	01/10/2020	APPROVED BY:	TK 04/10/2020		

I:\25220067.00\Drawings\ASD Mod 1-3 LF\Site Location Map.dwg, 4/12/2020 7:05:09 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- SURFACE WATER SAMPLE LOCATION
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- LEACHATE HEADWELL
- CCR UNIT
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016, AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. MONITORING WELLS MW-93A, MW-93B, AND MW-312 WERE INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 23-28, 2022.
8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
9. BACKGROUND MONITORING WELLS FOR THE MODULES 10-11 DRY ASH DISPOSAL FACILITY ARE: MW-301 AND MW-84A.

500 0 500

SCALE: 1" = 500'

PROJECT NO.	25224067.00	DRAWN BY:	KP/SB
DRAWN:	12/02/2019	CHECKED BY:	RM
REVISED:	06/04/2024	APPROVED BY:	TK

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

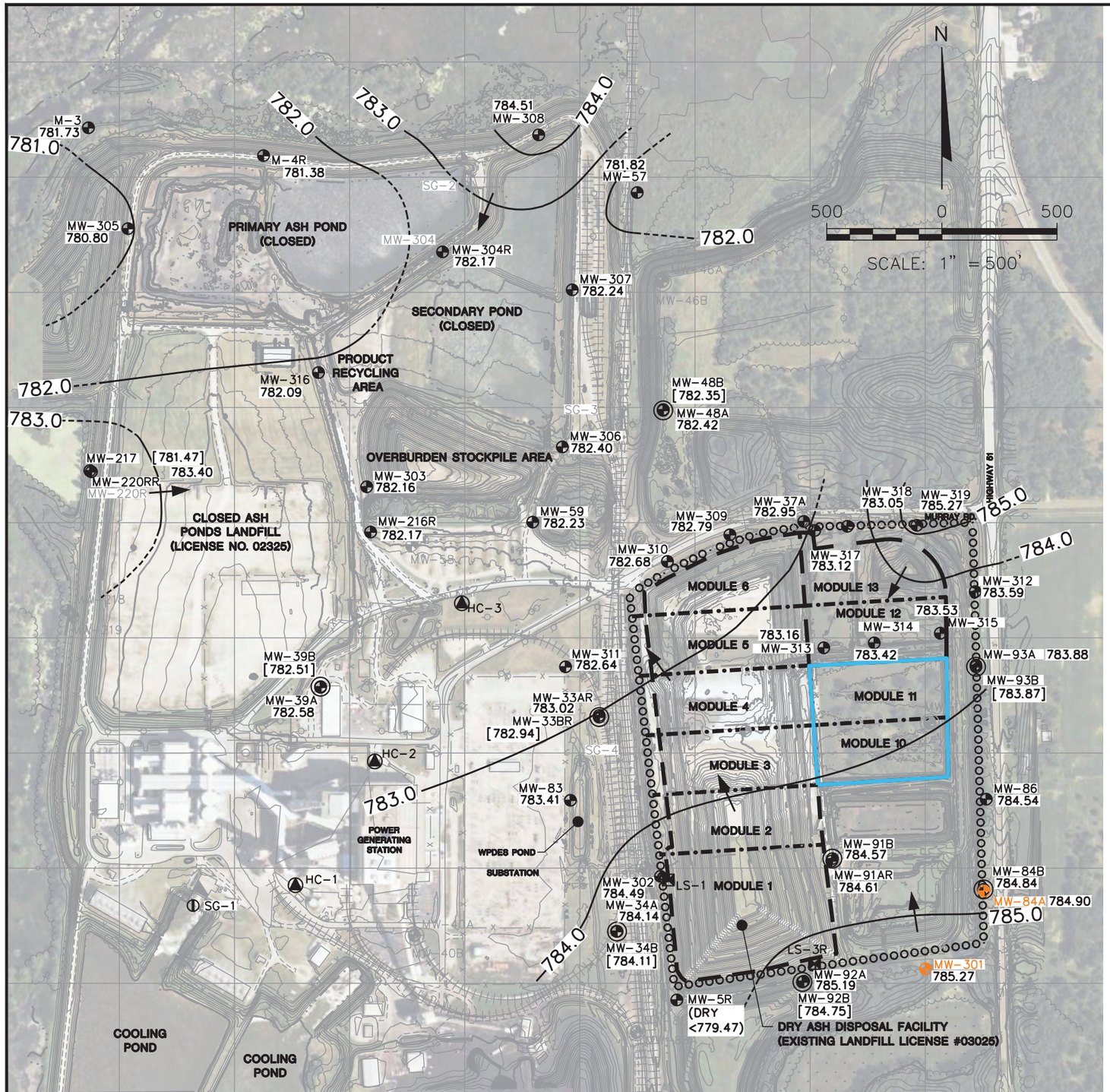
CLIENT: ALLIANT ENERGY, COLUMBIA ENERGY CENTER, W8375 MURRAY ROAD, PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY, COLUMBIA ENERGY CENTER, MODULES 10-11 DRY ASH DISPOSAL FACILITY, PARDEEVILLE, WI

SITE PLAN AND MONITORING WELL LOCATIONS

FIGURE 2

I:\25224067.00\Drawings\Modules 10-11\Site Plan and Monitoring Well Locations.dwg, 6/4/2024 2:46:39 PM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 783.88 — WATER TABLE ELEVATION
- [781.47] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (DRY) — SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR (1-FOOT CONTOUR INTERVAL) (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- CCR UNIT

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE PRIMARY ASH POND ARE: MW-301 AND MW-84A.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
10. MONITORING WELLS MW-317, MW-318 AND MW-319 WERE INSTALLED BY HORIZON CONSTRUCTION 7 EXPLORATION ON APRIL 9 THROUGH 11, 2024.

PROJECT NO.	25224067.00	DRAWN BY:	SB
DRAWN:	11/05/2024	CHECKED BY:	NLB/BRK
REVISED:	10/25/2024	APPROVED BY:	BRK (10/30/2024)

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
PRIMARY ASH POND
PARDEEVILLE, WI

WATER TABLE CONTOUR MAP
APRIL 15-17, 2024
MODULES 10-11

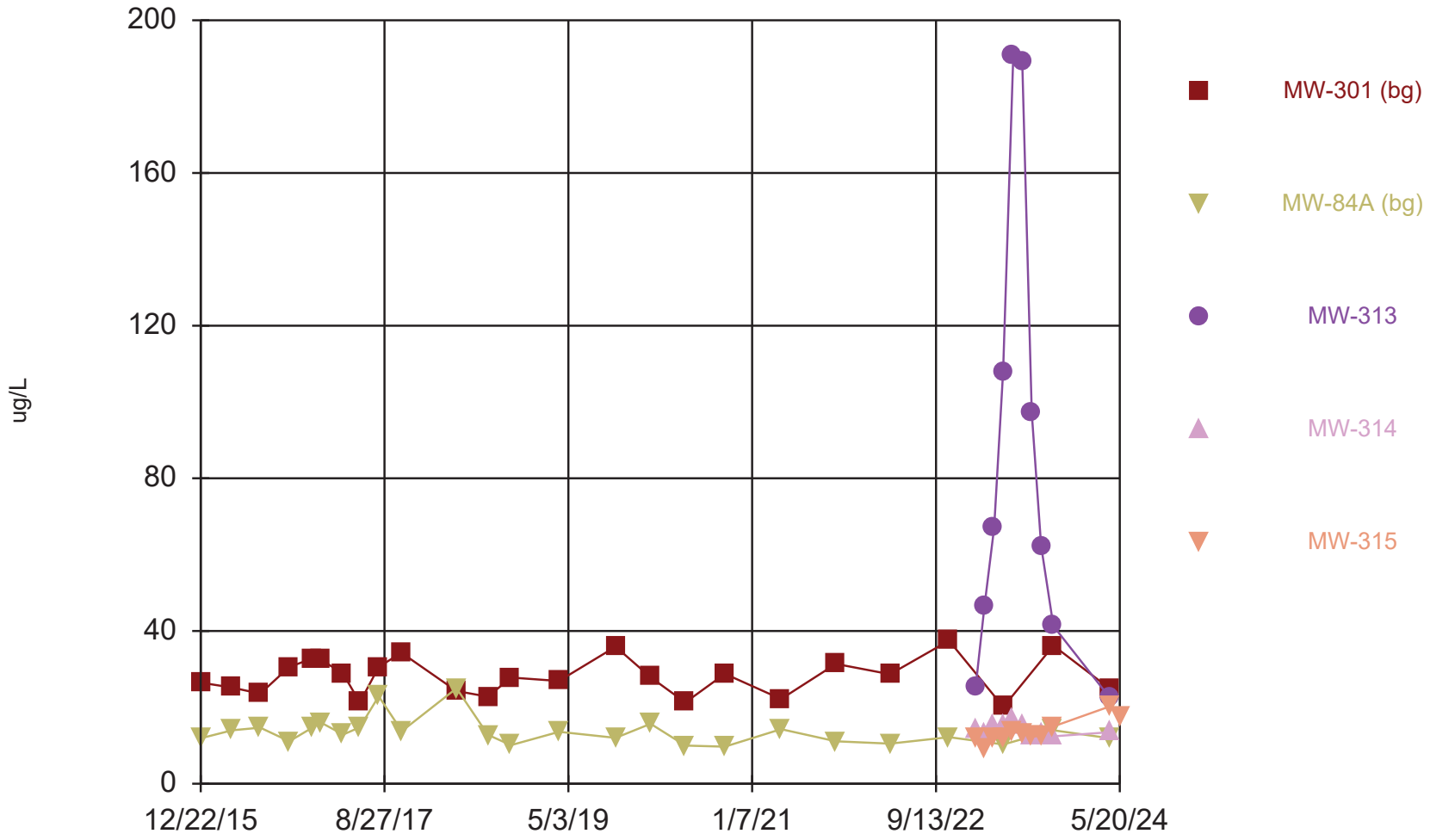
FIGURE 3

I:\25224067.00\Drawings\COL April 2024 WTBL CCR Units.dwg, 11/5/2024 1:00:52 PM

Appendix A

Trend Plots for CCR Wells

Boron



Time Series Analysis Run 10/3/2024 5:32 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

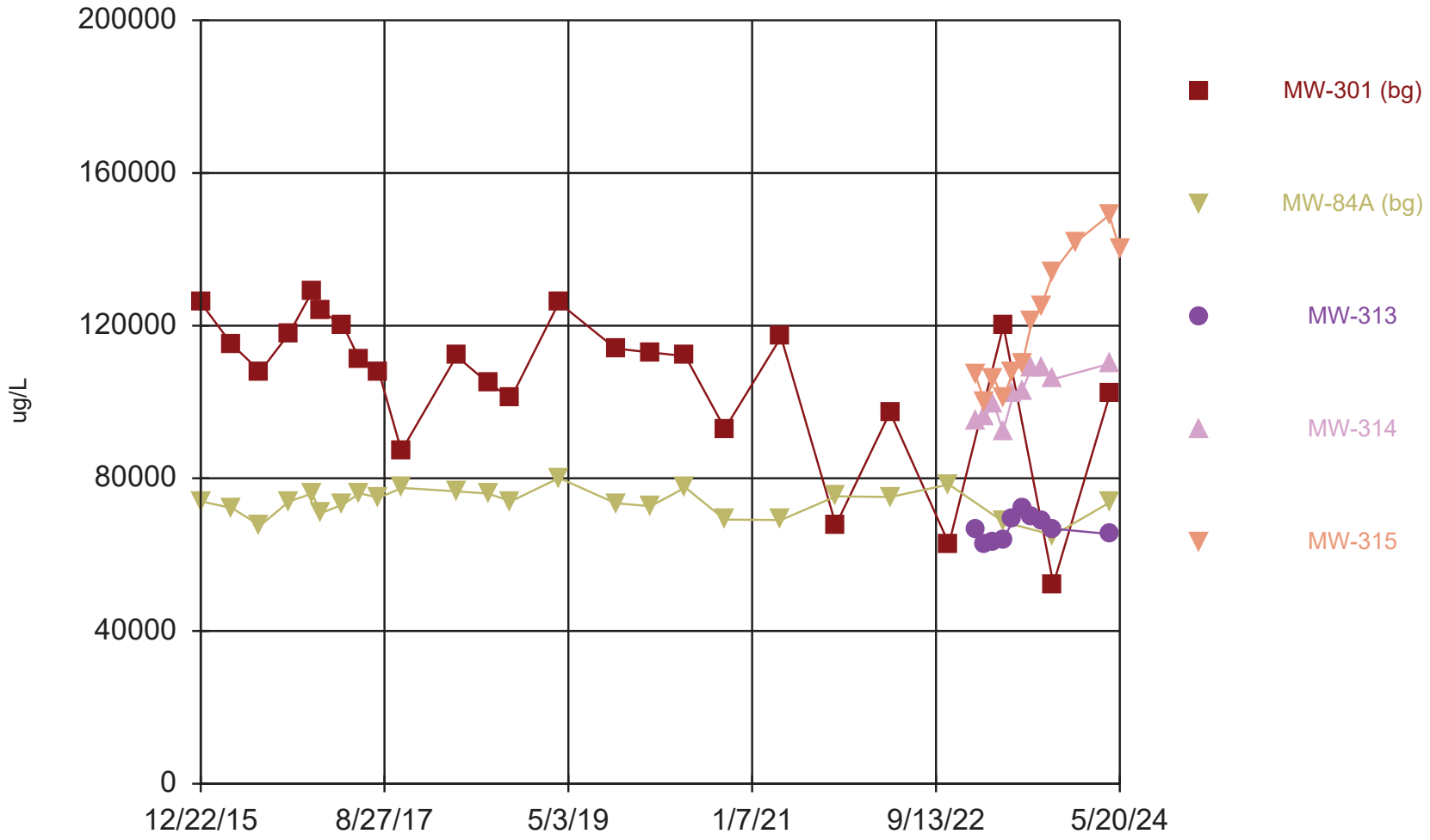
Time Series

Constituent: Boron (ug/L) Analysis Run 10/3/2024 5:32 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
12/22/2015	26.5	11.9			
4/5/2016	25.2	14			
7/8/2016	23.6	14.7			
10/13/2016	30.6	11.1			
12/29/2016	32.8	14.7			
1/25/2017	32.6	16.1			
4/11/2017	28.8	12.9			
6/6/2017	21.3	14.8			
8/8/2017	30.6	22.9			
10/23/2017	34.3				
10/24/2017		13.8			
4/25/2018	24.3	25			
8/8/2018	22.8	12.8			
10/24/2018	27.8	10.1 (J)			
4/2/2019	26.9				
4/3/2019		13.6			
10/9/2019	35.9	12			
2/3/2020	27.9	15.7			
5/29/2020	21.3	10			
10/8/2020	28.8	9.7 (J)			
4/14/2021	22.2	14.3			
10/14/2021	31.4	11.1			
4/13/2022	28.7	10.5			
10/27/2022	37.5	12.2			
1/24/2023			25.1	14.2	11.7
2/23/2023			46.6	13	9.3 (J)
3/27/2023			67.1	15.2	11.9
4/26/2023			108	15.5	12
4/27/2023	20.1	10.3			
5/30/2023			191	16.9	13.6
6/29/2023			189	15.4	13.3
7/31/2023			97.1	12.4	12.3
8/31/2023			62.3	13	12.6
10/11/2023	36.2	14	41.3	12.4	15
4/15/2024			22.7	13.5	20.2
4/17/2024	24.9	11.9			
5/20/2024					17.7

Calcium



Time Series Analysis Run 10/3/2024 5:32 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

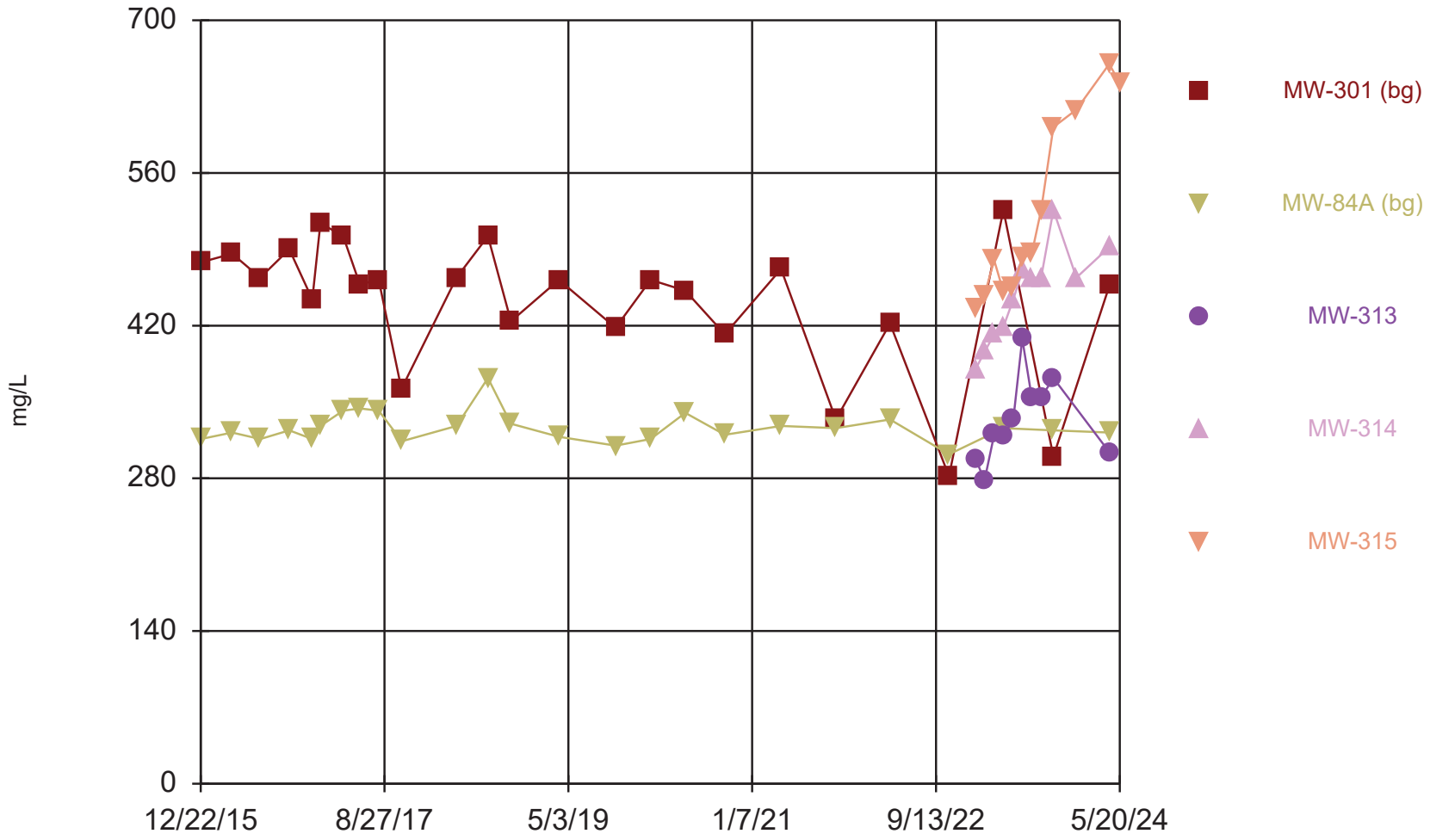
Time Series

Constituent: Calcium (ug/L) Analysis Run 10/3/2024 5:32 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
12/22/2015	126000	74000			
4/5/2016	115000	72200			
7/8/2016	108000	67600			
10/13/2016	118000	74000			
12/29/2016	129000	76000			
1/25/2017	124000	70800			
4/11/2017	120000	73200			
6/6/2017	111000	76100			
8/8/2017	108000	74900			
10/23/2017	87200				
10/24/2017		77500			
4/25/2018	112000	76600			
8/8/2018	105000	76000			
10/24/2018	101000	74000			
4/2/2019	126000				
4/3/2019		80100			
10/9/2019	114000	73500			
2/3/2020	113000	72700			
5/29/2020	112000	77600			
10/8/2020	93000	69200			
4/14/2021	117000	69100			
10/14/2021	67800	75300			
4/13/2022	97300	75100			
10/27/2022	62800	78400			
1/24/2023			66800	95000	107000
2/23/2023			62900	96200	100000
3/27/2023			63300	99300	106000
4/26/2023			63900	92400	101000
4/27/2023	120000	68600			
5/30/2023			69100	102000	108000
6/29/2023			71900	103000	110000
7/31/2023			70000	109000	121000
8/31/2023			68600	109000	125000
10/11/2023	52300	65100	66800	106000	134000
12/27/2023					142000
4/15/2024			65400	110000	149000
4/17/2024	102000	73700			
5/20/2024					140000

Total Dissolved Solids



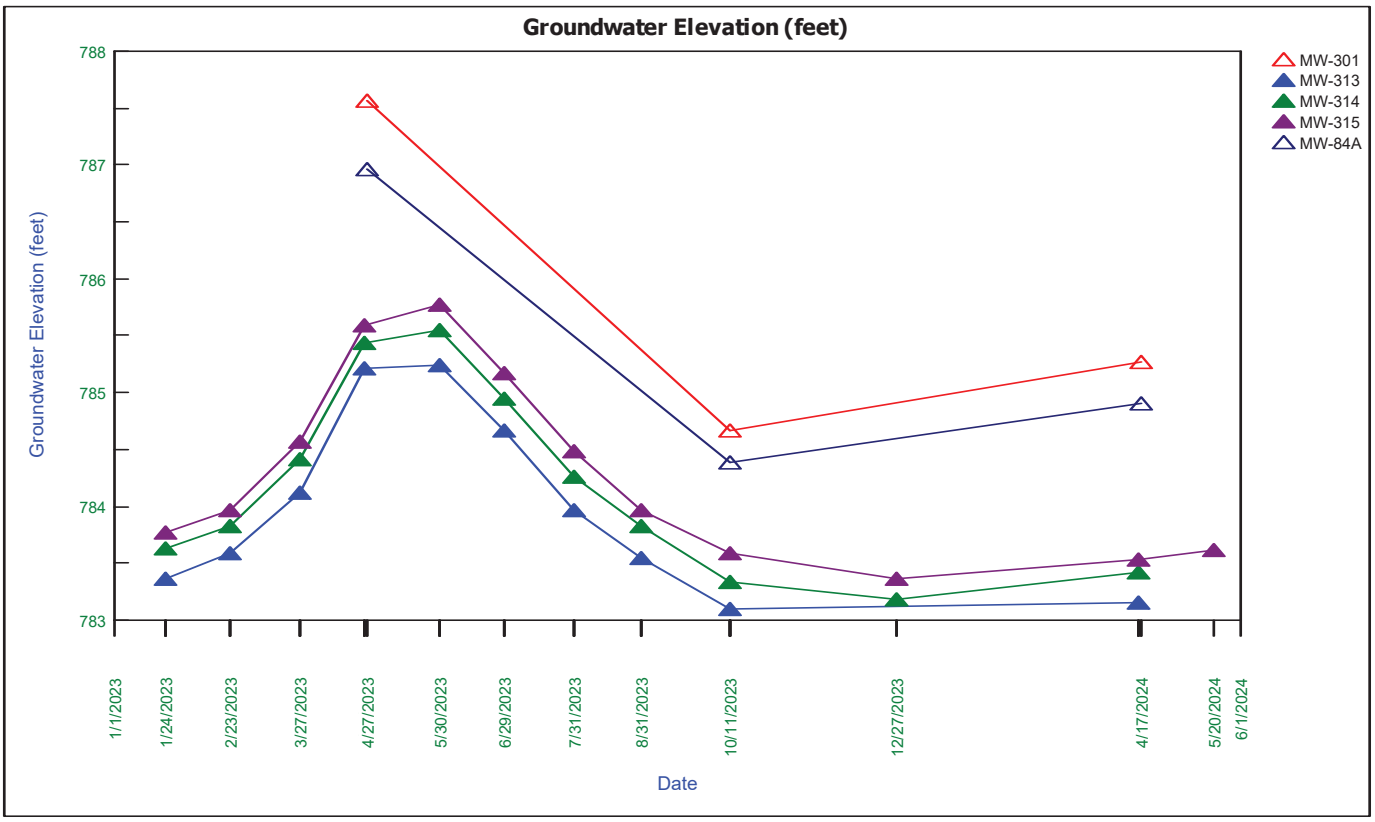
Time Series Analysis Run 10/3/2024 5:32 PM View: Mod 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 10/3/2024 5:32 PM View: Mod 10-11
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
12/22/2015	478	316			
4/5/2016	486	322			
7/8/2016	464	316			
10/13/2016	490	324			
12/29/2016	444	316			
1/25/2017	514	328			
4/11/2017	502	342			
6/6/2017	458	344			
8/8/2017	462	342			
10/23/2017	362				
10/24/2017		314			
4/25/2018	464	328			
8/8/2018	502	372			
10/24/2018	424	330			
4/2/2019	462				
4/3/2019		318			
10/9/2019	418	310			
2/3/2020	462	316			
5/29/2020	452	340			
10/8/2020	412	320			
4/14/2021	472	328			
10/14/2021	334	326			
4/13/2022	422	334			
10/27/2022	282	302			
1/24/2023			298	380	436
2/23/2023			278	396	448
3/27/2023			320	412	480
4/26/2023			318	418	452
4/27/2023	526	326			
5/30/2023			334	444	456
6/29/2023			408	470	482
7/31/2023			354	464	486
8/31/2023			354	464	526
10/11/2023	300	324	372	526	602
12/27/2023				464	618
4/15/2024			304	492	660
4/17/2024	458	322			
5/20/2024					642



Appendix B

Selected UPLs and Results for Other Wells

Table 1. Groundwater Analytical Results Summary - Columbia Ash Disposal Facility MOD 1-3 / SCS Engineers Project #25224067.00

Parameter Name	UPL Method	UPL		Background Wells		Compliance Wells		
				MW-84A	MW-301	MW-33AR	MW-34A	MW-302
				10/11/2023	10/11/2023	10/11/2023	10/11/2023	10/11/2023
Groundwater Elevation, ft amsl				784.39	784.67	782.57	783.55	784.65
Appendix III								
Boron, ug/L	P	35.6		14.0	36.2	485	237	309
Calcium, ug/L	NP	129,000		65,100	52,300	59,400	59,000	70,800
Chloride, mg/L	P	6.2		3.1	2.1	24.2	2.7	1.6 J
Fluoride, mg/L	DQ	DQ		<0.095	<0.095 M0	<0.095	<0.095	0.10 J
Field pH, Std. Units	P	7.78		7.51	7.06	7.88	7.78	7.40
Sulfate, mg/L	P	30.3		1.4 J	11.8	139	43.6	19.9
Total Dissolved Solids, mg/L	NP	514		324	300	448	302	354

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:

UPL = Upper Prediction Limit
DQ = Double Qualification
SSI = Statistically Significant Increase
-- = Not Measured
µg/L = micrograms per liter
NP = Nonparametric UPL with 1-of-2 retesting
P = Parametric UPL with 1-of-2 retesting
LOQ = Limit of Quantitation
LOD = Limit of Detection
mg/L = milligrams per liter

J = Estimated concentration at or above the LOD and below the LOQ.
M0 = Matrix spike recovery and/or matrix spike duplicate recovery was outside laboratory control limits

Notes:

1. An individual result above the UPL does not constitute an SSI above background. See the accompanying report text for identification of statistically significant results.
2. Interwell UPLs calculated based on results from background wells MW-84A and MW-301. Interwell UPLs based on 1-of-2 retesting approach. UPLs updated in January 2021 based on background well results through October 2019.

Created by:	NDK	Date:	12/2/2022
Last revision by:	RM	Date:	11/7/2023
Checked by:	NLB	Date:	11/14/2023
Scientist/Proj Mgr QA/QC:	TK	Date:	1/9/2024

Table 1. Groundwater Analytical Results Summary
Columbia Dry Ash Disposal Facility - Module 4-6 / SCS Engineers Project #25224067.00

Parameter Name	Background Wells		Compliance Wells						
	MW-84A	MW-301	MW-309			MW-310		MW-311	
	4/17/2024	4/17/2024	Intrawell UPL	4/15/2024	6/4/2024	Intrawell UPL	4/15/2024	Intrawell UPL	4/15/2024
Groundwater Elevation, ft amsl	784.90	785.27		782.79	784.27		782.68		782.64
Appendix III									
Boron, µg/L	11.9	24.9	61.9	38.7	--	82.4	65.2	43.1	30.9
Calcium, µg/L	73,700	102,000	137,000	82,600	--	65,700	44,600	76,300	59,900
Chloride, mg/L	3.2	1.6 J	772	391	--	277	175	3.67	2.3
Fluoride, mg/L	0.12 J	<0.095	DQ	<0.095	--	DQ	<0.095	DQ	<0.095
Field pH, Std. Units	7.68	7.06	7.94	7.27	7.55	8.02	7.63	7.95	7.40
Sulfate, mg/L	1.4 J	11.5	64.6	75.1	68.8	107	98.9	124	10.1
Total Dissolved Solids, mg/L	322	458	1,600	948	--	773	686	380	276

4.4 Blue shaded cell indicates the compliance well result exceeds the UPL (background) and the Limit of Quantitation (LOQ).

Abbreviations:
UPL = Upper Prediction Limit
DQ = Double Quantification
-- = Not Analyzed
LOQ = Limit of Quantitation
LOD = Limit of Detection
mg/L = milligrams per liter
µg/L = micrograms per liter
SSI = Statistically Significant Increase

Lab Notes:
J = Estimated concentration at or above the LOD and below the LOQ.

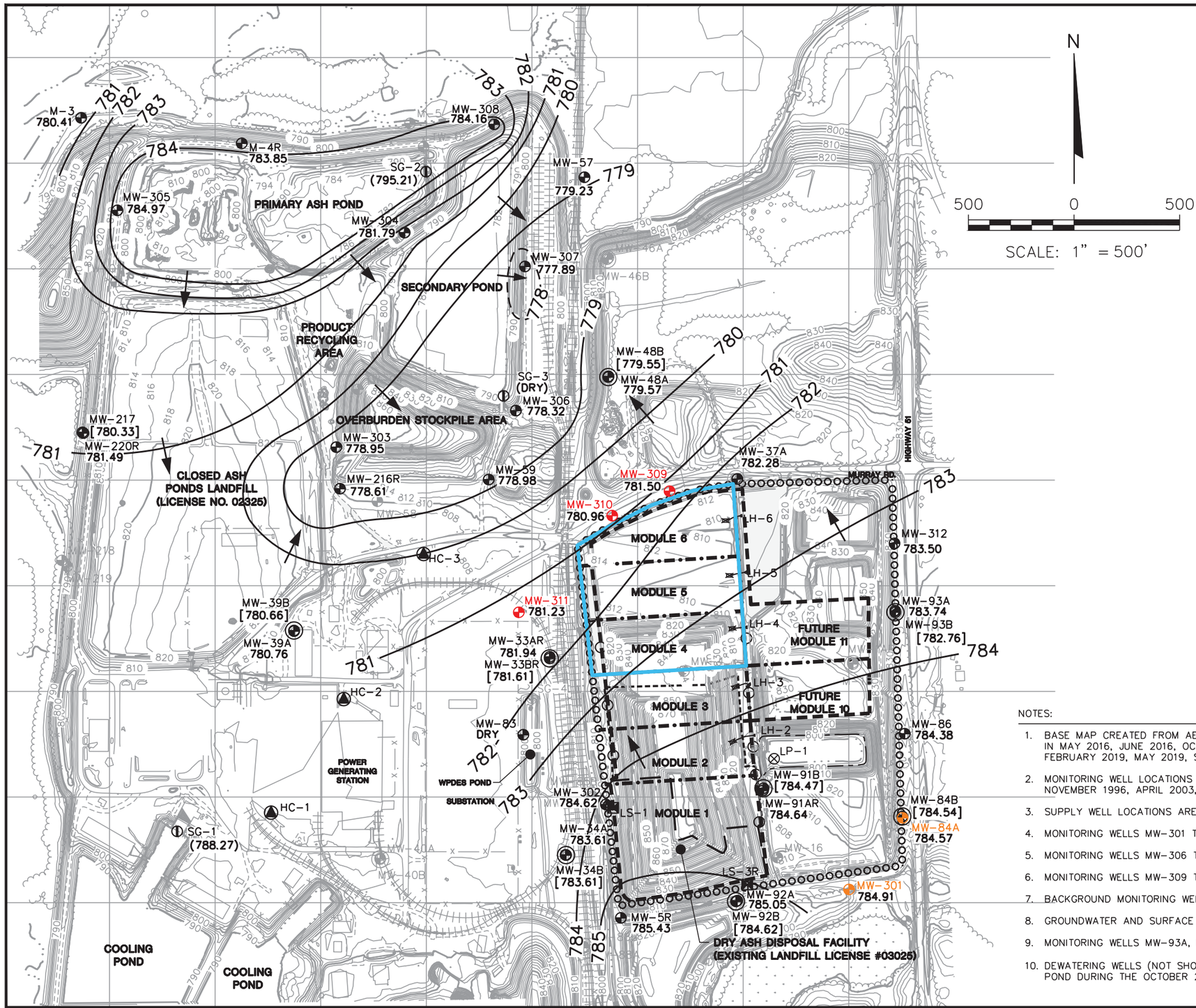
Notes:
1. Intrawell UPLs are based on 1-of-2 retesting approach; therefore, there is no SSI if either the original sample result or the resample are below the UPL.
2. Intrawell UPL for fluoride is based on the double quantification rule, because fluoride was not detected above the LOQ in the background samples.
3. Intrawell UPLs were calculated from background sampling results for the compliance wells from February 2018 through October 2023.

Created by: RM Date: 5/24/2024
Last revision by: RM Date: 6/24/2024
Checked by: BLR Date: 6/28/2024
Scientist/PM QA/QC: TK Date: 9/3/2024

Lic#	Sample Date	Point Name	Parm	Parameter Description	Result	Result Unit
3025	9/7/1984	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	76	mg/L
3025	12/17/1984	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	98	mg/L
3025	3/7/1985	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	127	mg/L
3025	6/14/1985	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	89	mg/L
3025	9/18/1985	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	114	mg/L
3025	12/12/1985	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	100	mg/L
3025	3/21/1986	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	105	mg/L
3025	6/20/1986	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	98	mg/L
3025	9/18/1986	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	107	mg/L
3025	12/19/1986	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	102	mg/L
3025	3/20/1987	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	80	mg/L
3025	6/5/1987	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	114	mg/L
3025	9/9/1987	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	100	mg/L
3025	12/9/1987	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	95.8	mg/L
3025	3/10/1988	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	98.8	mg/L
3025	6/7/1988	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	108	mg/L
3025	9/9/1988	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	101	mg/L
3025	12/7/1988	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	102	mg/L
3025	3/21/1989	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	142.7	mg/L
3025	3/22/1989	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	142.7	mg/L
3025	6/16/1989	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	115	mg/L
3025	9/7/1989	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	99	mg/L
3025	12/6/1989	MW86	915	CALCIUM, DISSOLVED (MG/L CA)	103	mg/L

Appendix C

Previous Water Table Maps



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- SURFACE WATER SAMPLE LOCATION
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- LEACHATE HEADWELL
- CCR UNIT
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 — WATER TABLE ELEVATION
- [788.87] — POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) — SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, MAY 2019, SEPTEMBER 2020, AUGUST 2021, AND NOVEMBER 2021.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
8. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON OCTOBER 25-27, 2022.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
10. DEWATERING WELLS (NOT SHOWN) AROUND THE SECONDARY POND WERE PUMPING AND DISCHARGING TO THE PRIMARY POND DURING THE OCTOBER 2022 SAMPLING EVENT.

PROJECT NO.	25224067.00	DRAWN BY:	KP
DRAWN:	12/15/2022	CHECKED BY:	MDB
REVISED:	04/24/2024	APPROVED BY:	

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

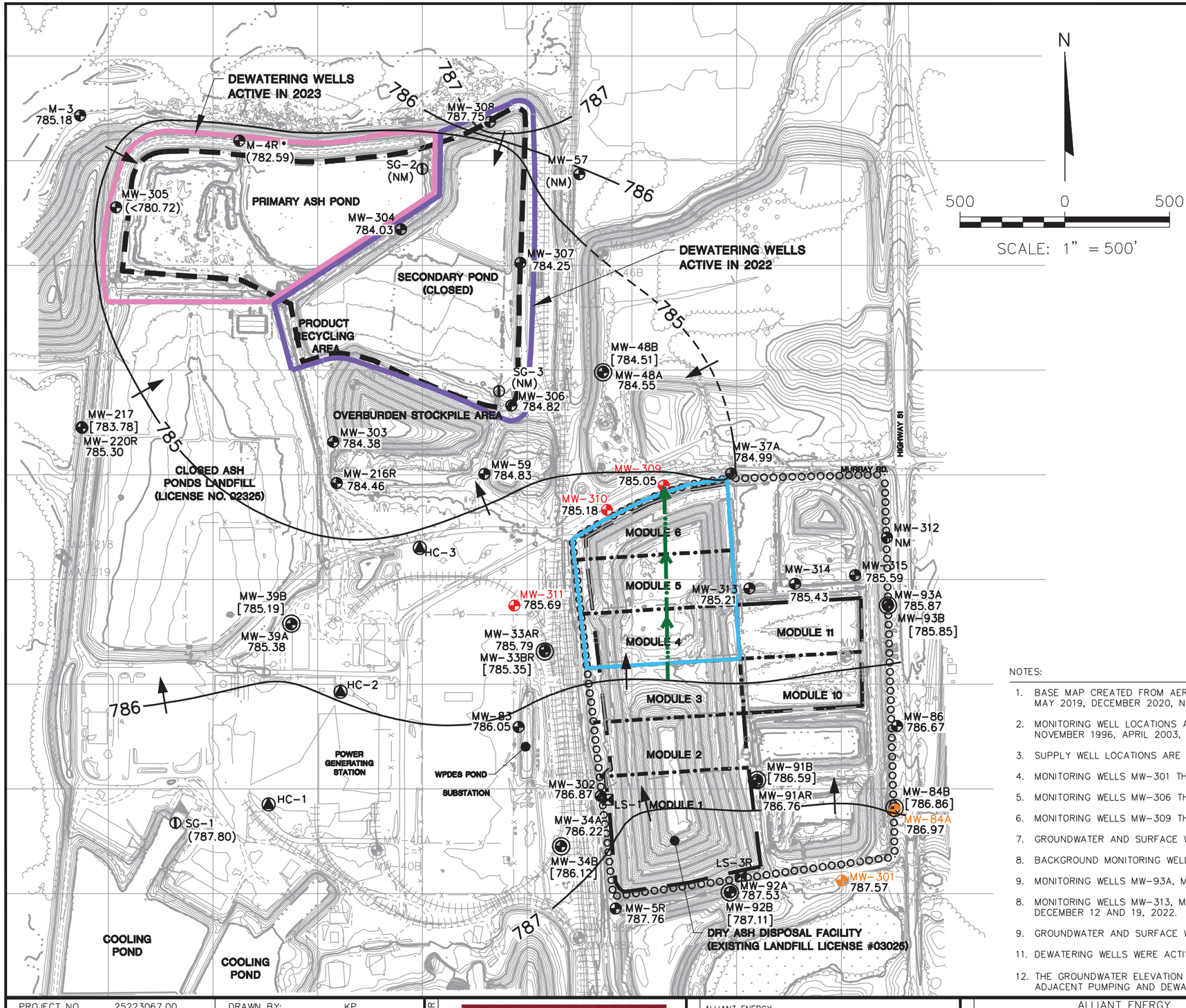
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
OCTOBER 2022

FIGURE 4

I:\25224067.00\Drawings\Modules 4-6\Water Table Map-October 2022.dwg, 4/25/2024 7:38:39 AM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR UNIT
- FLOW PATH FOR VELOCITY CALCULATION (SEE TABLE 4)
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- PRIMARY POND DEWATERING WELLS ACTIVE IN 2023
- SECONDARY POND DEWATERING WELLS ACTIVE IN 2022

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 4-6 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
8. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
9. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 24-27, 2023.
11. DEWATERING WELLS WERE ACTIVE AROUND THE PRIMARY POND DURING THE APRIL 2023 SAMPLING EVENT.
12. THE GROUNDWATER ELEVATION FOR M-4R (*) WAS NOT USED FOR CONTOURING OF THE WATER TABLE (SHALLOW) DUE TO ADJACENT PUMPING AND DEWATERING ACTIVITIES.

PROJECT NO.	25223067.00	DRAWN BY:	KP
DRAWN:	10/12/2023	CHECKED BY:	NLB
REVISED:	01/22/2024	APPROVED BY:	TK 1/29/2024

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

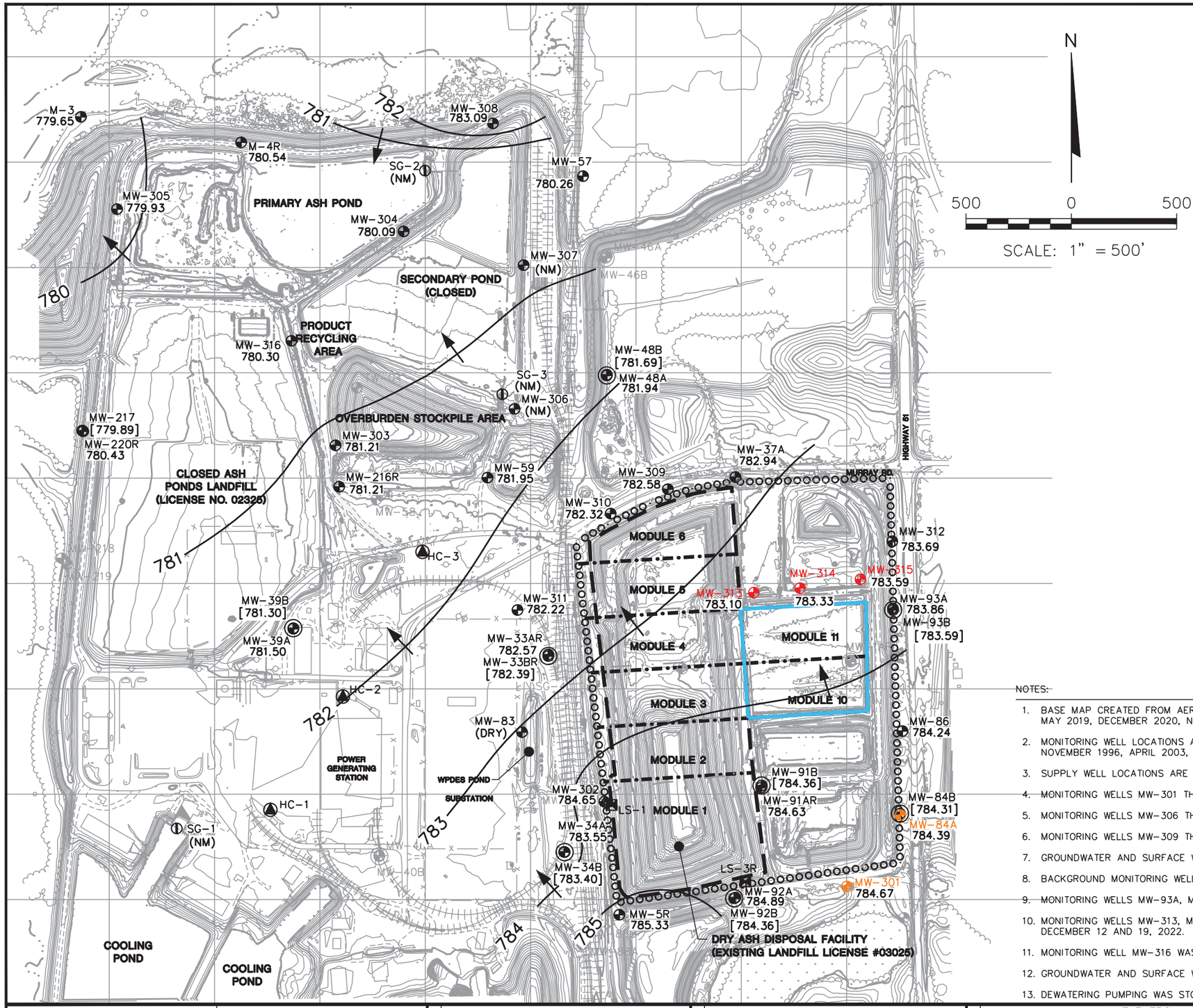
CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 4-6 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
APRIL 2023

FIGURE 3

I:\25223067.00\Drawings\Module 4\Water Table Map-April 2023.dwg, 1/22/2024 9:41:17 AM



LEGEND

- EXISTING MAJOR CONTOUR (10' INTERVAL)
- EXISTING MINOR CONTOUR (2' CONTOUR)
- EXISTING FENCELINE
- EXISTING TRACKS
- EXISTING PAVED ROAD
- EXISTING UNPAVED ROAD
- EDGE OF WATER
- DRY ASH DISPOSAL FACILITY LIMITS
- LIMITS OF WASTE
- LINER PHASE/MODULE LIMITS
- WATER SUPPLY WELL
- STAFF GAUGE
- WATER TABLE WELL
- PIEZOMETER
- LYSIMETER
- ABANDONED WATER TABLE WELL
- ABANDONED PIEZOMETER
- CCR UNIT
- CCR MONITORING WELL
- CCR BACKGROUND MONITORING WELL
- 787.62 WATER TABLE ELEVATION
- [788.87] POTENTIOMETRIC SURFACE ELEVATION (NOT CONTOURED)
- (795.20) SURFACE WATER ELEVATION (NOT CONTOURED)
- WATER TABLE CONTOUR
- APPROXIMATE GROUNDWATER FLOW DIRECTION

NOTES:

1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEYS BY SCS ENGINEERS IN MAY 2019, DECEMBER 2020, NOVEMBER 2021, AND DECEMBER 2021, AND BY DRONE SURVEY BY AMES IN NOVEMBER 2022.
2. MONITORING WELL LOCATIONS AND ELEVATIONS SURVEYED BY WISCONSIN POWER AND LIGHT, INC. IN DECEMBER 1994, NOVEMBER 1996, APRIL 2003, AND JANUARY 2016 AND BY SCS ENGINEERS IN FEBRUARY 2018.
3. SUPPLY WELL LOCATIONS ARE APPROXIMATE AND ASSUMED BASED ON JANUARY 2013 DRAWINGS BY TRC.
4. MONITORING WELLS MW-301 THROUGH MW-305 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 11-13, 2015.
5. MONITORING WELLS MW-306 THROUGH MW-308 INSTALLED BY BADGER STATE DRILLING ON NOVEMBER 14-15, 2016.
6. MONITORING WELLS MW-309 THROUGH MW-311 INSTALLED BY BADGER STATE DRILLING ON FEBRUARY 13-14, 2018.
7. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON APRIL 12-14, 2021.
8. BACKGROUND MONITORING WELLS FOR THE MODULE 10-11 DRY ASH FACILITY ARE: MW-301 AND MW-84A.
9. MONITORING WELLS MW-93A, MW-93B, AND MW-312 INSTALLED BY CASCADE ENVIRONMENTAL ON MARCH 25-28, 2022.
10. MONITORING WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
11. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
12. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED OCTOBER 2023.
13. DEWATERING PUMPING WAS STOPPED SEPTEMBER 11, 2023.

PROJECT NO.	25224067.00	DRAWN BY:	KP/SB
DRAWN:	11/13/2023	CHECKED BY:	
REVISED:	06/04/2024	APPROVED BY:	

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

CLIENT: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
W8375 MURRAY ROAD
PARDEEVILLE, WI 53954

SITE: ALLIANT ENERGY
COLUMBIA ENERGY CENTER
MODULES 10-11 DRY ASH DISPOSAL FACILITY
PARDEEVILLE, WI

WATER TABLE MAP
OCTOBER 2023

FIGURE
3

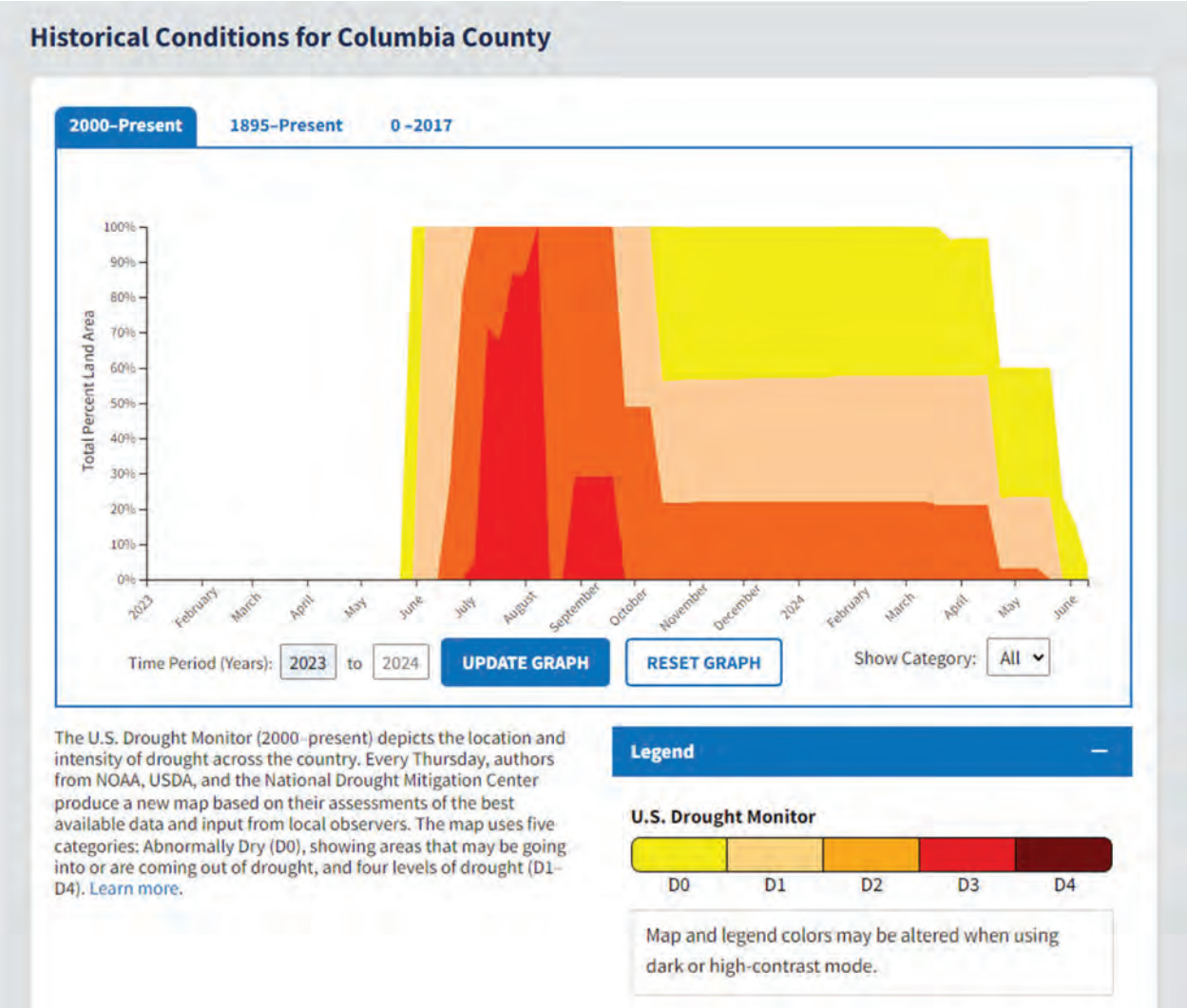
I:\25224067.00\Drawings\Modules 10-11\Water Table Map-October 2023.dwg, 6/4/2024 12:29:40 PM

Appendix D

Drought Conditions Plot

Drought Conditions in Columbia County, Wisconsin, 1/2023 – 6/2024

Source: https://www.drought.gov/states/wisconsin/county/columbia



Appendix F

Updated UPL Memorandum

March 22, 2024
File No. 25223067.00

TECHNICAL MEMORANDUM

SUBJECT: Statistical Evaluation of Groundwater Monitoring Results
Columbia Dry Ash Disposal Facility Modules 10 and 11 Landfill
October 2023 Sampling Event

PREPARED BY: Ryan Matzuk

CHECKED BY: Sherren Clark

STATISTICAL METHOD

The statistical analysis using commercially available software (*Sanitas for Groundwater*© or similar) in general accordance with the U.S. Environmental Protection Agency's (U.S. EPA's) *Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities* dated March 2009 (Unified Guidance) (U.S. EPA, 2009) and generally accepted procedures. For the prediction interval evaluation, intrawell testing was selected based on the considerations outlined in Chapter 6 of the Unified Guidance. The statistical program used to calculate the intrawell prediction interval is Sanitas™.

Groundwater monitoring data for the Columbia (COL) CCR Module 10 and 11 units is evaluated in accordance with 40 CFR 257.93(f)(3), using a prediction interval procedure, in which an interval for each constituent is established from the distribution of the background data, and the level of each constituent in each compliance well is compared to the upper prediction limit.

Under the intrawell approach, detection monitoring results are compared to upper prediction limits (UPLs) calculated based on background monitoring results from the same wells.

Eight rounds of background monitoring were performed prior to coal combustion residual (CCR) disposal in the Mod 10 and 11 CCR landfill. The background wells for Mods 10-11 (MW-84A and MW-301) are shared background wells for all of the COL CCR units. Compliance wells for Mods 10 and 11 include MW-313, MW-314, and MW-315. For the Mods 10 and 11 compliance wells, background monitoring was performed from January 2023 to August 2023. Because the Mods 10 and 11 evaluation is intrawell, the background well data is not used in the statistical evaluation, but is available for use in data interpretation as needed.

TIME SERIES PLOTS

Time series plots were prepared for the required detection monitoring parameters to show the concentration variations over time, and are included in **Attachment A**. The time series plots include the three compliance wells and two background wells for Mods 10 and 11.

OUTLIER ANALYSIS

For the intrawell evaluation, an outlier analysis was performed for the background monitoring results at each of the three compliance wells. A statistical outlier is a value that is extremely different from the other values in the data set. The Sanitas outlier tests identify data points that do not appear to fit the distribution of the rest of the data set and determine if they differ significantly from the rest of the data. The outlier analysis performed in Sanitas includes the following steps:

1) Run normality test (Shapiro Wilk).
   a) If not normal, transform to natural log and test for lognormal distribution.

2) If normally or lognormally distributed, run U.S. EPA's 1989 Outlier Test to identify suspected outliers:
   a) If number of background samples is less than or equal to 25, run Dixon's test for suspected outliers.
   b) If number of background samples is more than 25, run Rosner's test for suspected outliers.

3) If not normally distributed, run Tukey's test for outliers.

4) Review data flagged as possible outliers to evaluate whether they should be removed from the background data set. Also review time series plots for possible outliers that were not picked up in the statistical evaluation (e.g., outlier test may not identify outliers when two values are similar to each other, but very different from all other data).

The Sanitas output for the outlier analysis is provided in Attachment B.

Results identified as statistical outliers are checked for possible lab instrument failure, field collection problems, or data entry errors. However, outliers may exist naturally in the data if there is an extremely wide inherent or temporal variability in the data. The Unified Guidance states that unless a likely error can be identified, the outlier should not be removed.

For the October 2023 data evaluation, the following background values were identified as potential outliers and handled as described:

- Boron (MW-315): One low result from the February 2023 sampling event was flagged by Sanitas as a statistical outlier. This result was kept in the dataset because there was no known explanation for the low result and the result falls within a reasonable range slightly below other observed results, but is below the limit of quantification. Because the background samples were all collected within one calendar year, the degree of natural variation and seasonality cannot yet be determined.

- Fluoride (MW-313): One high result from the May 2023 sampling was flagged by Sanitas as a statistical outlier. This result was kept in the dataset because there was no known explanation for the varying results, and the result falls within a reasonable range for this parameter. Because the background samples were all collected within one calendar year, the degree of natural variation and seasonality cannot yet be determined.

INTRAWELL PREDICTION LIMITS

Intrawell UPLs were calculated using background data from the compliance wells for each monitored constituent, with outliers handled as noted above. The prediction limit analysis performed in Sanitas includes the following steps:

1) If more than 50 percent of results are non-detect, apply a non-parametric UPL. For small background sample sizes, the non-parametric UPL is the highest background value. For a parameter with 100 percent non-detects in the background values, the Double Quanitification rule applies, which says that an statistically significant increase (SSI) occurs when two results exceeding the quantification limit are reported for a compliance well.

2) If 50 percent or fewer of the results are non-detect, run normality test (Shapiro Wilk/Francia) to assess whether the data fit a normal distribution or can be transformed to fit a normal distribution (e.g., lognormal).

3) If normal or transformed normal, calculate parametric UPL.

4) If not normal or transformed normal, calculate non-parametric UPL.

Consistent with the Unified Guidance, parametric prediction limits were calculated based on a 1-of-2 retesting protocol and a target 10 percent annual site-wide false positive rate. Sanitas establishes the per-test significance level based on user inputs of the number of events per year, number of constituents being evaluated, and number of compliance wells. For the October 2023 event, the following values were used:

Parameter	Value	Comments
Evaluations per year	2	April and October events
Constituents analyzed	7	Total of 7 constituents analyzed for detection monitoring
Compliance wells	3	MW-313, MW-314, MW-315

Non-parametric prediction limits are also based on a 1-of-2 retesting protocol. The non-parametric limit for these initial UPL calculations is the highest value in the background dataset. Due to the small sample size, the false positive rate for the non-parametric tests is higher than for the parametric tests, but will go down as more background data are obtained.

For results with 100 percent non-detects in the background data, evaluation under the Double Quantification Rule means that a SSI has not occurred for a compliance well unless two sample results from the well exceed the laboratory's reporting limit or quanitification limit. For evaluation of parameters with less than 100 percent non-detects in the background sampling, the non-detects were replaced with a value of one-half the detection limit. For all parameters, only results at or above the laboratory's reporting limit or quanitification limit are compared to the UPL for SSI determination.

Intrawell prediction limit analysis results for 2023 are included in Attachment C.

RESULTS

Detection monitoring parameters for which SSIs above background were identified during the October 2023 monitoring event include the following:

- Calcium: MW-315
- TDS: MW-315

Encl. Attachment A Time Series Plots
Attachment B Outlier Analysis
Attachment C Intrawell Prediction Limit Analysis

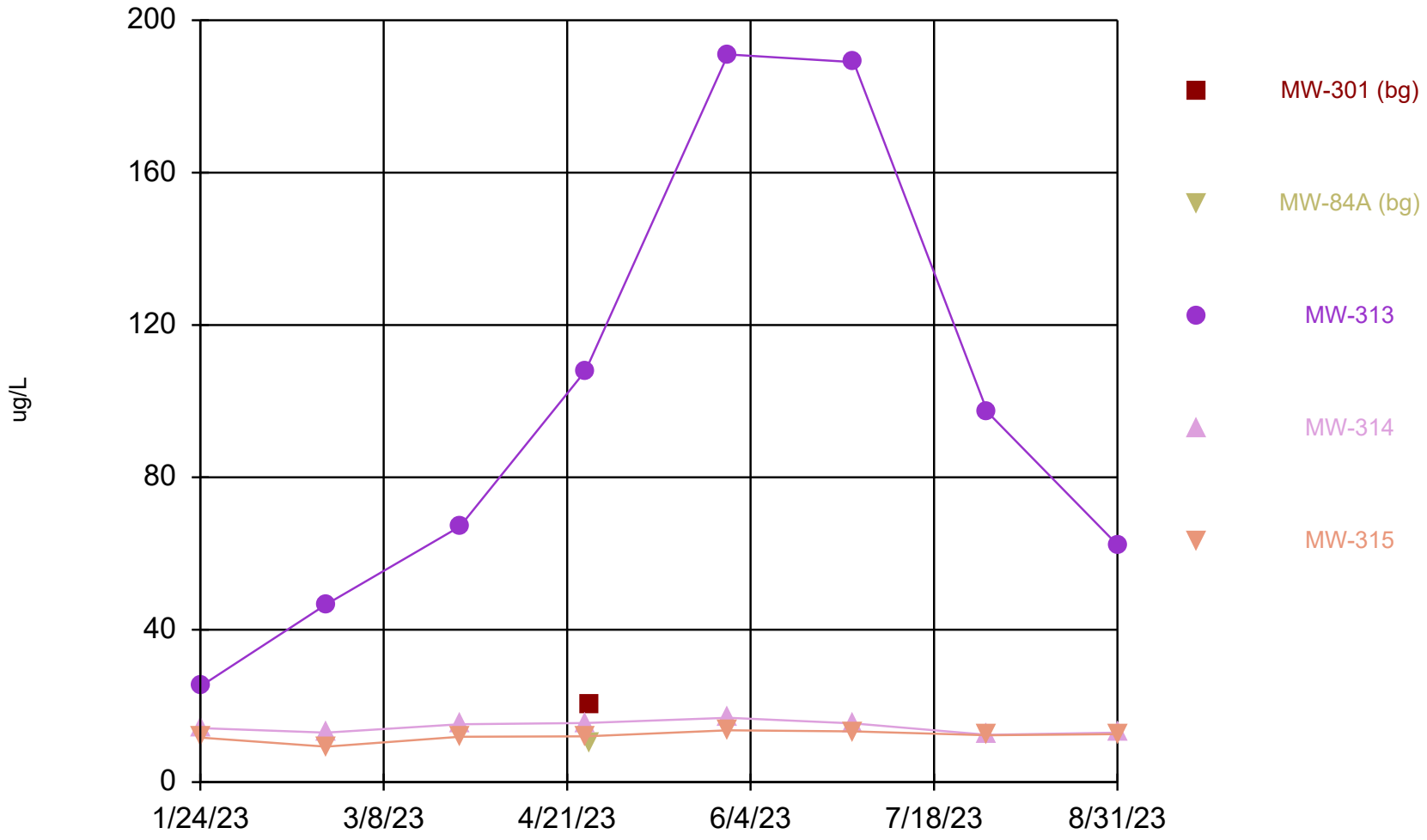
RM/AJR/SCC

I:\25223067.00\Deliverables\COL MOD 10-11 - October 2023 Results Letter\Att B - Statistical Evaluation\240322_COL Mod 10-11_2023 Oct_Stats Memo.docx

Attachment A

Time Series Plots

Boron



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

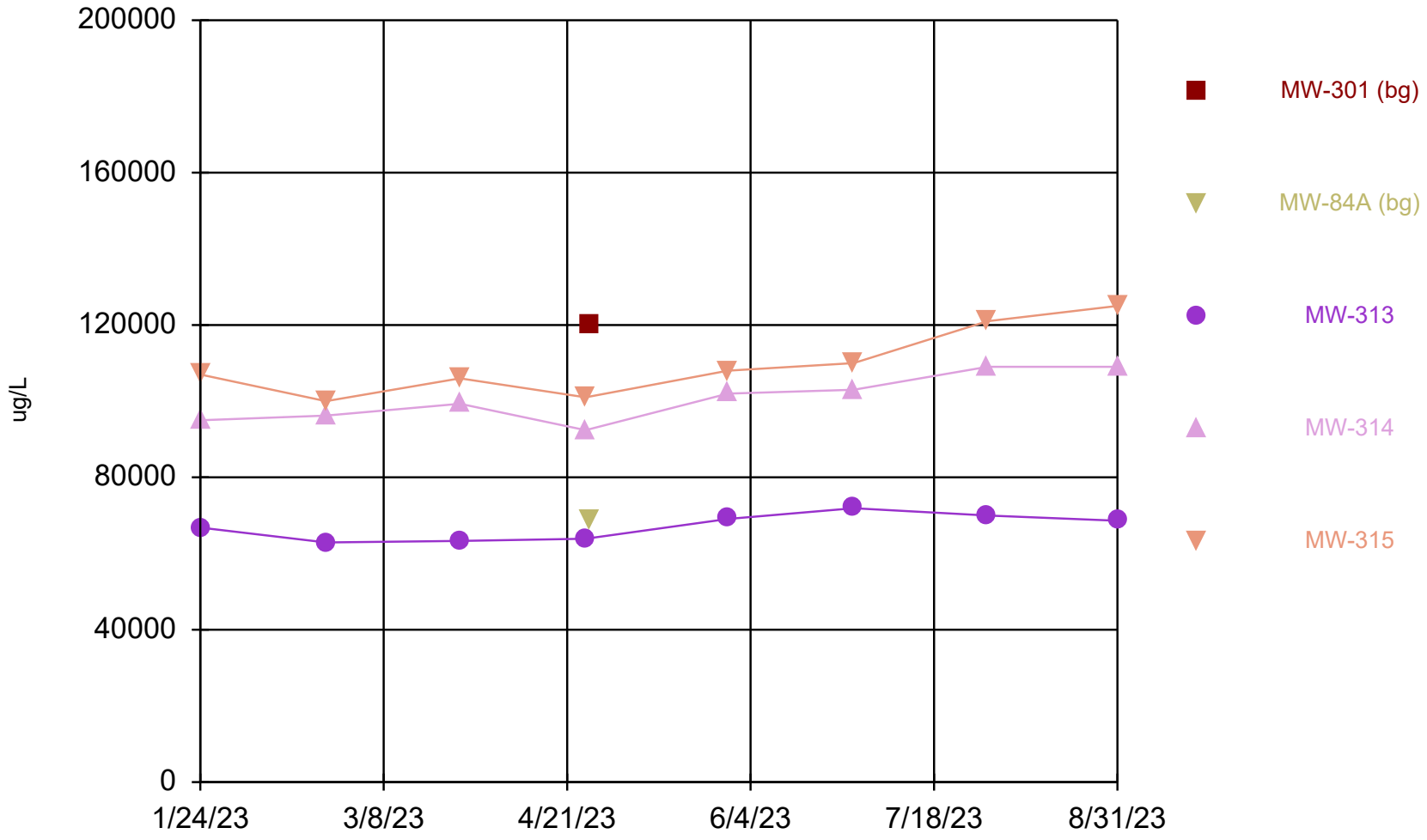
Time Series

Constituent: Boron (ug/L) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			25.1	14.2	11.7
2/23/2023			46.6	13	9.3 (J)
3/27/2023			67.1	15.2	11.9
4/26/2023			108	15.5	12
4/27/2023	20.1	10.3			
5/30/2023			191	16.9	13.6
6/29/2023			189	15.4	13.3
7/31/2023			97.1	12.4	12.3
8/31/2023			62.3	13	12.6

Calcium



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

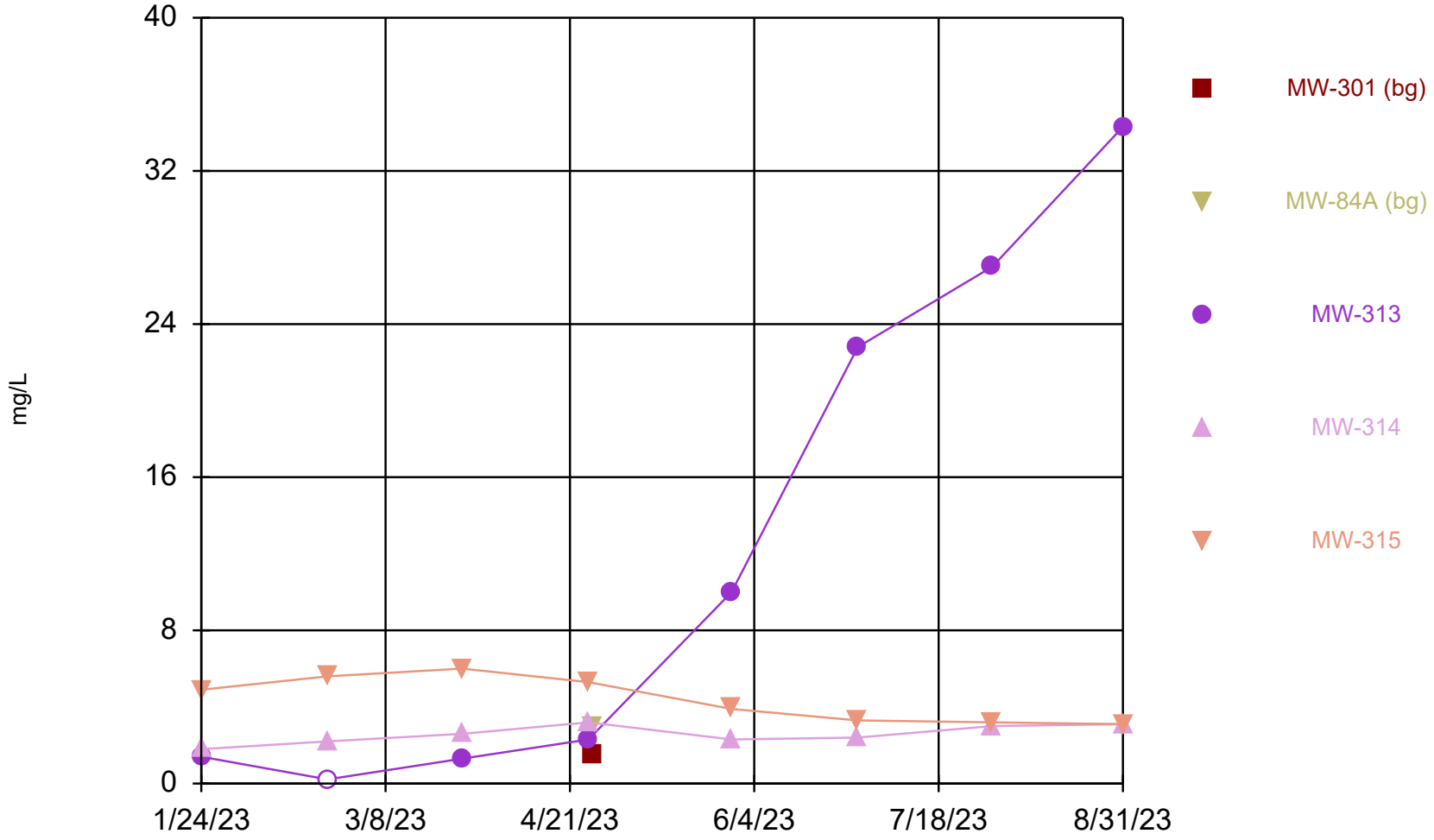
Constituent: Calcium (ug/L) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			66800	95000	107000
2/23/2023			62900	96200	100000
3/27/2023			63300	99300	106000
4/26/2023			63900	92400	101000
4/27/2023	120000	68600			
5/30/2023			69100	102000	108000
6/29/2023			71900	103000	110000
7/31/2023			70000	109000	121000
8/31/2023			68600	109000	125000

Hollow symbols indicate censored values.

Chloride



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

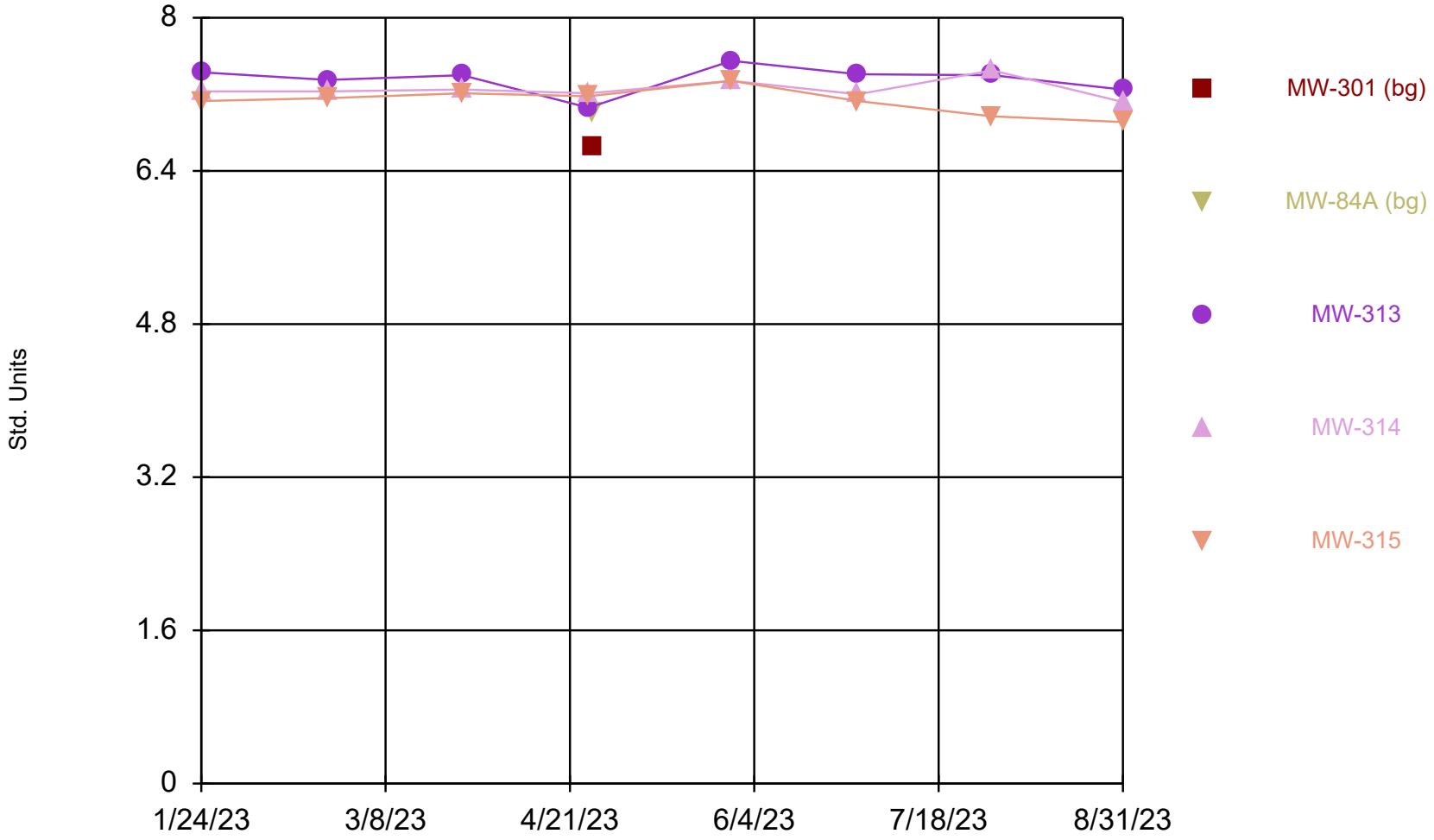
Constituent: Chloride (mg/L) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			1.4 (J)	1.8 (J)	4.9
2/23/2023			<0.43 (U)	2.2	5.6
3/27/2023			1.3 (J)	2.6	6
4/26/2023			2.3	3.2	5.3
4/27/2023	1.5 (J)	3			
5/30/2023			10	2.3	3.9
6/29/2023			22.8	2.4	3.3
7/31/2023			27	3	3.2
8/31/2023			34.3	3.1	3.1

ND substitution: RL or RL/2 if <15% NDs.

Field pH



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

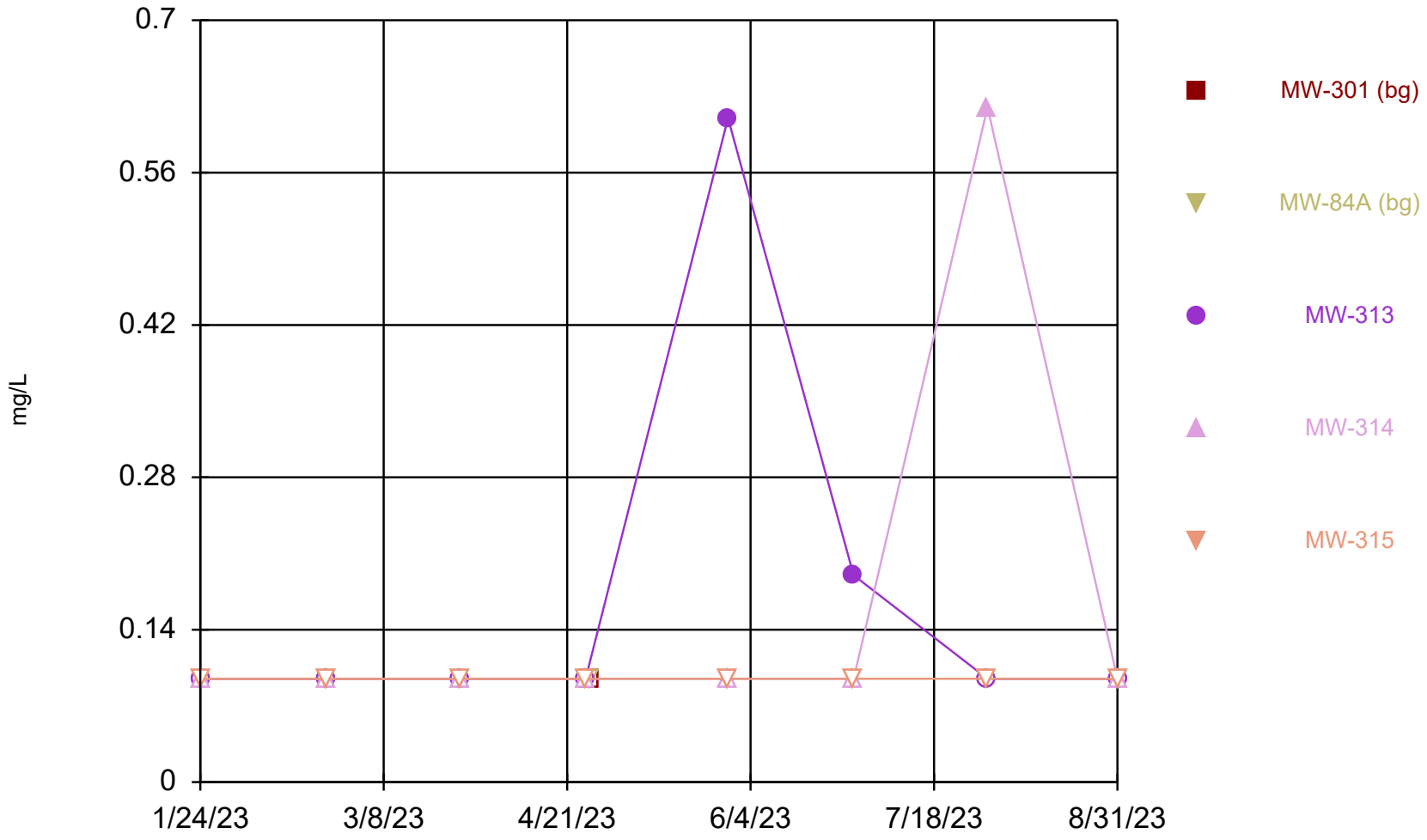
Time Series

Constituent: Field pH (Std. Units) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			7.43	7.23	7.13
2/23/2023			7.35	7.23	7.16
3/27/2023			7.4	7.25	7.21
4/26/2023			7.06	7.21	7.18
4/27/2023	6.65	7.01			
5/30/2023			7.55	7.34	7.34
6/29/2023			7.41	7.2	7.13
7/31/2023			7.4	7.45	6.97
8/31/2023			7.25	7.12	6.91

Hollow symbols indicate censored values.

Fluoride



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

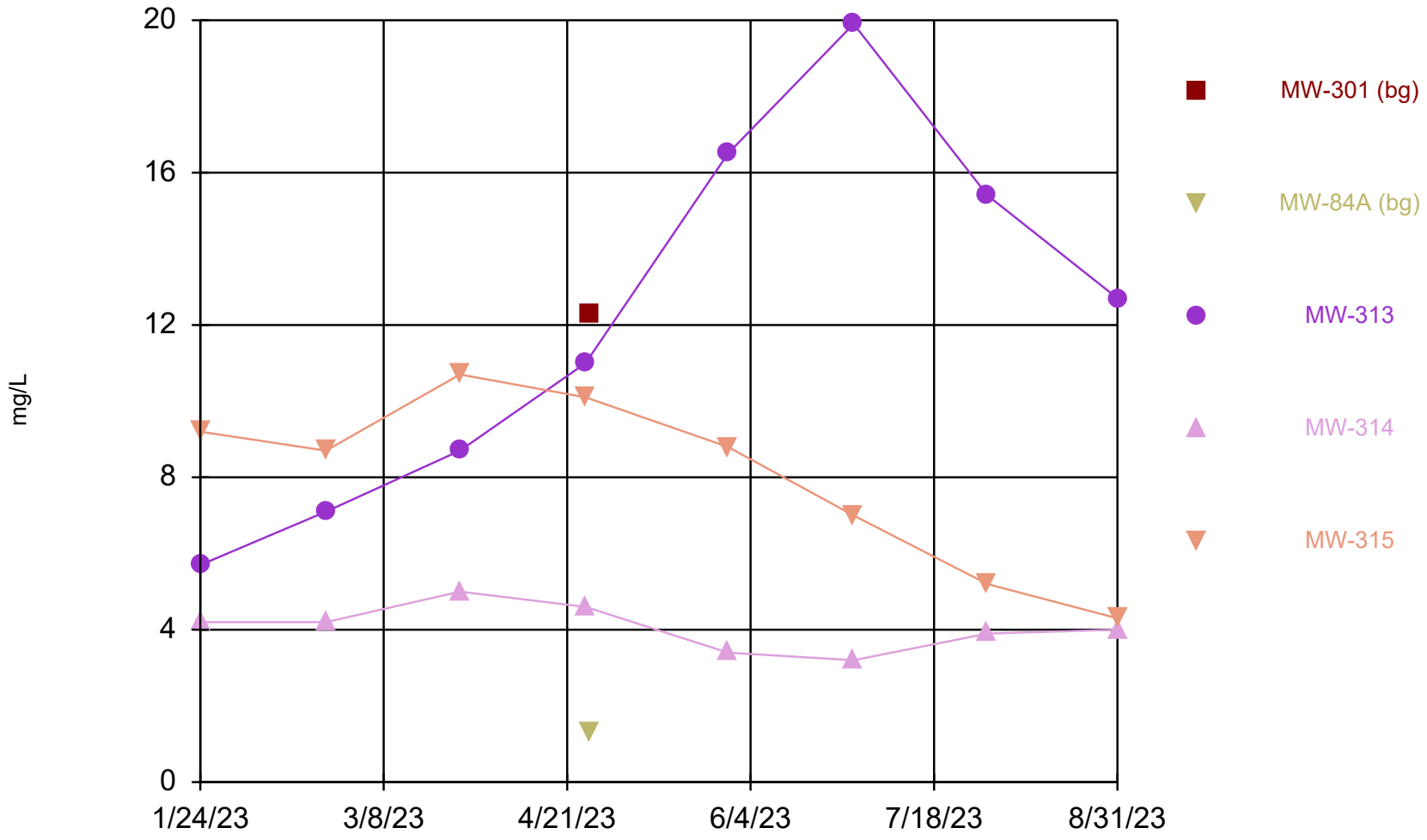
Constituent: Fluoride (mg/L) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)
2/23/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)
3/27/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)
4/26/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)
4/27/2023	<0.095 (U)	<0.095 (U)			
5/30/2023			0.61	<0.095 (U)	<0.095 (U)
6/29/2023			0.19 (J)	<0.095 (U)	<0.095 (U)
7/31/2023			<0.095 (U)	0.62	<0.095 (U)
8/31/2023			<0.095 (U)	<0.095 (U)	<0.095 (U)

ND substitution: RL or RL/2 if <15% NDs.

Sulfate



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

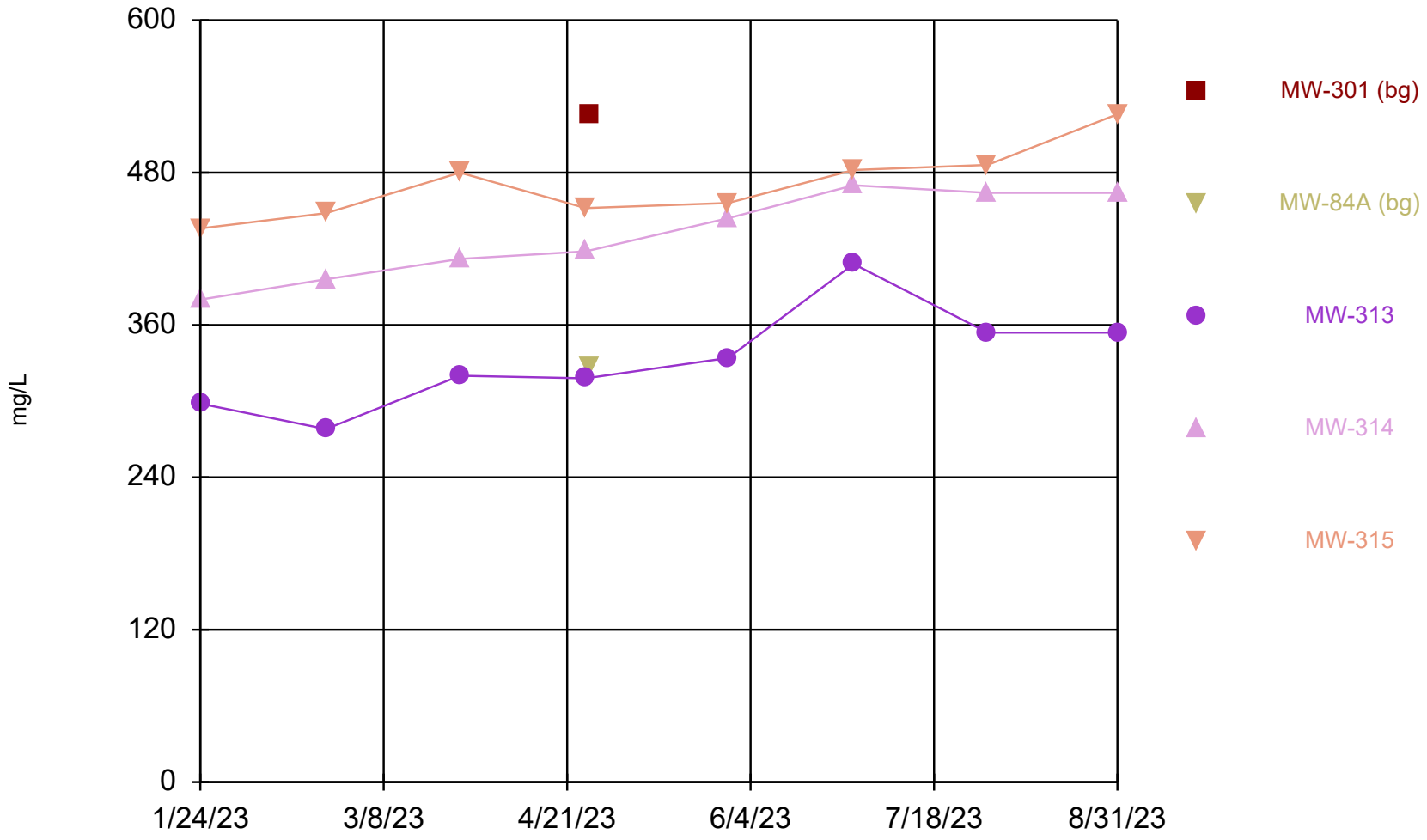
Time Series

Constituent: Sulfate (mg/L) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			5.7	4.2	9.2
2/23/2023			7.1	4.2	8.7
3/27/2023			8.7	5	10.7
4/26/2023			11	4.6	10.1
4/27/2023	12.3	1.3 (J)			
5/30/2023			16.5	3.4	8.8
6/29/2023			19.9	3.2	7
7/31/2023			15.4	3.9	5.2
8/31/2023			12.7	4	4.3

Total Dissolved Solids



Time Series Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Time Series

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/19/2023 11:18 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-301 (bg)	MW-84A (bg)	MW-313	MW-314	MW-315
1/24/2023			298	380	436
2/23/2023			278	396	448
3/27/2023			320	412	480
4/26/2023			318	418	452
4/27/2023	526	326			
5/30/2023			334	444	456
6/29/2023			408	470	482
7/31/2023			354	464	486
8/31/2023			354	464	526

Attachment B

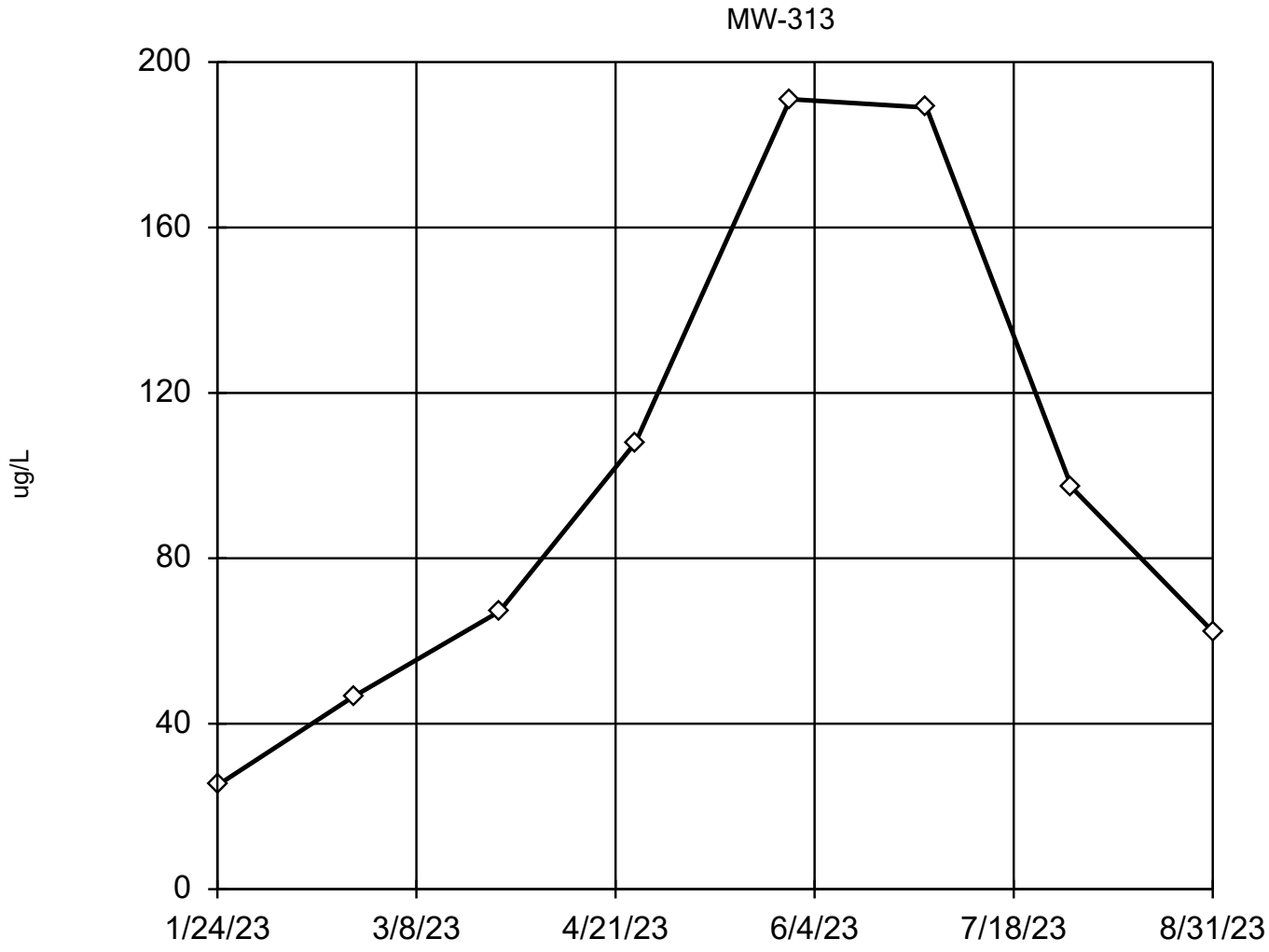
Outlier Analysis

Outlier Analysis

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020 Printed 12/19/2023, 11:32 AM

Constituent	Well	Outlier	Value(s)	Date(s)	Method	Alpha	N	Mean	Std. Dev.	Distribution	Normality Test
Boron (ug/L)	MW-313	No	n/a	n/a	EPA 1989	0.05	8	98.28	62.35	normal	ShapiroWilk
Boron (ug/L)	MW-314	No	n/a	n/a	EPA 1989	0.05	8	14.45	1.56	normal	ShapiroWilk
Boron (ug/L)	**MW-315**	**Yes**	**9.3**	**2/23/2023**	**Dixon`s**	**0.05**	**8**	**12.09**	**1.311**	**normal**	**ShapiroWilk**
Calcium (ug/L)	MW-313	No	n/a	n/a	EPA 1989	0.05	8	67063	3383	normal	ShapiroWilk
Calcium (ug/L)	MW-314	No	n/a	n/a	EPA 1989	0.05	8	100738	6191	normal	ShapiroWilk
Calcium (ug/L)	MW-315	No	n/a	n/a	EPA 1989	0.05	8	109750	8908	normal	ShapiroWilk
Chloride (mg/L)	MW-313	No	n/a	n/a	EPA 1989	0.05	8	12.41	13.63	ln(x)	ShapiroWilk
Chloride (mg/L)	MW-314	No	n/a	n/a	EPA 1989	0.05	8	2.575	0.4921	normal	ShapiroWilk
Chloride (mg/L)	MW-315	No	n/a	n/a	EPA 1989	0.05	8	4.413	1.174	normal	ShapiroWilk
Field pH (Std. Units)	MW-313	No	n/a	n/a	Dixon`s	0.05	8	7.356	0.1458	normal	ShapiroWilk
Field pH (Std. Units)	MW-314	No	n/a	n/a	EPA 1989	0.05	8	7.254	0.09985	normal	ShapiroWilk
Field pH (Std. Units)	MW-315	No	n/a	n/a	EPA 1989	0.05	8	7.129	0.1352	normal	ShapiroWilk
Fluoride (mg/L)	**MW-313**	**Yes**	**0.61**	**5/30/2023**	**NP (nrm)**	**NaN**	**8**	**0.1712**	**0.1804**	**unknown**	**ShapiroWilk**
Fluoride (mg/L)	MW-314	n/a	n/a	n/a	NP (nrm)	NaN	8	0.1606	0.1856	unknown	ShapiroWilk
Fluoride (mg/L)	MW-315	n/a	n/a	n/a	NP (nrm)	NaN	8	0.095	0	unknown	ShapiroWilk
Sulfate (mg/L)	MW-313	No	n/a	n/a	EPA 1989	0.05	8	12.13	4.931	normal	ShapiroWilk
Sulfate (mg/L)	MW-314	No	n/a	n/a	EPA 1989	0.05	8	4.063	0.5878	normal	ShapiroWilk
Sulfate (mg/L)	MW-315	No	n/a	n/a	EPA 1989	0.05	8	8	2.293	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-313	No	n/a	n/a	EPA 1989	0.05	8	333	39.91	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-314	No	n/a	n/a	EPA 1989	0.05	8	431	34.28	normal	ShapiroWilk
Total Dissolved Solids (mg/L)	MW-315	No	n/a	n/a	EPA 1989	0.05	8	470.8	28.76	normal	ShapiroWilk

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 98.28, std. dev. 62.35, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.884
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

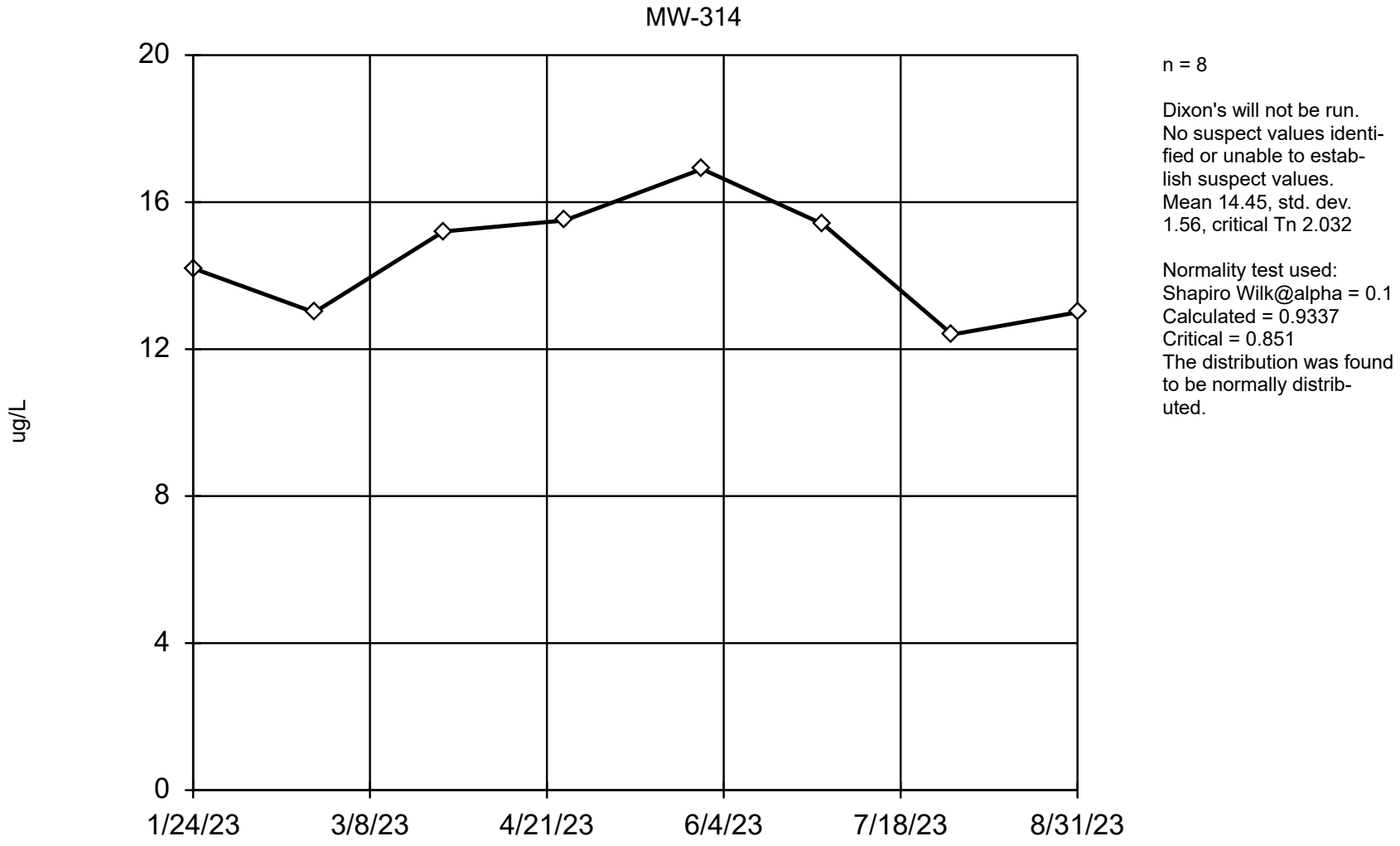
EPA 1989 Outlier Screening

Constituent: Boron (ug/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	25.1
2/23/2023	46.6
3/27/2023	67.1
4/26/2023	108
5/30/2023	191
6/29/2023	189
7/31/2023	97.1
8/31/2023	62.3

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 14.45, std. dev. 1.56, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9337
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Boron Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

EPA 1989 Outlier Screening

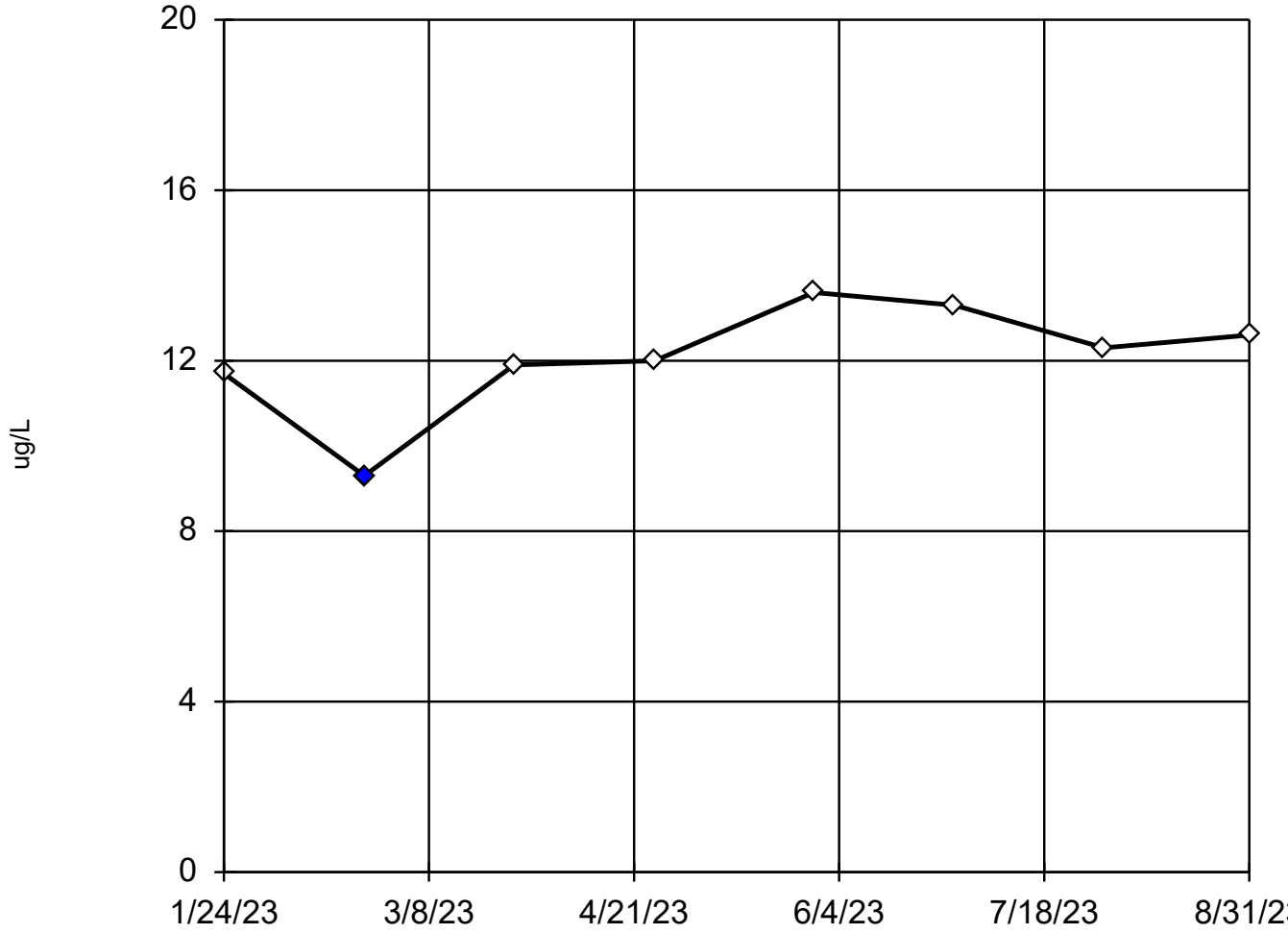
Constituent: Boron (ug/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	14.2
2/23/2023	13
3/27/2023	15.2
4/26/2023	15.5
5/30/2023	16.9
6/29/2023	15.4
7/31/2023	12.4
8/31/2023	13

Dixon's Outlier Test

MW-315



n = 8

Statistical outlier is drawn as solid.
Testing for 1 low outlier.
Mean = 12.09.
Std. Dev. = 1.311.
9.3 (J): c = 0.6
tabl = 0.554.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.91
Critical = 0.838
The distribution, after removal of suspect value, was found to be normally distributed.

Constituent: Boron Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

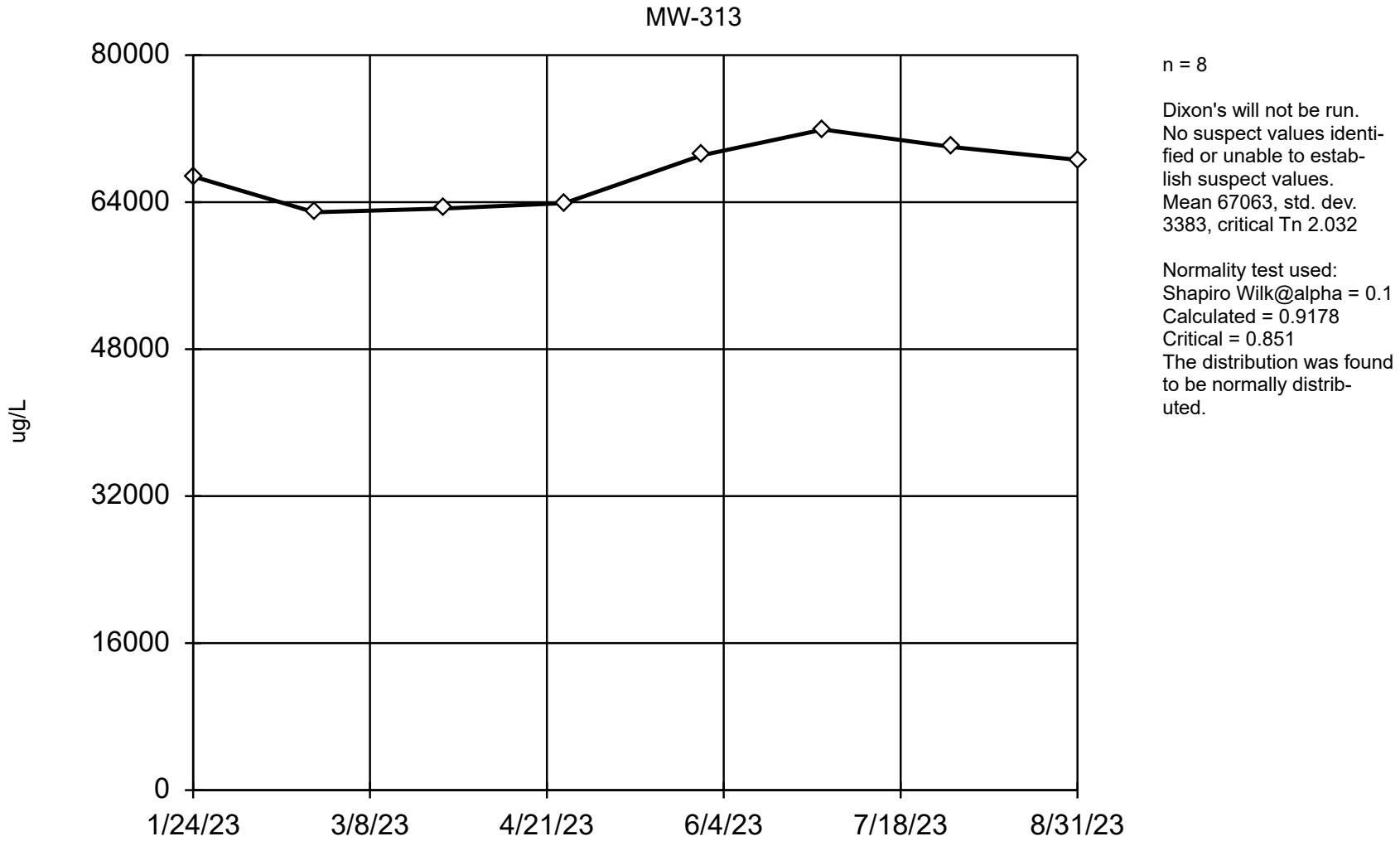
Dixon's Outlier Test

Constituent: Boron (ug/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	11.7
2/23/2023	9.3 (JO)
3/27/2023	11.9
4/26/2023	12
5/30/2023	13.6
6/29/2023	13.3
7/31/2023	12.3
8/31/2023	12.6

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 67063, std. dev. 3383, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9178
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

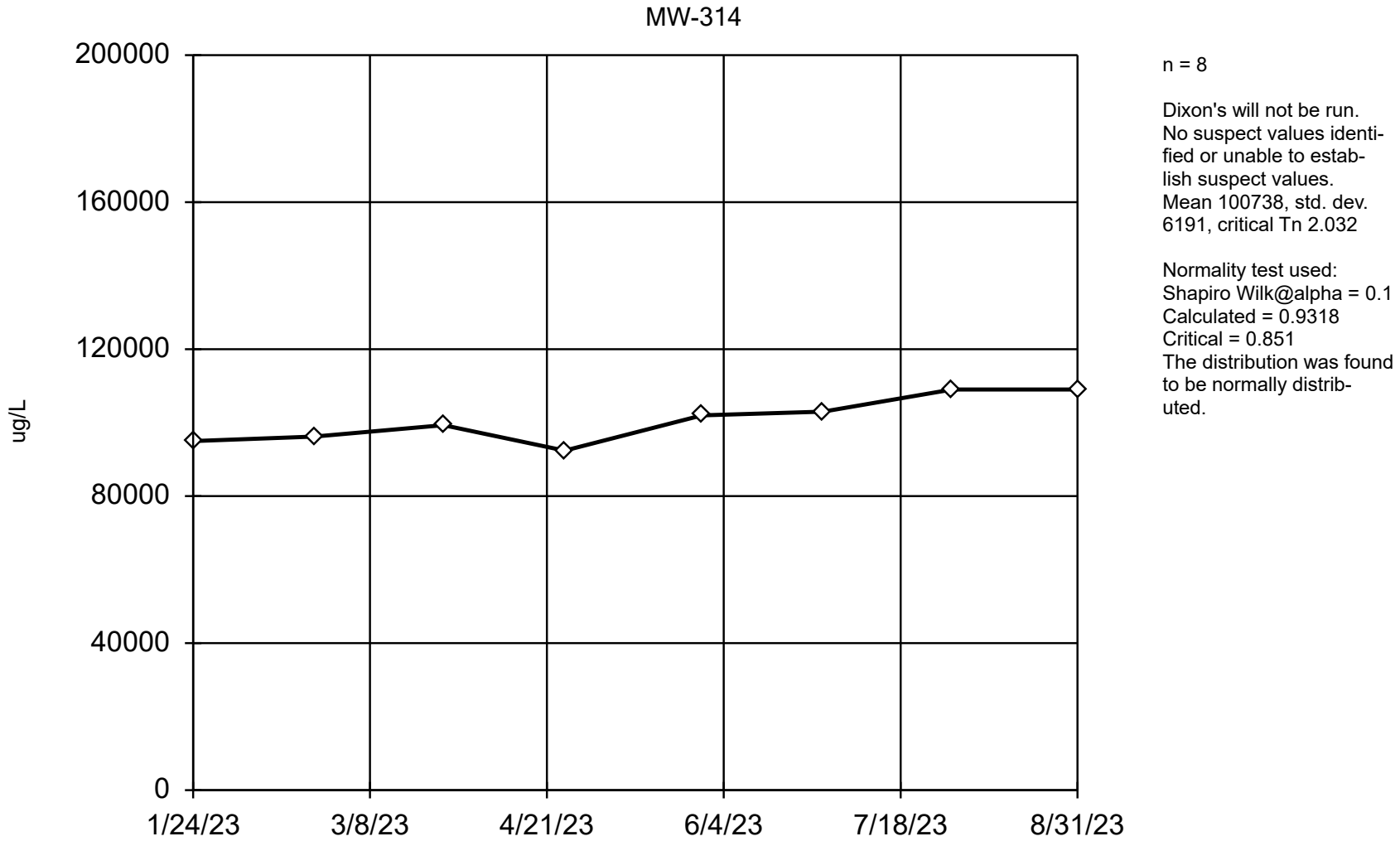
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	66800
2/23/2023	62900
3/27/2023	63300
4/26/2023	63900
5/30/2023	69100
6/29/2023	71900
7/31/2023	70000
8/31/2023	68600

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 100738, std. dev. 6191, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9318
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

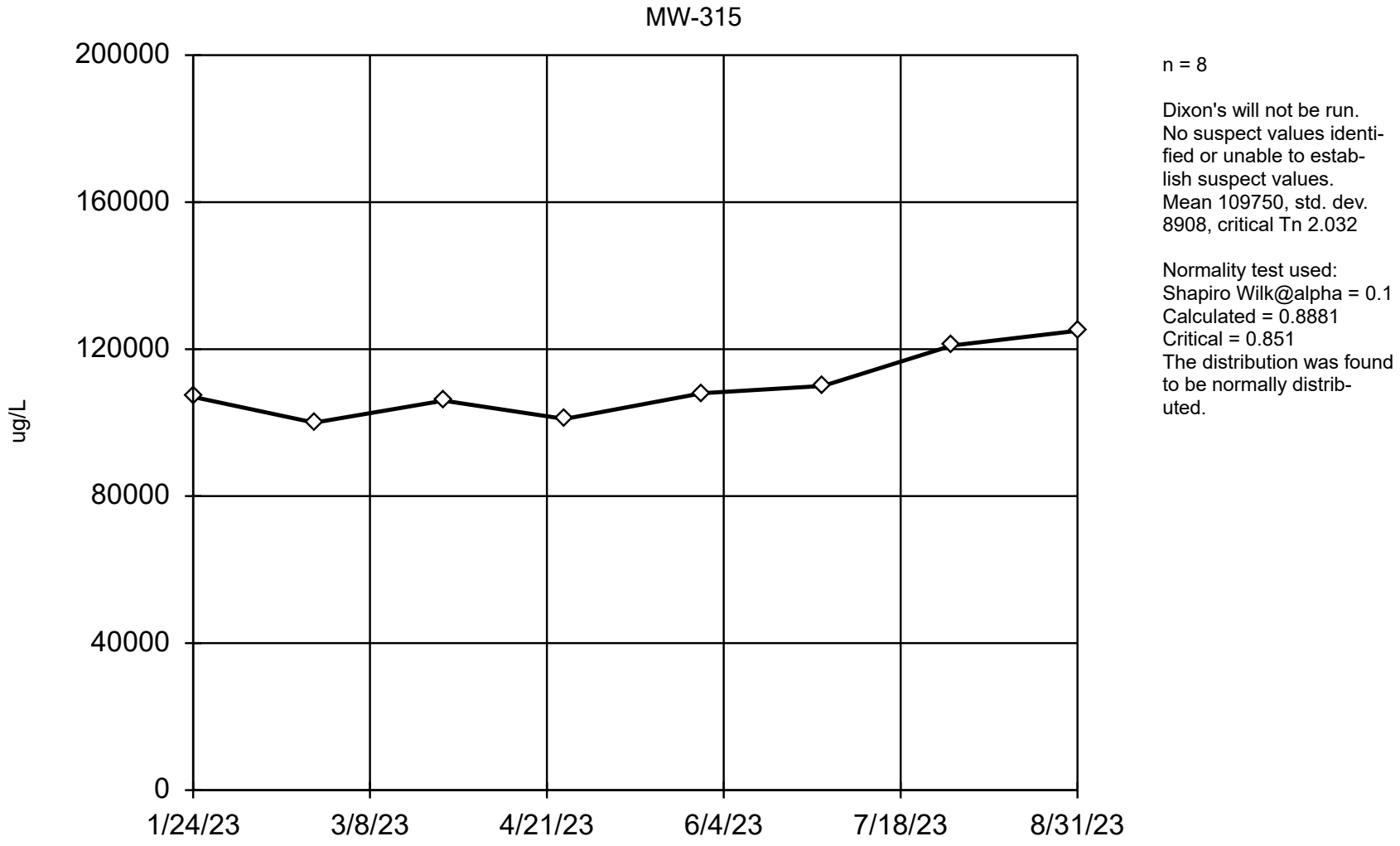
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	95000
2/23/2023	96200
3/27/2023	99300
4/26/2023	92400
5/30/2023	102000
6/29/2023	103000
7/31/2023	109000
8/31/2023	109000

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 109750, std. dev. 8908, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.8881
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Calcium Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

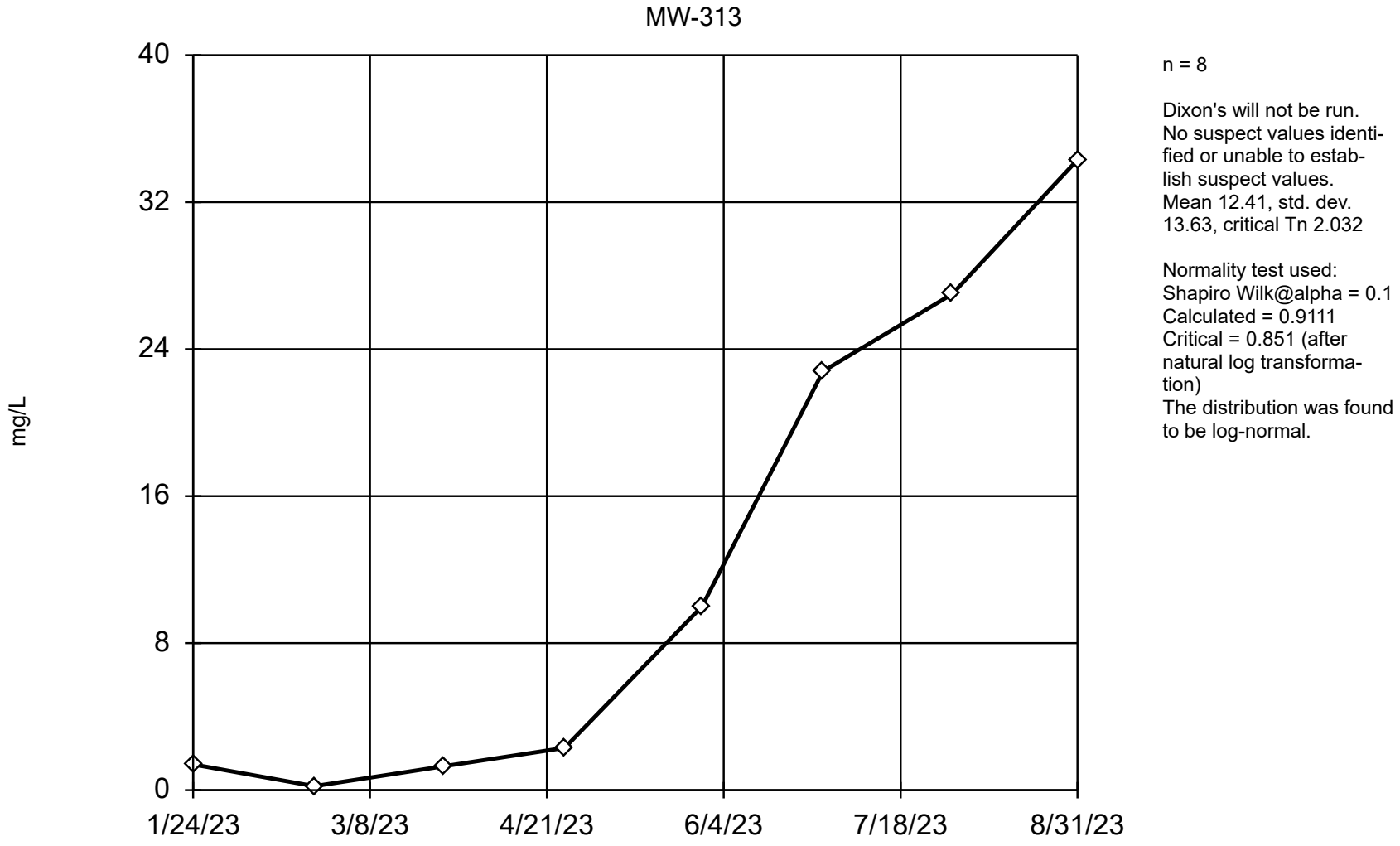
EPA 1989 Outlier Screening

Constituent: Calcium (ug/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	107000
2/23/2023	100000
3/27/2023	106000
4/26/2023	101000
5/30/2023	108000
6/29/2023	110000
7/31/2023	121000
8/31/2023	125000

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 12.41, std. dev. 13.63, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9111
Critical = 0.851 (after natural log transformation)
The distribution was found to be log-normal.

Constituent: Chloride Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

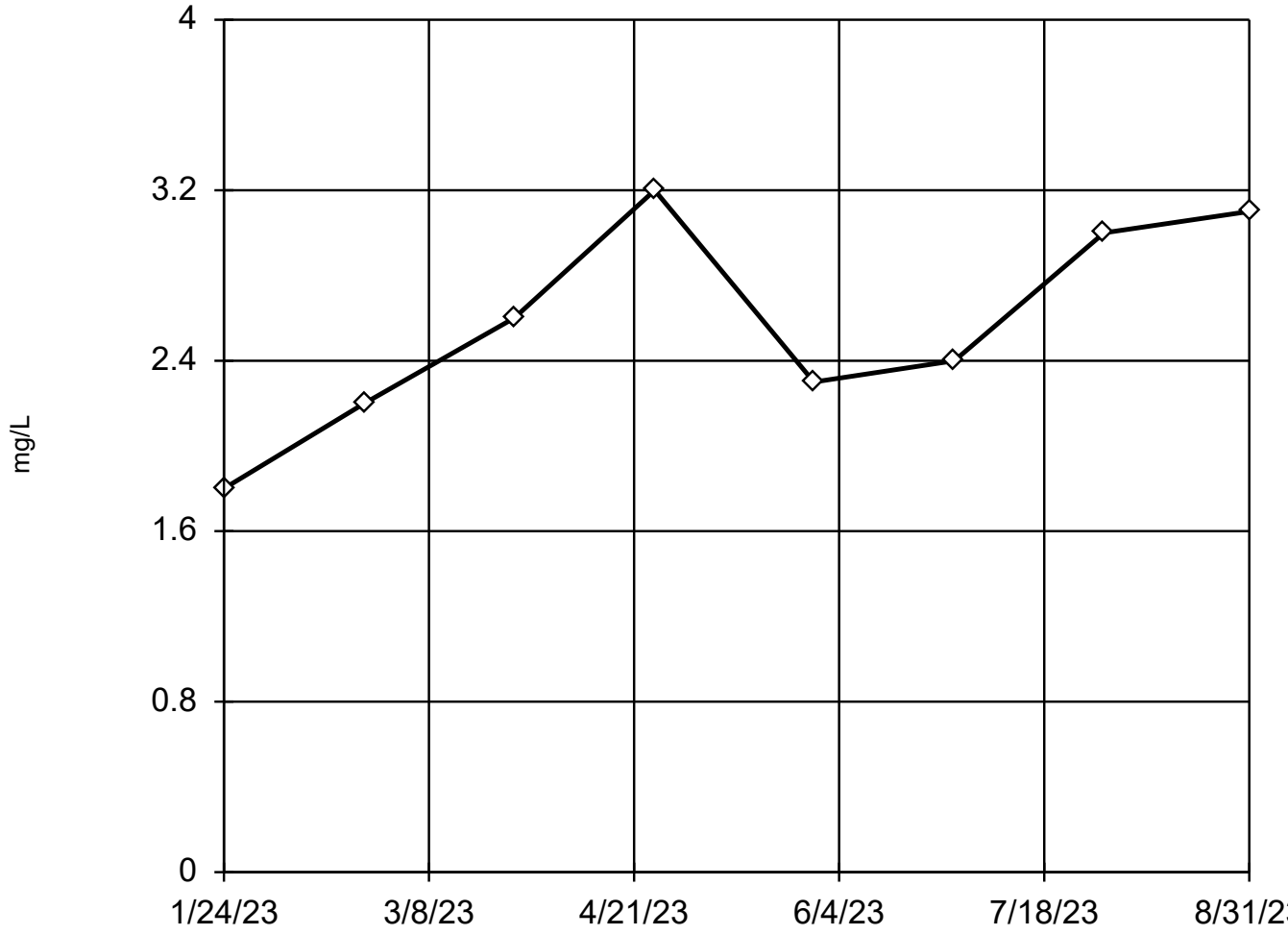
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	1.4 (J)
2/23/2023	<0.43 (U)
3/27/2023	1.3 (J)
4/26/2023	2.3
5/30/2023	10
6/29/2023	22.8
7/31/2023	27
8/31/2023	34.3

ND substitution: RL or RL/2 if <15% NDs.

EPA Screening (suspected outliers for Dixon's Test)

MW-314



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 2.575, std. dev. 0.4921, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9445
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

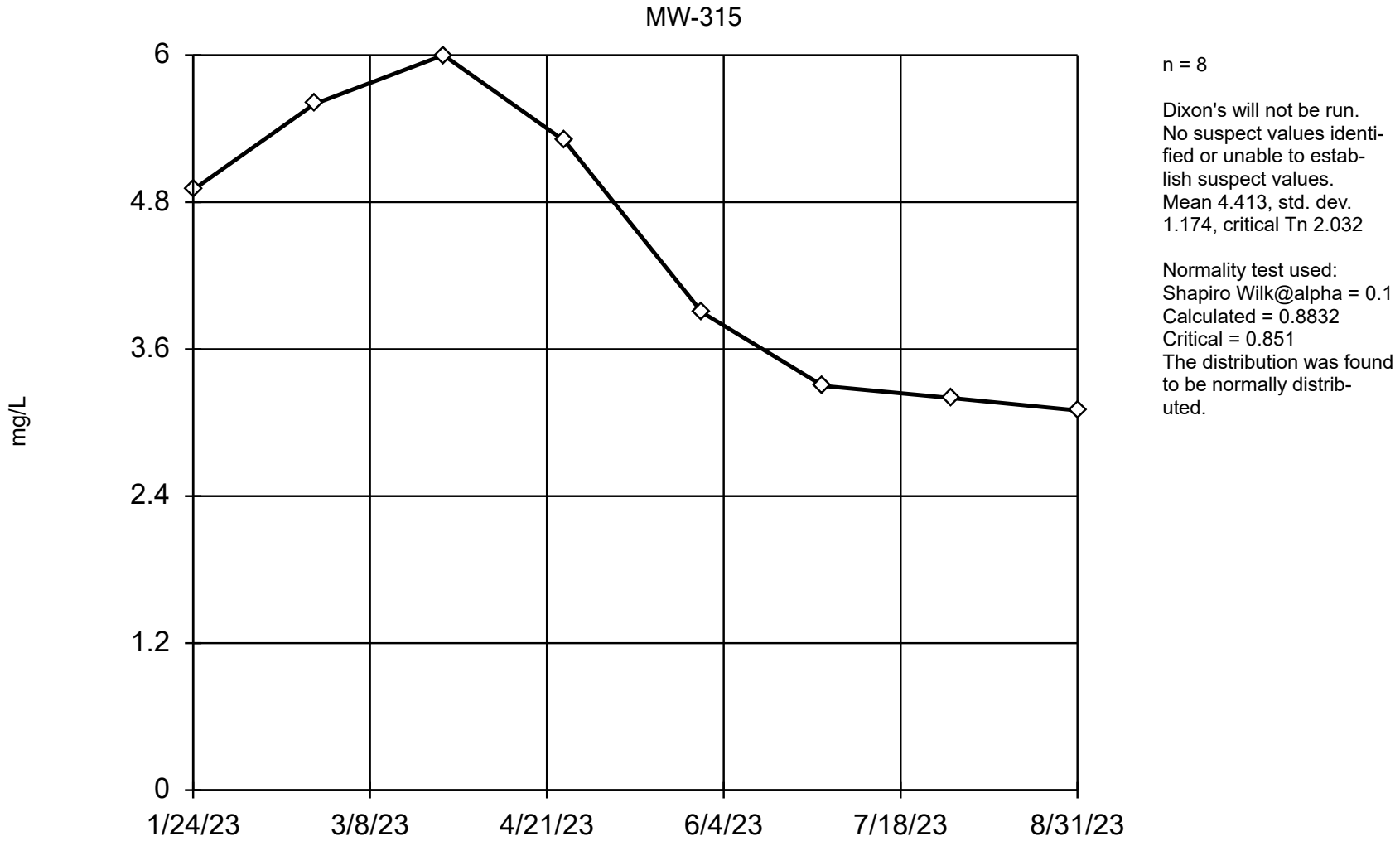
EPA 1989 Outlier Screening

Constituent: Chloride (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	1.8 (J)
2/23/2023	2.2
3/27/2023	2.6
4/26/2023	3.2
5/30/2023	2.3
6/29/2023	2.4
7/31/2023	3
8/31/2023	3.1

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 4.413, std. dev. 1.174, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.8832
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Chloride Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

EPA 1989 Outlier Screening

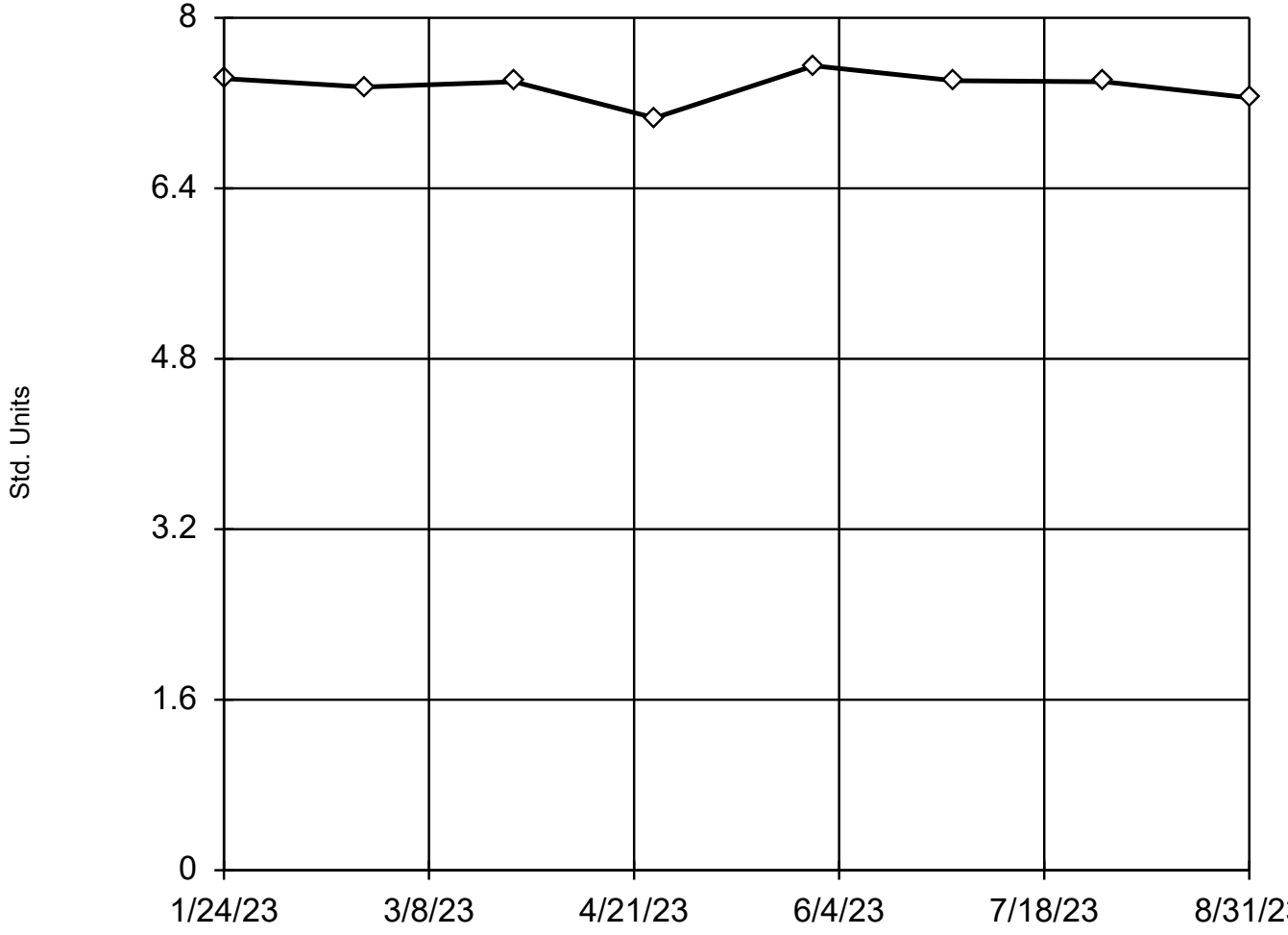
Constituent: Chloride (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	4.9
2/23/2023	5.6
3/27/2023	6
4/26/2023	5.3
5/30/2023	3.9
6/29/2023	3.3
7/31/2023	3.2
8/31/2023	3.1

Dixon's Outlier Test

MW-313



n = 8

No statistical outliers.
Testing for 1 low outlier.
Mean = 7.356.
Std. Dev. = 0.1458.
7.06: c = 0.5135
tabl = 0.554.
Alpha = 0.05.

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9325
Critical = 0.838
The distribution was found to be normally distrib-uted.

Constituent: Field pH Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Dixon's Outlier Test

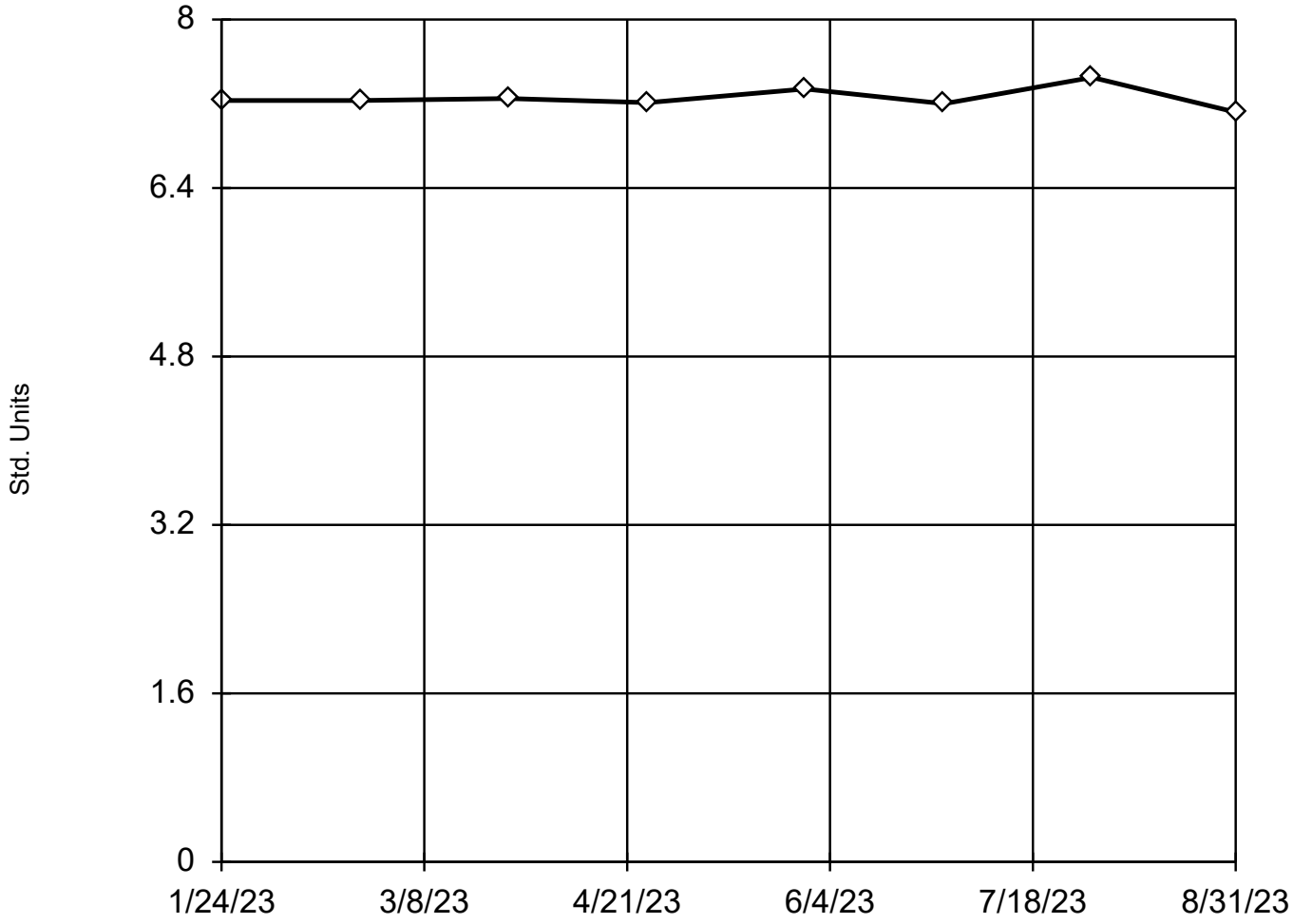
Constituent: Field pH (Std. Units) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	7.43
2/23/2023	7.35
3/27/2023	7.4
4/26/2023	7.06
5/30/2023	7.55
6/29/2023	7.41
7/31/2023	7.4
8/31/2023	7.25

EPA Screening (suspected outliers for Dixon's Test)

MW-314



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.254, std. dev. 0.09985, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9026
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

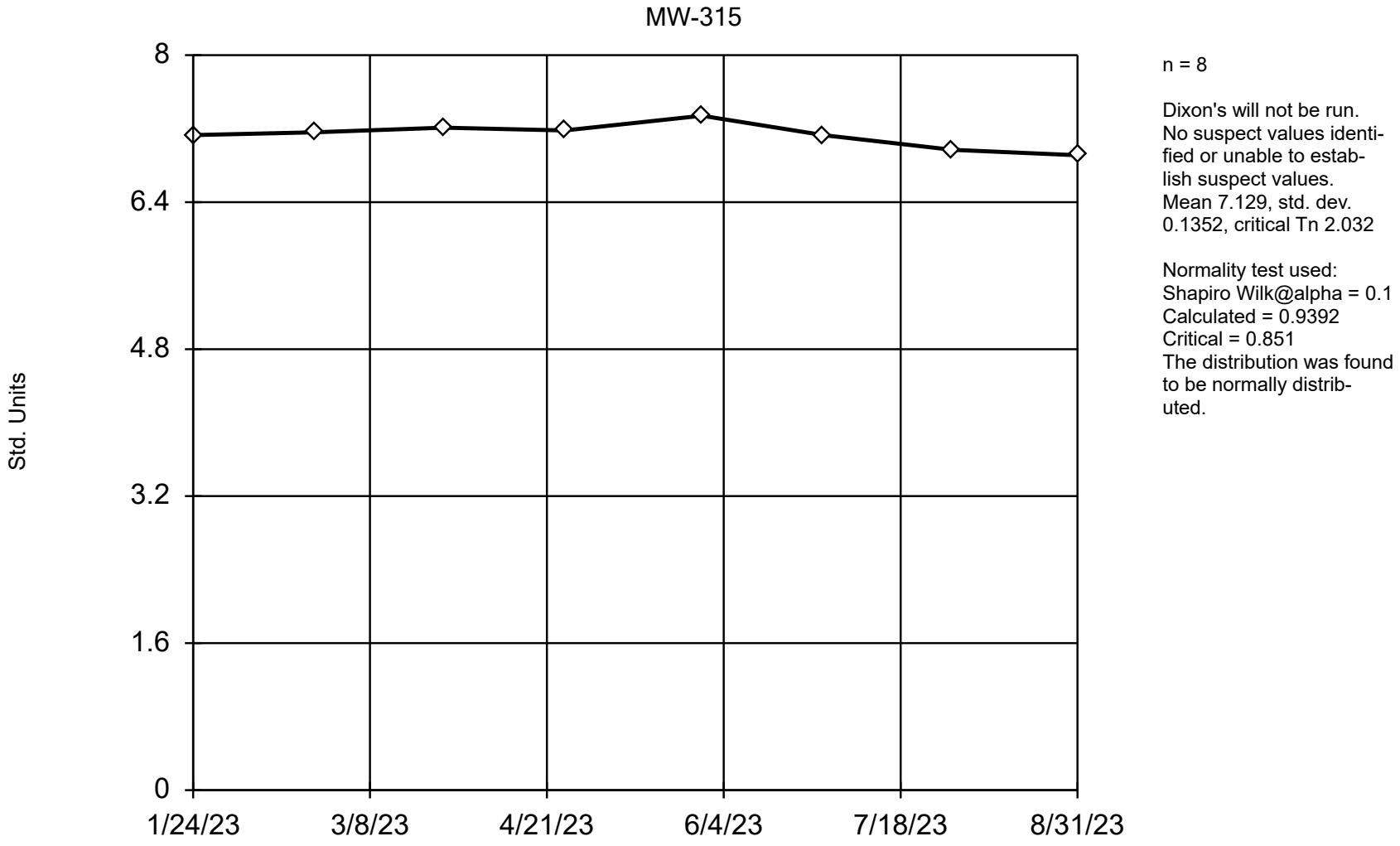
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	7.23
2/23/2023	7.23
3/27/2023	7.25
4/26/2023	7.21
5/30/2023	7.34
6/29/2023	7.2
7/31/2023	7.45
8/31/2023	7.12

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 7.129, std. dev. 0.1352, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9392
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Field pH Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

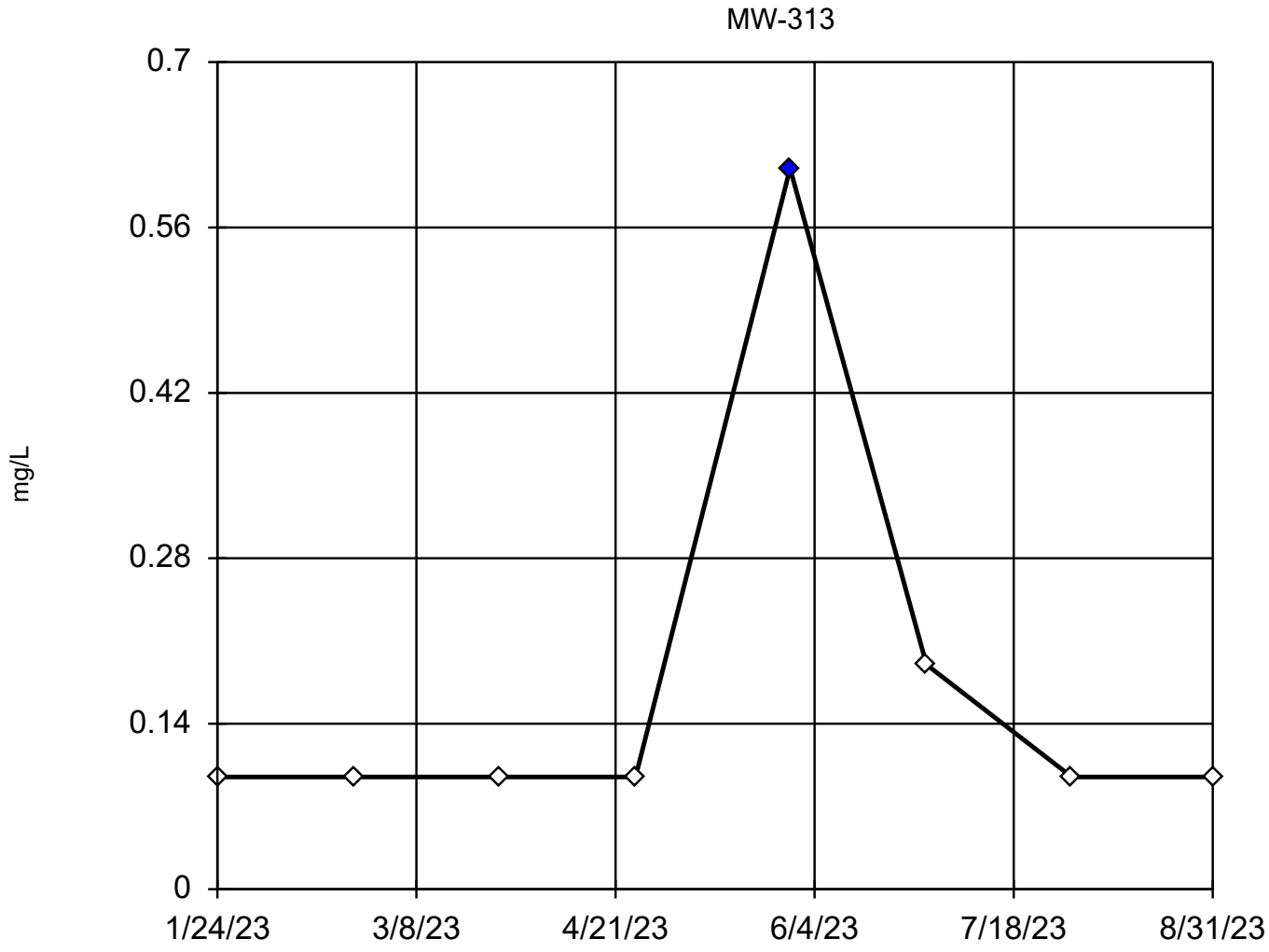
EPA 1989 Outlier Screening

Constituent: Field pH (Std. Units) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	7.13
2/23/2023	7.16
3/27/2023	7.21
4/26/2023	7.18
5/30/2023	7.34
6/29/2023	7.13
7/31/2023	6.97
8/31/2023	6.91

Tukey's Outlier Screening



n = 8

Outlier is drawn as solid. Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

High cutoff = 0.285, low cutoff = -0.0475, based on IQR multiplier of 3.

Constituent: Fluoride Analysis Run 12/19/2023 11:20 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Tukey's Outlier Screening

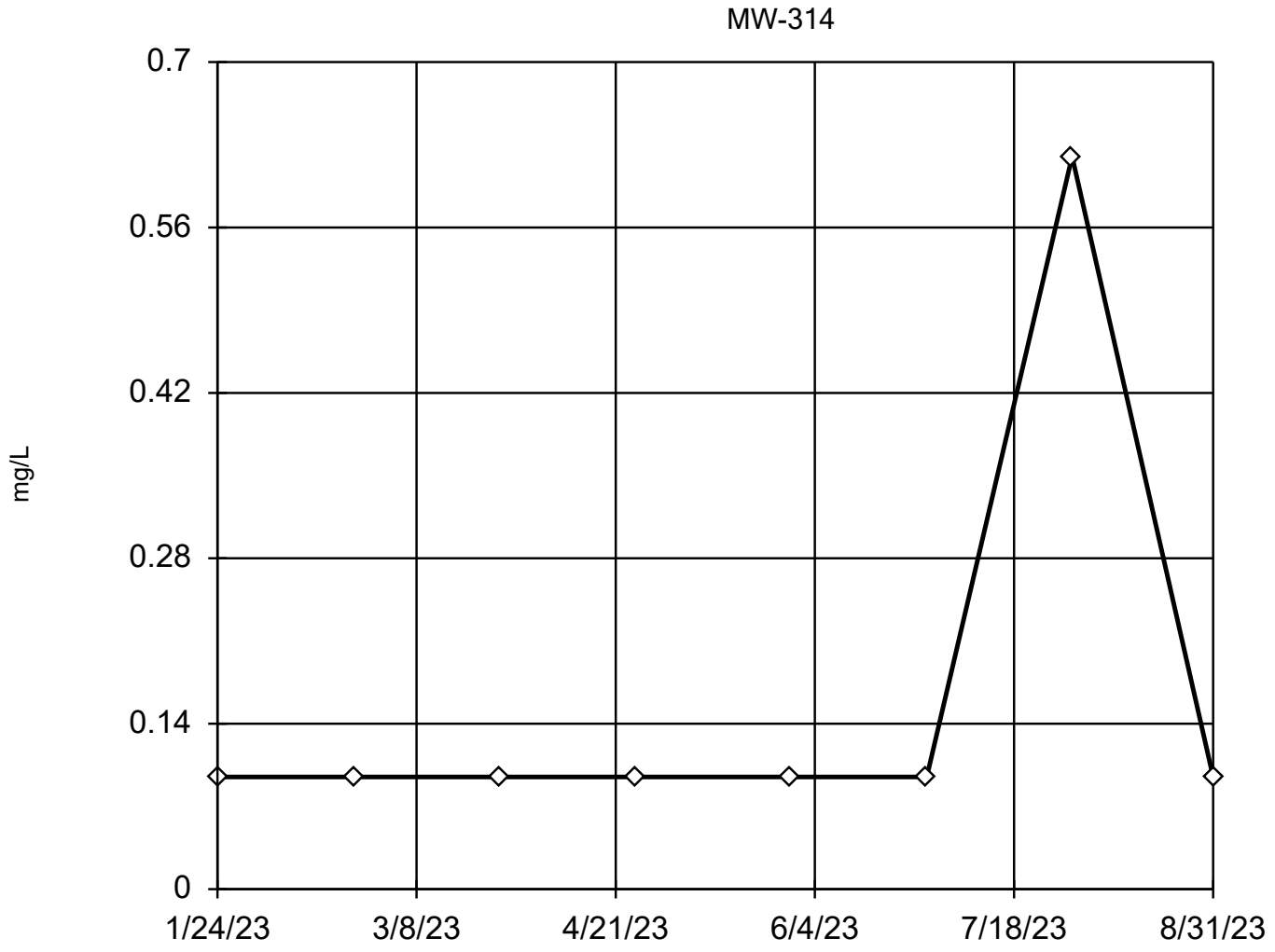
Constituent: Fluoride (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	<0.095 (U)
2/23/2023	<0.095 (U)
3/27/2023	<0.095 (U)
4/26/2023	<0.095 (U)
5/30/2023	0.61 (O)
6/29/2023	0.19 (J)
7/31/2023	<0.095 (U)
8/31/2023	<0.095 (U)

ND substitution: RL or RL/2 if <15% NDs.

Tukey's Outlier Screening



n = 8

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Tukey's Outlier Screening

Constituent: Fluoride (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

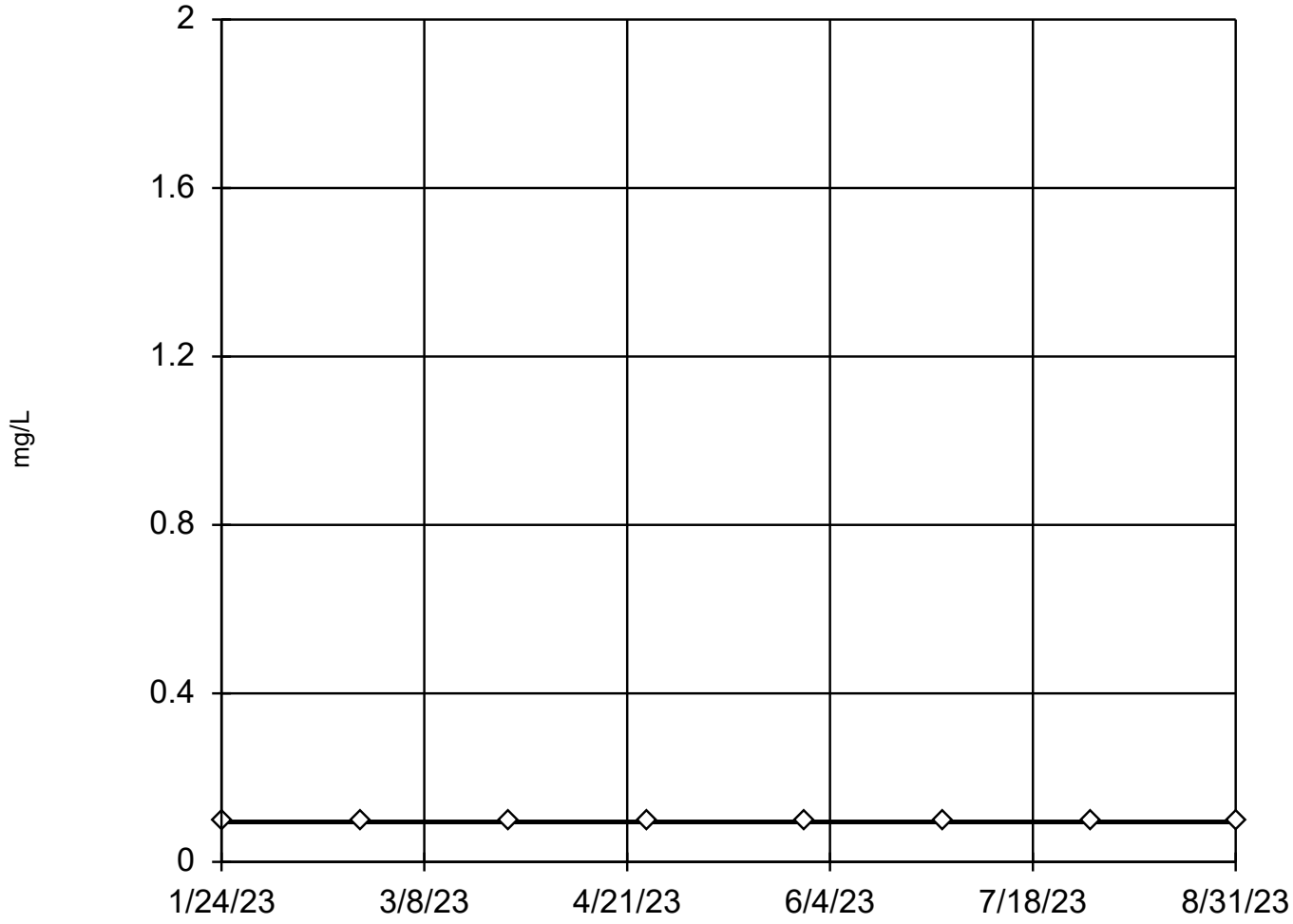
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	<0.095 (U)
2/23/2023	<0.095 (U)
3/27/2023	<0.095 (U)
4/26/2023	<0.095 (U)
5/30/2023	<0.095 (U)
6/29/2023	<0.095 (U)
7/31/2023	0.62
8/31/2023	<0.095 (U)

ND substitution: RL or RL/2 if <15% NDs.

Tukey's Outlier Screening

MW-315



n = 8

No outliers found.
Tukey's method used in lieu of parametric test because the Shapiro Wilk normality test failed at the 0.1 alpha level.

The results were invalidated, because the lower and upper quartiles are equal.

Constituent: Fluoride Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Tukey's Outlier Screening

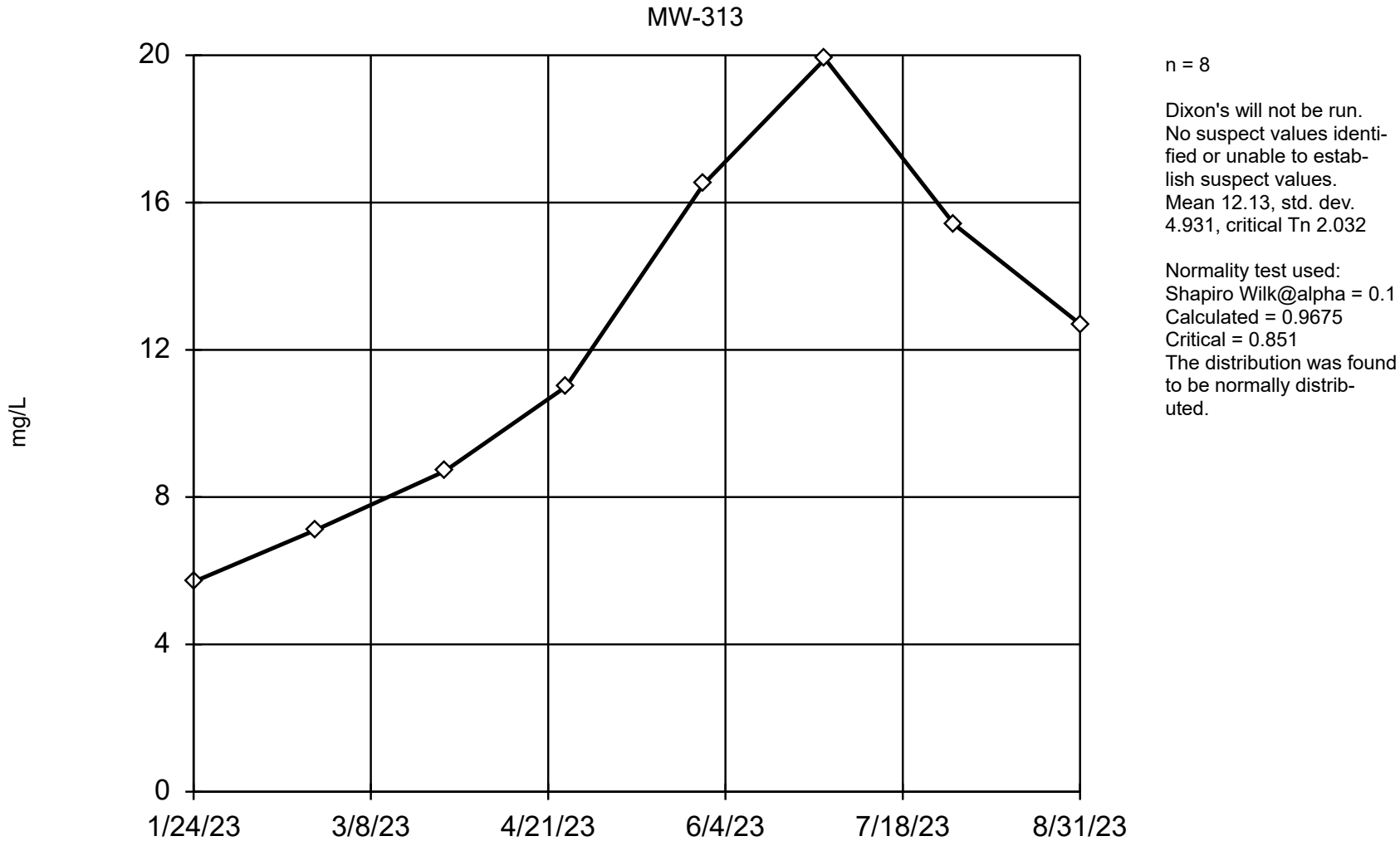
Constituent: Fluoride (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	<0.095 (U)
2/23/2023	<0.095 (U)
3/27/2023	<0.095 (U)
4/26/2023	<0.095 (U)
5/30/2023	<0.095 (U)
6/29/2023	<0.095 (U)
7/31/2023	<0.095 (U)
8/31/2023	<0.095 (U)

ND substitution: RL or RL/2 if <15% NDs.

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 12.13, std. dev. 4.931, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9675
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

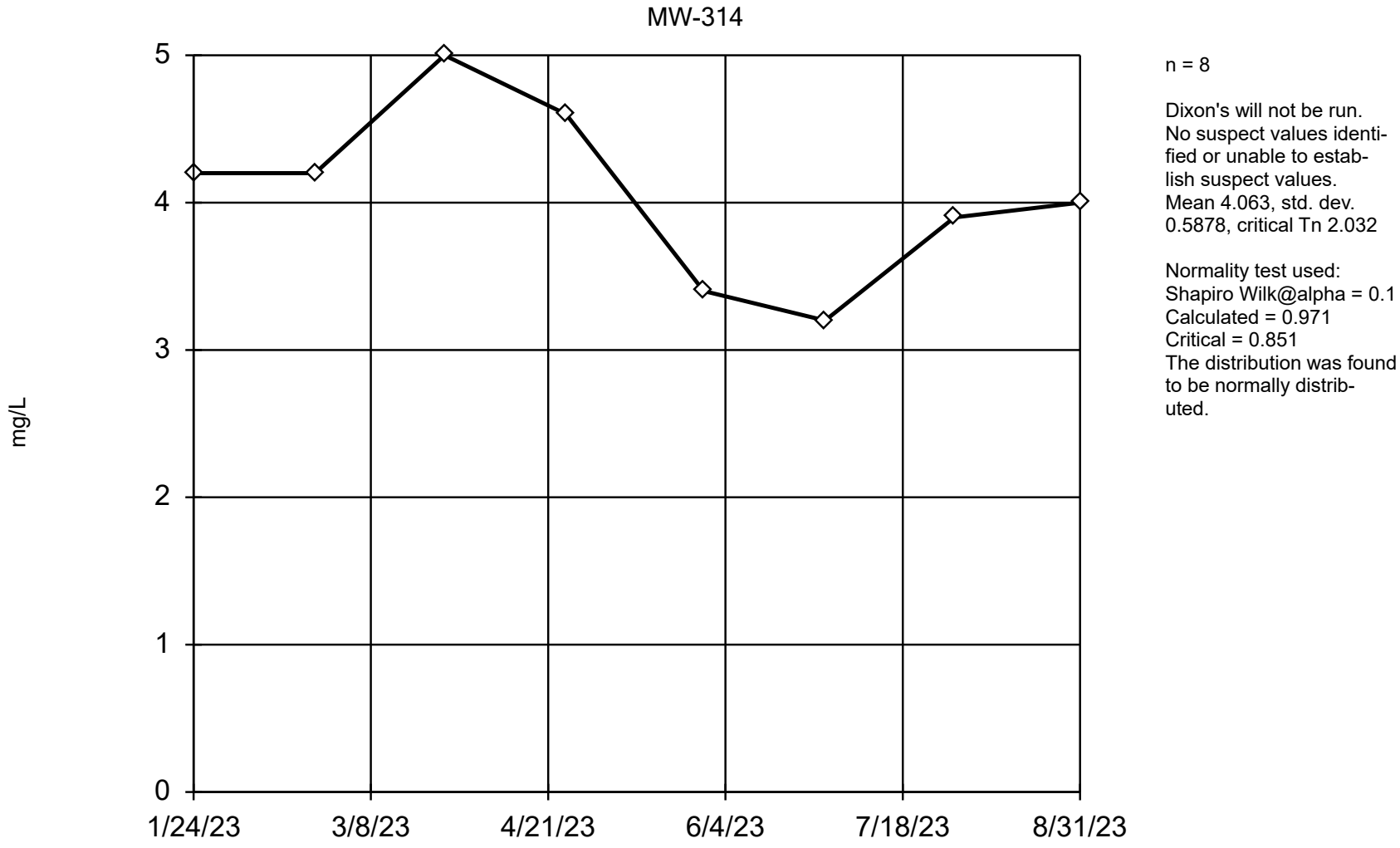
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	5.7
2/23/2023	7.1
3/27/2023	8.7
4/26/2023	11
5/30/2023	16.5
6/29/2023	19.9
7/31/2023	15.4
8/31/2023	12.7

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 4.063, std. dev. 0.5878, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.971
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

EPA 1989 Outlier Screening

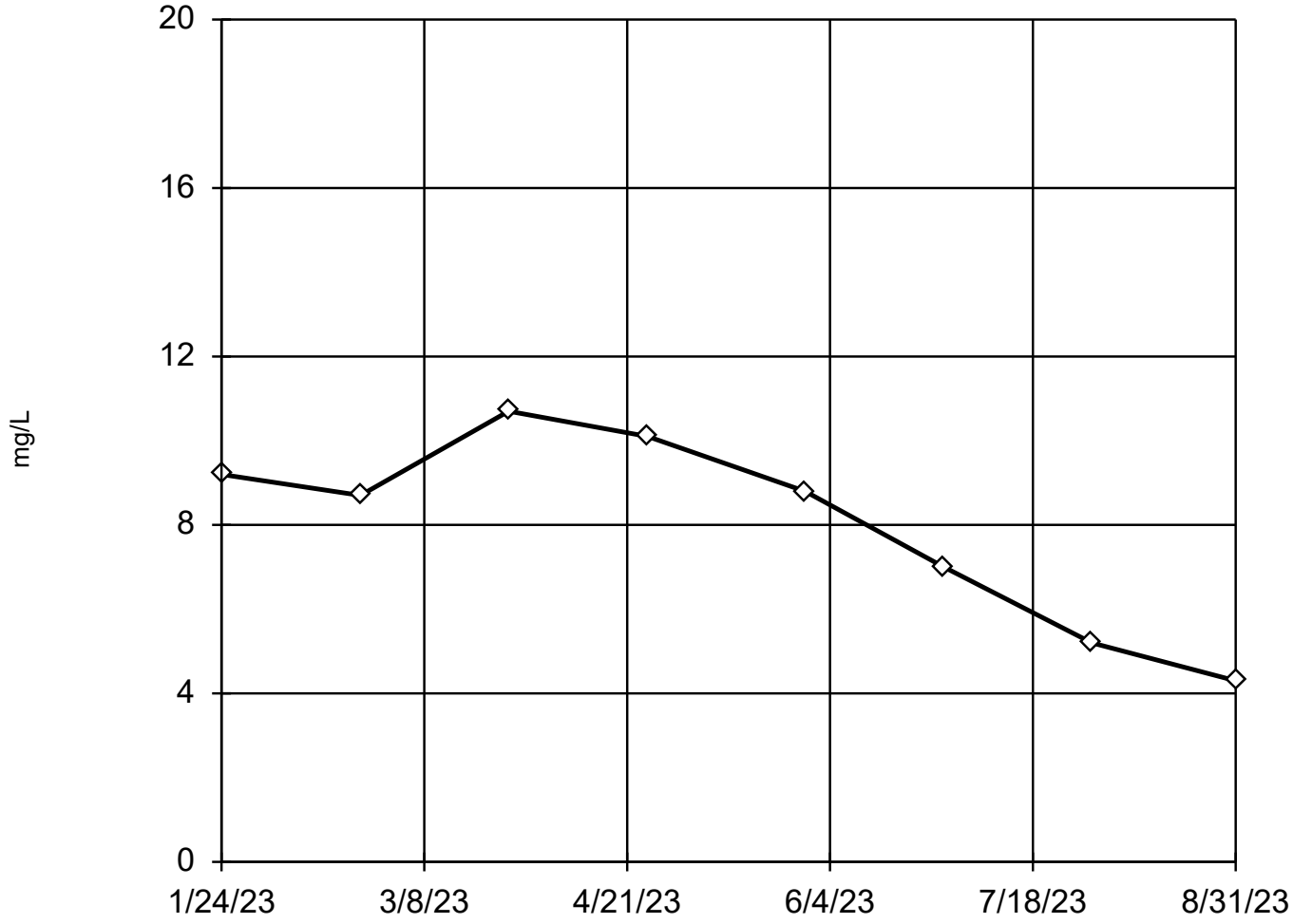
Constituent: Sulfate (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	4.2
2/23/2023	4.2
3/27/2023	5
4/26/2023	4.6
5/30/2023	3.4
6/29/2023	3.2
7/31/2023	3.9
8/31/2023	4

EPA Screening (suspected outliers for Dixon's Test)

MW-315



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 8, std. dev. 2.293, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9181
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Sulfate Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

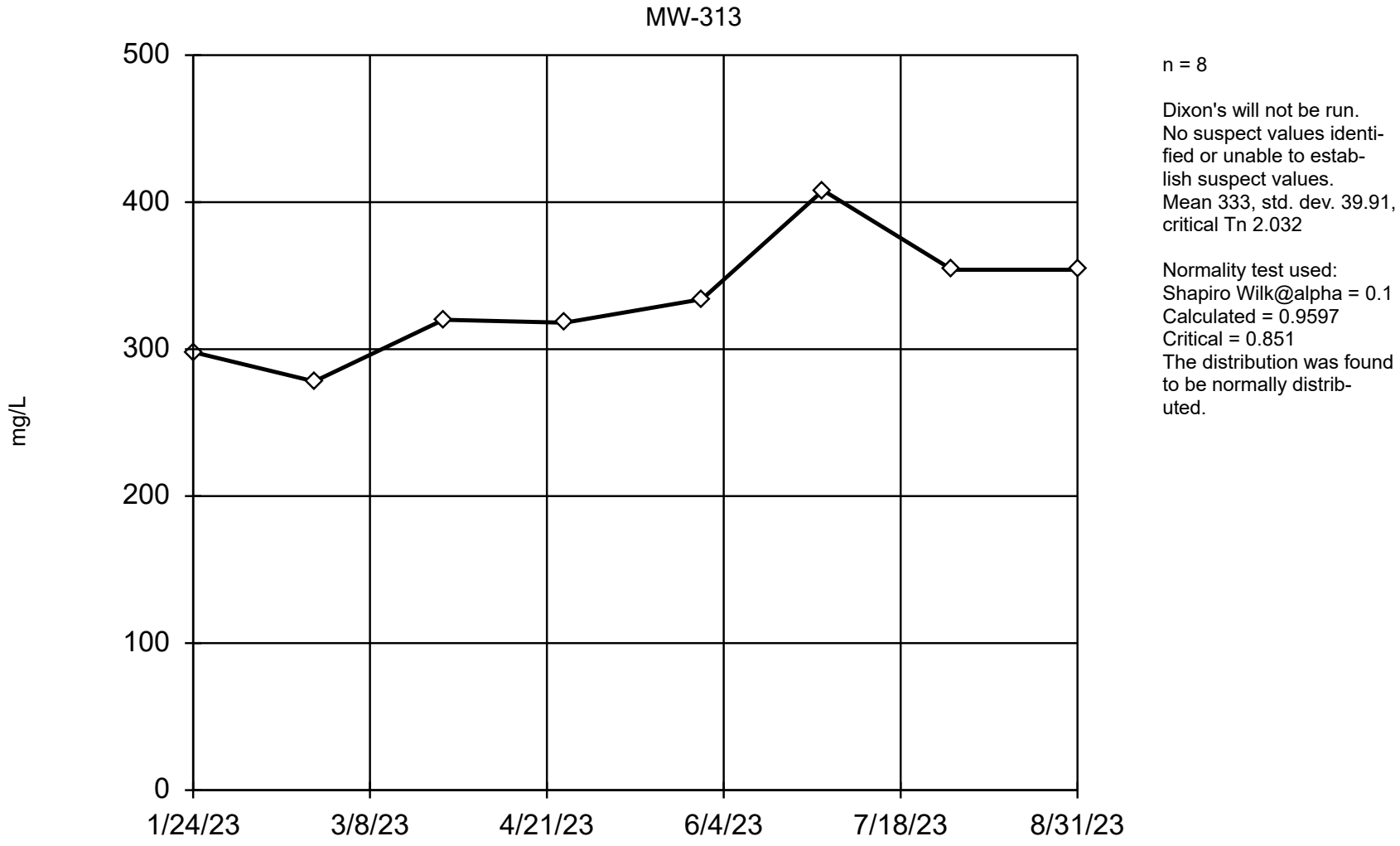
EPA 1989 Outlier Screening

Constituent: Sulfate (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	9.2
2/23/2023	8.7
3/27/2023	10.7
4/26/2023	10.1
5/30/2023	8.8
6/29/2023	7
7/31/2023	5.2
8/31/2023	4.3

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 333, std. dev. 39.91, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9597
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

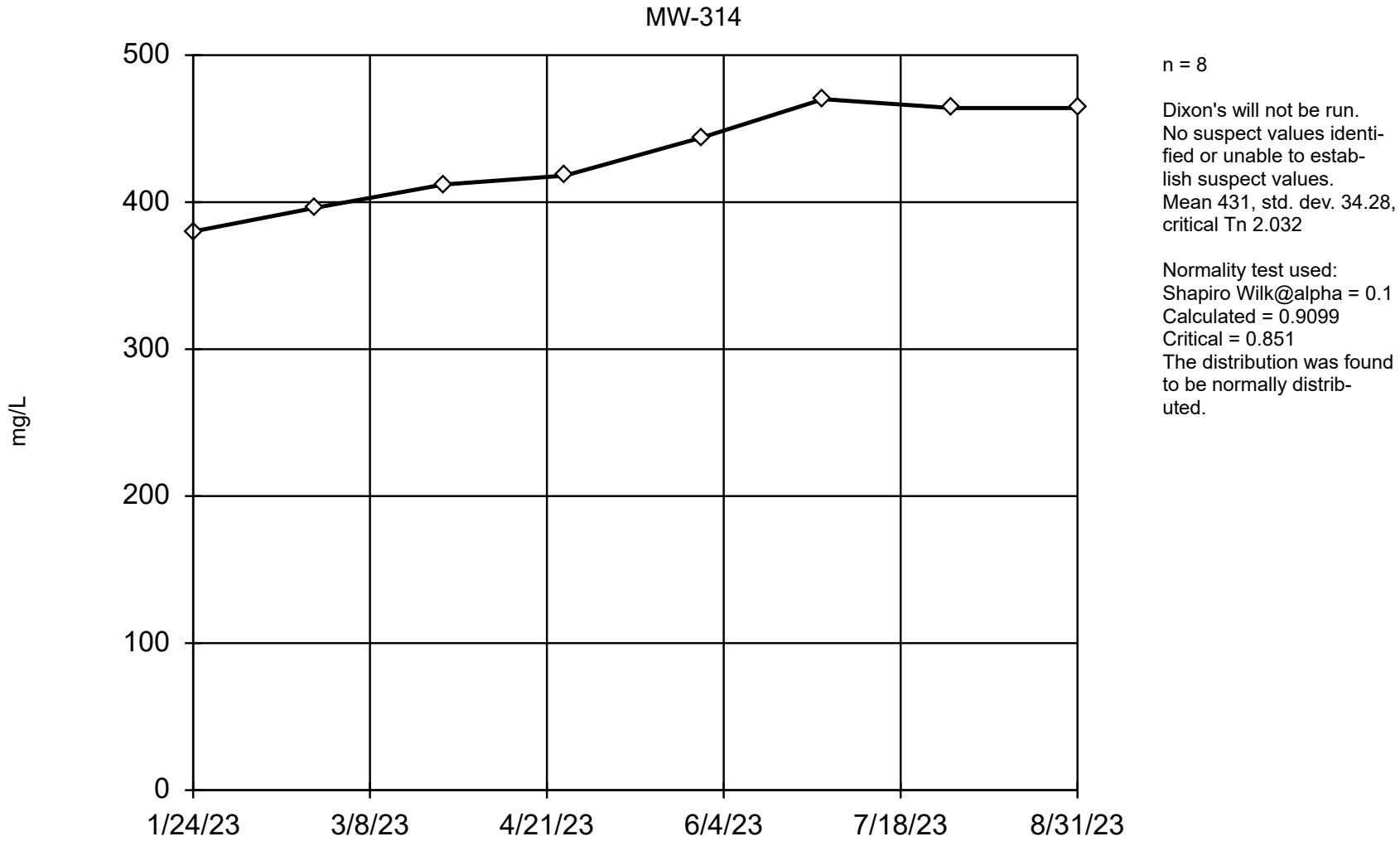
EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-313
1/24/2023	298
2/23/2023	278
3/27/2023	320
4/26/2023	318
5/30/2023	334
6/29/2023	408
7/31/2023	354
8/31/2023	354

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 431, std. dev. 34.28, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9099
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

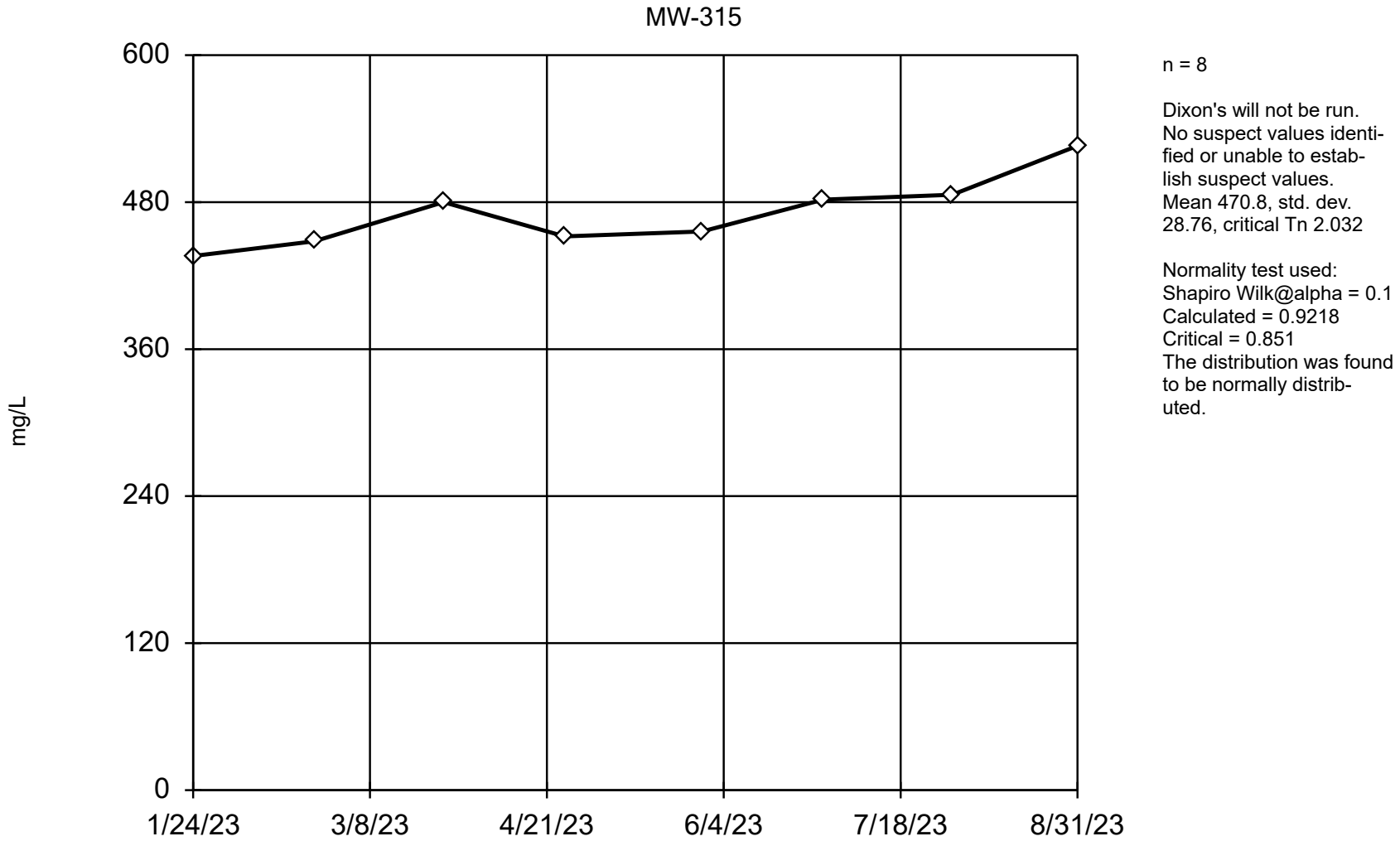
EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-314
1/24/2023	380
2/23/2023	396
3/27/2023	412
4/26/2023	418
5/30/2023	444
6/29/2023	470
7/31/2023	464
8/31/2023	464

EPA Screening (suspected outliers for Dixon's Test)



n = 8

Dixon's will not be run.
No suspect values identified or unable to establish suspect values.
Mean 470.8, std. dev. 28.76, critical Tn 2.032

Normality test used:
Shapiro Wilk@alpha = 0.1
Calculated = 0.9218
Critical = 0.851
The distribution was found to be normally distributed.

Constituent: Total Dissolved Solids Analysis Run 12/19/2023 11:21 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

EPA 1989 Outlier Screening

Constituent: Total Dissolved Solids (mg/L) Analysis Run 12/19/2023 11:32 AM View: COL MOD 10-11

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-315
1/24/2023	436
2/23/2023	448
3/27/2023	480
4/26/2023	452
5/30/2023	456
6/29/2023	482
7/31/2023	486
8/31/2023	526

Attachment C

Intrawell Prediction Limit Analysis

Prediction Limit

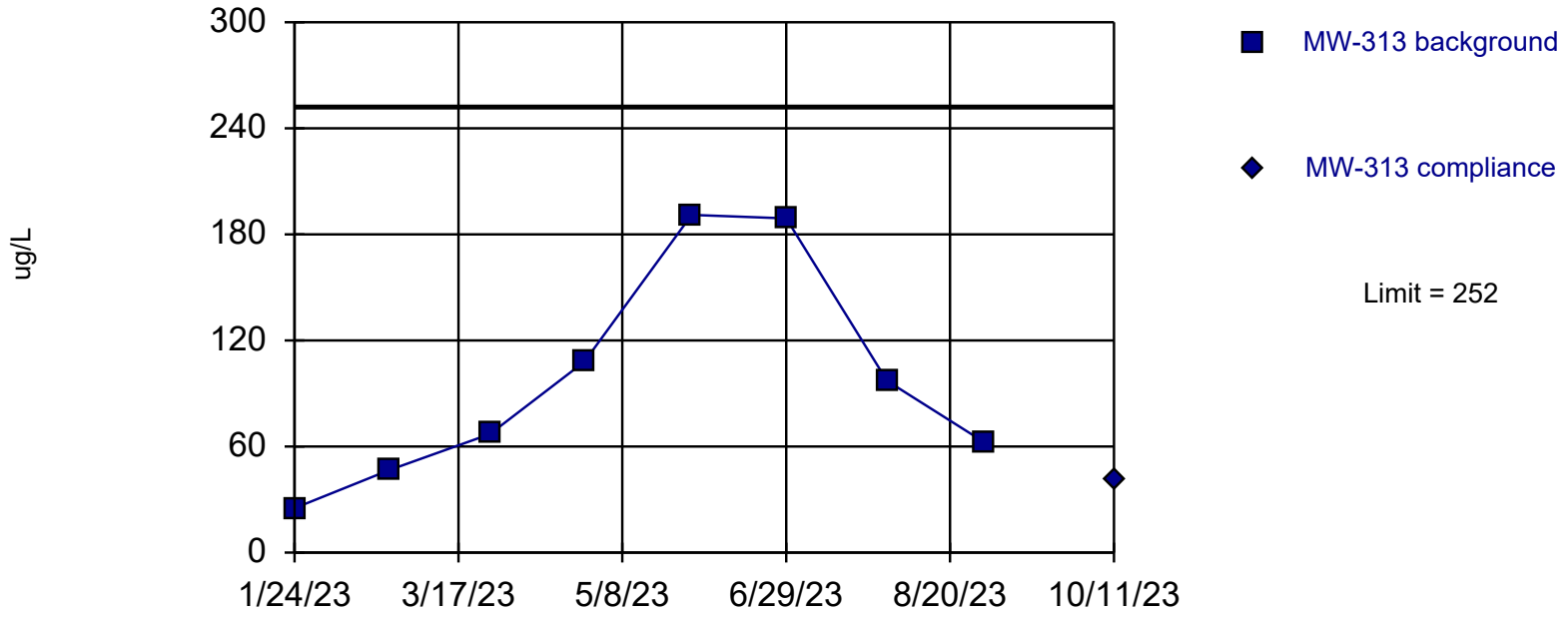
Columbia Energy Center Data: December - Chem- export-Dec2020 Printed 3/21/2024, 3:08 PM

Constituent	Well	Upper Lim.	Date	Observ.	Sig.	Bg N	Bg Wells	Bg Mean	Std. Dev.	%NDs	ND Adj.	Transform	Alpha	Method
Boron (ug/L)	MW-313	252	10/11/2023	41.3	No	8	n/a	98.28	62.35	0	None	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-314	18.3	10/11/2023	12.4	No	8	n/a	14.45	1.56	0	None	No	0.002505	Param Intra 1 of 2
Boron (ug/L)	MW-315	15.3	10/11/2023	15	No	8	n/a	12.09	1.311	0	None	No	0.002505	Param Intra 1 of 2
Calcium (ug/L)	MW-313	75400	10/11/2023	66800	No	8	n/a	67063	3383	0	None	No	0.002505	Param Intra 1 of 2
Calcium (ug/L)	MW-314	116000	10/11/2023	106000	No	8	n/a	100738	6191	0	None	No	0.002505	Param Intra 1 of 2
Calcium (ug/L)	**MW-315**	**132000**	**12/27/2023**	**142000**	**Yes**	**8**	**n/a**	**109750**	**8908**	**0**	**None**	**No**	**0.002505**	**Param Intra 1 of 2**
Chloride (mg/L)	MW-313	45.9	10/11/2023	29.6	No	8	n/a	12.41	13.63	12.5	None	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-314	3.78	10/11/2023	3.2	No	8	n/a	2.575	0.4921	0	None	No	0.002505	Param Intra 1 of 2
Chloride (mg/L)	MW-315	7.3	10/11/2023	3.1	No	8	n/a	4.413	1.174	0	None	No	0.002505	Param Intra 1 of 2
Field pH (Std. Units)	MW-313	7.71	10/11/2023	7.24	No	8	n/a	7.356	0.1458	0	None	No	0.002505	Param Intra 1 of 2
Field pH (Std. Units)	MW-314	7.5	12/27/2023	7.23	No	8	n/a	7.254	0.09985	0	None	No	0.002505	Param Intra 1 of 2
Field pH (Std. Units)	MW-315	7.46	12/27/2023	7.03	No	8	n/a	7.129	0.1352	0	None	No	0.002505	Param Intra 1 of 2
Fluoride (mg/L)	MW-313	0.610	10/11/2023	0.095ND	No	8	n/a	n/a	n/a	75	n/a	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-314	0.620	10/11/2023	0.095ND	No	8	n/a	n/a	n/a	87.5	n/a	n/a	0.02144	NP Intra (NDs) 1 of 2
Fluoride (mg/L)	MW-315	0.0950	10/11/2023	0.095ND	No	8	n/a	n/a	n/a	100	n/a	n/a	0.02144	NP Intra (NDs) 1 of 2
Sulfate (mg/L)	MW-313	24.2	10/11/2023	9	No	8	n/a	12.13	4.931	0	None	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-314	5.51	10/11/2023	3.5	No	8	n/a	4.063	0.5878	0	None	No	0.002505	Param Intra 1 of 2
Sulfate (mg/L)	MW-315	13.6	10/11/2023	3.1	No	8	n/a	8	2.293	0	None	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-313	431	10/11/2023	372	No	8	n/a	333	39.91	0	None	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	MW-314	515	12/27/2023	464	No	8	n/a	431	34.28	0	None	No	0.002505	Param Intra 1 of 2
Total Dissolved Solids (mg/L)	**MW-315**	**541**	**12/27/2023**	**618**	**Yes**	**8**	**n/a**	**470.8**	**28.76**	**0**	**None**	**No**	**0.002505**	**Param Intra 1 of 2**

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=98.28, Std. Dev.=62.35, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.884, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Boron (ug/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

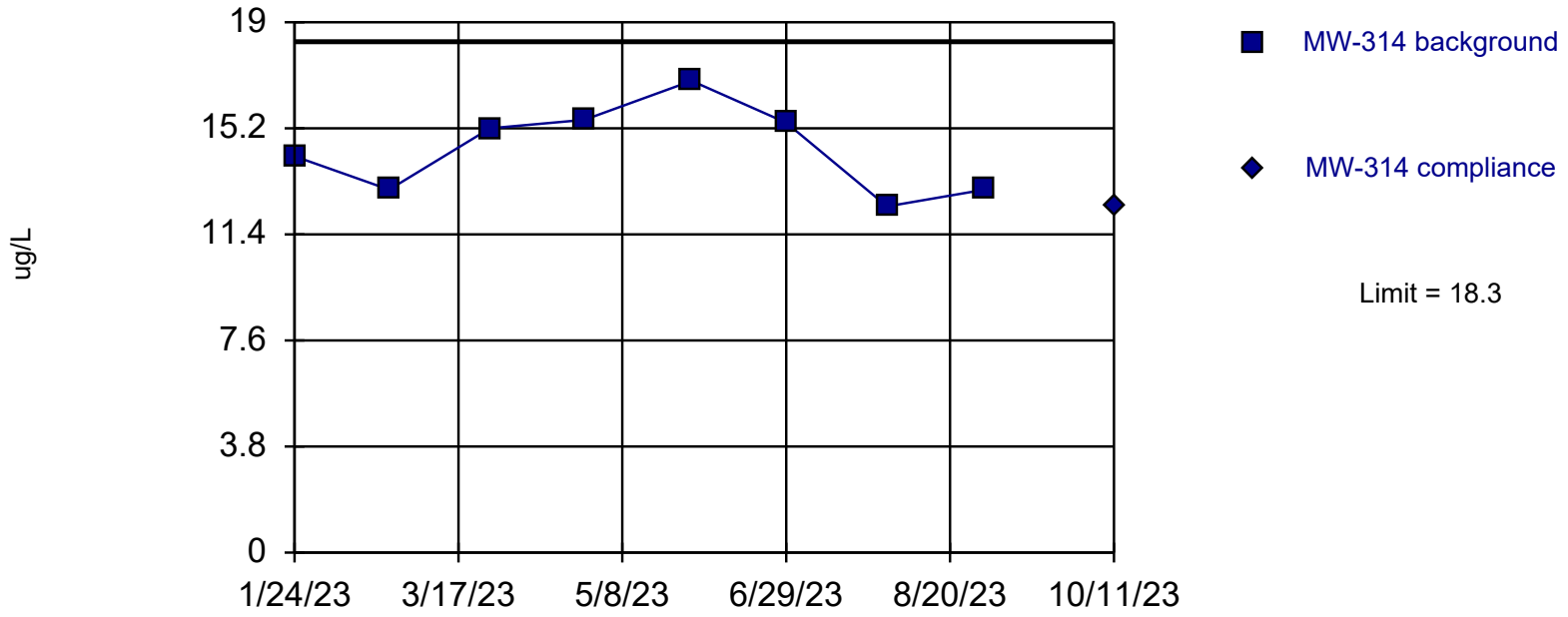
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-313	MW-313
1/24/2023	25.1	
2/23/2023	46.6	
3/27/2023	67.1	
4/26/2023	108	
5/30/2023	191	
6/29/2023	189	
7/31/2023	97.1	
8/31/2023	62.3	
10/11/2023		41.3

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=14.45, Std. Dev.=1.56, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9337, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Boron (ug/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

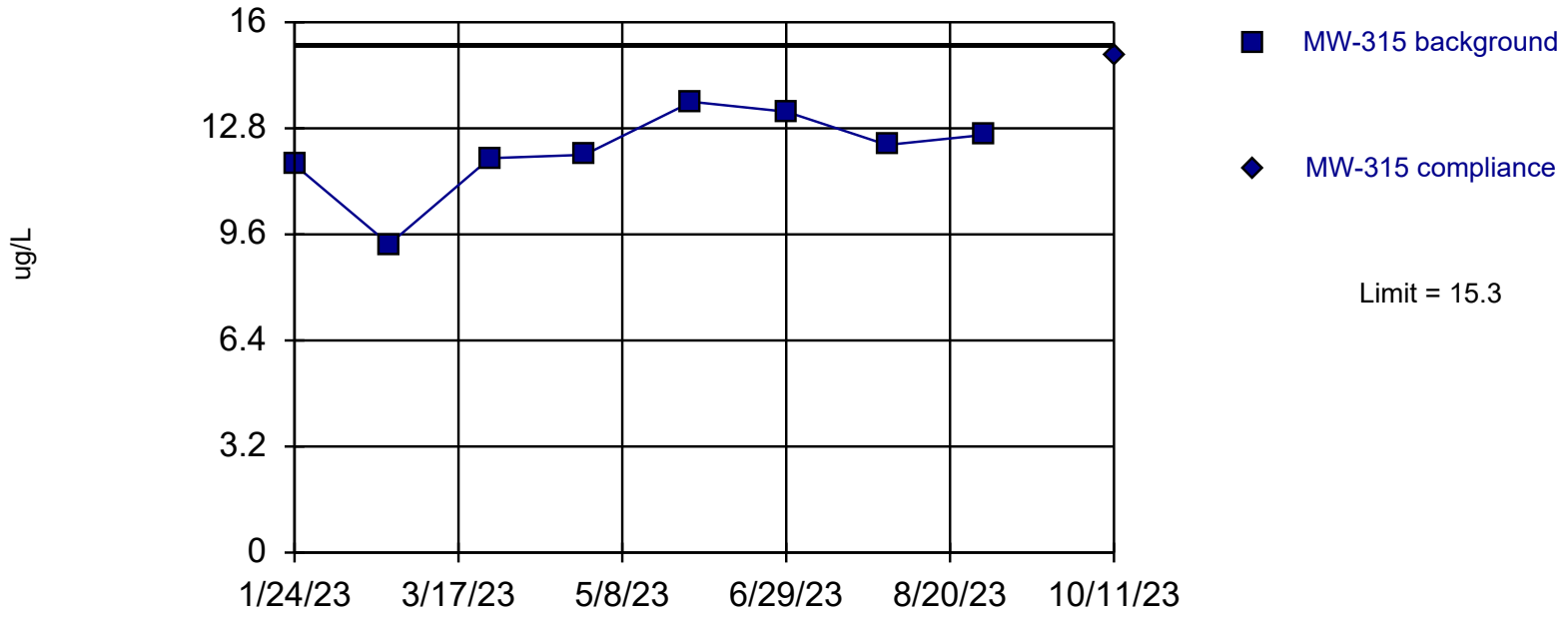
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	14.2	
2/23/2023	13	
3/27/2023	15.2	
4/26/2023	15.5	
5/30/2023	16.9	
6/29/2023	15.4	
7/31/2023	12.4	
8/31/2023	13	
10/11/2023		12.4

Within Limit

Boron

Intrawell Parametric



Background Data Summary: Mean=12.09, Std. Dev.=1.311, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8767, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Boron (ug/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

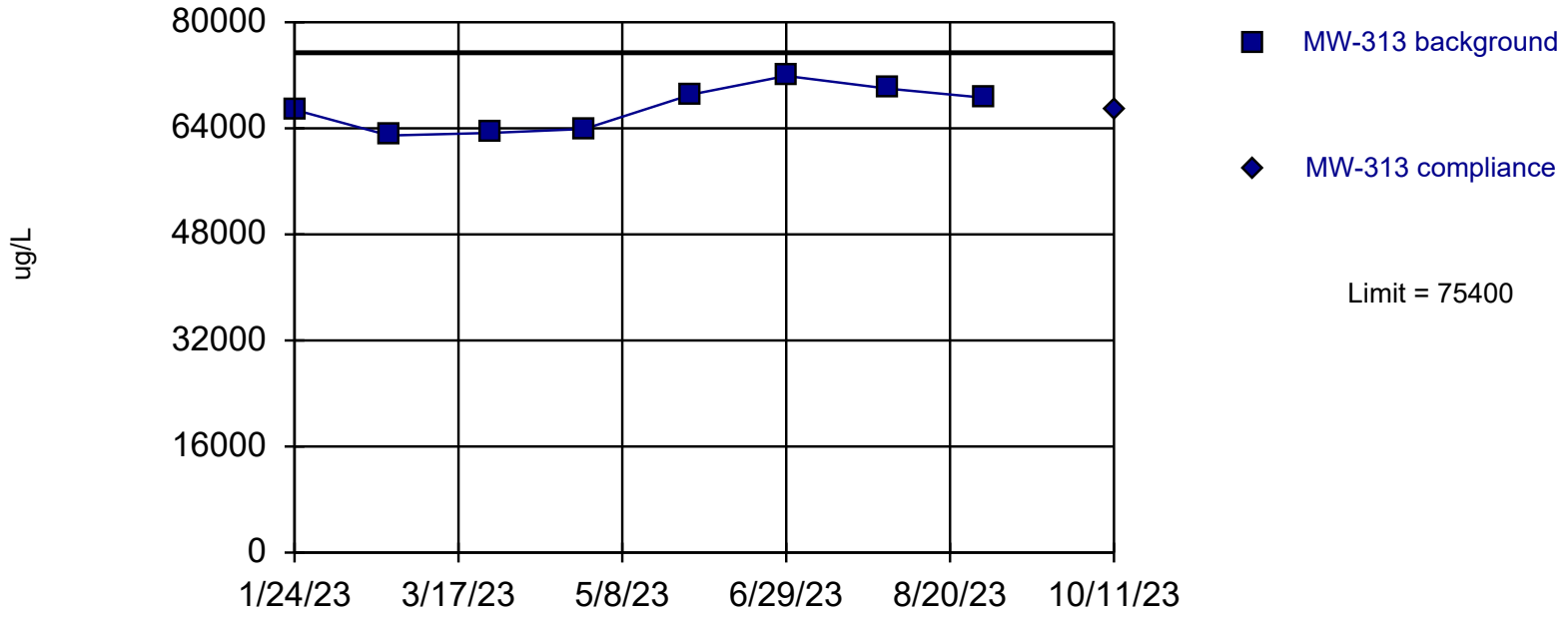
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-315	MW-315
1/24/2023	11.7	
2/23/2023	9.3 (J)	
3/27/2023	11.9	
4/26/2023	12	
5/30/2023	13.6	
6/29/2023	13.3	
7/31/2023	12.3	
8/31/2023	12.6	
10/11/2023		15

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=67063, Std. Dev.=3383, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9178, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

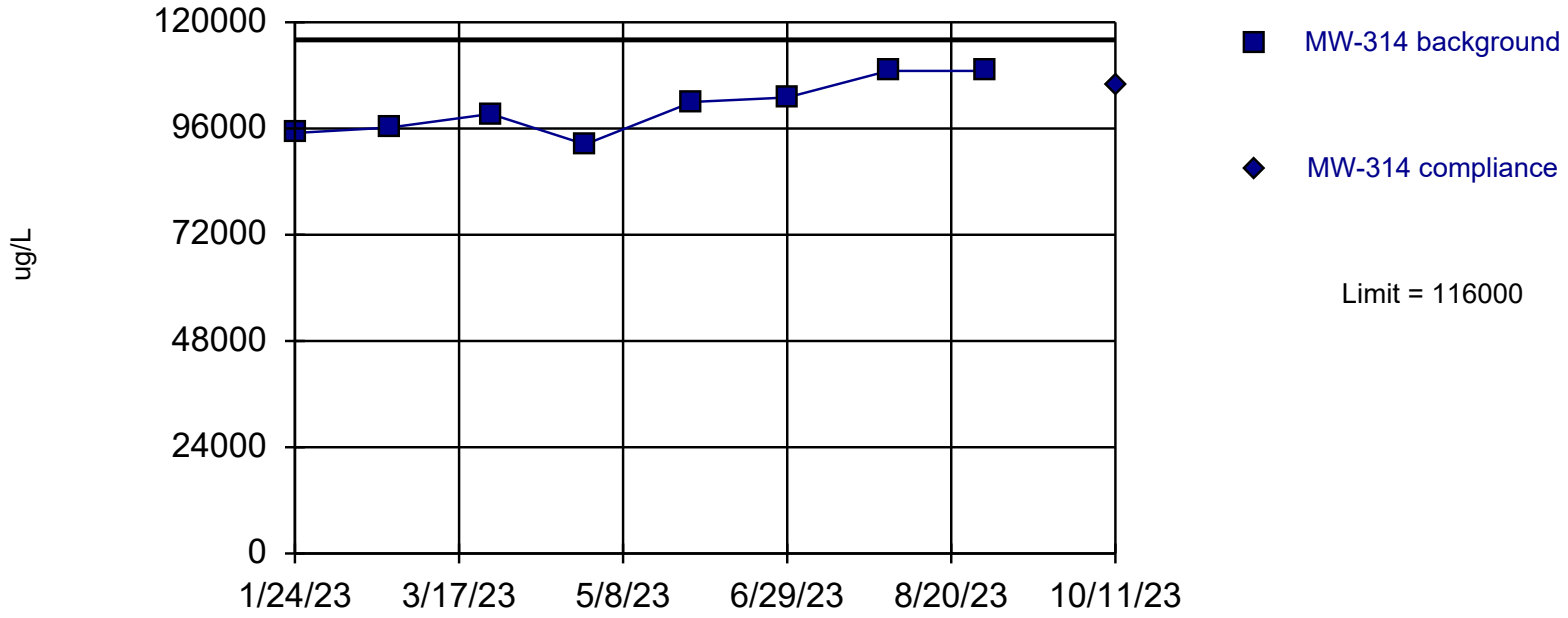
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-313	MW-313
1/24/2023	66800	
2/23/2023	62900	
3/27/2023	63300	
4/26/2023	63900	
5/30/2023	69100	
6/29/2023	71900	
7/31/2023	70000	
8/31/2023	68600	
10/11/2023		66800

Within Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=100738, Std. Dev.=6191, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9318, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

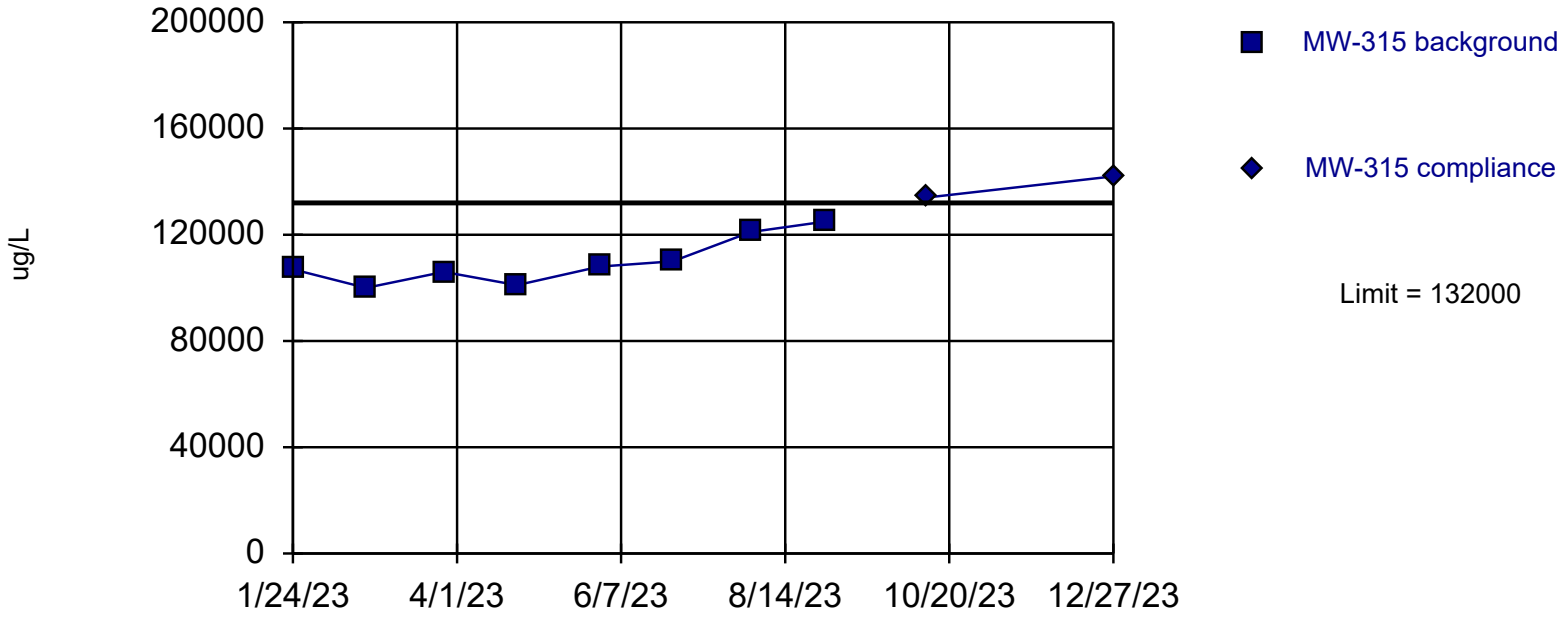
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	95000	
2/23/2023	96200	
3/27/2023	99300	
4/26/2023	92400	
5/30/2023	102000	
6/29/2023	103000	
7/31/2023	109000	
8/31/2023	109000	
10/11/2023		106000

Exceeds Limit

Calcium

Intrawell Parametric



Background Data Summary: Mean=109750, Std. Dev.=8908, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8881, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Calcium (ug/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

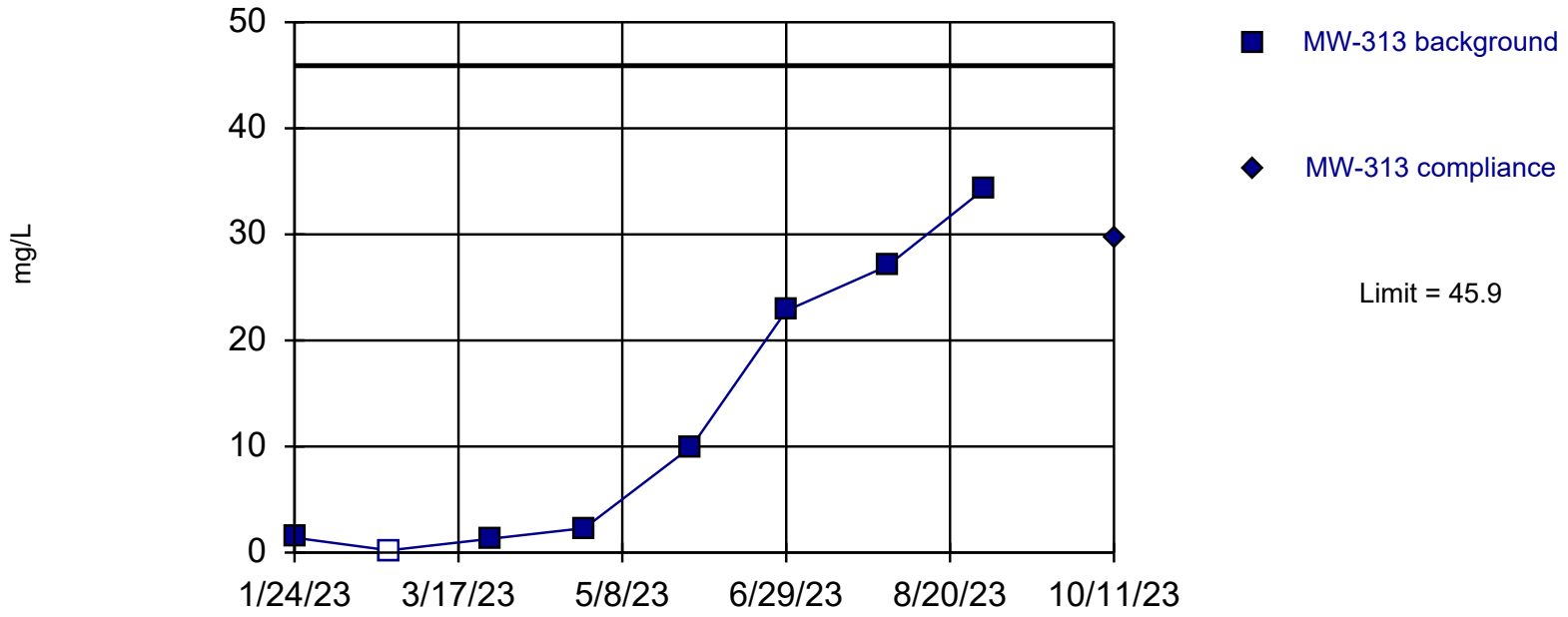
	MW-315	MW-315
1/24/2023	107000	
2/23/2023	100000	
3/27/2023	106000	
4/26/2023	101000	
5/30/2023	108000	
6/29/2023	110000	
7/31/2023	121000	
8/31/2023	125000	
10/11/2023		134000
12/27/2023		142000

Hollow symbols indicate censored values.

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=12.41, Std. Dev.=13.63, n=8, 12.5% NDs. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8328, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

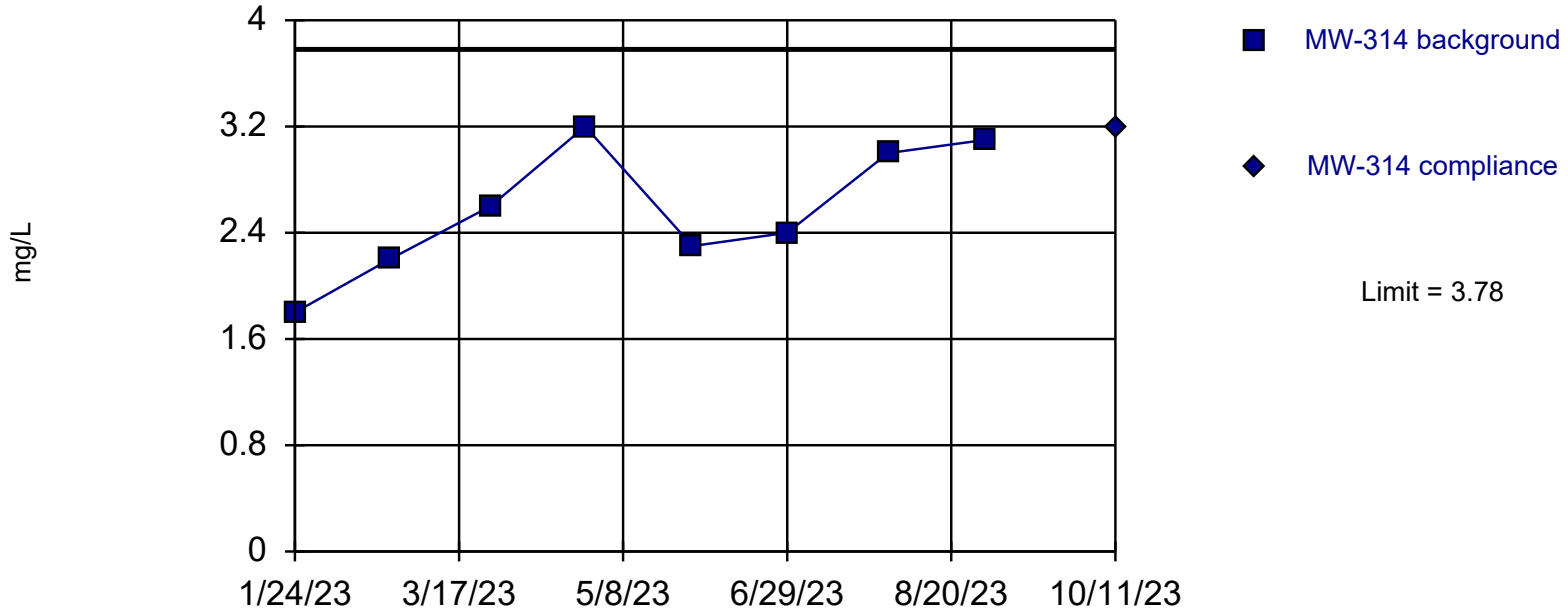
	MW-313	MW-313
1/24/2023	1.4 (J)	
2/23/2023	<0.43 (U)	
3/27/2023	1.3 (J)	
4/26/2023	2.3	
5/30/2023	10	
6/29/2023	22.8	
7/31/2023	27	
8/31/2023	34.3	
10/11/2023		29.6

ND substitution: RL or RL/2 if <15% NDs.

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=2.575, Std. Dev.=0.4921, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9445, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

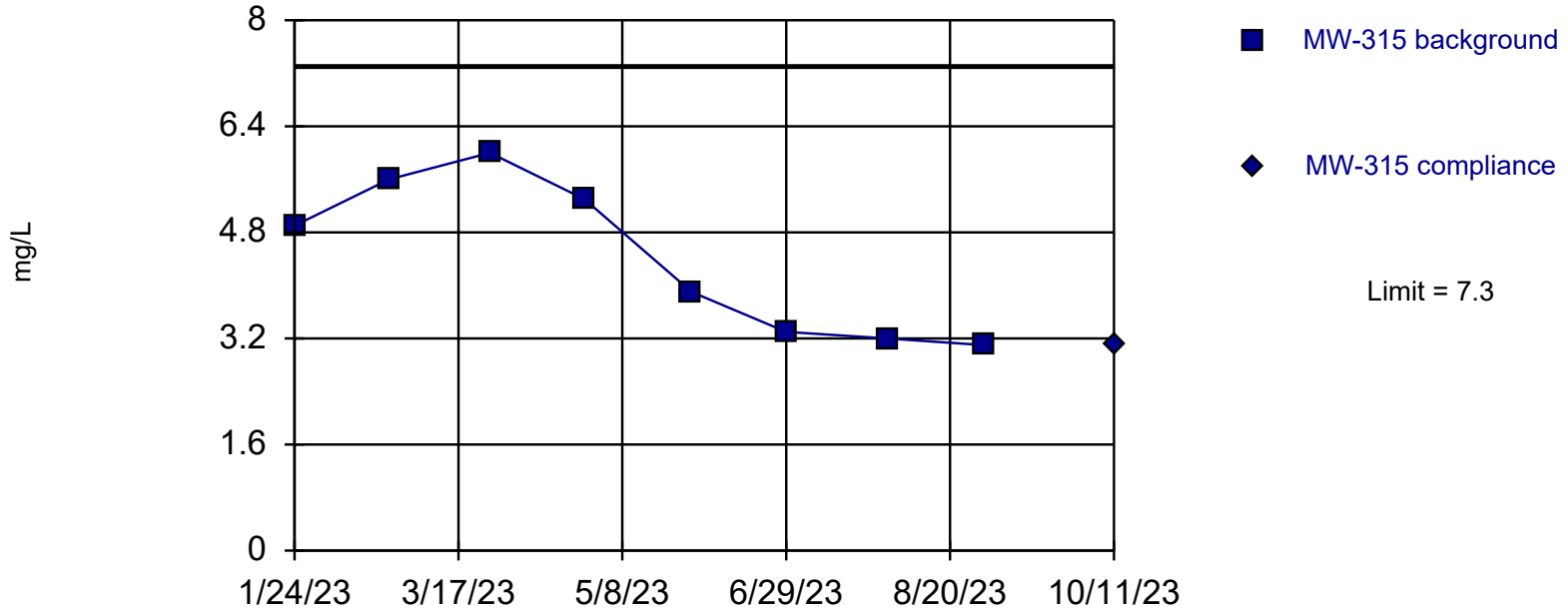
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	1.8 (J)	
2/23/2023	2.2	
3/27/2023	2.6	
4/26/2023	3.2	
5/30/2023	2.3	
6/29/2023	2.4	
7/31/2023	3	
8/31/2023	3.1	
10/11/2023		3.2

Within Limit

Chloride

Intrawell Parametric



Background Data Summary: Mean=4.413, Std. Dev.=1.174, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8832, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Chloride (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

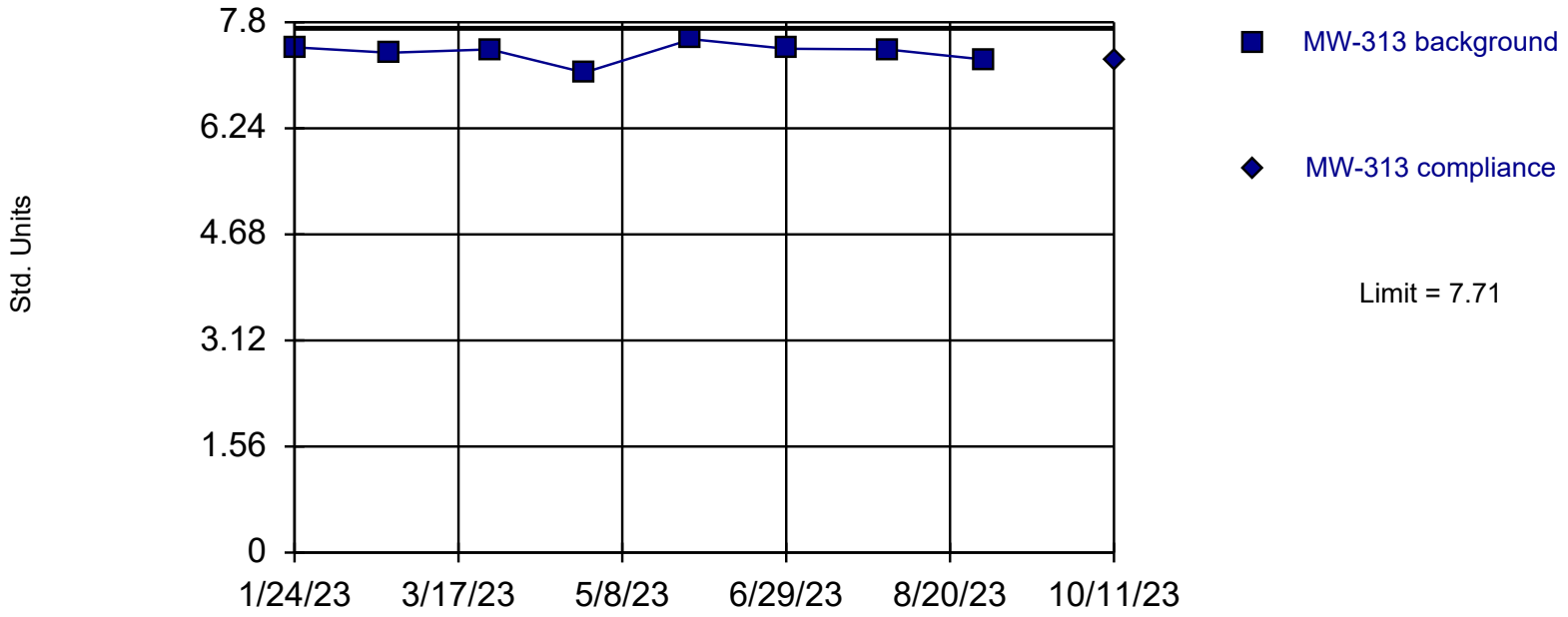
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-315	MW-315
1/24/2023	4.9	
2/23/2023	5.6	
3/27/2023	6	
4/26/2023	5.3	
5/30/2023	3.9	
6/29/2023	3.3	
7/31/2023	3.2	
8/31/2023	3.1	
10/11/2023		3.1

Within Limit

Field pH

Intrawell Parametric



Background Data Summary: Mean=7.356, Std. Dev.=0.1458, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.8903, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Field pH (Std. Units) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

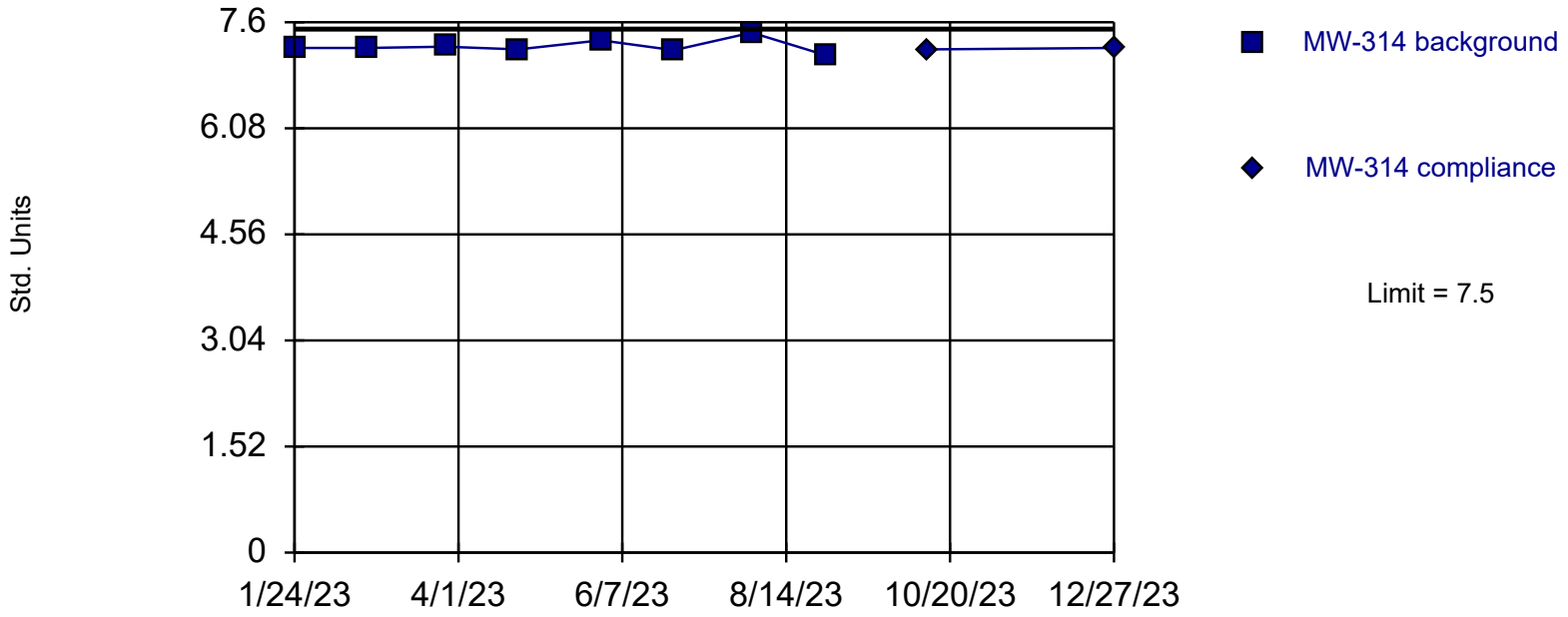
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-313	MW-313
1/24/2023	7.43	
2/23/2023	7.35	
3/27/2023	7.4	
4/26/2023	7.06	
5/30/2023	7.55	
6/29/2023	7.41	
7/31/2023	7.4	
8/31/2023	7.25	
10/11/2023		7.24

Within Limit

Field pH

Intrawell Parametric



Background Data Summary: Mean=7.254, Std. Dev.=0.09985, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9026, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Field pH (Std. Units) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

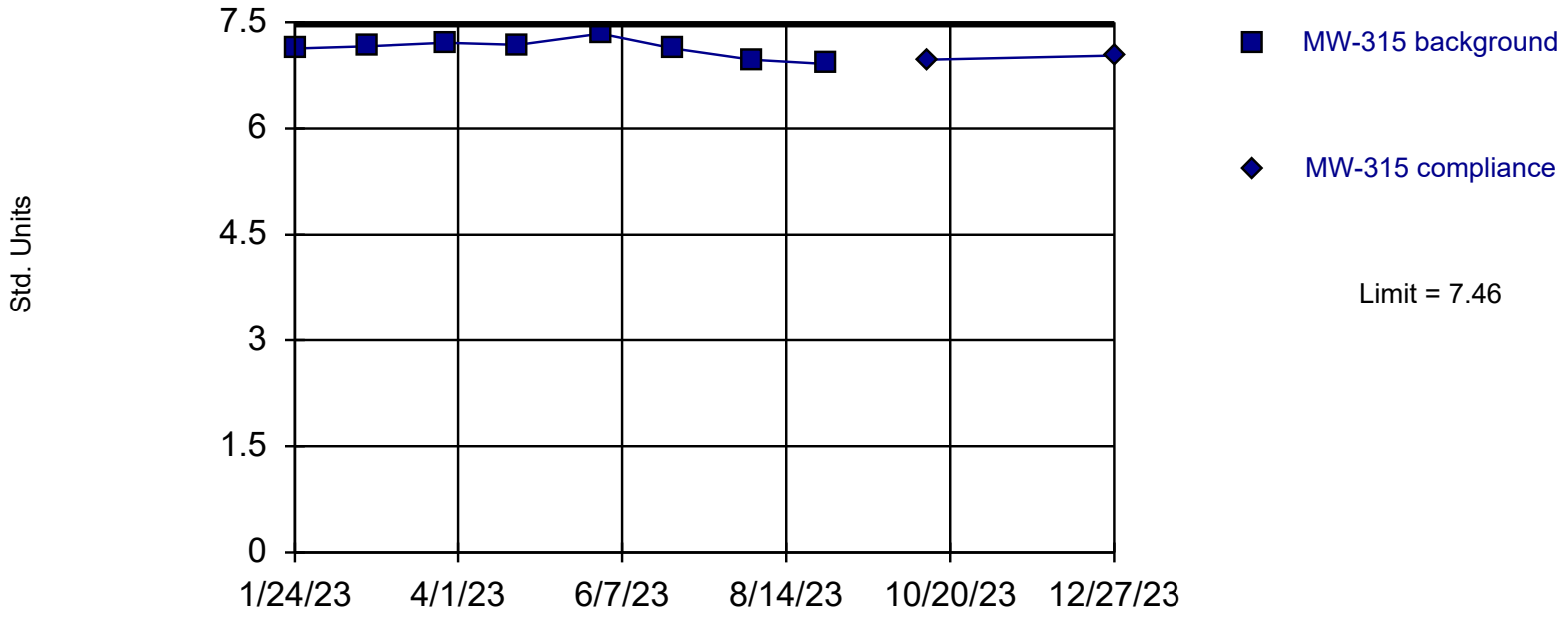
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	7.23	
2/23/2023	7.23	
3/27/2023	7.25	
4/26/2023	7.21	
5/30/2023	7.34	
6/29/2023	7.2	
7/31/2023	7.45	
8/31/2023	7.12	
10/11/2023		7.21
12/27/2023		7.23

Within Limit

Field pH

Intrawell Parametric



Background Data Summary: Mean=7.129, Std. Dev.=0.1352, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9392, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Field pH (Std. Units) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

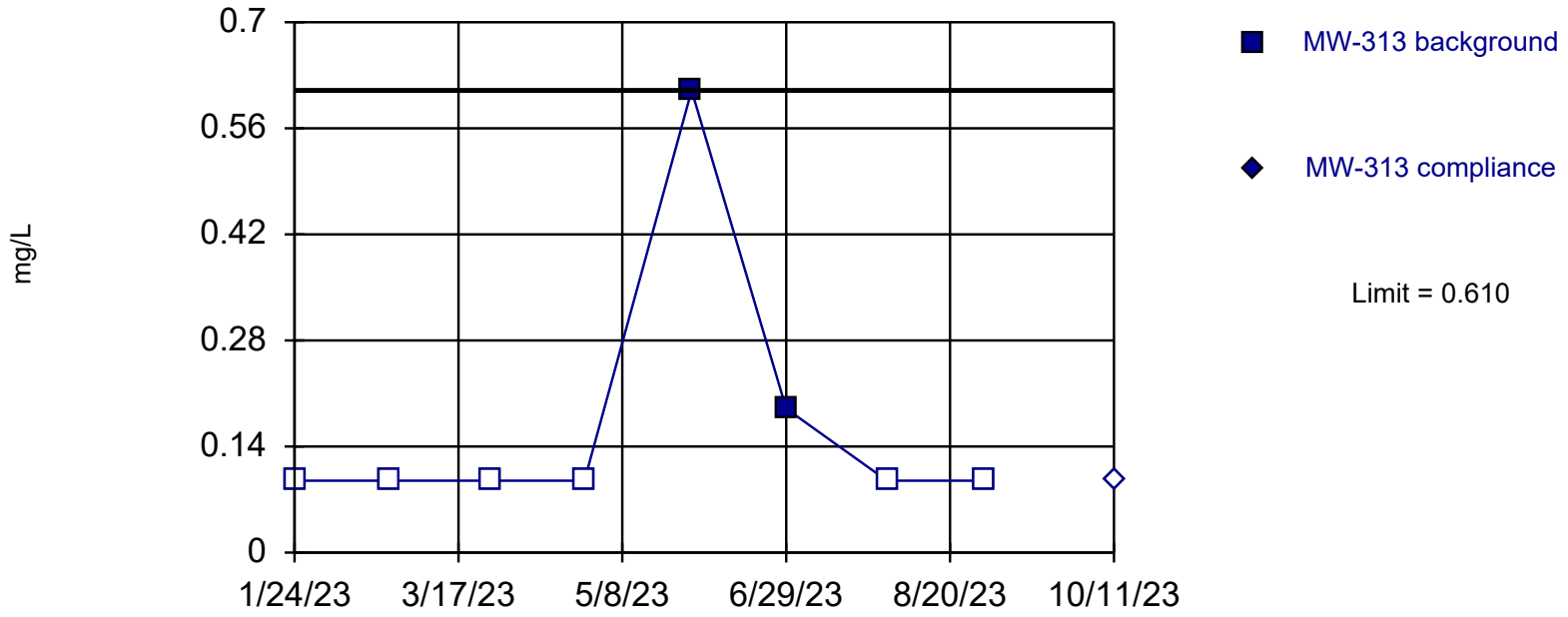
	MW-315	MW-315
1/24/2023	7.13	
2/23/2023	7.16	
3/27/2023	7.21	
4/26/2023	7.18	
5/30/2023	7.34	
6/29/2023	7.13	
7/31/2023	6.97	
8/31/2023	6.91	
10/11/2023		6.97
12/27/2023		7.03

Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 75% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-313	MW-313
1/24/2023	<0.095 (U)	
2/23/2023	<0.095 (U)	
3/27/2023	<0.095 (U)	
4/26/2023	<0.095 (U)	
5/30/2023	0.61	
6/29/2023	0.19 (J)	
7/31/2023	<0.095 (U)	
8/31/2023	<0.095 (U)	
10/11/2023		<0.095 (U)

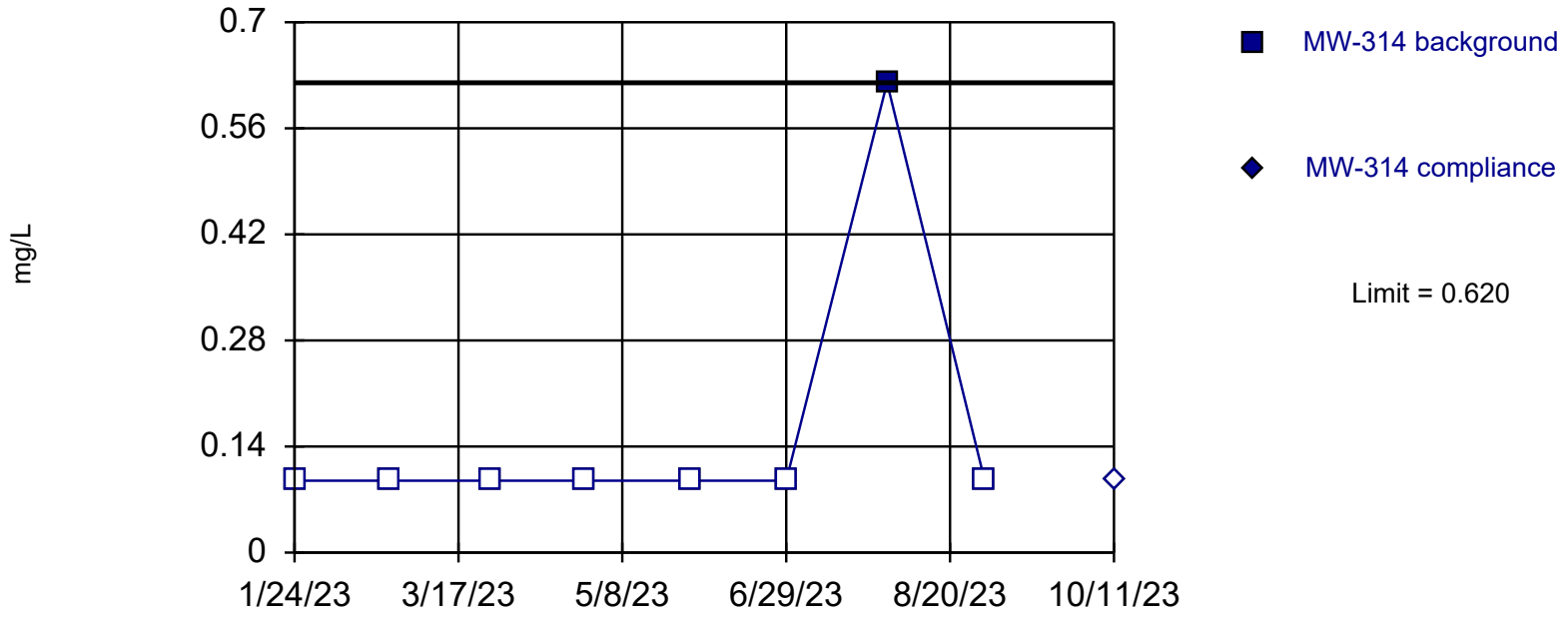
ND substitution: RL or RL/2 if <15% NDs.

Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 8 background values. 87.5% NDs. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	<0.095 (U)	
2/23/2023	<0.095 (U)	
3/27/2023	<0.095 (U)	
4/26/2023	<0.095 (U)	
5/30/2023	<0.095 (U)	
6/29/2023	<0.095 (U)	
7/31/2023	0.62	
8/31/2023	<0.095 (U)	
10/11/2023		<0.095 (U)

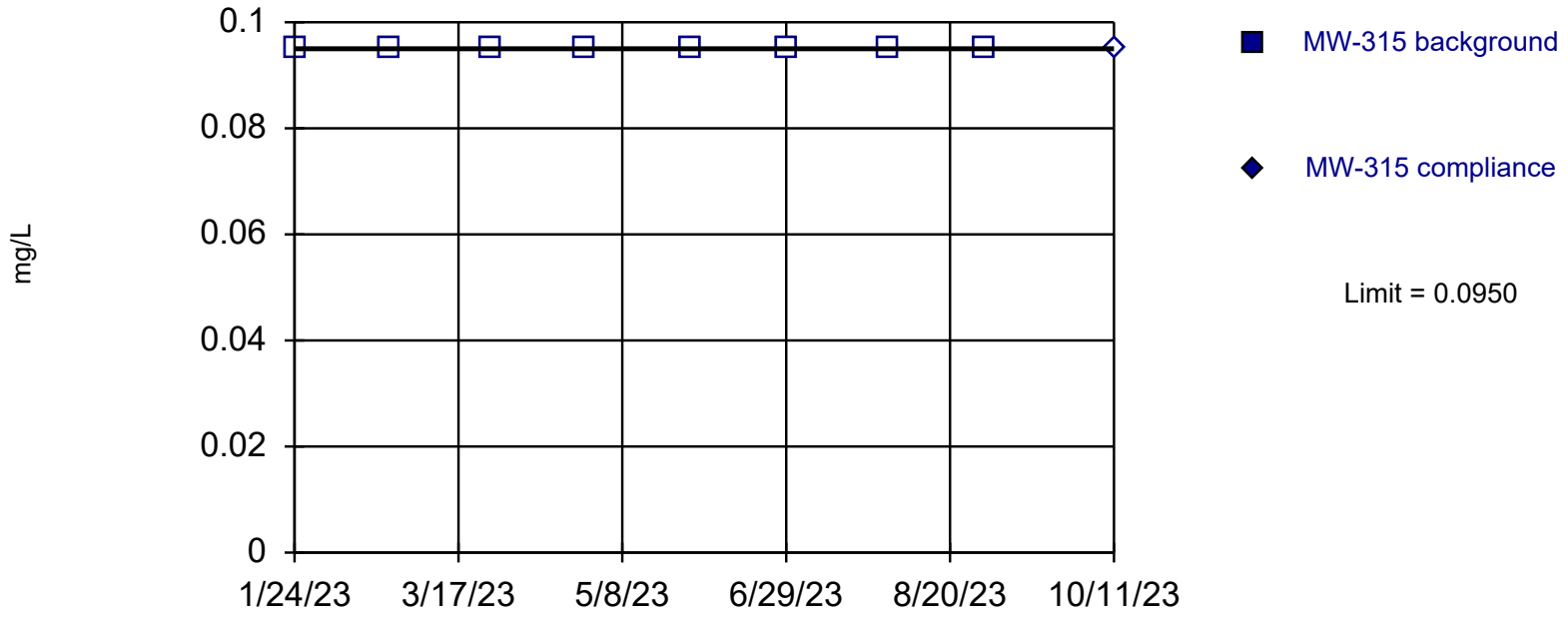
ND substitution: RL or RL/2 if <15% NDs.

Hollow symbols indicate censored values.

Within Limit

Fluoride

Intrawell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. All background values (n = 8) were censored; limit is most recent reporting limit. Well-constituent pair annual alpha = 0.04242. Individual comparison alpha = 0.02144 (1 of 2).

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Fluoride (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

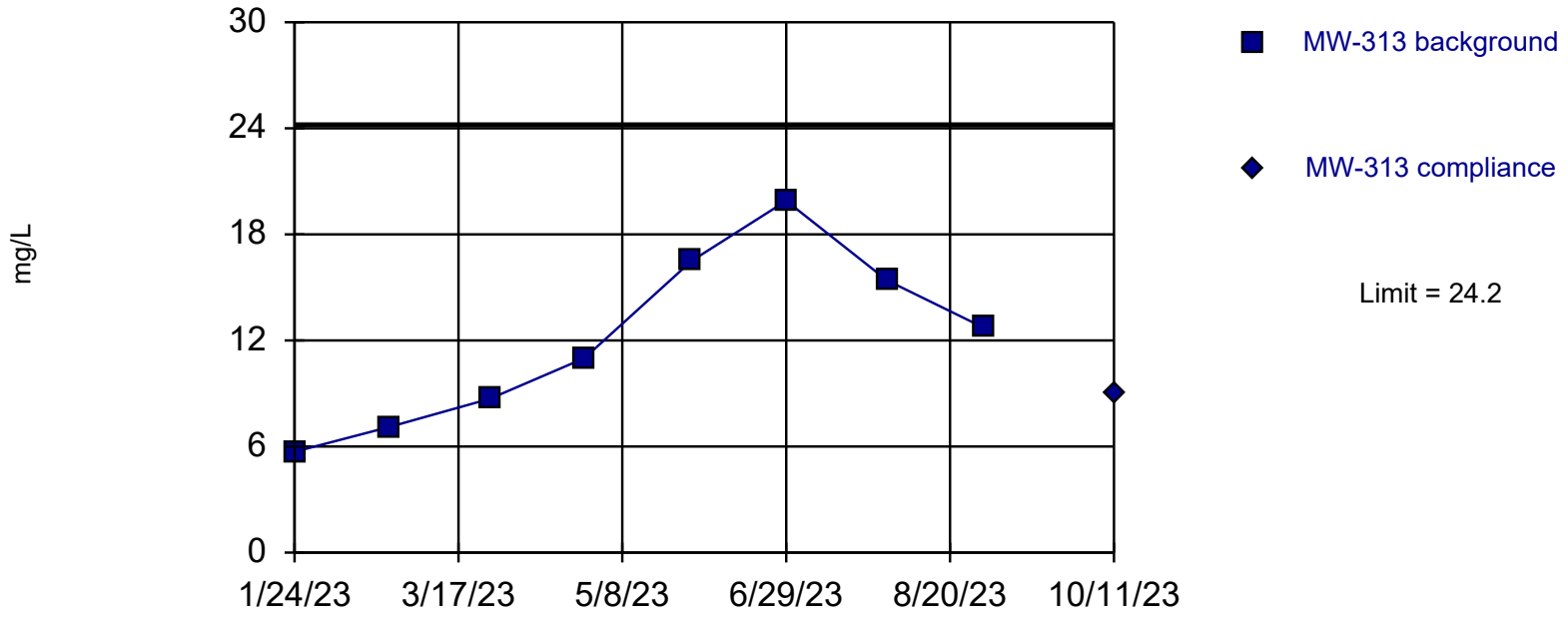
	MW-315	MW-315
1/24/2023	<0.095 (U)	
2/23/2023	<0.095 (U)	
3/27/2023	<0.095 (U)	
4/26/2023	<0.095 (U)	
5/30/2023	<0.095 (U)	
6/29/2023	<0.095 (U)	
7/31/2023	<0.095 (U)	
8/31/2023	<0.095 (U)	
10/11/2023		<0.095 (U)

ND substitution: RL or RL/2 if <15% NDs.

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=12.13, Std. Dev.=4.931, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9675, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

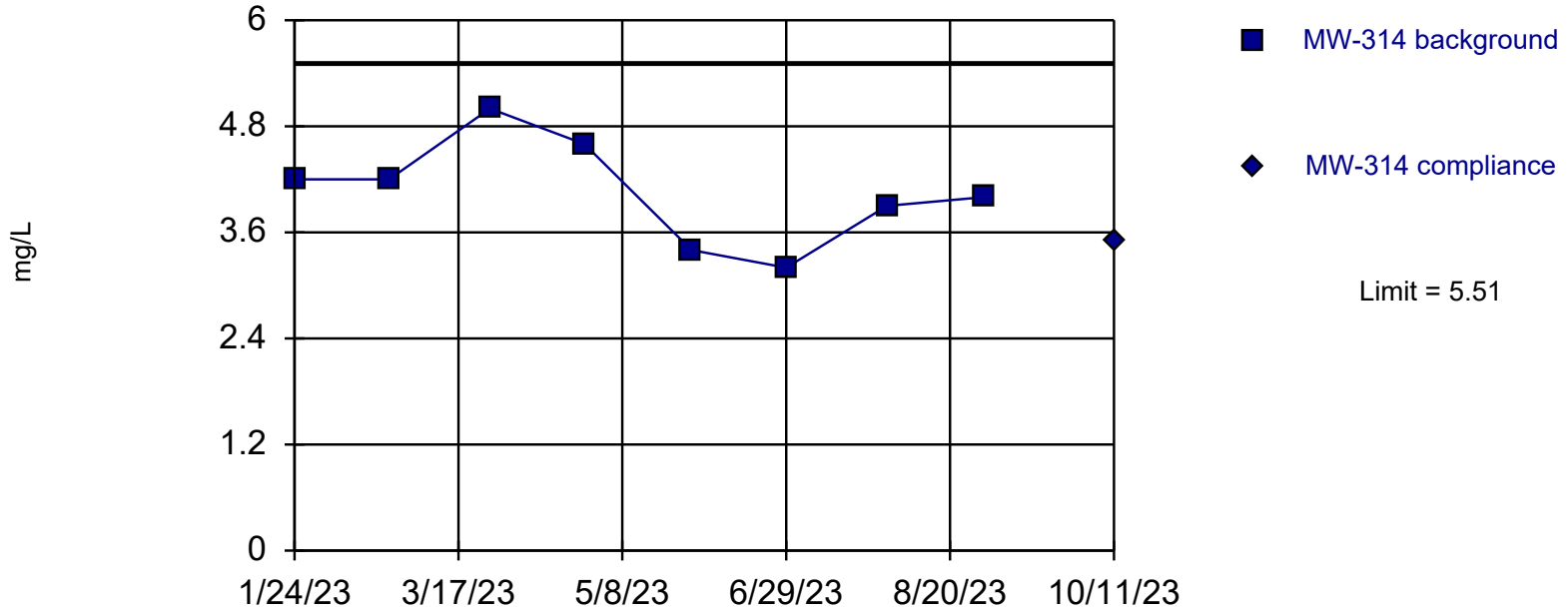
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-313	MW-313
1/24/2023	5.7	
2/23/2023	7.1	
3/27/2023	8.7	
4/26/2023	11	
5/30/2023	16.5	
6/29/2023	19.9	
7/31/2023	15.4	
8/31/2023	12.7	
10/11/2023		9

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=4.063, Std. Dev.=0.5878, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.971, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

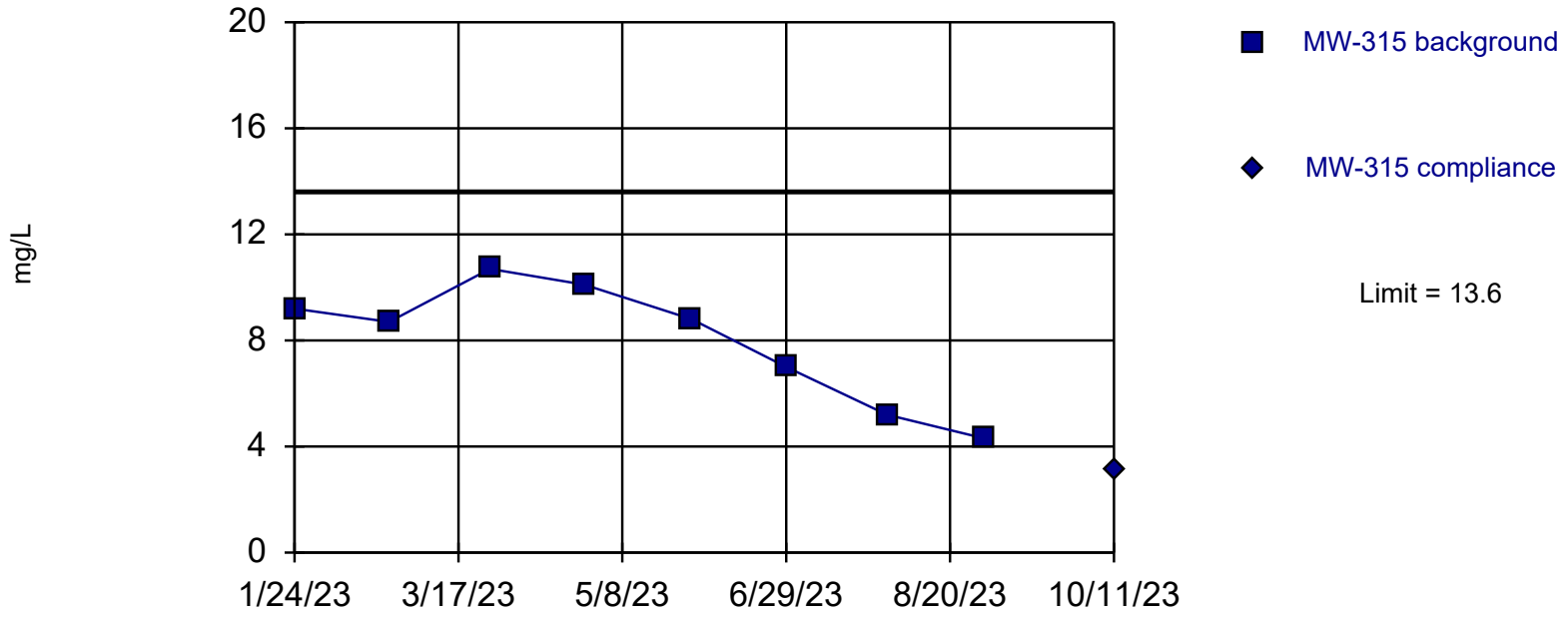
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	4.2	
2/23/2023	4.2	
3/27/2023	5	
4/26/2023	4.6	
5/30/2023	3.4	
6/29/2023	3.2	
7/31/2023	3.9	
8/31/2023	4	
10/11/2023		3.5

Within Limit

Sulfate

Intrawell Parametric



Background Data Summary: Mean=8, Std. Dev.=2.293, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9181, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Sulfate (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

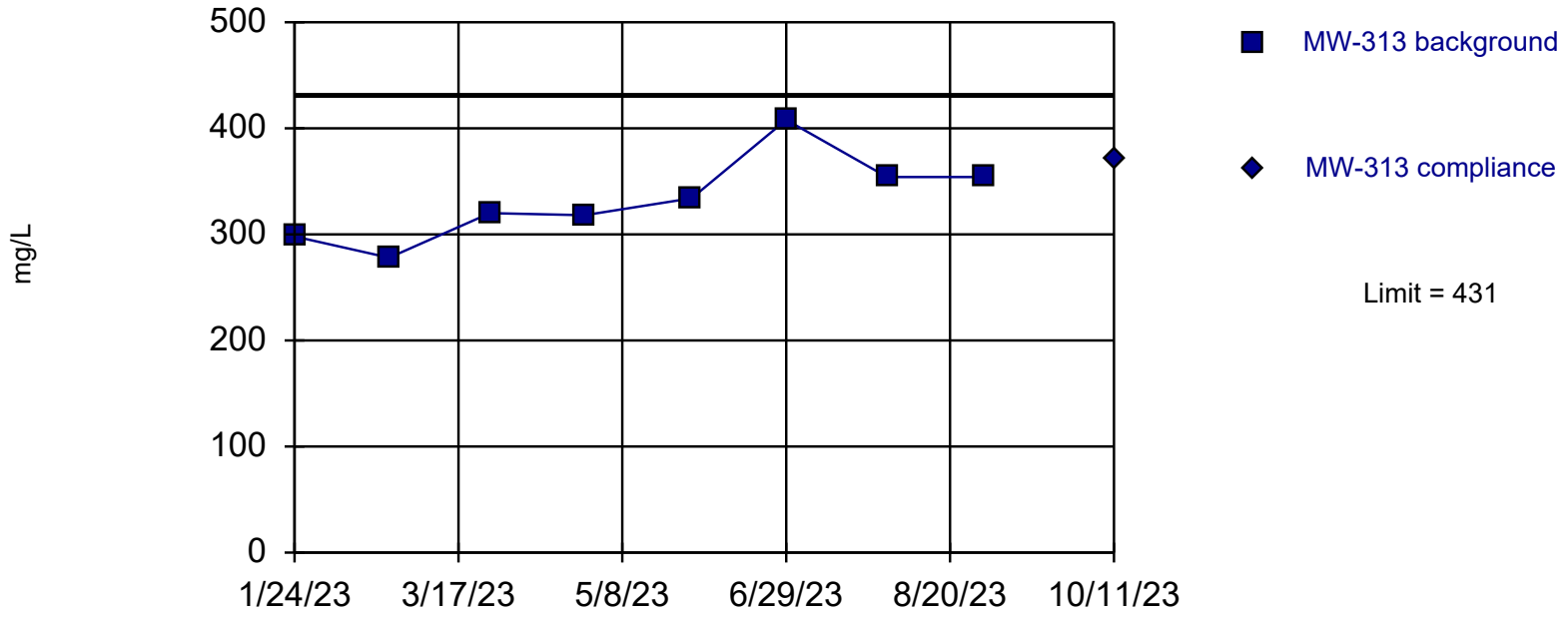
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-315	MW-315
1/24/2023	9.2	
2/23/2023	8.7	
3/27/2023	10.7	
4/26/2023	10.1	
5/30/2023	8.8	
6/29/2023	7	
7/31/2023	5.2	
8/31/2023	4.3	
10/11/2023		3.1

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=333, Std. Dev.=39.91, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9597, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

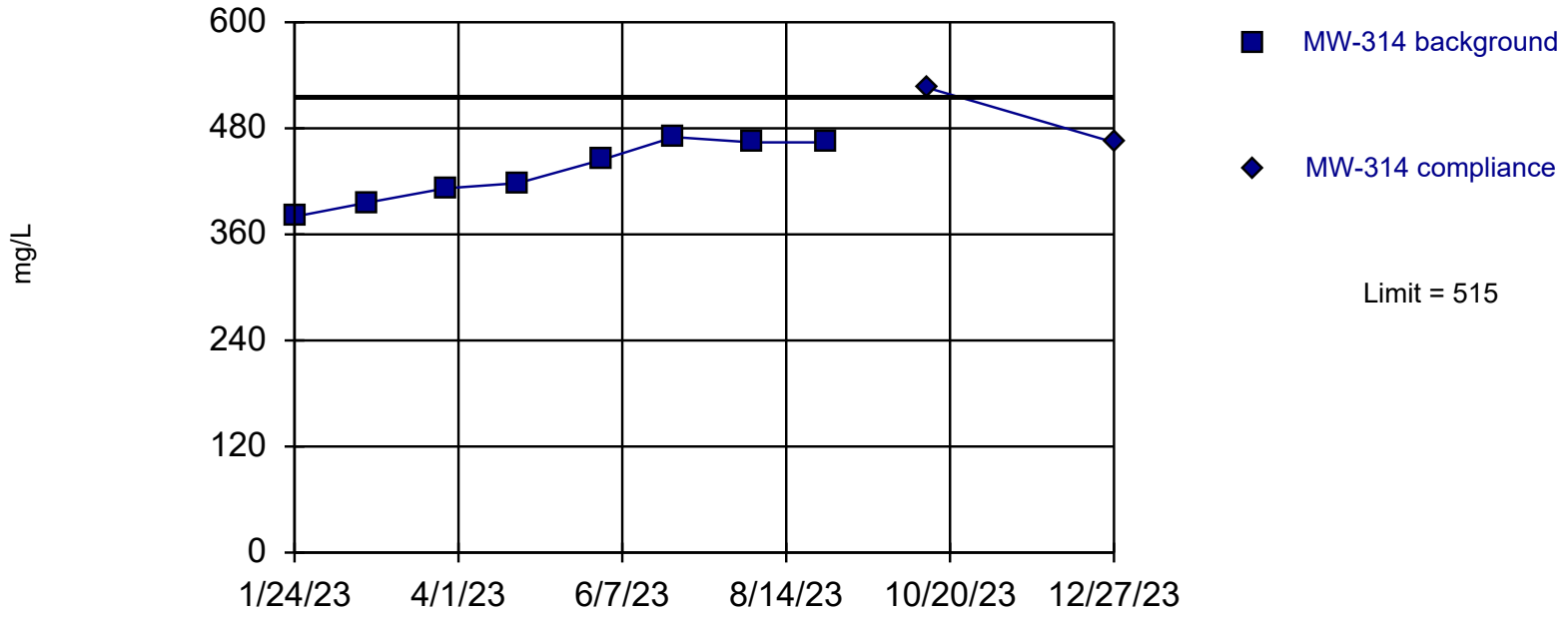
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-313	MW-313
1/24/2023	298	
2/23/2023	278	
3/27/2023	320	
4/26/2023	318	
5/30/2023	334	
6/29/2023	408	
7/31/2023	354	
8/31/2023	354	
10/11/2023		372

Within Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=431, Std. Dev.=34.28, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9099, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

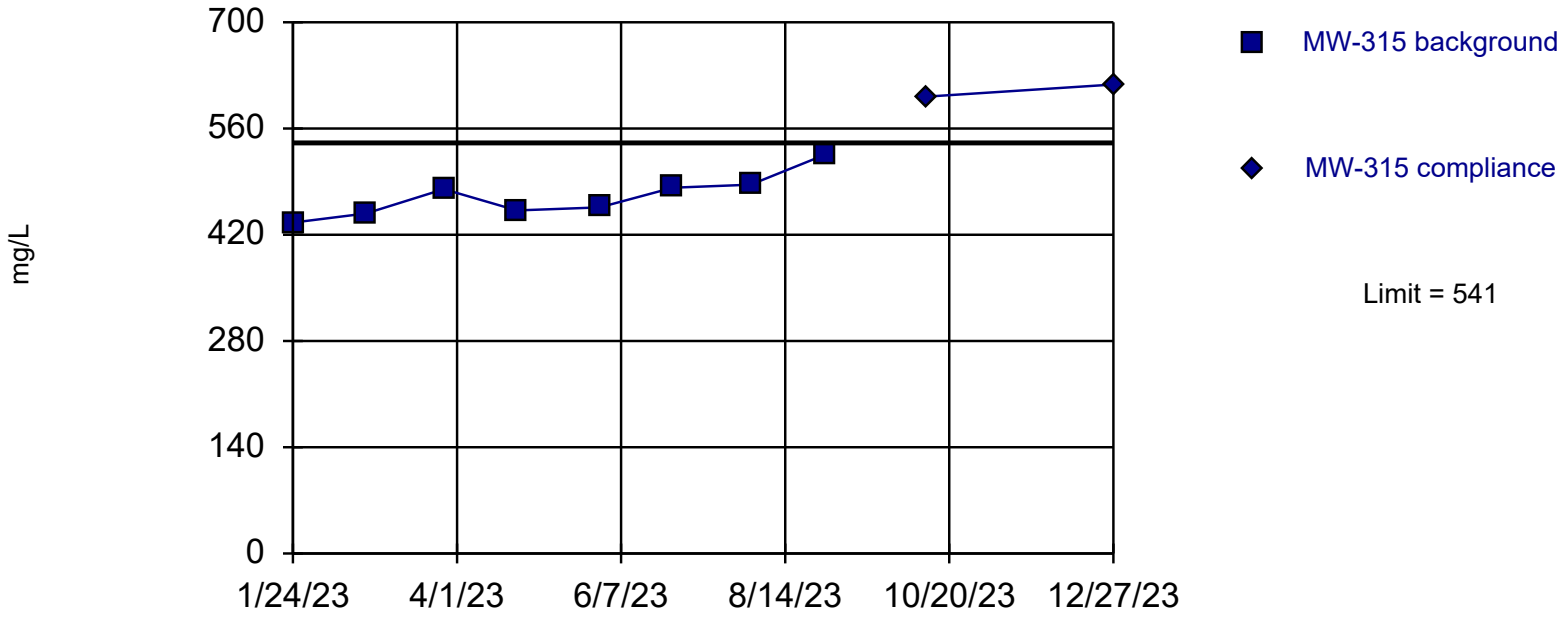
Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-314	MW-314
1/24/2023	380	
2/23/2023	396	
3/27/2023	412	
4/26/2023	418	
5/30/2023	444	
6/29/2023	470	
7/31/2023	464	
8/31/2023	464	
10/11/2023		526
12/27/2023		464

Exceeds Limit

Total Dissolved Solids

Intrawell Parametric



Background Data Summary: Mean=470.8, Std. Dev.=28.76, n=8. Normality test: Shapiro Wilk @alpha = 0.01, calculated = 0.9218, critical = 0.749. Kappa = 2.458 (c=7, w=3, 1 of 2, event alpha = 0.05132). Report alpha = 0.002505.

Prediction Limit Analysis Run 3/21/2024 3:06 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

Prediction Limit

Constituent: Total Dissolved Solids (mg/L) Analysis Run 3/21/2024 3:08 PM View: COL Secondary Pond

Columbia Energy Center Data: December - Chem- export-Dec2020

	MW-315	MW-315
1/24/2023	436	
2/23/2023	448	
3/27/2023	480	
4/26/2023	452	
5/30/2023	456	
6/29/2023	482	
7/31/2023	486	
8/31/2023	526	
10/11/2023		602
12/27/2023		618