

2023 Annual Groundwater Monitoring and Corrective Action Report

Primary Ash Pond
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:

Alliant Energy



SCS ENGINEERS

25223067.00 | January 31, 2024

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

OVERVIEW OF CURRENT STATUS

Columbia Energy Center, Dry Ash Disposal Facility, Primary Ash Pond 2023 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 Primary Ash Pond at the Columbia Energy Center (COL) monitors a single existing CCR unit. Supporting information is provided in the text of the annual report.

Category	Rule Requirement	Site Status
Monitoring Status – Start of Year	(i) At the start of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Assessment
Monitoring Status – End of Year	(ii) At the end of the current annual reporting period, whether the CCR unit was operating under the detection monitoring program in §257.94 or the assessment monitoring program in §257.95;	Assessment
Statistically Significant Increases (SSIs)	(iii) If it was determined that there was an SSI over background for one or more constituents listed in Appendix III to this part pursuant to §257.94(e): (A) Identify those constituents listed in Appendix III to this part and the names of the monitoring wells associated with such an increase; and	<p><u>October 2022/January 2023</u> Boron: M-4R, MW-303, MW-304, MW-305 Chloride: M-4R, MW-304, MW-305 Sulfate: M-4R, MW-303, MW-304, MW-305 Total Dissolved Solids: M-4R, MW-303 Field pH: MW-303, MW-305</p> <p><u>April 2023</u> Boron: MW-303 Field pH: MW-303 Sulfate: MW-303</p> <p><u>May 2023</u> Field pH: MW-316</p>

Category	Rule Requirement	Site Status
	(B) Provide the date when the assessment monitoring program was initiated for the CCR unit.	July 16, 2018
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:	
	(A) Identify those constituents listed in Appendix IV to this part and the names of the monitoring wells associated with such an increase;	October 2022 Arsenic: MW-303
	(B) Provide the date when the assessment of corrective measures (ACM) was initiated for the CCR unit;	Not applicable – Alternative Source Demonstration prepared in June 2023. ACM not required
	(C) Provide the date when the public meeting was held for the ACM for the CCR unit; and	Not applicable – ACM not required
	(D) Provide the date when the ACM was completed for the CCR unit.	Not applicable – ACM not required
Selection of Remedy	(v) Whether a remedy was selected pursuant to §257.97 during the current annual reporting period, and if so, the date of remedy selection; and	Not applicable – Selection of remedy not required
Corrective Action	(vi) Whether remedial activities were initiated or are ongoing pursuant to §257.98 during the current annual reporting period.	Not applicable – Remedial activities not required

Table of Contents

Section	Page
Overview of Current Status.....	i
1.0 Introduction.....	1
2.0 Background.....	1
2.1 Geologic and Hydrogeologic Setting.....	1
2.1.1 Regional Information.....	1
2.1.2 Site Information.....	2
2.2 CCR Rule Monitoring System.....	2
3.0 §257.90(e) Annual Report Requirements.....	2
3.1 §257.90(e)(1) Site Map.....	3
3.2 §257.90(e)(2) Monitoring System Changes.....	3
3.3 §257.90(e)(3) Summary of Sampling Events.....	3
3.4 §257.90(e)(4) Monitoring Transition Narrative.....	4
3.5 §257.90(e)(5) Other Requirements.....	5
3.5.1 §257.90(e) General Requirements.....	6
3.5.2 §257.94(d) Alternative Detection Monitoring Frequency.....	7
3.5.3 §257.94(e)(2) Alternative Source Demonstration for Detection Monitoring.....	7
3.5.4 §257.95(c) Alternative Assessment Monitoring Frequency.....	7
3.5.5 §257.95(d)(3) Assessment Monitoring Results and Standards.....	7
3.5.6 §257.95(g)(3)(ii) Alternative Source Demonstration for Assessment Monitoring..	8
3.5.7 §257.96(a) Extension of Time for Corrective Measures Assessment.....	8
3.6 §257.90(e)(6) Overview.....	8
4.0 References.....	8

Tables

Table 1.	Groundwater Monitoring Well Network
Table 2.	Groundwater Samples Summary
Table 3.	Groundwater Elevation – State Monitoring Program and CCR Well Network
Table 4.	Horizontal Gradients and Flow Velocity
Table 5.	Groundwater Analytical Results Summary – Assessment Monitoring
Table 6.	Groundwater Field Data Summary

Figures

Figure 1.	Site Location Map
Figure 2.	Site Plan and Monitoring Well Locations
Figure 3.	Water Table Map – April 2023
Figure 4.	Water Table Map – October 2023

Appendices

Appendix A	Summary of Regional Hydrogeologic Stratigraphy
Appendix B	Boring Logs and Well Construction Documentation
Appendix C	Laboratory Reports
	C1 October 2022 Assessment Monitoring
	C2 January 2023 Supplemental Assessment Monitoring
	C3 April 2023 Assessment Monitoring
	C4 May 2023 Supplemental Assessment Monitoring
Appendix D	Historical Monitoring Results
Appendix E	Statistical Evaluations
	E1 October 2022 LCLs
	E2 April 2023 LCLs
Appendix F	Alternative Source Demonstration

I:\25223067.00\Deliverables\2023 - Fed CCR Annual Report - COL PP\240131_2023 Annual CCR GW Report COL PP_Final.docx

1.0 INTRODUCTION

This 2023 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 2023 Annual Groundwater Monitoring and Corrective Action Report for the CCR Units.

This report covers the period of groundwater monitoring from January 1, 2023, through December 31, 2023.

The groundwater monitoring system for the Primary Ash Pond at the Columbia Energy Center (COL) monitors a single existing CCR unit:

- COL Primary Ash Pond (existing CCR surface impoundment)

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

In 2023, closure activities were ongoing for the Primary Ash Pond, including CCR removal facilitated by operation of dewatering wells installed around the perimeter of the pond to lower the groundwater table. Removal of CCR from the Primary Ash Pond was completed on October 4, 2023. In 2022, closure activities were completed for the adjacent Secondary Pond, including CCR removal facilitated by operation of dewatering wells installed around perimeter of the Secondary Pond to lower the groundwater table elevation.

2.0 BACKGROUND

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

- Geologic and hydrogeologic setting
- CCR Rule monitoring system

2.1 GEOLOGIC AND HYDROGEOLOGIC SETTING

2.1.1 Regional 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 Primary Ash Pond. 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, 1978). During drilling of CCR wells MW-301, MW-303, MW-304, and MW-305, the unconsolidated materials were identified as consisting primarily of silty sand and sand. Boring logs for previously-installed monitoring wells MW-84A and M-4R show silty sand and sand as the primary unconsolidated materials at these locations. The boring logs for Primary Ash Pond CCR monitoring wells are provided in **Appendix B**. All CCR monitoring wells are screened within the unconsolidated sand unit.

In the vicinity of the ash ponds, groundwater flow has historically been radially away from the ponds in all directions; however, the April 2023 water levels and apparent flow directions reflect the influence of a temporary dewatering system installed to lower groundwater levels in the area of the Primary Ash Pond as part of the closure project for that CCR Unit. The groundwater dewatering system ceased operations as of September 11, 2023, and removal of CCR from the Unit was completed on October 4, 2023. A stormwater pond was constructed in the footprint of the CCR Unit. WPL continues to evaluate the effects on groundwater elevations after removing CCR from the CCR Unit.

The water table elevations and groundwater flow directions for the April 2023 monitoring event are shown on **Figure 3**, and the water table elevations and groundwater flow directions for the October 2023 sampling are shown on **Figure 4**. The groundwater elevation data for the CCR monitoring wells are provided in **Table 3**, and 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 four downgradient monitoring Wells (**Table 1** and **Figure 2**). The background wells include MW-84A and MW-301. The downgradient wells include M-4R, MW-303, MW-304, and MW-305. One new temporary supplemental monitoring well, MW-316, was installed as part of an alternative source demonstration in April 2023, discussed further in Section 3.2. Documentation of this well installation is included in **Appendix F**. The CCR Rule wells are installed in the surficial sand aquifer. Well depths range from approximately 26 to 40 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 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 showing the site location is provided on **Figure 1**. A map showing the CCR unit 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;

There were no changes to the certified monitoring system for the Primary Ash Pond in 2023.

One new supplemental monitoring well was installed as part of an alternative source demonstration completed in response to the determination that arsenic was at a statistically significant level above the GPS following the October 2022 monitoring event. MW-316 was installed as a temporary water table observation well to provide data on shallow groundwater flow and water quality south of the Primary Ash Pond. The Primary Ash Pond was undergoing excavation at the time of well installation as part of the closure process for the CCR Unit.

No monitoring wells in the Primary Ash Pond monitoring system were decommissioned in 2023.

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;

Four groundwater sampling events were completed for the Primary Ash Pond CCR unit in 2023. Two semiannual sampling events were completed in April 2023 and October 2023, as required by the assessment monitoring program. The October 2023 event was the first sampling event completed since removal of CCR from the CCR Unit. One additional sampling event for select parameters at monitoring well MW-304 was completed in January 2023. An additional sampling event was completed in May 2023 for select parameters at temporary supplemental monitoring well MW-316.

The January 2023 sampling event was added to the 2023 monitoring schedule to collect a sample from MW-304, which had insufficient water for sampling during the October 2022 monitoring event.

Supplemental well MW-316 was sampled in May 2023 to monitor groundwater flow and water quality south of the Primary Pond while dewatering of the CCR unit was in progress.

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 assessment monitoring programs is included in **Table 2**.

Groundwater samples collected in the April and October 2023 sampling events were analyzed for both Appendix III and Appendix IV constituents. Groundwater samples collected during the January 2023 event were analyzed for Appendix III and Appendix IV constituents at MW-304. The groundwater sample collected from MW-316 during the May 2023 event was analyzed for arsenic.

The validation and evaluation of the April 2023 monitoring event data was completed and transmitted to Wisconsin Power and Light Company (WPL) on August 29, 2023. The January 2023 supplemental assessment monitoring event data was transmitted to WPL on May 16, 2023. The results of the May 2023 sampling were included in the Alternative Source Demonstration transmitted to WPL on June 9, 2023. The validation and evaluation of the October 2023 monitoring event data was in progress at the end of 2023 and will be transmitted to WPL in 2024; therefore, the October 2023 monitoring results and analytical report will be included in the 2024 annual report. The October 2023 groundwater elevation data is included in this report.

The sampling results for Appendix III and Appendix IV parameters in October 2022, January 2023, April 2023, and May 2023 are summarized in **Table 5**. Field parameter results for the October 2022 and January, April, and May 2023 sampling events are provided in **Table 6**. The analytical laboratory reports for October 2022 and January, April, and May 2023 are provided in **Appendix C**. Historical results for each monitoring well through May 2023 are summarized in **Appendix D**.

The October 2022 analyses for the samples collected from background wells MW-84A and MW-301 are provided in two laboratory reports: an initial report and a reanalysis report. The reanalysis only affects Appendix IV parameters. The background well samples were reanalyzed for select metals because the original results were flagged for detections in the method blank sample and/or were not consistent with historical results. The reanalysis was completed within the method holding time, the metals were not detected in the method blank, and no other flags were applied to the results. Based on the quality control review, the reanalysis results were considered to be more accurate than the original analyses.

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 was no monitoring program transition in 2023.

Assessment monitoring for the Primary Ash Pond was initiated in April 2018 and continued through 2023. Evaluation of the October 2022 results was completed in March 2023. Evaluation of the January 2023 results was completed in May 2023. Evaluation of the April 2023 results was completed in August 2023.

In accordance with the Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (U.S. EPA, 2009), the comparison of

assessment monitoring results to the Groundwater Protection Standards (GPS) was based on the lower confidence limit (LCL) for the arithmetic mean. The LCL evaluation was completed for each Appendix IV parameter that has been detected at a concentration exceeding the GPS in at least one sample result since assessment monitoring was initiated, which include arsenic, molybdenum, and selenium. The LCLs were calculated with Sanitas™ using historical concentrations measured since assessment monitoring began in April 2018. LCL evaluations for data collected in October 2022 and April 2023 are provided in **Appendix E**.

In the evaluation of the October 2022 monitoring event, completed in March 2023, arsenic was determined to be at an SSL above the GPS. The October 2022 arsenic and selenium results at MW-303 were higher than previous results; therefore, in addition to the LCL analysis, the arsenic and selenium results for this well were evaluated for a potential increasing trend using a Mann-Kendall analysis (**Attachment E**). Trend analysis for the arsenic and selenium results obtained since assessment monitoring was initiated indicated no significant trend for either parameter. To focus on the more recent data, Mann-Kendall trend analysis was also performed for the last eight samples for each parameter (**Attachment E**). The analysis of the last eight samples indicated a significant increasing trend for arsenic, and the lower limit for the 98-percent confidence band around the trend line exceeded the GPS. Based on these results, arsenic was determined to be at an SSL above the GPS at MW-303.

An Alternative Source Demonstration (ASD) was completed for the October 2022 event, demonstrating that sources other than the CCR unit were the likely cause of the observed concentrations of arsenic. The ASD report is provided in **Appendix F**.

Arsenic was not determined to be at an SSL about the GPS in the evaluation of the April 2023 monitoring event. No other Appendix IV parameters were detected at SSLs above the GPS values established under §257.95(h).

As shown in **Table 5**, several Appendix III and Appendix IV parameters continue to be detected at levels that represent statistically significant increases (SSIs) above background. Based on these results, the Primary Ash Pond will continue in the assessment monitoring program.

The comparison to background was based on a prediction limit approach, comparing the results to interwell upper prediction limits (UPLs) based on background monitoring results from the upgradient wells (MW-84A and MW-301). The interwell UPLs were most recently updated in January 2020 using background data collected through October 2019. The January 2020 Statistical Analysis was included as an appendix in the 2021 Annual Groundwater Monitoring Report.

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 2023 Annual Groundwater Monitoring and Corrective Action Report for the CCR Unit.

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. The groundwater monitoring and corrective action program is currently in Assessment Monitoring.

Summary of Key Actions Completed.

- Statistical evaluation for the October 2022, January 2023, and April 2023 assessment monitoring events.
- Installation of supplemental monitoring well MW-316.
- Alternative Source Demonstration for arsenic at MW-303 following the October 2022 monitoring event.
- Two semiannual groundwater sampling and analysis events and two additional sampling events (January, April, May, and October 2023).

Description of Any Problems Encountered. Monitoring wells M-4R, MW-304, and MW-305 were not sampled during the April 2023 or October 2023 monitoring events due to insufficient water in the wells. A dewatering well system was in operation in 2023 to lower groundwater levels to assist with the ongoing pond closure at COL. The groundwater dewatering system ceased operations in September 11, 2023, but groundwater elevations had not recovered sufficiently to collect samples in October 2023. Samples were collected from the remaining wells in the monitoring system.

Reanalysis was conducted for Appendix IV parameters collected during the October 2022 monitoring event at background wells MW-84A and MW-301. The background well samples were reanalyzed for select metals because the original results were flagged for detections in the method blank sample and/or were not consistent with historical results.

Discussion of Actions to Resolve the Problems. The CCR removal is now complete and the associated dewatering system has been shut down. These wells will be sampled after the water levels recover enough to allow sampling. If the water level remains too low for sampling, then installation of deeper replacement wells or another action to restore the monitoring system will be implemented.

The reanalysis for background results at MW-84A and MW-301 was completed within the method holding time, the metals were not detected in the method blank, and no other flags were applied to the results. Based on the quality control review, the reanalysis results were considered to be more accurate than the original analyses.

Projection of Key Activities for the Upcoming Year (2024).

- Statistical evaluation and determination of any SSLs exceeding the GPS for the October 2023 and April 2024 monitoring events.
- Two semiannual groundwater sampling and analysis events (April and October 2024).

- If one or more Appendix IV constituents is detected at an SSL above the GPS, then within 30 days WPL will prepare a notification in accordance with §257.95(g) and within 90 days complete an alternative source demonstration or initiate an assessment of corrective measures (§257.95(g)(3)). WPL will also characterize the release pursuant to §257.95(g)(1) and provide notice pursuant to §257.95(g)(2).
- Further evaluation of the current groundwater monitoring network following ceasing dewatering and removal of CCR, which may result in installation of deeper wells or other action to restore the monitoring system as necessary.

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. The Primary Ash Pond is no longer in detection monitoring.

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.

Not applicable. The Primary Ash Pond is no longer in detection monitoring.

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 been initiated at the site, but no alternative assessment monitoring frequency is proposed at this time.

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).

The 2023 assessment monitoring results, background UPLs, and GPSs established for the Primary Ash Pond are provided in **Table 5**. The laboratory reports are provided in **Appendix C**. Historical monitoring results are summarized in **Appendix D**.

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.

The ASD report prepared to address the SSL above the GPS observed for arsenic at MW-303 for the October 2022 sampling event is provided in **Appendix F**. The ASD report is certified by a qualified professional engineer.

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.

Tables

- 1 Groundwater Monitoring Well Network
- 2 Groundwater Samples Summary
- 3 Groundwater Elevation – State Monitoring Program
and CCR Well Network
- 4 Horizontal Gradients and Flow Velocity
- 5 Groundwater Analytical Results Summary –
Assessment Monitoring
- 6 Groundwater Field Data Summary

**Table 1. Groundwater Monitoring Well Network
Columbia Energy Center Primary Ash Pond / SCS Engineers Project #25223067.00**

Monitoring Well	Location in Monitoring Network	Role in Monitoring Network
MW-84A	Upgradient	Background
MW-301	Upgradient	Background
M-4R	Downgradient	Compliance
MW-303	Downgradient	Compliance
MW-304	Downgradient	Compliance
MW-305	Downgradient	Compliance
MW-316	Downgradient	Supplemental

Created by: NDK
 Last revision by: NLB
 Checked by: BR

Date: 9/19/2022
 Date: 11/29/2023
 Date: 12/4/2023

**Table 2. Groundwater Samples Summary
Columbia Energy Center Primary Ash Pond / SCS Engineers Project #25223067.00**

Sample Dates	Compliance Wells				Background Wells		Supplemental Well
	M-4R	MW-303	MW-304	MW-305	MW-84A	MW-301	MW-316
January 20, 2023	--	--	A-S	--	--	--	NI
April 24-27, 2023	A	A	A	A	A	A	--
May 5, 2023	--	--	--	--	--	--	A-S
October 9-11, 2023	--	A	A	--	A	A	A
Total Samples	1	2	3	1	2	2	2

Abbreviations:

A = Required by Assessment Monitoring Program

A-S = Supplemental Sample for the Assessment Monitoring Program

-- = Not Sampled

NI = Not Installed

Created by:	<u>NLB</u>	Date:	<u>11/29/2023</u>
Last revision by:	<u>NLB</u>	Date:	<u>11/29/2023</u>
Checked by:	<u>BR</u>	Date:	<u>12/4/2023</u>

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25223067.00**

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
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

Dry Ash Facility
(Facility ID #03025)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25223067.00**

	Well Number	M-3	M-4R	MW-39A	MW-39B	MW-48A	MW-48B	MW-57	MW-59	MW-216R	MW-217	MW-220RR
	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	
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	

Ash Pond Facility (Facility ID #02325)

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25223067.00**

Well Number	MW-301	MW-302	MW-303	MW-304	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
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	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
Screen Length (ft)	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	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5				43.7
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29				774.79
Measurement Date																				
December 21-22, 2015	785.56	784.78	784.11	786.13	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 4-5, 2016	786.78	785.81	785.48	788.08	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	NI	NI	NI	NI	NI	NI
July 7-8, 2016	786.31	786.28	784.60	787.36	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	NI	NI	NI	NI	NI	NI
July 28, 2016	NM	NM	784.35	NM	NM	NM	NM	784.86	785.61	--	--	--	--	--	NI	NI	NI	NI	NI	NI
October 11-13, 2016	787.64	787.76	786.18	788.18	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	NI	NI	NI	NI	NI	NI
December 29, 2016	787.37	787.05	NM	NM	NM	NM	785.66	785.72	786.63	--	--	--	--	--	NI	NI	NI	NI	NI	NI
January 25-26, 2017	787.27	786.89	785.28	789.34	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	NI	NI	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	NI	NI	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	NI	NI	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	NI	NI	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	NI	NI	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI	NI
April 23-25, 2018	785.29	784.37	783.27	789.69	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
May 24, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.79	785.09	NM	785.45	785.97	786.11	NI	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	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
April 1-4, 2019	787.04	787.56	786.52	789.72	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
June 12, 2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI	NI
June 19, 2019	NM	NM	786.81	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI	NI
December 13, 2019	--	--	--	--	--	--	--	--	--	787.03	785.68	786.43	--	--	NI	NI	NI	NI	NI	NI
December 23, 2019	--	--	--	--	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI	NI
January 17, 2020	--	--	785.58	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	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
June 30, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI	NI
August 6, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI	NI
October 7-8, 2020	786.53	786.74	785.16	788.52	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
December 11, 2020	NM	NM	NM	NM	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	788.36	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI
April 12, 2021	786.50	785.77	784.07	787.99	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
June 11, 2021	NM	NM	NM	NM	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	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
December 21, 2021	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	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
July 27, 2022	NM	NM	783.07	NM	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	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
November 30, 2022	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NI	NI	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	788.08	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NM	NM	NM	NM	NM	NM	NI
January 24, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.73	783.36	783.63	783.77	NI
February 20-23, 2023	785.56	784.98	NM	NM	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
March 27-28, 2023	786.83	785.87	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.84	783.98	784.43	NM	784.12	784.41	784.57	NI
April 24-27, 2023	787.57	786.87	784.38	784.03	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
May 5, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.55	NM	NM	NM	NM	780.49
May 16, 2023	787.43	787.07	783.88	784.12	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
May 30-31, 2023	787.04	786.89	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	784.90	784.69	784.97	NM	785.24	785.55	785.77	NM
June																				

Table 4. Horizontal Gradients and Flow Velocity
Columbia Energy Center - Primary Pond / SCS Engineers Project #25223067.00
January - December 2023

Flow Path A - South/Southwest					
Sampling Dates	h1 (ft)	h2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/d)
4/24-27/2023	787.75	785.00	92	0.030	3.5
10/9-11/2023	783.09	781.00	114	0.018	2.1

Flow Path B - Northeast					
Sampling Dates	h1 (ft)	h2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/d)
4/24-27/2023	785.30	784.03	1799	0.001	0.1

Flow Path C - West					
Sampling Dates	h1 (ft)	h2 (ft)	Δl (ft)	Δh/Δl (ft/ft)	V (ft/d)
10/9-11/2023	780.00	779.93	121	0.001	0.1

Wells	K Values (cm/sec)	K Values (ft/d)	Assumed Porosity, n
M-4R	3.0E-03	8.4	
M-303	4.0E-02	114	0.40
M-304	1.2E-02	34	
M-305	5.0E-02	141	
Geometric Mean	1.6E-02	46	

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

NA - not applicable

Note:

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

Created by: RM
 Last revision by: RM
 Checked by: NLB

Date: 1/2/2024
 Date: 1/2/2024
 Date: 1/2/2024

**Table 5. Groundwater Analytical Results Summary - Assessment Monitoring
Columbia Energy Center - Primary Pond / SCS Engineers Project #25223067.00**

Parameter Name	UPL Method	UPL	Background Wells				Compliance Wells									
			MW-84A		MW-301		M-4R		MW-303		MW-304			MW-305		MW-316
			10/27/2022	4/27/2023	10/27/2022	4/27/2023	10/26/2022	4/25/2023	10/26/2022	4/24/2023	10/26/2022	1/20/2023	4/25/2023	10/26/2022	4/25/2023	5/5/2023
Groundwater Elevation (ft amsl)			784.57	786.97	784.91	787.57	783.85	DRY	778.94	784.38	781.79	788.08	784.03 [^]	784.97	DRY	780.49
Appendix III																
Boron, ug/L	P	35.6	12.2	10.3	37.5	20.1	1,590	--	2,730 P6	2,720 P6	--	346	--	1,610	--	--
Calcium, ug/L	NP	129,000	78,400	68,600	62,800 P6	120,000	110,000	--	2,360	43,600	--	92700	--	71,600	--	--
Chloride, mg/L	P	6.2	3.4	3.0	2.3	1.5 J	58.6	--	<8.6 D3	3.5 J,D3	--	12.7	--	55.5	--	--
Fluoride, mg/L	DQ	DQ	<0.095	<0.095	<0.095	<0.095	0.23 J	--	<0.095	<0.48 D3	--	0.32 M0,R1	--	0.32	--	--
Field pH, Std. Units	P	7.78	7.31	7.01	6.80	6.65	7.23	--	9.9	8.44	--	7	--	9.31	--	8.32
Sulfate, mg/L	P	30.3	1.1 J	1.3 J	11.6	12.3	282	--	442	229	--	31.3	--	261	--	--
Total Dissolved Solids, mg/L	NP	514	302	326	282	526	670	--	930	420	--	398	--	474	--	--
Appendix IV																
		UPL	GPS													
Antimony, ug/L	NP*	0.4	6	0.29 J	<0.15	<0.15	<0.15	0.28 J	--	0.7 J	<0.15	--	<0.15 1q	--	0.47 J	--
Arsenic, ug/L	P*	0.53	10	0.72 J	<0.28	0.3 J	<0.28	0.4 J	--	52	4.0	--	1.4	--	1.3	--
Barium, ug/L	P	18.3	2000	13.7	12.6	7.5	9.8	34.3	--	4	31.0	--	30.7	--	10.8	--
Beryllium, ug/L	NP*	0.37	4	<0.25	<0.25	<0.25	<0.25	<0.25	--	<0.25	<0.25	--	<0.25	--	<0.25	--
Cadmium, ug/L	NP*	0.32	5	0.22 J	<0.15	<0.15	<0.15	<0.15	--	0.16 J	<0.15	--	<0.15	--	<0.15	--
Chromium, ug/L	P*	3.13	100	2.2 J	1.7 J	<1.0	<1.0	<1.0	--	46.3	45.0	--	<1.0	--	<1.0	--
Cobalt, ug/L	NP*	0.38	6	0.25 J	<0.12	0.46 J	<0.12	0.14 J	--	0.94 J	0.26 J	--	0.37 J	--	<0.12	--
Fluoride, mg/L	DQ	DQ	4	<0.095	<0.095	<0.095	<0.095	0.23 J	--	<0.095	<0.48	--	0.32 M0,R1	--	0.32	--
Lead, ug/L	NP*	0.48	15	0.26 J	<0.24	<0.24	<0.24	<0.24	--	0.28 J	<0.24	--	0.24 J	--	<0.24	--
Lithium, ug/L	P*	0.86	40	0.41 J	0.71 J	0.37 J	<0.62 J	1.7	--	0.34 J	4.4	--	0.29 J	--	<0.22	--
Mercury, ug/L	DQ	DQ	2	<0.066	<0.066	<0.066	<0.066 M0	<0.066	--	<0.066	<0.066	--	<0.066	--	<0.066	--
Molybdenum, ug/L	NP*	0.44	100	<0.44	<0.44	<0.44	<0.44	34.5	--	89.4	41.3	--	2.4	--	44.9	--
Selenium, ug/L	NP*	0.71	50	<0.32	<0.32	<0.32	<0.32	5.8	--	74.4	9.7	--	<0.32	--	9.1	--
Thallium, ug/L	NP*	0.48	2	0.33 J	<0.14	<0.14	<0.14	<0.14	--	0.21 J	<0.14	--	0.23 J	--	<0.14	--
Radium 226/228 Combined, pCi/L	P	1.93	5	0.673	0.326	0.003	0.417	0.181	--	0.357	0.292	--	0.945	--	0.309	--

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

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

Abbreviations:

mg/L = milligrams per liter
 ug/L = micrograms per liter
 -- = Not Analyzed
 amsl = above mean sea level

LOD = Limit of Detection
 LOQ = Limit of Quantitation
 DQ = Double Quantification Rule (not detected in background)

P = Parametric UPL with 1-of-2 retesting
 NP = Nonparametric UPL (highest background value)

Lab Notes:

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.
 P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the spike level.
 R1 = RPD value was outside control limits.
 1q = Analyte was measured in the associated method blank at -0.26 ug/L.

Notes:

1. An individual result above the UPL or GPS does not constitute a statistically significant increase (SSI) above background or statistically significant level above the GPS. See the accompanying letter text for identification of statistically significant results.
 2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCLs), if established; otherwise, the values from 40 CFR 257.95(h)(2).
 3. Interwell UPLs calculated based on results from background wells MW-84 and MW-301.
 4. Intrawell UPL for fluoride is based on the double quantification rule, because fluoride was not detected above the LOQ in the background samples.
- * = UPL is below the LOQ for background sampling. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs above background.
 ^ . MW-304 water level dropped below pump shortly after beginning low-flow purging.

Created by: NDK Date: 5/1/2018
 Last revision by: NLB Date: 8/3/2023
 Checked by: BR Date: 8/4/2023
 Proj Mgr QA/QC: TK Date: 1/4/2024

Table 6. Groundwater Field Data Summary
Columbia Energy Center - Primary Ash Pond / SCS Engineers Project #25223067.00

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	10/27/2022	784.57	11.7	7.31	8.31	585	40	0.00
	4/27/2023	786.97	10.7	7.01	9.37	557	103	0.72
MW-301	10/27/2022	784.91	10.8	6.80	0.10	508	81	0.00
	4/27/2023	787.57	8.0	6.65	6.50	857	95	0.00
M-4R	10/25/2022	783.85	13.6	7.23	0.38	988	103	0.00
	4/25/2023	well dry						
MW-303	10/26/2022	778.94	11.0	9.90	6.19	1396	23	2.28
	4/24/2023	784.38	10.5	8.44	9.48	575	46	0.00
MW-304	10/25/2022	781.79	NM	NM	NM	NM	NM	NM
	1/20/2023	788.08	10.0	7.00	0.14	665	115	3.69
	4/25/2023	well went dry before stabilization						
MW-305	10/25/2022	784.97	18.7	9.31	1.49	704	104	0.00
	4/25/2023	well dry						
MW-316	5/5/2023	NS	12.80	8.32	0.09	636	-167	0.05

Abbreviations:

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

umhos/cm = micromhos/cm
NM = Not Measured

NS = Not Surveyed

Notes:

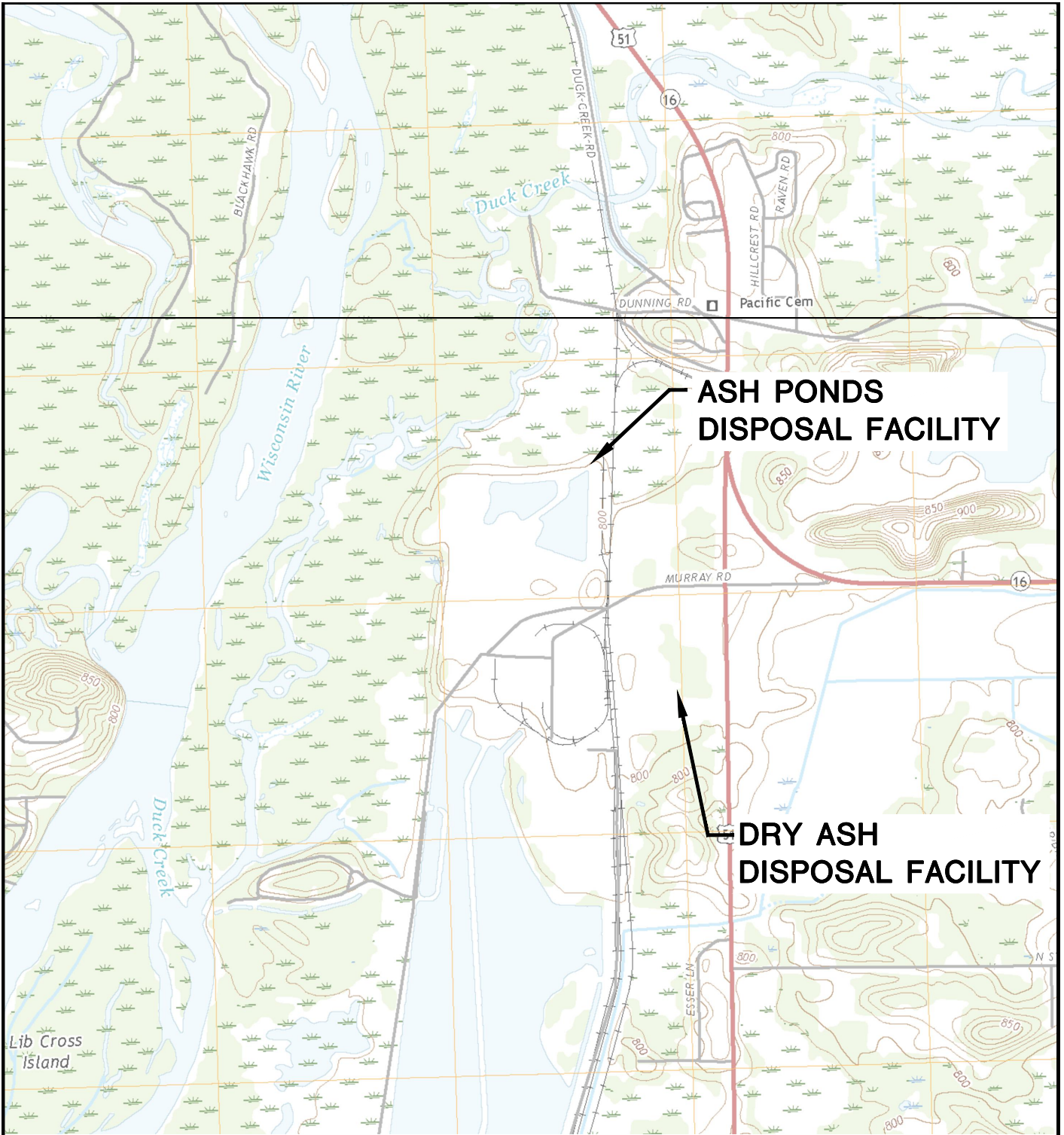
1. Groundwater elevation was below the top of the dedicated pump at M-4R during the October 2022 monitoring event.
2. MW-304 was dry during the October 2022 sampling event due to ongoing dewatering at the site.

Created by: DK
Last revision by: NLB
Checked by: BLR

Date: 9/2/2022
Date: 8/1/2023
Date: 8/2/2023

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Map – April 2023
- 4 Water Table Map – October 2023

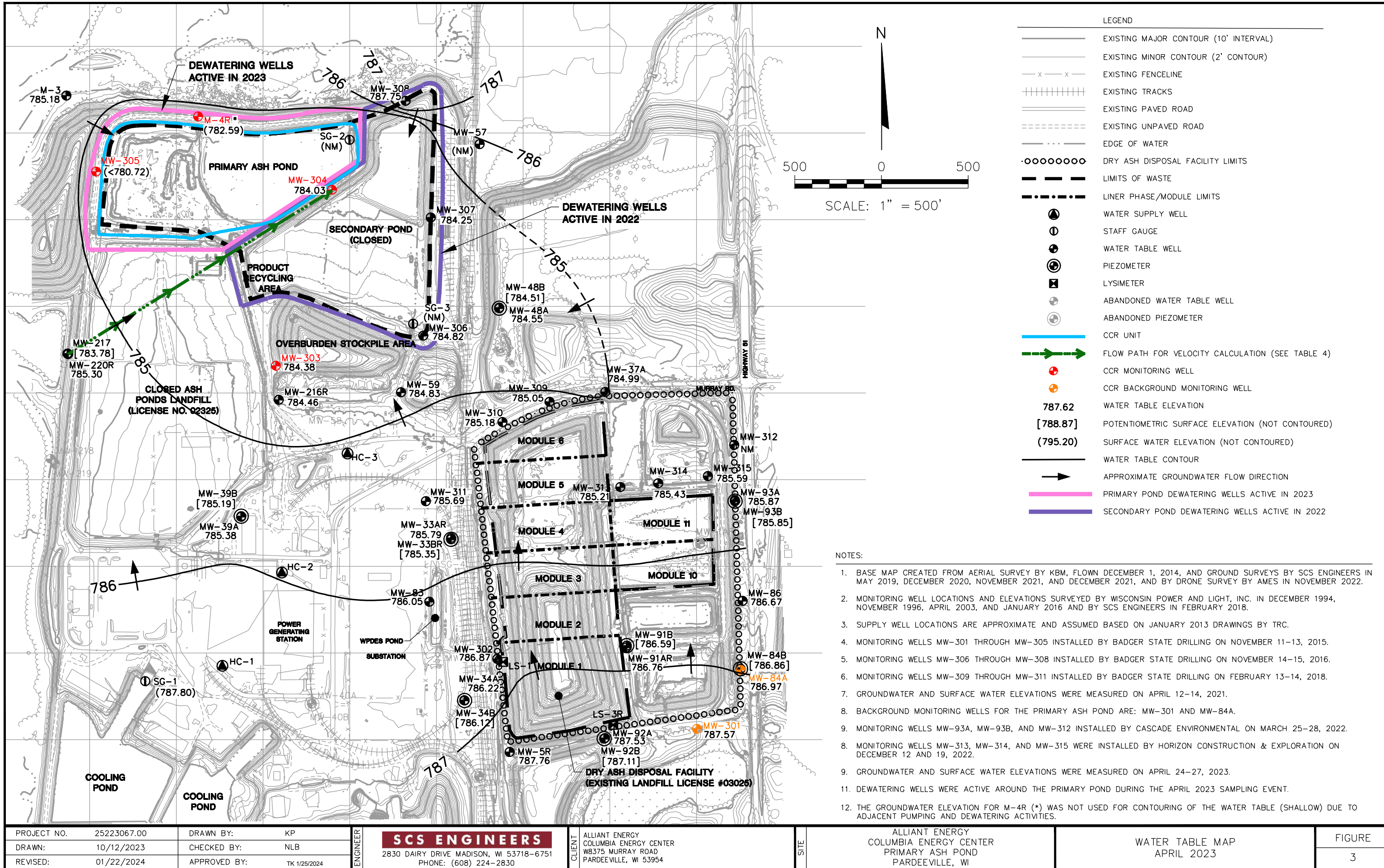


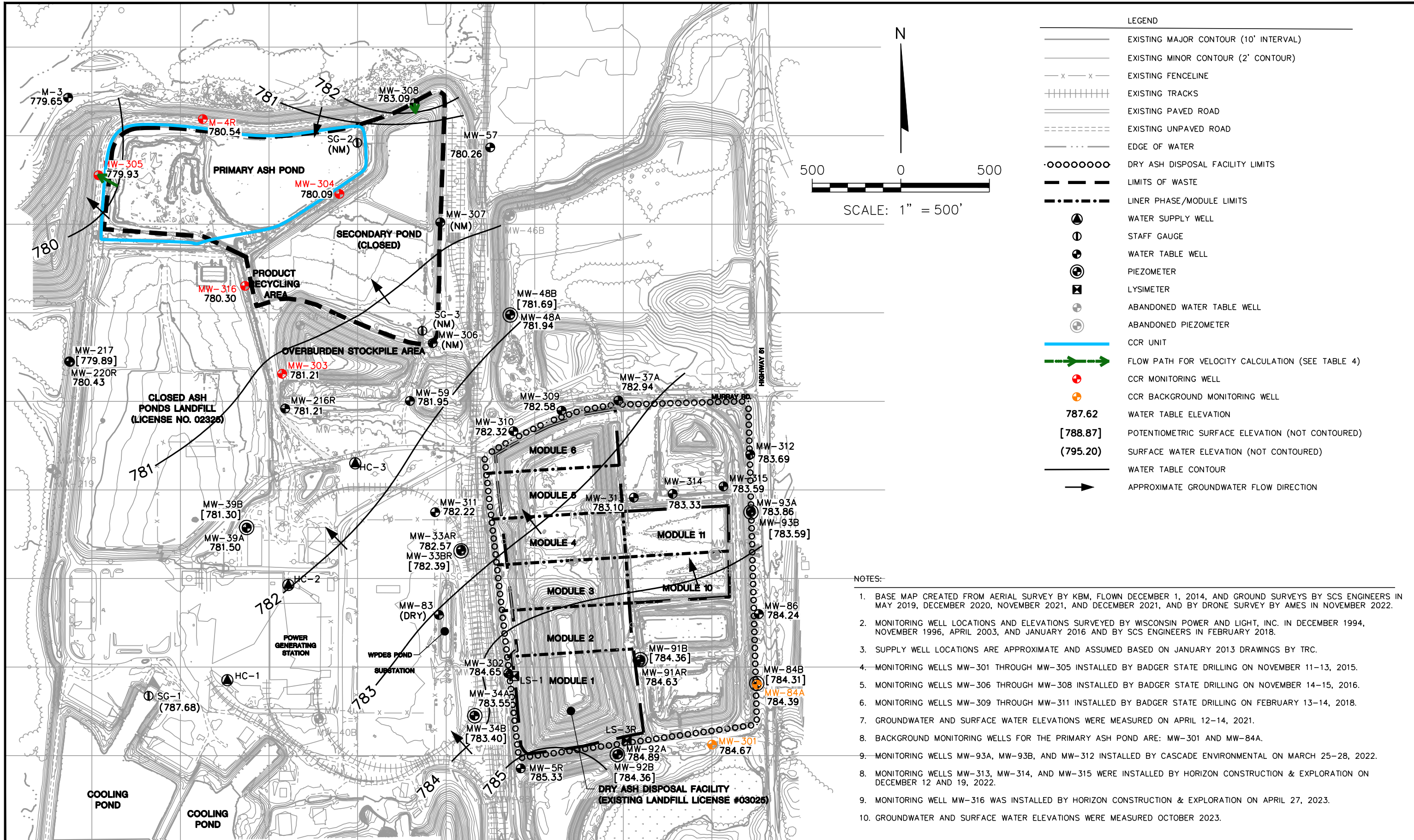
POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'



CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830		FIGURE
	PROJECT NO.	25219067.00		DRAWN BY:	BSS		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)
 - x - x - 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

- 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. GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED OCTOBER 2023.

PROJECT NO. 25223067.00	DRAWN BY: KP	ENGINEER		CLIENT	SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PRIMARY ASH POND PARDEEVILLE, WI	WATER TABLE MAP OCTOBER 2023	FIGURE				
DRAWN: 11/13/2023	CHECKED BY: NLB								2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954	WATER TABLE MAP OCTOBER 2023	4
REVISED: 01/09/2024	APPROVED BY: TK 1/10/2024											

I:\25223067.00\Drawings\Primary Ash Pond\Water Table Map-October 2023.dwg, 1/9/2024 10:11:40 AM



Appendix A
Summary of Regional Hydrogeologic Stratigraphy

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

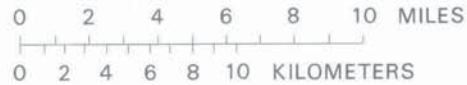
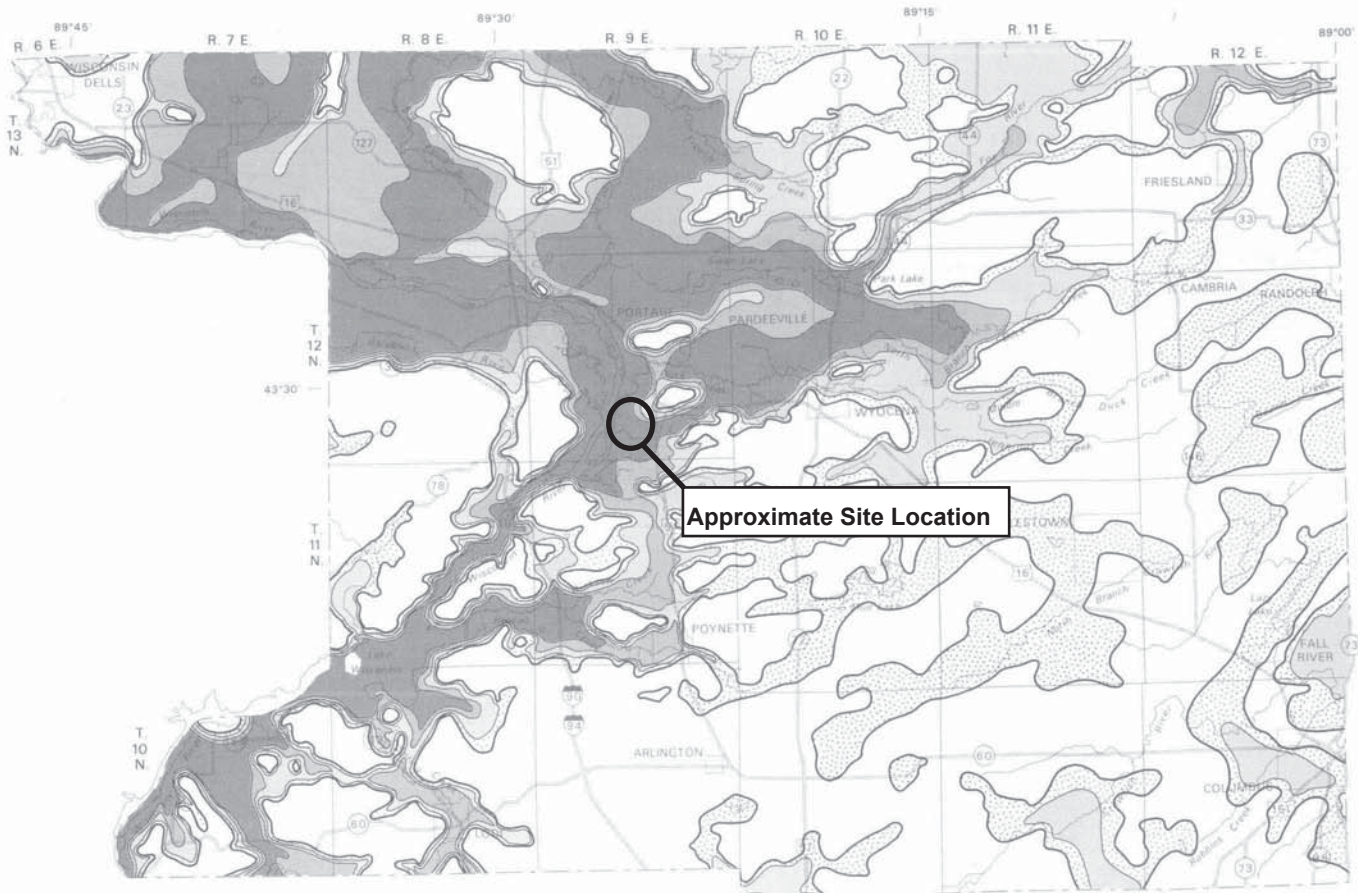
Approximate Age	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Predominant Lithology
Quaternary (0-1 million years old)	Surficial Aquifer	0 to 300+	Holocene & Pleistocene Deposits	<ul style="list-style-type: none"> Unconsolidated clay, silt, sand, gravel, cobbles, boulders, and organic matter
Ordovician (460 to 490 million years old)	Sandstone Aquifer	0 to 800+	Galena Decorah Platteville St. Peter Prairie du Chien	<ul style="list-style-type: none"> Dolomite and shaley dolomite Sandstone
Cambrian (490 to 500 million years old)			Trempeleau Franconia Galesville Eau Claire Mt. Simon	<ul style="list-style-type: none"> Sandstone
Precambrian (more than 1 billion years old)	Used for domestic supply in some areas	--	Precambrian	<ul style="list-style-type: none"> 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:

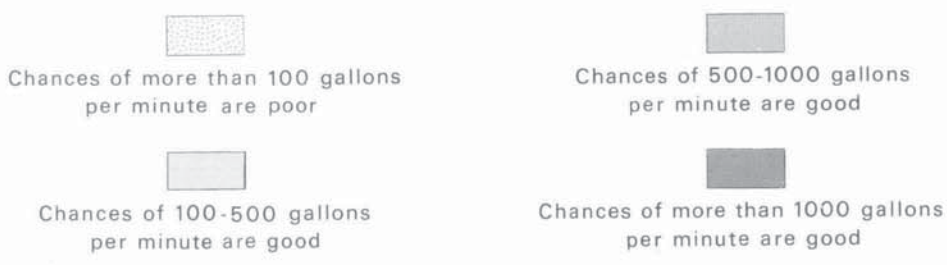
Harr, C.A., L.C. Trotta, and R.G. Borman, "Ground-Water Resources and Geology of Columbia County, Wisconsin," University of Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.
Wisconsin Geological and Natural History Survey, Bedrock Stratigraphic Units in Wisconsin, UW Extension Educational Series 51, ISSN: 1052-2115, 2011.

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



EXPLANATION

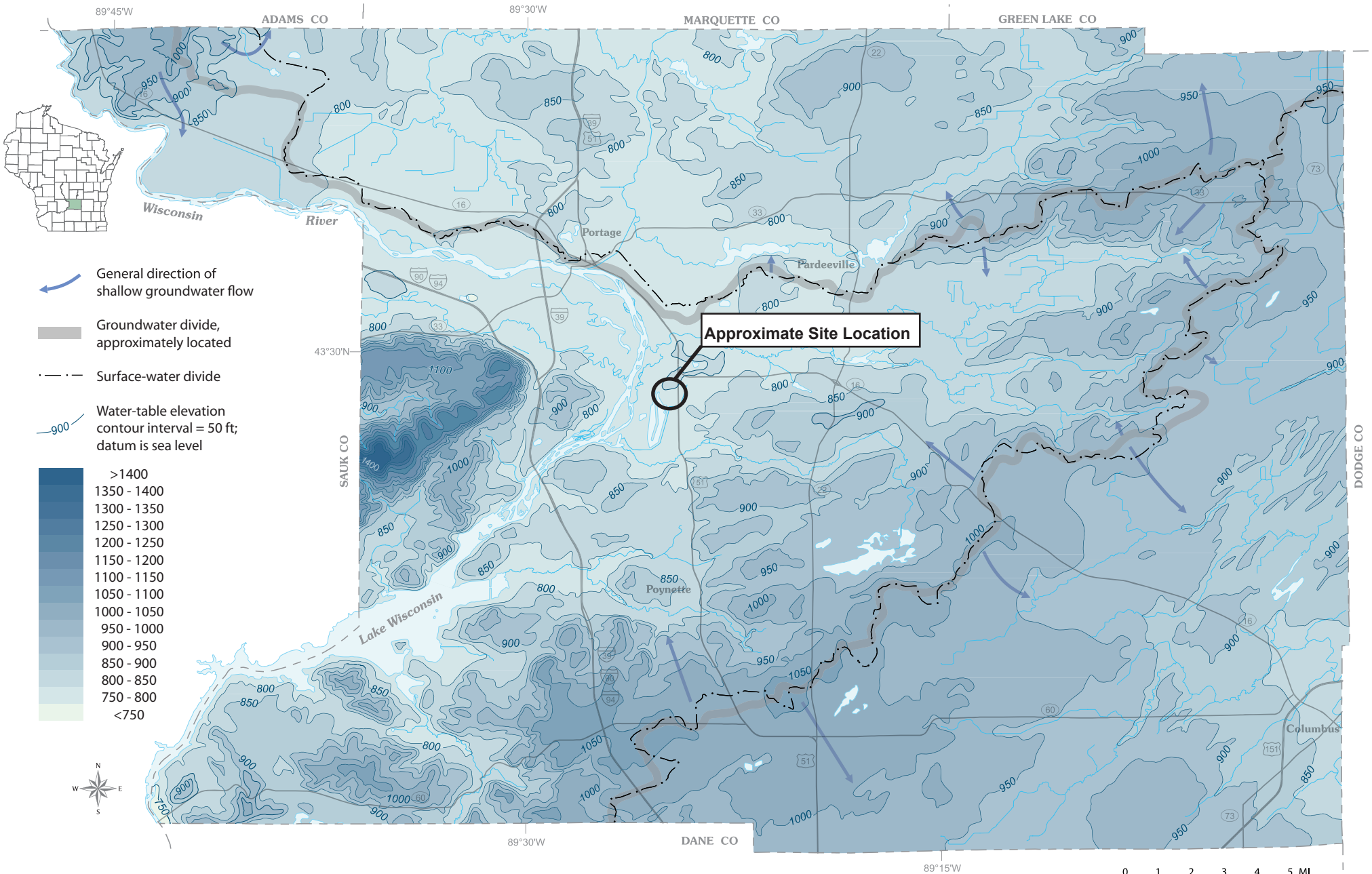
Probable well yields




Boundary of saturated sand-and-gravel aquifer

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

Generalized water-table elevation in Columbia County, Wisconsin





Appendix B
Boring Logs and Well Construction Documentation

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

Facility/Project Name WPL-Columbia		SCS#: 25215135.00		License/Permit/Monitoring Number	Boring Number MW-301
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State Drilling			Date Drilling Started 11/11/2015	Date Drilling Completed 11/11/2015	Drilling Method hollow stem auger
WI Unique Well No. VY701	DNR Well ID No.	Common Well Name	Final Static Water Level Feet	Surface Elevation 803.69 Feet	Borehole Diameter 8.5 in.
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 541562.2 N, 2025001.0 E S/C/N			Local Grid Location Lat _____ " <input type="checkbox"/> N <input type="checkbox"/> E Long _____ " <input type="checkbox"/> S <input type="checkbox"/> W		
1/4 of _____		1/4 of Section 27 , T 12 N, R 9 E			
Facility ID	County Columbia	County Code 11	Civil Town/City/ or Village 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					RQD/ Comments	
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S1	21	7 6 9 10	1 2	SILTY SAND, yellowish brown (10YR 5/6), fine to medium grained.											
S2	20	6 7 9 10	3 4	Same as above except, 10YR 5/4 (top section), 10YR 3/6 (bottom section), trace gravel.											
S3	22	7 6 9 6	5 6	Same as above except, 10YR 3/4 (bottom), 10YR 5/4 (top), trace little roots and sticks, trace gravel.	SM										
S4	21	4 5 6 5	7 8	Same as above except, 10YR (top), 10YR 4/6 (bottom), trace clay at bottom.											
S5	18	2 2 4 5	9 10	Same as above except, fine to coarse grained sand, little gravel, trace clay in top half, 10YR 3/6.											
S6	20	2 3 3 3	11 12	Same as above except, 10YR 6/8.											

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

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

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 used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-301**

Use only as an attachment to Form 4400-122.

Page **2** of **2**

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

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

Facility/Project Name WPL-Columbia		SCS#: 25215135.00		License/Permit/Monitoring Number		Boring Number MW-303	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State Drilling				Date Drilling Started 11/12/2015		Date Drilling Completed 11/13/2015	
WI Unique Well No. VY714		DNR Well ID No.		Common Well Name		Final Static Water Level Feet	
						Surface Elevation 808.69 Feet	
						Borehole Diameter 8.5 in.	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>				Local Grid Location			
State Plane 543655.7 N, 2122574 E				Lat ° ' "		Feet <input type="checkbox"/> N <input type="checkbox"/> E	
1/4 of 1/4 of Section 27, T 12 N, R 9 E				Long ° ' "		Feet <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County Columbia		County Code 11		Civil Town/City/ or Village 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					RQD/ Comments
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S1	20	5 8 15 10	1	SILTY SAND CLAY with GRAVEL, (fill), tan colored 10YR 7/6.	SM									
			2											
S2	24	7 7 7 17	3	Same as above except, grey/brown (10YR 5/4).										
			4											
S3	20	13 34 50/5	5	SILTY SAND, trace gravel, tan color (10YR 5/4).										
			6											
S4	14	30 50/5	7											
			8											
S5	15	31 50/3	9											
			10											
S6	15	38 50/3	11	Same as above with an inch of rock (limestone).										
			12											
			13											
			14											
			15											

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

Signature *Zach Watson* for Zach Watson 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 used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-303**

Use only as an attachment to Form 4400-122.

Page **2** of **2**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
S7	10	50/4	16-17	SILTY SAND, trace gravel, tan color (10YR 5/4), with trace gravel.						M				
S8	18	28 37 50/4	18-20							M				
S9	0	50	21-22										Lost spoon tip no sample.	
S10	15	35 50/5	24-25	Same as above except, fine to coarse grained sand, little gravel.	SM					M				
S11	14	7 50/3	26-27	Same as above except, tan (10YR 5/6).						W				
				End of boring at 33 ft bgs.										

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

Facility/Project Name WPL-Columbia SCS#: 25215135.00		License/Permit/Monitoring Number		Boring Number MW-304	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State Drilling			Date Drilling Started 11/12/2015	Date Drilling Completed 11/12/2015	Drilling Method hollow stem auger
WI Unique Well No. VY703	DNR Well ID No.	Common Well Name	Final Static Water Level Feet	Surface Elevation 802.50 Feet	Borehole Diameter 8.5 in.
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 544671 N, 2122897 E /C/N Lat _____ ° _____ ' _____ " _____" 1/4 of _____ 1/4 of Section 27 , T 12 N, R 9 E Long _____ ° _____ ' _____ " _____" Feet <input type="checkbox"/> N <input type="checkbox"/> E Feet <input type="checkbox"/> S Feet <input type="checkbox"/> W			Local Grid Location		
Facility ID		County Columbia	County Code 11	Civil Town/City/ or Village 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					RQD/ Comments
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
				TOPSOIL.	TOPSOIL									
S1	24	7 8 10 12	1 2	SILTY SAND, mostly fine, brown/tan (10YR 5/6).							M			
S2	24	14 22 26 31	4 5	Same as above except, trace gravel, brown tan to grey (top to bottom) 10YR 5/4.							M			
S3	24	16 18 22 24	6 7	Same as above except, brown/tan/grey assorted coloring.	SM						M			
S4	24	11 15 15 14	9 10	Same as above except, black/grey/brown, saturated area about 2" thick.							M			
S5	24	23 31 30 29	11 12	Same as above except, 10YR 5/3.							M			
S6	20	9 10 7 5	13 14 15	trace gravel.							M			

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

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

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 used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

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

Facility/Project Name WPL-Columbia		SCS#: 25215135.00		License/Permit/Monitoring Number		Boring Number MW-305	
Boring Drilled By: Name of crew chief (first, last) and Firm Kevin Durst Badger State Drilling				Date Drilling Started 11/13/2015		Date Drilling Completed 11/13/2015	
WI Unique Well No. VY716		DNR Well ID No.		Common Well Name		Drilling Method hollow stem auger	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/>		State Plane 544776.1 N, 2121537 E		Final Static Water Level Feet		Surface Elevation 803.95 Feet	
1/4 of		1/4 of Section 27, T 12 N, R 9 E		Long _____ "		Local Grid Location Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
Facility ID		County Columbia		County Code 11		Civil Town/City/ or Village 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					RQD/ Comments
									Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200	
			1	TOPSOIL	TOPSOIL									
S1	18	5 8 9 7	2	SILTY SAND, mostly fine, brown/tan 10YR 5/8.							M			
S2	18	2 3 3 4	5								M			
S3	18	2 8 9 8	7	Same as above except, trace gravel, tan 10YR 6/8 at bottom.	SM						M			
S4	20	5 7 6 5	10	Same as above except, light tan 10YR 6/6, trace gravel, some large gravel chunks.							M			
S5	20	9 12 17 22	12	POORLY GRADED SAND, tan (10YR 6/8), trace gravel, some saturated areas.	SP						M			
S6	24	16 19 22 34	14	SILTY SAND, trace gravel, tan (10YR 5/6).	SM						W			

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

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

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 used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-305**

Use only as an attachment to Form 4400-122.

Page **2** of **2**

Sample		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						RQD/ Comments
Number and Type	Length Att. & Recovered (in)								Pocket Penetration (tsf)	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S7		31 30	16	SILTY SAND, trace gravel, tan (10YR 5/6), some large dolomite chunks.	SM										
		41 50/2	17												
			18	End of boring at 18 ft bgs.											

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

A. Protective pipe, top elevation <u>807.16</u> ft. MSL	1. Cap and lock? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
B. Well casing, top elevation <u>806.89</u> ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>6</u> in. b. Length: <u>5</u> ft. c. Material: Steel <input checked="" type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation <u>803.69</u> ft. MSL	d. Additional protection? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <u>bumper posts</u>
D. Surface seal, bottom <u>791.69</u> ft. MSL or <u>12</u> ft.	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 <u>Bentonite to grade, sand above</u> Other <input type="checkbox"/>
13. Sieve analysis performed? <input type="checkbox"/> Yes <input type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft ³ volume added for any of the above
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input type="checkbox"/> 08
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 32 c. <u>4</u> ft ³ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7. Fine sand material: Manufacturer, product name & mesh size a. <u>RW Sidley Inc. #7</u> <input type="checkbox"/> b. Volume added <u>0.5</u> ft ³
Describe _____	8. Filter pack material: Manufacturer, product name & mesh size a. <u>RW Sidley #5</u> <input type="checkbox"/> b. Volume added <u>2</u> ft ³
17. Source of water (attach analysis, if required): _____	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
E. Bentonite seal, top <u>803.69</u> ft. MSL or <u>0</u> ft.	10. Screen material: <u>PVC</u> a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
F. Fine sand, top <u>791.69</u> ft. MSL or <u>12</u> ft.	b. Manufacturer <u>Johnson</u> c. Slot size: <u>0.01</u> in. d. Slotted length: <u>10</u> ft.
G. Filter pack, top <u>789.69</u> ft. MSL or <u>14</u> ft.	11. Backfill material (below filter pack): None <input type="checkbox"/> 14 <u>Native</u> Other <input checked="" type="checkbox"/>
H. Screen joint, top <u>787.69</u> ft. MSL or <u>16</u> ft.	
I. Well bottom <u>777.69</u> ft. MSL or <u>26</u> ft.	
J. Filter pack, bottom <u>776.69</u> ft. MSL or <u>27</u> ft.	
K. Borehole, bottom <u>775.69</u> ft. MSL or <u>28</u> ft.	
L. Borehole, diameter <u>8.5</u> in.	
M. O.D. well casing <u>2.4</u> in.	
N. I.D. well casing <u>2.0</u> in.	

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.

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. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name MW-303
Facility License, Permit or Monitoring No.	Local Grid Origin _____ (estimated: _____) or Well Location _____ Lat. _____ " Long. _____ or _____	Wis. Unique Well No. VY714 DNR Well ID No. _____
Facility ID	St. Plane 543655.7 ft. N, 2122574 ft. E. S/C/N _____	Date Well Installed 11 / 13 / 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 NW 1/4 of Sec. 27, T. 12 N, R. 9 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Kevin Duerst Badger State Drilling
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	
Enf. Stds. Apply <input type="checkbox"/>	Gov. Lot Number _____	

A. Protective pipe, top elevation -- 811.81 ft. MSL
 B. Well casing, top elevation -- 811.52 ft. MSL
 C. Land surface elevation -- 808.69 ft. MSL
 D. Surface seal, bottom -- 789.69 ft. MSL or -- 19 ft.

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

13. Sieve analysis performed? Yes No

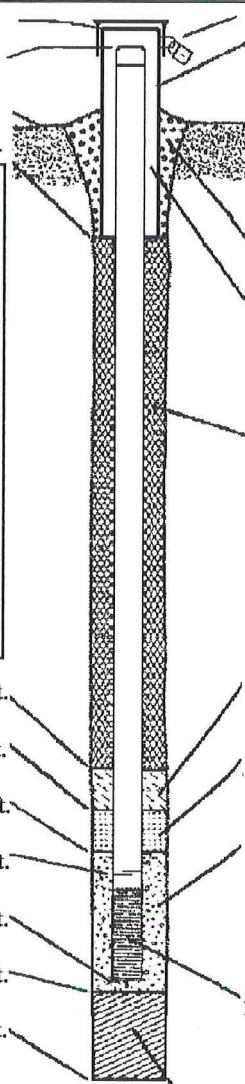
14. Drilling method used: Rotary 50
 Hollow Stem Auger 41
 Other

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):



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: yes, bumper posts

3. Surface seal: Bentonite 30
 Concrete 01
 Other

4. Material between well casing and protective pipe:
 Bentonite 30
 Bentonite to grade, sand in between 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. _____ Ft³ 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. 6.7 ft³ Other

7. Fine sand material: Manufacturer, product name & mesh size
 a. RW Sidley Inc. #7
 b. Volume added 0.5 ft³

8. Filter pack material: Manufacturer, product name & mesh size
 a. RW Sidley #5
 b. Volume added 2.5 ft³

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): None 14
 Native

E. Bentonite seal, top -- 808.69 ft. MSL or -- 0 ft.
 F. Fine sand, top -- 789.69 ft. MSL or -- 19 ft.
 G. Filter pack, top -- 787.69 ft. MSL or -- 21 ft.
 H. Screen joint, top -- 785.69 ft. MSL or -- 23 ft.
 I. Well bottom -- 775.69 ft. MSL or -- 33 ft.
 J. Filter pack, bottom -- 775.69 ft. MSL or -- 33 ft.
 K. Borehole, bottom -- 774.69 ft. MSL or -- 34 ft.
 L. Borehole, diameter -- 8.5 in.
 M. O.D. well casing -- 2.4 in.
 N. I.D. well casing -- 2.0 in.

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

Signature *Kevin Duerst* 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.

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. <input type="checkbox"/> N. _____ ft. <input type="checkbox"/> E. _____ ft. <input type="checkbox"/> S. _____ ft. <input type="checkbox"/> W.	Well Name MW-304
Facility License, Permit or Monitoring No.	Local Grid Origin _____ (estimated: <input type="checkbox"/>) or Well Location _____ Lat. _____ " Long. _____ or _____	Wis. Unique Well No. <u>VY703</u> DNR Well ID No. _____
Facility ID _____	St. Plane <u>544671</u> ft. N, <u>2122897</u> ft. E. S/C/N	Date Well Installed <u>11</u> / <u>12</u> / <u>2015</u> m m d d y y y y
Type of Well Well Code <u>11</u> / MW	Section Location of Waste/Source SE 1/4 of NW 1/4 of Sec. <u>27</u> , T. <u>12</u> N, R. <u>9</u> <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm <u>Kevin Duerst</u> <u>Badger State Drilling</u>
Distance from Waste/Source _____ ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	
Enf. Stds. Apply <input type="checkbox"/>	Gov. Lot Number _____	

A. Protective pipe, top elevation <u>805.67</u> ft. MSL	1. Cap and lock? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
B. Well casing, top elevation <u>805.42</u> ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>6</u> in. b. Length: <u>5</u> ft. c. Material: <u>steel</u> Steel <input type="checkbox"/> 04 Other <input type="checkbox"/>
C. Land surface elevation <u>802.50</u> ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <u>yes, bumper posts</u>
D. Surface seal, bottom <u>793.50</u> ft. MSL or <u>9</u> ft.	3. Surface seal: Bentonite <input checked="" type="checkbox"/> 30 Concrete <input type="checkbox"/> 01 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: Bentonite <input checked="" type="checkbox"/> 30 Sand. Bentonite to grade Other <input type="checkbox"/>
13. Sieve analysis performed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 33 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 35 c. _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 31 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 50 e. _____ Ft ³ volume added for any of the above
14. Drilling method used: Rotary <input type="checkbox"/> 50 Hollow Stem Auger <input checked="" type="checkbox"/> 41 Other <input type="checkbox"/>	f. How installed: Tremie <input type="checkbox"/> 01 Tremie pumped <input type="checkbox"/> 02 Gravity <input type="checkbox"/> 08
15. Drilling fluid used: Water <input type="checkbox"/> 02 Air <input type="checkbox"/> 01 Drilling Mud <input type="checkbox"/> 03 None <input checked="" type="checkbox"/> 99	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 33 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input type="checkbox"/> 32 c. <u>3.4</u> ft ³ Other <input type="checkbox"/>
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7. Fine sand material: Manufacturer, product name & mesh size a. <u>RW Sidley Inc. #7</u> <input type="checkbox"/>
Describe _____	b. Volume added <u>0.5</u> ft ³
17. Source of water (attach analysis, if required): _____	8. Filter pack material: Manufacturer, product name & mesh size a. <u>RW Sidley #5</u> <input type="checkbox"/>
E. Bentonite seal, top <u>802.50</u> ft. MSL or <u>0</u> ft.	b. Volume added <u>1.5</u> ft ³
F. Fine sand, top <u>793.50</u> ft. MSL or <u>9</u> ft.	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 23 Flush threaded PVC schedule 80 <input type="checkbox"/> 24 Other <input type="checkbox"/>
G. Filter pack, top <u>791.50</u> ft. MSL or <u>11</u> ft.	10. Screen material: <u>PVC</u>
H. Screen joint, top <u>789.50</u> ft. MSL or <u>13</u> ft.	a. Screen type: Factory cut <input checked="" type="checkbox"/> 11 Continuous slot <input type="checkbox"/> 01 Other <input type="checkbox"/>
I. Well bottom <u>779.50</u> ft. MSL or <u>23</u> ft.	b. Manufacturer <u>Johnson</u>
J. Filter pack, bottom <u>779.50</u> ft. MSL or <u>23</u> ft.	c. Slot size: <u>0.01</u> in.
K. Borehole, bottom <u>779.50</u> ft. MSL or <u>23</u> ft.	d. Slotted length: <u>10</u> ft.
L. Borehole, diameter <u>8.5</u> in.	11. Backfill material (below filter pack): None <input type="checkbox"/> 14 Other <input checked="" type="checkbox"/>
M. O.D. well casing <u>2.4</u> in.	
N. I.D. well casing <u>2.0</u> in.	

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

Signature [Signature] for Zach Watson 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.

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. <input type="checkbox"/> N. <input type="checkbox"/> E. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name MW-305
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location Lat. _____ " Long. _____ " or	Wis. Unique Well No. <u>VY716</u> DNR Well ID No. _____
Facility ID	St. Plane <u>544776.1</u> ft. N. <u>2121537</u> ft. E. S/C/N	Date Well Installed <u>11/13/2015</u> m m d d y y y
Type of Well Well Code _____ /	Section Location of Waste/Source SW <input type="checkbox"/> NW <input type="checkbox"/> SE <input type="checkbox"/> SW <input checked="" type="checkbox"/> 1/4 of NW 1/4 of Sec. <u>27</u> , T. <u>12</u> N, R. <u>9</u> E W	Well Installed By: Name (first, last) and Firm <u>Kevin Duerst</u> <u>Badger State Drilling</u>
Distance from Waste/Source _____ ft.	Enf. Stds. Apply <input type="checkbox"/>	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known
		Gov. Lot Number _____

A. Protective pipe, top elevation <u>806.88</u> ft. MSL	1. Cap and lock? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
B. Well casing, top elevation <u>806.32</u> ft. MSL	2. Protective cover pipe: a. Inside diameter: <u>6</u> in. b. Length: <u>5</u> ft. c. Material: <u>steel</u> Steel <input type="checkbox"/> 0 4 Other <input type="checkbox"/>
C. Land surface elevation <u>803.95</u> ft. MSL	d. Additional protection? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, describe: <u>yes, bumper posts</u>
D. Surface seal, bottom <u>794.95</u> ft. MSL or <u>9</u> ft.	3. Surface seal: <u>Bentonite</u> <input checked="" type="checkbox"/> 3 0 Concrete <input type="checkbox"/> 0 1 Other <input type="checkbox"/>
12. USCS classification of soil near screen: GP <input type="checkbox"/> GM <input type="checkbox"/> GC <input type="checkbox"/> GW <input type="checkbox"/> SW <input type="checkbox"/> SP <input type="checkbox"/> SM <input checked="" type="checkbox"/> SC <input type="checkbox"/> ML <input type="checkbox"/> MH <input type="checkbox"/> CL <input type="checkbox"/> CH <input type="checkbox"/> Bedrock <input type="checkbox"/>	4. Material between well casing and protective pipe: <u>Bentonite to grade, sand in between</u> Bentonite <input type="checkbox"/> 3 0 Other <input type="checkbox"/>
13. Sieve analysis performed? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	5. Annular space seal: a. Granular/Chipped Bentonite <input type="checkbox"/> 3 3 b. _____ Lbs/gal mud weight . . . Bentonite-sand slurry <input type="checkbox"/> 3 5 c. _____ Lbs/gal mud weight Bentonite slurry <input type="checkbox"/> 3 1 d. _____ % Bentonite Bentonite-cement grout <input type="checkbox"/> 5 0 e. _____ Ft ³ volume added for any of the above f. How installed: Tremie <input type="checkbox"/> 0 1 Tremie pumped <input type="checkbox"/> 0 2 Gravity <input type="checkbox"/> 0 8
14. Drilling method used: Rotary <input type="checkbox"/> 5 0 Hollow Stem Auger <input checked="" type="checkbox"/> 4 1 Other <input type="checkbox"/>	6. Bentonite seal: a. Bentonite granules <input type="checkbox"/> 3 3 b. <input type="checkbox"/> 1/4 in. <input checked="" type="checkbox"/> 3/8 in. <input type="checkbox"/> 1/2 in. Bentonite chips <input checked="" type="checkbox"/> 3 2 c. <u>2</u> ft ³ Other <input type="checkbox"/>
15. Drilling fluid used: Water <input type="checkbox"/> 0 2 Air <input type="checkbox"/> 0 1 Drilling Mud <input type="checkbox"/> 0 3 None <input checked="" type="checkbox"/> 9 9	7. Fine sand material: Manufacturer, product name & mesh size a. <u>RW Sidley Inc. #7</u> <input type="checkbox"/> b. Volume added <u>0.5</u> ft ³
16. Drilling additives used? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Describe _____	8. Filter pack material: Manufacturer, product name & mesh size a. <u>RW Sidley #5</u> <input type="checkbox"/> b. Volume added <u>3</u> ft ³
17. Source of water (attach analysis, if required): _____	9. Well casing: Flush threaded PVC schedule 40 <input checked="" type="checkbox"/> 2 3 Flush threaded PVC schedule 80 <input type="checkbox"/> 2 4 Other <input type="checkbox"/>
E. Bentonite seal, top <u>803.95</u> ft. MSL or <u>0</u> ft.	10. Screen material: <u>PVC</u> a. Screen type: Factory cut <input checked="" type="checkbox"/> 1 1 Continuous slot <input type="checkbox"/> 0 1 Other <input type="checkbox"/>
F. Fine sand, top <u>794.95</u> ft. MSL or <u>9</u> ft.	b. Manufacturer <u>Johnson</u> c. Slot size: <u>0.01</u> in. d. Slotted length: <u>10</u> ft.
G. Filter pack, top <u>792.95</u> ft. MSL or <u>11</u> ft.	11. Backfill material (below filter pack): None <input type="checkbox"/> 1 4 Other <input checked="" type="checkbox"/>
H. Screen joint, top <u>789.95</u> ft. MSL or <u>13</u> ft.	
I. Well bottom <u>779.95</u> ft. MSL or <u>23</u> ft.	
J. Filter pack, bottom <u>779.95</u> ft. MSL or <u>23</u> ft.	
K. Borehole, bottom <u>779.35</u> ft. MSL or <u>23.6</u> ft.	
L. Borehole, diameter <u>8.5</u> in.	
M. O.D. well casing <u>2.4</u> in.	
N. I.D. well casing <u>2.0</u> in.	

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

Signature Zach Watson 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.

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

Facility/Project Name Alliant-Columbia	County Name Columbia	Well Name MW-301	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VY701	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other

3. Time spent developing well _____ 120 min.

4. Depth of well (from top of well casing) _____ 29 . 4 ft.

5. Inside diameter of well _____ 2 . 00 in.

6. Volume of water in filter pack and well casing _____ 7 . 6 gal.

7. Volume of water removed from well _____ 84 . 0 gal.

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

9. Source of water added _____

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

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 21 . 72 ft.	_____ 21 . 77 ft.
Date	b. _____ 12 / _____ 02 / _____ 2015	_____ 12 / _____ 02 / _____ 2015
Time	c. _____ 08 : 30 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	_____ 10 : 30 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	_____ 0 . inches	_____ 0 . inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)
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: Gary	Last Name: Sterkel	
Firm: SCS ENGINEERS		

Name and Address of Facility Contact /Owner/Responsible Party

First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

Street: W8375 Murray Rd.

City/State/Zip: Pardeville, WI 53954

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

Signature: *[Handwritten Signature]* for Gary Sterkel

Print Name: Gary Sterkel

Firm: SCS ENGINEERS

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

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

Facility/Project Name Alliant - Columbia	County Name Columbia	Well Name MW-302	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VY702	DNR Well ID Number

1. Can this well be purged dry? Yes No
2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other
3. Time spent developing well _____ 120 min.
4. Depth of well (from top of well casing) _____ 33 . 6 ft.
5. Inside diameter of well _____ 2 . 00 in.
6. Volume of water in filter pack and well casing _____ 5 . 4 gal.
7. Volume of water removed from well _____ 60 . 0 gal.
8. Volume of water added (if any) _____ gal.
9. Source of water added _____
10. Analysis performed on water added? Yes No
(If yes, attach results)

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 28 . 37 ft.	_____ 28 . 41 ft.
Date	b. _____ 12 / _____ 02 / _____ 2015	_____ 12 / _____ 02 / _____ 2015
Time	c. _____ 02 : 00 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.	_____ 04 : 00 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ 0 . inches	_____ 0 . inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)
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: Gary	Last Name: Sterkel	
Firm: SCS ENGINEERS		

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party

First Name: Nate Last Name: Sievers
Name: _____ Name: _____

Facility/Firm: Wisconsin Power and Light

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: *[Handwritten Signature]* for G.S.

Print Name: Gary Sterkel

Firm: SCS ENGINEERS

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

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

Facility/Project Name Alliant - Columbia	County Name Columbia	Well Name MW-303	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VY714	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method

- surged with bailer and bailed 4 1
- surged with bailer and pumped 6 1
- surged with block and bailed 4 2
- surged with block and pumped 6 2
- surged with block, bailed and pumped 7 0
- compressed air 2 0
- bailed only 1 0
- pumped only 5 1
- pumped slowly 5 0
- Other

3. Time spent developing well _____ 120 min.

4. Depth of well (from top of well casing) _____ 35 . 8 ft.

5. Inside diameter of well _____ 2 . 00 in.

6. Volume of water in filter pack and well casing _____ 7 . 5 gal.

7. Volume of water removed from well _____ 83 . 0 gal.

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

9. Source of water added _____

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

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 28 . 30 ft.	_____ 28 . 38 ft.
Date	b. <u>12</u> / <u>02</u> / <u>2015</u>	<u>12</u> / <u>02</u> / <u>2015</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 11 : 45 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	_____ 1 : 45 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)

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: Gary Last Name: Sterkel
 Firm: SCS ENGINEERS

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party

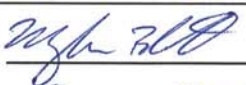
First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

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:  for G.S.

Print Name: Gary Sterkel

Firm: SCS ENGINEERS

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

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

Facility/Project Name Alliant - Columbia	County Name Columbia	Well Name MW-304	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VY703	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method

- surged with bailer and bailed 4 1
- surged with bailer and pumped 6 1
- surged with block and bailed 4 2
- surged with block and pumped 6 2
- surged with block, bailed and pumped 7 0
- compressed air 2 0
- bailed only 1 0
- pumped only 5 1
- pumped slowly 5 0
- Other _____

3. Time spent developing well _____ 135 min.

4. Depth of well (from top of well casing) _____ 25 . 7 ft.

5. Inside diameter of well _____ 2 . 00 in.

6. Volume of water in filter pack and well casing _____ 8 . 0 gal.

7. Volume of water removed from well _____ 88 . 0 gal.

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

9. Source of water added _____

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

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 17 . 26 ft.	_____ 20 . 85 ft.
Date	b. <u>12</u> / <u>03</u> / <u>2015</u>	<u>12</u> / <u>03</u> / <u>2015</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 11 : 00 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	_____ 01 : 15 <input type="checkbox"/> a.m. <input checked="" type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe) _____	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe) _____

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: Gary Last Name: Sterkel

Firm: SCS ENGINEERS

17. Additional comments on development:

Name and Address of Facility Contact /Owner/Responsible Party

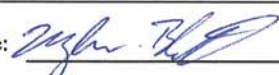
First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

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:  for G.S.

Print Name: Gary Sterkel

Firm: SCS ENGINEERS

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

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

Facility/Project Name Alliant - Columbia	County Name Columbia	Well Name MW-305	
Facility License, Permit or Monitoring Number	County Code 11	Wis. Unique Well Number VYZ16	DNR Well ID Number

1. Can this well be purged dry? Yes No

2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other

3. Time spent developing well _____ 120 min.

4. Depth of well (from top of well casing) _____ 25 . 6 ft.

5. Inside diameter of well _____ 2 . 00 in.

6. Volume of water in filter pack and well casing _____ 7 . 7 gal.

7. Volume of water removed from well _____ 85 . 0 gal.

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

9. Source of water added _____

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

17. Additional comments on development:

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. _____ 18 . 61 ft.	_____ 18 . 62 ft.
Date	b. <u>12</u> / <u>02</u> / <u>2015</u>	<u>12</u> / <u>02</u> / <u>2015</u>
	m m d d y y y y	m m d d y y y y
Time	c. _____ 08 : 30 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.	_____ 11 : 30 <input checked="" type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	_____ inches	_____ inches
13. Water clarity	Clear <input type="checkbox"/> 1 0 Turbid <input checked="" type="checkbox"/> 1 5 (Describe)	Clear <input checked="" type="checkbox"/> 2 0 Turbid <input type="checkbox"/> 2 5 (Describe)

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

14. Total suspended _____ mg/l _____ mg/l
solids

15. COD _____ mg/l _____ mg/l

16. Well developed by: Name (first, last) and Firm
First Name: Gary Last Name: Sterkel
Firm: SCS ENGINEERS

Name and Address of Facility Contact /Owner/Responsible Party

First Name: Nate Last Name: Sievers

Facility/Firm: Wisconsin Power and Light

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: *[Handwritten Signature]* Par G. S.

Print Name: Gary Sterkel

Firm: SCS ENGINEERS

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



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		N	Depth		q _c	W	LL	PL	D	
No.	Type	↓	↓									
						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

GENERAL NOTES

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

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

Facility/Project Name WP&L - Columbia 3024.07		License/Permit/Monitoring Number		Boring Number M4R	
Boring Drilled By (Firm name and name of crew chief) Environmental & Foundation Drilling, Crew: Frank, Jim, Leon		Date Drilling Started 8/22/96		Date Drilling Completed 8/22/96	
DNR Facility Well No.		WI Unique Well No.		Common Well Name M4R	
Final Static Water Level Feet MSL		Surface Elevation 803.6 Feet MSL		Borehole Diameter 8.0 Inches	
Boring Location State Plane 545093.90 N, 2122125.90 E		Lat 0 ° "		Local Grid Location (If applicable)	
NW 1/4 of NW 1/4 of Section 27 T 12 N.R 9E		Long 0 ° "		<input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W	
County Columbia		DNR County Code 11		Civil Town/City/ or Village Pacific	

Sample Number	Length (In) Recovered	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					Comments
									Standard Penetration	Moisture Content	Liquid Limit	Plastic Limit	P 200	
1	12	22	1	SILTY SAND (SM) , trace fine gravel, non-plastic, yellowish brown 10YR 5/6, no odor, loose, (Fill).	SM					M				SS
2	24	16	2	As above, occasional thin layers of light brown sand.										SS
3	15	17	4	As above.										SS
4	24	25	6	Color change to 10YR 5/4. As above, occasional 10YR 4/4 dark yellowish brown seams with more silt, trace clay.										SS
5	23	19	8	As above.										SS
			9	1" gravel (dark colored) at about 9.0 feet.										

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

Signature

Firm **RMT**
744 Heartland Trail, Madison Wisconsin
Tel: 608-831-4444, Fax: 608-831-3334

This form is authorized by Chapters 144, 147 and 162, Wis. Stats. Completion of this report is mandatory. Penalties: Forfeit not less than \$10 nor more than \$5,000 for each violation. Fined not less than \$10 or more than \$100 or imprisoned not less than 30 days, or both for each violation. Each day of continued violation is a separate offense, pursuant to ss 144.99 and 162.06, Wis. Stats.

WELL DETAIL INFORMATION SHEET

JOB NO. C 7134

BORING NO. MW-84A

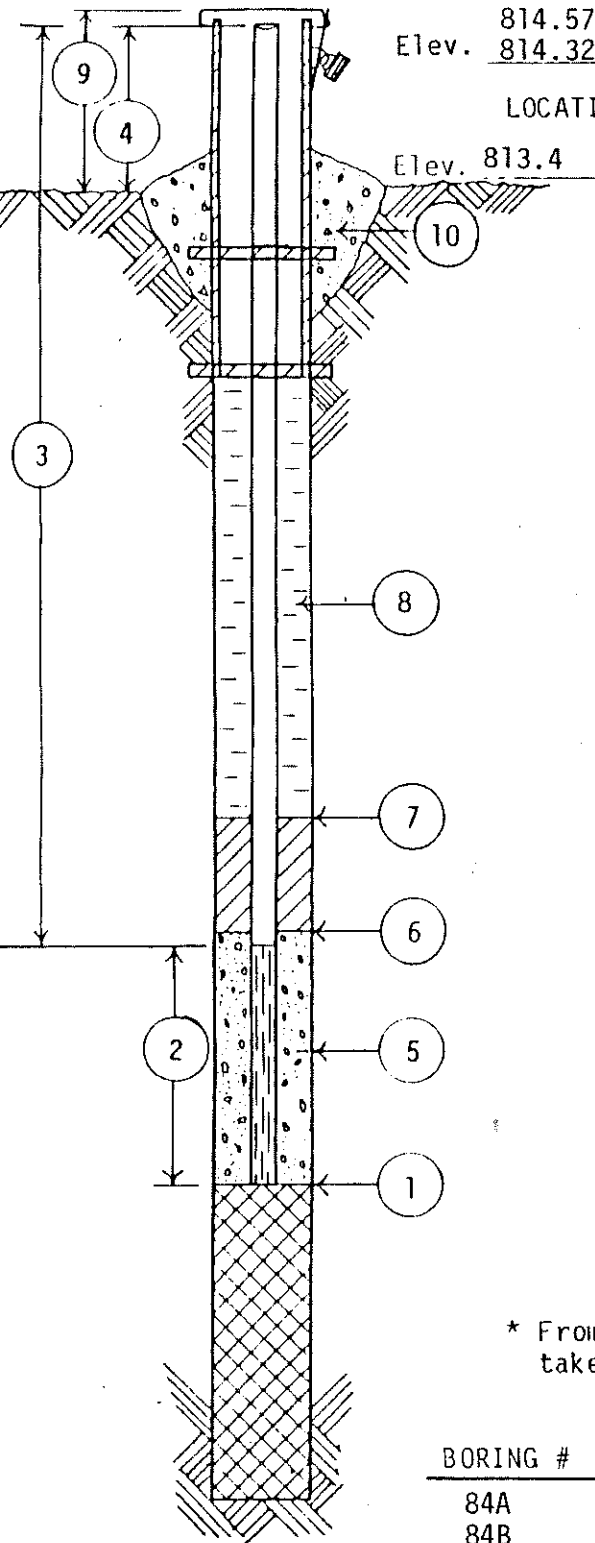
DATE 10/5/83

Elev. 814.57 Steel
Elev. 814.32 PVC CHIEF JS

LOCATION WP&L-Columbia Generating Station

Elev. 813.4

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"	



Facility/Project Name P&L Columbia	Local Grid Location of Well <input checked="" type="checkbox"/> N. <input checked="" type="checkbox"/> E. 545093.9 ft. <input type="checkbox"/> S. 2122125.9 ft. <input type="checkbox"/> W.	Well Name M4R
Facility License, Permit or Monitoring Number 2325	Grid Origin Location Lat. _____ Long. _____ or St. Plane _____ ft. N, _____ ft. E.	Wis. Unique Well Number DNR Well Number 133
Type of Well: Water Table Observation Well <input checked="" type="checkbox"/> 11 Piezometer <input type="checkbox"/> 12	Section Location of Waste/Source <input checked="" type="checkbox"/> E. <input type="checkbox"/> W.	Date Well Installed 08 / 22 / 96 M M D D Y Y
Distance Well is From Waste/Source Boundary 120 ft.	Location of Well Relative to Waste/Source U <input type="checkbox"/> Upgradient S <input type="checkbox"/> Sidegradient D <input checked="" type="checkbox"/> Downgradient N <input type="checkbox"/> Not Known	Well Installed By: (Persons' Name and Firm) Frank Badula Environmental & Foundation Drilling
Is Well A Point of Enforcement Std. Application? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		

Protective pipe, top elevation 805.94 ft. MSL
Well casing, top elevation 806.10 ft. MSL
Land surface elevation 803.6 ft. MSL
Surface seal, bottom 803.1 ft. MSL or 0.5 ft.

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

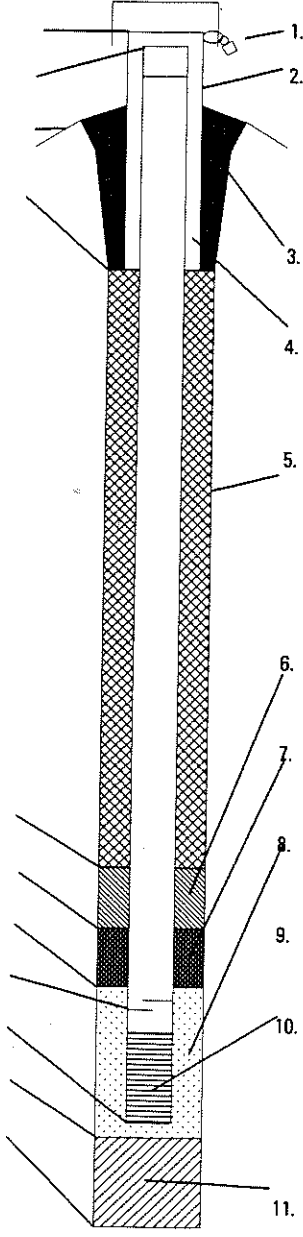
13. Sieve analysis attached? Yes No

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):



1. Cap and lock? Yes No

2. Protective cover pipe:
a. Inside diameter: 4.0 in
b. Length: 7.0 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
Annular space seal
Other

5. Annular space seal:
a. Granular 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. lb 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 pellets 32
c. Other

7. Fine sand material: Manufacturer, product name, mesh size
a. Unimin silica sand
b. Volume added 75 lbs

8. Filter pack material: Manufacturer, product, mesh size
a. Badger Mining Co. (#30)
b. Volume added 400 lbs

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 Timco
c. Slot size: 0.010 in
d. Slotted length: 1.0 ft

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

Bentonite seal, top 803.1 ft. MSL or 0.5 ft.
Fine sand, top 794.6 ft. MSL or 9.0 ft.
Filter pack, top 792.6 ft. MSL or 11.0 ft.
Screen joint, top 790.6 ft. MSL or 13.0 ft.
Well bottom 780.6 ft. MSL or 23.0 ft.
Filter pack, bottom 780.1 ft. MSL or 23.5 ft.
Borehole, bottom 780.1 ft. MSL or 23.5 ft.
Borehole, diameter 8.0 in.
O.D. well casing 2.38 in.
I.D. well casing 2.03 in.

I hereby certify that the information on this form is true and correct to the best of my knowledge.
Signature: [Signature] Firm: RMT, Inc.

Use complete both sides of this form and return to the appropriate DNR office listed at the top of this form as required by chs. 144, 147 and 160, Wis. Stats., and ch. NR 141, Wis. Adm. Code. In accordance with ch. 144, Wis. Stats., failure to file this form may result in a forfeiture of not less than \$10, nor more than \$5,000 for each day of violation. In accordance with ch. 147, Wis. Stats., failure to file this form may result in a forfeiture of not more than \$10,000 for each day of violation. NOTE: Shaded areas are for DNR use only. See instructions for information including where the completed form should be sent.

APPENDIX D
APPENDIX E
APPENDIX F
APPENDIX G

Route to: Solid Waste Haz. Waste Wastewater
Env. Response & Repair Underground Tanks Other

Facility/Project Name P&L Columbia	County Name Columbia	Well Name M4R
Facility License, Permit or Monitoring Number 2325	County Code 11	Wis. Unique Well Number
		DNR Well Number 133

Can this well be purged dry? Yes No

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

Time spent developing well 1 2 0 min.

Depth of well (from top of well casing) 2 5.3 ft.

Inside diameter of well 2.0 in.

Volume of water in filter pack and well casing 4.2 gal.

Volume of water removed from well 7 0. gal.

Volume of water added (if any) 0. gal.

Source of water added _____

	Before Development	After Development
11. Depth to Water (from top of well casing)	a. <u>1 9.9 0</u> ft.	<u>2 0.0 5</u> ft.
Date	b. <u>0 8 / 2 3 / 9 6</u> m m d d y y	<u>0 8 / 2 3 / 9 6</u> m m d d y y
Time	c. <u>8:3 0</u> <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.	<u>1 0:3 0</u> <input type="checkbox"/> a.m. <input type="checkbox"/> p.m.
12. Sediment in well bottom	<u>0.</u> inches	<u>0.</u> inches
13. Water clarity	Clear <input type="checkbox"/> 10 Turbid <input checked="" type="checkbox"/> 15 (Describe) Brn, very silty	Clear <input type="checkbox"/> 20 Turbid <input type="checkbox"/> 25 (Describe)
Fill in if drilling fluids were used and well is at solid waste facility:		
14. Total suspended solids	<u> </u> mg/l	<u>1 9 0.</u> mg/l
15. COD	<u> </u> mg/l	<u>N / A.</u> mg/l

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

Additional comments on development: Well was surged w/PVC bailer for 30 minutes and then pumped.

Time	Volume Removed (gal.)	pH	Temperature (°C)	Conductivity (µmhos)
0	0 (initial)	6.12	15.2	660
25	10	6.73	14.0	670
40	25	6.95	13.7	610
50	35	6.90	13.7	600
55	45	6.87	13.6	600
6:00	55	6.92	13.6	600
6:10	70	6.95	13.7	600

Well developed by: Person's Name and Firm
Name: Meredith Westover
Firm: RMT, Inc.

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

Signature: *Meredith Westover*

Print Initials: M L W

Firm: RMT, Inc.


NOTE: Shaded areas are for DNR use only. See instructions for more information including a list of county codes. I:\WPMSN\PJT\00-03024\07\B0003024.07A 12/31/96

APPENDIX D

APPENDIX E

APPENDIX F

APPENDIX G



Appendix C

Laboratory Reports

C1 – October 2022 Assessment Monitoring

December 02, 2022

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 29, 2022. 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
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
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 #: PA014572018-1
New Hampshire/TNI Certification #: 297617
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 #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
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
Wyoming Certification #: 8TMS-L

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40253965001	MW-301	Water	10/27/22 16:35	10/29/22 09:15
40253965002	MW-84A	Water	10/27/22 15:25	10/29/22 09:15

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40253965001	MW-301	EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			JXA	7	PASI-G
		EPA 903.1	JDZ	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	SRK	1	PASI-G
		EPA 9040	YER	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40253965002	MW-84A	EPA 6020B	KXS
EPA 7470	AJT			1	PASI-G
	JXA			7	PASI-G
EPA 903.1	JDZ			1	PASI-PA
EPA 904.0	ZPC			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	SRK			1	PASI-G
EPA 9040	YER			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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

Sample: MW-301 **Lab ID: 40253965001** Collected: 10/27/22 16:35 Received: 10/29/22 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	11/18/22 06:38	11/30/22 11:56	7440-36-0	
Arsenic	0.30J	ug/L	1.0	0.28	1	11/18/22 06:38	11/30/22 11:56	7440-38-2	
Barium	7.5	ug/L	2.3	0.70	1	11/18/22 06:38	12/01/22 17:45	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	11/18/22 06:38	12/01/22 17:45	7440-41-7	
Boron	37.5	ug/L	10.0	3.0	1	11/18/22 06:38	11/30/22 11:56	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	11/18/22 06:38	11/30/22 11:56	7440-43-9	
Calcium	62800	ug/L	2540	762	10	11/18/22 06:38	11/30/22 12:55	7440-70-2	P6
Chromium	<1.0	ug/L	3.4	1.0	1	11/18/22 06:38	11/30/22 11:56	7440-47-3	
Cobalt	0.46J	ug/L	1.0	0.12	1	11/18/22 06:38	11/30/22 11:56	7440-48-4	B
Lead	<0.24	ug/L	1.0	0.24	1	11/18/22 06:38	11/30/22 11:56	7439-92-1	
Lithium	0.37J	ug/L	1.0	0.22	1	11/18/22 06:38	11/30/22 11:56	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/18/22 06:38	11/30/22 11:56	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/18/22 06:38	11/30/22 11:56	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	11/18/22 06:38	11/30/22 11:56	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	11/03/22 07:25	11/04/22 08:00	7439-97-6	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	6.80	Std. Units			1		10/27/22 16:35		
Field Specific Conductance	507.5	umhos/cm			1		10/27/22 16:35		
Oxygen, Dissolved	0.10	mg/L			1		10/27/22 16:35	7782-44-7	
REDOX	80.9	mV			1		10/27/22 16:35		
Turbidity	0.00	NTU			1		10/27/22 16:35		
Static Water Level	784.91	feet			1		10/27/22 16:35		
Temperature, Water (C)	10.8	deg C			1		10/27/22 16:35		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	282	mg/L	20.0	8.7	1		11/01/22 11:31		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.1	Std. Units	0.10	0.010	1		11/03/22 13:55		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	2.3	mg/L	2.0	0.43	1		11/12/22 13:03	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		11/14/22 12:02	16984-48-8	M0
Sulfate	11.6	mg/L	2.0	0.44	1		11/12/22 13:03	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

Sample: MW-84A **Lab ID: 40253965002** Collected: 10/27/22 15:25 Received: 10/29/22 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	0.29J	ug/L	1.0	0.15	1	11/18/22 06:38	11/30/22 13:25	7440-36-0	B
Arsenic	0.72J	ug/L	1.0	0.28	1	11/18/22 06:38	11/30/22 13:25	7440-38-2	
Barium	13.7	ug/L	2.3	0.70	1	11/18/22 06:38	12/01/22 18:14	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	11/18/22 06:38	12/01/22 18:14	7440-41-7	
Boron	12.2	ug/L	10.0	3.0	1	11/18/22 06:38	11/30/22 13:25	7440-42-8	
Cadmium	0.22J	ug/L	1.0	0.15	1	11/18/22 06:38	11/30/22 13:25	7440-43-9	B
Calcium	78400	ug/L	254	76.2	1	11/18/22 06:38	11/30/22 13:25	7440-70-2	
Chromium	2.2J	ug/L	3.4	1.0	1	11/18/22 06:38	11/30/22 13:25	7440-47-3	
Cobalt	0.25J	ug/L	1.0	0.12	1	11/18/22 06:38	11/30/22 13:25	7440-48-4	B
Lead	0.26J	ug/L	1.0	0.24	1	11/18/22 06:38	11/30/22 13:25	7439-92-1	
Lithium	0.41J	ug/L	1.0	0.22	1	11/18/22 06:38	11/30/22 13:25	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	11/18/22 06:38	11/30/22 13:25	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	11/18/22 06:38	11/30/22 13:25	7782-49-2	
Thallium	0.33J	ug/L	1.0	0.14	1	11/18/22 06:38	11/30/22 13:25	7440-28-0	B
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	11/03/22 07:25	11/04/22 08:02	7439-97-6	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	7.31	Std. Units			1		10/27/22 15:25		
Field Specific Conductance	585.2	umhos/cm			1		10/27/22 15:25		
Oxygen, Dissolved	8.31	mg/L			1		10/27/22 15:25	7782-44-7	
REDOX	39.9	mV			1		10/27/22 15:25		
Turbidity	0.00	NTU			1		10/27/22 15:25		
Static Water Level	784.57	feet			1		10/27/22 15:25		
Temperature, Water (C)	11.7	deg C			1		10/27/22 15:25		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	302	mg/L	20.0	8.7	1		11/01/22 11:32		
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		11/03/22 13:56		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	3.4	mg/L	2.0	0.43	1		11/12/22 14:11	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		11/14/22 12:45	16984-48-8	
Sulfate	1.1J	mg/L	2.0	0.44	1		11/12/22 14:11	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

QC Batch: 430492

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40253965001, 40253965002

METHOD BLANK: 2479204

Matrix: Water

Associated Lab Samples: 40253965001, 40253965002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	11/04/22 07:30	

LABORATORY CONTROL SAMPLE: 2479205

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.0	101	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2479206 2479207

Parameter	Units	40253959001		2479207		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Mercury	ug/L	<0.066	5	5	5.0	4.8	100	95	85-115	5	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

QC Batch: 431884 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40253965001, 40253965002

METHOD BLANK: 2487054 Matrix: Water

Associated Lab Samples: 40253965001, 40253965002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	0.19J	1.0	11/30/22 12:41	
Arsenic	ug/L	<0.28	1.0	11/30/22 12:41	
Barium	ug/L	<0.70	2.3	12/01/22 17:30	
Beryllium	ug/L	<0.25	1.0	12/01/22 17:30	
Boron	ug/L	<3.0	10.0	11/30/22 12:41	
Cadmium	ug/L	0.20J	1.0	11/30/22 12:41	
Calcium	ug/L	<76.2	254	11/30/22 12:41	
Chromium	ug/L	<1.0	3.4	11/30/22 12:41	
Cobalt	ug/L	0.18J	1.0	11/30/22 12:41	
Lead	ug/L	<0.24	1.0	11/30/22 12:41	
Lithium	ug/L	<0.22	1.0	11/30/22 12:41	
Molybdenum	ug/L	<0.44	1.5	11/30/22 12:41	
Selenium	ug/L	<0.32	1.1	11/30/22 12:41	
Thallium	ug/L	0.18J	1.0	11/30/22 12:41	

LABORATORY CONTROL SAMPLE: 2487055

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	270	108	80-120	
Arsenic	ug/L	250	261	104	80-120	
Barium	ug/L	250	242	97	80-120	
Beryllium	ug/L	250	262	105	80-120	
Boron	ug/L	250	253	101	80-120	
Cadmium	ug/L	250	264	105	80-120	
Calcium	ug/L	10000	10200	102	80-120	
Chromium	ug/L	250	254	102	80-120	
Cobalt	ug/L	250	249	99	80-120	
Lead	ug/L	250	259	104	80-120	
Lithium	ug/L	250	263	105	80-120	
Molybdenum	ug/L	250	255	102	80-120	
Selenium	ug/L	250	272	109	80-120	
Thallium	ug/L	250	259	104	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2487056		2487056		2487057		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		40253965001	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Antimony	ug/L	<0.15	250	250	268	263	107	105	75-125	2	20			
Arsenic	ug/L	0.30J	250	250	260	260	104	104	75-125	0	20			
Barium	ug/L	7.5	250	250	250	245	97	95	75-125	2	20			
Beryllium	ug/L	<0.25	250	250	268	265	107	106	75-125	1	20			
Boron	ug/L	37.5	250	250	295	282	103	98	75-125	5	20			
Cadmium	ug/L	<0.15	250	250	259	254	104	102	75-125	2	20			
Calcium	ug/L	62800	10000	10000	72700	69600	99	69	75-125	4	20	P6		
Chromium	ug/L	<1.0	250	250	251	247	100	99	75-125	1	20			
Cobalt	ug/L	0.46J	250	250	247	244	99	97	75-125	1	20			
Lead	ug/L	<0.24	250	250	260	257	104	103	75-125	1	20			
Lithium	ug/L	0.37J	250	250	272	255	109	102	75-125	6	20			
Molybdenum	ug/L	<0.44	250	250	256	255	102	102	75-125	0	20			
Selenium	ug/L	<0.32	250	250	271	267	108	107	75-125	1	20			
Thallium	ug/L	<0.14	250	250	258	257	103	103	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

QC Batch: 430299	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40253965001, 40253965002

METHOD BLANK: 2477981 Matrix: Water

Associated Lab Samples: 40253965001, 40253965002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	11/01/22 11:27	

LABORATORY CONTROL SAMPLE: 2477982

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	546	93	80-120	

SAMPLE DUPLICATE: 2477983

Parameter	Units	40253952003 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	658	652	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

QC Batch: 430502

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40253965001, 40253965002

SAMPLE DUPLICATE: 2479241

Parameter	Units	40253453001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	0	20	H6

SAMPLE DUPLICATE: 2479545

Parameter	Units	40253825003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

QC Batch: 430807 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40253965001, 40253965002

METHOD BLANK: 2480961 Matrix: Water
Associated Lab Samples: 40253965001, 40253965002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	11/12/22 12:34	
Fluoride	mg/L	<0.095	0.32	11/14/22 11:33	
Sulfate	mg/L	<0.44	2.0	11/12/22 12:34	

LABORATORY CONTROL SAMPLE: 2480962

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.4	97	90-110	
Fluoride	mg/L	2	1.9	97	90-110	
Sulfate	mg/L	20	19.4	97	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2480963 2480964

Parameter	Units	40253965001		2480964		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MSD Result								
Chloride	mg/L	2.3	20	20	24.1	24.2	109	110	90-110	1	15		
Fluoride	mg/L	<0.095	2	2	2.5	2.4	123	121	90-110	2	15	M0	
Sulfate	mg/L	11.6	20	20	32.8	33.1	106	107	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

Sample: MW-301 **Lab ID: 40253965001** Collected: 10/27/22 16:35 Received: 10/29/22 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	-0.169 ± 0.429 (0.940) C:NA T:90%	pCi/L	11/22/22 13:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.00292 ± 0.343 (0.793) C:79% T:90%	pCi/L	11/16/22 15:01	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.00292 ± 0.772 (1.73)	pCi/L	11/22/22 17:11	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

Sample: MW-84A **Lab ID: 40253965002** Collected: 10/27/22 15:25 Received: 10/29/22 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	0.267 ± 0.279 (0.393) C:NA T:96%	pCi/L	11/22/22 13:34	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.406 ± 0.346 (0.700) C:82% T:96%	pCi/L	11/16/22 15:01	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.673 ± 0.625 (1.09)	pCi/L	11/22/22 17:11	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

QC Batch: 544795

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: 40253965001, 40253965002

METHOD BLANK: 2644705

Matrix: Water

Associated Lab Samples: 40253965001, 40253965002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.113 ± 0.314 (0.610) C:NA T:88%	pCi/L	11/22/22 12:52	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

QC Batch: 544797

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: 40253965001, 40253965002

METHOD BLANK: 2644706

Matrix: Water

Associated Lab Samples: 40253965001, 40253965002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.565 ± 0.314 (0.566) C:89% T:88%	pCi/L	11/16/22 11:48	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40253965

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.

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

B Analyte was detected in the associated method blank.

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40253965

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40253965001	MW-301	EPA 3010A	431884	EPA 6020B	431956
40253965002	MW-84A	EPA 3010A	431884	EPA 6020B	431956
40253965001	MW-301	EPA 7470	430492	EPA 7470	430560
40253965002	MW-84A	EPA 7470	430492	EPA 7470	430560
40253965001	MW-301				
40253965002	MW-84A				
40253965001	MW-301	EPA 903.1	544795		
40253965002	MW-84A	EPA 903.1	544795		
40253965001	MW-301	EPA 904.0	544797		
40253965002	MW-84A	EPA 904.0	544797		
40253965001	MW-301	Total Radium Calculation	549026		
40253965002	MW-84A	Total Radium Calculation	549026		
40253965001	MW-301	SM 2540C	430299		
40253965002	MW-84A	SM 2540C	430299		
40253965001	MW-301	EPA 9040	430502		
40253965002	MW-84A	EPA 9040	430502		
40253965001	MW-301	EPA 300.0	430807		
40253965002	MW-84A	EPA 300.0	430807		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineering
Courier: CS Logistics Fed Ex Speedee UPS Waltco
 Client Pace Other: _____

WO#: 40253965



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 - 123 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 0 /Corr: 0.2

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: 10/11/22 / Initials: SG
Labeled By Initials: NK

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

December 29, 2022

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40255945

Dear Meghan Blodgett:

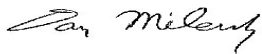
Enclosed are the analytical results for sample(s) received by the laboratory on December 14, 2022. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise 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
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40255945

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40255945

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40255945001	MW-301	Water	10/27/22 16:35	12/14/22 09:20
40255945002	MW-84A	Water	10/27/22 15:25	12/14/22 09:20

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40255945

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40255945001	MW-301	EPA 6020B	KXS	1
40255945002	MW-84A	EPA 6020B	KXS	5

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40255945

Sample: MW-301 **Lab ID: 40255945001** Collected: 10/27/22 16:35 Received: 12/14/22 09:20 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									
Cobalt	0.52J	ug/L	1.0	0.12	1	12/19/22 06:07	12/21/22 03:38	7440-48-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40255945

Sample: MW-84A **Lab ID: 40255945002** Collected: 10/27/22 15:25 Received: 12/14/22 09:20 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	12/19/22 06:07	12/21/22 03:46	7440-36-0	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/19/22 06:07	12/21/22 03:46	7440-43-9	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/19/22 06:07	12/21/22 03:46	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/19/22 06:07	12/21/22 03:46	7439-92-1	
Thallium	<0.14	ug/L	1.0	0.14	1	12/19/22 06:07	12/21/22 03:46	7440-28-0	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40255945

QC Batch: 434044 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40255945001, 40255945002

METHOD BLANK: 2498851 Matrix: Water
Associated Lab Samples: 40255945001, 40255945002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	12/21/22 00:57	
Cadmium	ug/L	<0.15	1.0	12/21/22 00:57	
Cobalt	ug/L	<0.12	1.0	12/21/22 00:57	
Lead	ug/L	<0.24	1.0	12/21/22 00:57	
Thallium	ug/L	<0.14	1.0	12/21/22 00:57	

LABORATORY CONTROL SAMPLE: 2498852

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	242	97	80-120	
Cadmium	ug/L	250	242	97	80-120	
Cobalt	ug/L	250	237	95	80-120	
Lead	ug/L	250	237	95	80-120	
Thallium	ug/L	250	228	91	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2498853 2498854

Parameter	Units	MS		MSD		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40255857001 Result	Spike Conc.	Spike Conc.	Result						
Antimony	ug/L	5.8J	250	250	256	247	100	96	75-125	4	20
Cadmium	ug/L	8.2J	250	250	250	246	97	95	75-125	2	20
Cobalt	ug/L	5.2J	250	250	247	242	97	95	75-125	2	20
Lead	ug/L	5.5J	250	250	250	245	98	96	75-125	2	20
Thallium	ug/L	2.9J	250	250	235	232	93	91	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25222067 COLUMBIA CCR BACKGRND

Pace Project No.: 40255945

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.

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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25222067 COLUMBIA CCR BACKGRND
Pace Project No.: 40255945

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40255945001	MW-301	EPA 3010A	434044	EPA 6020B	434141
40255945002	MW-84A	EPA 3010A	434044	EPA 6020B	434141

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

December 13, 2022

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on October 27, 2022. 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
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Nicole Kron, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
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 #: PA014572018-1
New Hampshire/TNI Certification #: 297617
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 #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
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
Wyoming Certification #: 8TMS-L

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40253825001	MW-303	Water	10/26/22 10:50	10/27/22 07:40
40253825002	MW-305	Water	10/25/22 11:00	10/27/22 07:40
40253825003	MW-4R	Water	10/25/22 11:55	10/27/22 07:40
40253825004	FIELD BLANK-PPOND	Water	10/26/22 10:50	10/27/22 07:40
40253825005	MW-304	Water	10/25/22 09:30	10/27/22 15:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory		
40253825001	MW-303	EPA 6020B	KXS	14	PASI-G		
		EPA 7470	AJT	1	PASI-G		
			JXA	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	SRK	1	PASI-G		
		EPA 9040	YER	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		40253825002	MW-305	EPA 6020B	KXS	14	PASI-G
EPA 7470	AJT			1	PASI-G		
	JXA			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	SRK			1	PASI-G		
EPA 9040	YER			1	PASI-G		
EPA 300.0	HMB			3	PASI-G		
40253825003	MW-4R			EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G		
			JXA	6	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	SRK	1	PASI-G		
		EPA 9040	YER	1	PASI-G		
		EPA 300.0	HMB	3	PASI-G		
		40253825004	FIELD BLANK-PPOND	EPA 6020B	KXS	14	PASI-G
EPA 7470	AJT			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	SRK			1	PASI-G		
EPA 9040	YER			1	PASI-G		
EPA 300.0	HMB			3	PASI-G		
40253825005	MW-304				JXA	1	PASI-G

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
--------	-----------	--------	----------	-------------------	------------

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Sample: MW-303 **Lab ID: 40253825001** Collected: 10/26/22 10:50 Received: 10/27/22 07:40 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	0.70J	ug/L	1.0	0.15	1	12/05/22 07:17	12/08/22 22:04	7440-36-0	
Arsenic	52.0	ug/L	1.0	0.28	1	12/05/22 07:17	12/08/22 22:04	7440-38-2	
Barium	4.0	ug/L	2.3	0.70	1	12/05/22 07:17	12/08/22 22:04	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/05/22 07:17	12/08/22 22:04	7440-41-7	
Boron	2730	ug/L	500	152	50	12/05/22 07:17	12/12/22 17:11	7440-42-8	P6
Cadmium	0.16J	ug/L	1.0	0.15	1	12/05/22 07:17	12/08/22 22:04	7440-43-9	
Calcium	2360	ug/L	254	76.2	1	12/05/22 07:17	12/08/22 22:04	7440-70-2	
Chromium	46.3	ug/L	3.4	1.0	1	12/05/22 07:17	12/08/22 22:04	7440-47-3	
Cobalt	0.94J	ug/L	1.0	0.12	1	12/05/22 07:17	12/08/22 22:04	7440-48-4	
Lead	0.28J	ug/L	1.0	0.24	1	12/05/22 07:17	12/08/22 22:04	7439-92-1	
Lithium	0.34J	ug/L	1.0	0.22	1	12/05/22 07:17	12/08/22 22:04	7439-93-2	
Molybdenum	89.4	ug/L	1.5	0.44	1	12/05/22 07:17	12/08/22 22:04	7439-98-7	
Selenium	74.4	ug/L	1.1	0.32	1	12/05/22 07:17	12/08/22 22:04	7782-49-2	
Thallium	0.21J	ug/L	1.0	0.14	1	12/05/22 07:17	12/08/22 22:04	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	10/31/22 10:50	11/01/22 07:26	7439-97-6	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	9.90	Std. Units			1		10/26/22 10:50		
Field Specific Conductance	1396	umhos/cm			1		10/26/22 10:50		
Oxygen, Dissolved	6.19	mg/L			1		10/26/22 10:50	7782-44-7	
REDOX	22.7	mV			1		10/26/22 10:50		
Turbidity	2.28	NTU			1		10/26/22 10:50		
Static Water Level	774.74	feet			1		10/26/22 10:50		
Temperature, Water (C)	11.0	deg C			1		10/26/22 10:50		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	930	mg/L	20.0	8.7	1		10/28/22 10:55		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	9.9	Std. Units	0.10	0.010	1		10/31/22 10:52		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<8.6	mg/L	40.0	8.6	20		11/09/22 18:40	16887-00-6	D3
Fluoride	<0.095	mg/L	0.32	0.095	1		11/08/22 16:40	16984-48-8	
Sulfate	442	mg/L	40.0	8.9	20		11/09/22 18:40	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Sample: MW-305 **Lab ID: 40253825002** Collected: 10/25/22 11:00 Received: 10/27/22 07:40 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	0.47J	ug/L	1.0	0.15	1	12/05/22 07:17	12/08/22 22:48	7440-36-0	
Arsenic	1.3	ug/L	1.0	0.28	1	12/05/22 07:17	12/08/22 22:48	7440-38-2	
Barium	10.8	ug/L	2.3	0.70	1	12/05/22 07:17	12/08/22 22:48	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/05/22 07:17	12/08/22 22:48	7440-41-7	
Boron	1610	ug/L	100	30.3	10	12/05/22 07:17	12/09/22 12:47	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/05/22 07:17	12/08/22 22:48	7440-43-9	
Calcium	71600	ug/L	254	76.2	1	12/05/22 07:17	12/08/22 22:48	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/05/22 07:17	12/08/22 22:48	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/05/22 07:17	12/08/22 22:48	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/05/22 07:17	12/08/22 22:48	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	12/05/22 07:17	12/08/22 22:48	7439-93-2	
Molybdenum	44.9	ug/L	1.5	0.44	1	12/05/22 07:17	12/08/22 22:48	7439-98-7	
Selenium	9.1	ug/L	1.1	0.32	1	12/05/22 07:17	12/08/22 22:48	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/05/22 07:17	12/08/22 22:48	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	10/31/22 10:50	11/01/22 07:33	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	9.31	Std. Units			1		10/25/22 11:00		
Field Specific Conductance	704	umhos/cm			1		10/25/22 11:00		
Oxygen, Dissolved	1.49	mg/L			1		10/25/22 11:00	7782-44-7	
REDOX	104.1	mV			1		10/25/22 11:00		
Turbidity	0.00	NTU			1		10/25/22 11:00		
Static Water Level	784.97	feet			1		10/25/22 11:00		
Temperature, Water (C)	18.7	deg C			1		10/25/22 11:00		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	474	mg/L	20.0	8.7	1		10/28/22 10:55		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	9.1	Std. Units	0.10	0.010	1		10/31/22 10:58		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	55.5	mg/L	40.0	8.6	20		11/09/22 04:26	16887-00-6	
Fluoride	0.32	mg/L	0.32	0.095	1		11/08/22 16:55	16984-48-8	
Sulfate	261	mg/L	40.0	8.9	20		11/09/22 04:26	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Sample: MW-4R **Lab ID: 40253825003** Collected: 10/25/22 11:55 Received: 10/27/22 07:40 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	0.28J	ug/L	1.0	0.15	1	12/05/22 07:17	12/08/22 23:02	7440-36-0	
Arsenic	0.40J	ug/L	1.0	0.28	1	12/05/22 07:17	12/08/22 23:02	7440-38-2	
Barium	34.3	ug/L	2.3	0.70	1	12/05/22 07:17	12/08/22 23:02	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/05/22 07:17	12/08/22 23:02	7440-41-7	
Boron	1590	ug/L	100	30.3	10	12/05/22 07:17	12/09/22 13:39	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/05/22 07:17	12/08/22 23:02	7440-43-9	
Calcium	110000	ug/L	254	76.2	1	12/05/22 07:17	12/08/22 23:02	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/05/22 07:17	12/08/22 23:02	7440-47-3	
Cobalt	0.14J	ug/L	1.0	0.12	1	12/05/22 07:17	12/08/22 23:02	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/05/22 07:17	12/08/22 23:02	7439-92-1	
Lithium	1.7	ug/L	1.0	0.22	1	12/05/22 07:17	12/08/22 23:02	7439-93-2	
Molybdenum	34.5	ug/L	1.5	0.44	1	12/05/22 07:17	12/08/22 23:02	7439-98-7	
Selenium	5.8	ug/L	1.1	0.32	1	12/05/22 07:17	12/08/22 23:02	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/05/22 07:17	12/08/22 23:02	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	10/31/22 10:50	11/01/22 07:36	7439-97-6	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	7.23	Std. Units			1		10/25/22 11:55		
Field Specific Conductance	988	umhos/cm			1		10/25/22 11:55		
Oxygen, Dissolved	0.38	mg/L			1		10/25/22 11:55	7782-44-7	
REDOX	103.1	mV			1		10/25/22 11:55		
Turbidity	0.00	NTU			1		10/25/22 11:55		
Temperature, Water (C)	13.6	deg C			1		10/25/22 11:55		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	670	mg/L	20.0	8.7	1		10/28/22 10:55		
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		11/03/22 13:55		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	58.6	mg/L	2.0	0.43	1		11/08/22 17:10	16887-00-6	
Fluoride	0.23J	mg/L	0.32	0.095	1		11/08/22 17:10	16984-48-8	
Sulfate	282	mg/L	20.0	4.4	10		11/09/22 04:41	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Sample: FIELD BLANK-PPOND **Lab ID: 40253825004** Collected: 10/26/22 10:50 Received: 10/27/22 07:40 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	12/05/22 07:17	12/09/22 11:48	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	12/05/22 07:17	12/09/22 11:48	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	12/05/22 07:17	12/09/22 11:48	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	12/05/22 07:17	12/09/22 11:48	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	12/05/22 07:17	12/09/22 11:48	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	12/05/22 07:17	12/09/22 11:48	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	12/05/22 07:17	12/09/22 11:48	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	12/05/22 07:17	12/09/22 11:48	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	12/05/22 07:17	12/09/22 11:48	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	12/05/22 07:17	12/09/22 11:48	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	12/05/22 07:17	12/09/22 11:48	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	12/05/22 07:17	12/09/22 11:48	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	12/05/22 07:17	12/09/22 11:48	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	12/05/22 07:17	12/09/22 11:48	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	10/31/22 10:50	11/01/22 07:38	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	26.0	mg/L	20.0	8.7	1		10/28/22 10:56		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	6.1	Std. Units	0.10	0.010	1		11/03/22 13:55		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		11/08/22 17:25	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		11/08/22 17:25	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		11/08/22 17:25	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Sample: MW-304 **Lab ID: 40253825005** Collected: 10/25/22 09:30 Received: 10/27/22 15:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Static Water Level	781.79	feet			1		10/25/22 09:30		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

QC Batch:	430126	Analysis Method:	EPA 7470
QC Batch Method:	EPA 7470	Analysis Description:	7470 Mercury
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

METHOD BLANK: 2477279 Matrix: Water
Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	11/01/22 07:22	

LABORATORY CONTROL SAMPLE: 2477280

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: 2477281 2477282

Parameter	Units	40253825001 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	4.9	4.8	98	95	85-115	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

QC Batch: 432904 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

METHOD BLANK: 2492302 Matrix: Water
Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	12/09/22 11:41	
Arsenic	ug/L	<0.28	1.0	12/09/22 11:41	
Barium	ug/L	<0.70	2.3	12/09/22 11:41	
Beryllium	ug/L	<0.25	1.0	12/09/22 11:41	
Boron	ug/L	<3.0	10.0	12/09/22 11:41	
Cadmium	ug/L	<0.15	1.0	12/09/22 11:41	
Calcium	ug/L	<76.2	254	12/09/22 11:41	
Chromium	ug/L	<1.0	3.4	12/09/22 11:41	
Cobalt	ug/L	<0.12	1.0	12/09/22 11:41	
Lead	ug/L	<0.24	1.0	12/09/22 11:41	
Lithium	ug/L	<0.22	1.0	12/09/22 11:41	
Molybdenum	ug/L	<0.44	1.5	12/09/22 11:41	
Selenium	ug/L	<0.32	1.1	12/09/22 11:41	
Thallium	ug/L	<0.14	1.0	12/09/22 11:41	

LABORATORY CONTROL SAMPLE: 2492303

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	252	101	80-120	
Arsenic	ug/L	250	246	99	80-120	
Barium	ug/L	250	240	96	80-120	
Beryllium	ug/L	250	233	93	80-120	
Boron	ug/L	250	217	87	80-120	
Cadmium	ug/L	250	250	100	80-120	
Calcium	ug/L	10000	9460	95	80-120	
Chromium	ug/L	250	241	96	80-120	
Cobalt	ug/L	250	235	94	80-120	
Lead	ug/L	250	250	100	80-120	
Lithium	ug/L	250	225	90	80-120	
Molybdenum	ug/L	250	240	96	80-120	
Selenium	ug/L	250	259	104	80-120	
Thallium	ug/L	250	245	98	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Parameter	Units	2492304		2492305		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40253825001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	0.70J	250	250	260	259	104	103	75-125	0	20		
Arsenic	ug/L	52.0	250	250	312	310	104	103	75-125	0	20		
Barium	ug/L	4.0	250	250	257	260	101	103	75-125	1	20		
Beryllium	ug/L	<0.25	250	250	251	270	100	108	75-125	7	20		
Boron	ug/L	2730	250	250	3030	2910	121	72	75-125	4	20	P6	
Cadmium	ug/L	0.16J	250	250	247	246	99	99	75-125	0	20		
Calcium	ug/L	2360	10000	10000	12100	11700	97	94	75-125	3	20		
Chromium	ug/L	46.3	250	250	293	290	99	98	75-125	1	20		
Cobalt	ug/L	0.94J	250	250	245	242	98	96	75-125	1	20		
Lead	ug/L	0.28J	250	250	266	265	106	106	75-125	0	20		
Lithium	ug/L	0.34J	250	250	252	266	101	106	75-125	6	20		
Molybdenum	ug/L	89.4	250	250	336	332	99	97	75-125	1	20		
Selenium	ug/L	74.4	250	250	342	338	107	105	75-125	1	20		
Thallium	ug/L	0.21J	250	250	253	253	101	101	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

QC Batch:	430019	Analysis Method:	SM 2540C
QC Batch Method:	SM 2540C	Analysis Description:	2540C Total Dissolved Solids
		Laboratory:	Pace Analytical Services - Green Bay

Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

METHOD BLANK: 2476521 Matrix: Water
Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	10/28/22 10:50	

LABORATORY CONTROL SAMPLE: 2476522

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	585	540	92	80-120	

SAMPLE DUPLICATE: 2476523

Parameter	Units	40253801001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	806	818	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

QC Batch: 430121

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40253825001, 40253825002

SAMPLE DUPLICATE: 2477262

Parameter	Units	40253592001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	5.0	5.1	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

QC Batch: 430502

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40253825003, 40253825004

SAMPLE DUPLICATE: 2479241

Parameter	Units	40253453001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.0	7.0	0	20	H6

SAMPLE DUPLICATE: 2479545

Parameter	Units	40253825003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.4	7.4	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

QC Batch: 430680 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

METHOD BLANK: 2480305 Matrix: Water
Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	11/08/22 15:11	
Fluoride	mg/L	<0.095	0.32	11/08/22 15:11	
Sulfate	mg/L	<0.44	2.0	11/08/22 15:11	

LABORATORY CONTROL SAMPLE: 2480306

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	21.6	108	90-110	
Fluoride	mg/L	2	2.1	106	90-110	
Sulfate	mg/L	20	21.6	108	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2480307 2480308

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40253823001 Result	Spike Conc.	Spike Conc.	Result								
Chloride	mg/L	275	200	200	462	457	94	91	90-110	1	15		
Fluoride	mg/L	<0.095	2	2	1.5	1.5	75	76	90-110	0	15	M0	
Sulfate	mg/L	34.3	200	200	248	242	107	104	90-110	3	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Sample: MW-303 **Lab ID: 40253825001** Collected: 10/26/22 10:50 Received: 10/27/22 07:40 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	-0.175 ± 0.595 (1.32) C:NA T:92%	pCi/L	11/11/22 13:59	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.357 ± 0.371 (0.774) C:86% T:84%	pCi/L	11/09/22 12:18	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.357 ± 0.966 (2.09)	pCi/L	11/15/22 15:49	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	0.000 ± 0.533 (1.13) C:NA T:85%	pCi/L	11/11/22 13:59	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.309 ± 0.414 (0.886) C:83% T:81%	pCi/L	11/09/22 12:19	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.309 ± 0.947 (2.02)	pCi/L	11/15/22 15:49	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Sample: MW-4R **Lab ID: 40253825003** Collected: 10/25/22 11:55 Received: 10/27/22 07:40 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	-0.246 ± 0.483 (1.16) C:NA T:91%	pCi/L	11/11/22 13:59	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.181 ± 0.313 (0.684) C:85% T:87%	pCi/L	11/09/22 12:19	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.181 ± 0.796 (1.84)	pCi/L	11/16/22 15:21	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

Sample: FIELD BLANK-PPOND **Lab ID: 40253825004** Collected: 10/26/22 10:50 Received: 10/27/22 07:40 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	0.171 ± 0.626 (1.20) C:NA T:96%	pCi/L	11/11/22 13:59	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.422 ± 0.433 (0.904) C:83% T:75%	pCi/L	11/09/22 12:20	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.593 ± 1.06 (2.10)	pCi/L	11/16/22 15:21	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

QC Batch: 543601

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: 40253825001, 40253825002, 40253825003, 40253825004

METHOD BLANK: 2638238

Matrix: Water

Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.500 ± 0.357 (0.692) C:83% T:80%	pCi/L	11/09/22 12:17	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

QC Batch: 543600

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: 40253825001, 40253825002, 40253825003, 40253825004

METHOD BLANK: 2638237

Matrix: Water

Associated Lab Samples: 40253825001, 40253825002, 40253825003, 40253825004

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0704 ± 0.322 (0.654) C:NA T:85%	pCi/L	11/11/22 13:28	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25222067 COLUMBIA CCR PRIMPOND

Pace Project No.: 40253825

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.

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

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.

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25222067 COLUMBIA CCR PRIMPOND
Pace Project No.: 40253825

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40253825001	MW-303	EPA 3010A	432904	EPA 6020B	432975
40253825002	MW-305	EPA 3010A	432904	EPA 6020B	432975
40253825003	MW-4R	EPA 3010A	432904	EPA 6020B	432975
40253825004	FIELD BLANK-PPOND	EPA 3010A	432904	EPA 6020B	432975
40253825001	MW-303	EPA 7470	430126	EPA 7470	430170
40253825002	MW-305	EPA 7470	430126	EPA 7470	430170
40253825003	MW-4R	EPA 7470	430126	EPA 7470	430170
40253825004	FIELD BLANK-PPOND	EPA 7470	430126	EPA 7470	430170
40253825001	MW-303				
40253825002	MW-305				
40253825003	MW-4R				
40253825005	MW-304				
40253825001	MW-303	EPA 903.1	543600		
40253825002	MW-305	EPA 903.1	543600		
40253825003	MW-4R	EPA 903.1	543600		
40253825004	FIELD BLANK-PPOND	EPA 903.1	543600		
40253825001	MW-303	EPA 904.0	543601		
40253825002	MW-305	EPA 904.0	543601		
40253825003	MW-4R	EPA 904.0	543601		
40253825004	FIELD BLANK-PPOND	EPA 904.0	543601		
40253825001	MW-303	Total Radium Calculation	547199		
40253825002	MW-305	Total Radium Calculation	547199		
40253825003	MW-4R	Total Radium Calculation	547492		
40253825004	FIELD BLANK-PPOND	Total Radium Calculation	547492		
40253825001	MW-303	SM 2540C	430019		
40253825002	MW-305	SM 2540C	430019		
40253825003	MW-4R	SM 2540C	430019		
40253825004	FIELD BLANK-PPOND	SM 2540C	430019		
40253825001	MW-303	EPA 9040	430121		
40253825002	MW-305	EPA 9040	430121		
40253825003	MW-4R	EPA 9040	430502		
40253825004	FIELD BLANK-PPOND	EPA 9040	430502		
40253825001	MW-303	EPA 300.0	430680		
40253825002	MW-305	EPA 300.0	430680		
40253825003	MW-4R	EPA 300.0	430680		
40253825004	FIELD BLANK-PPOND	EPA 300.0	430680		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Effective Date: 8/16/2022

Client Name: SCS Engineers

Sample Preservation Receipt Form
Project # 4053825

All containers needing preservation have been checked and noted below:

Yes No N/A

Initial when completed: PJB

Date/Time: 10/27/22

Lab Lot# of pH paper: 10 9073

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								2.5 / 5
002								2																				2								2.5 / 5
003								2																				2								2.5 / 5
004								2																				2								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

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 1L plastic HNO3 pres.
			GN 2

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS Engineers

WO#: **40253825**

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 Ziploc

Thermometer Used SR - 125 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1 /Corr: .9

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 10/27/20 Initials: RB
 Labeled By Initials: MJS

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

C2 – January 2023 Supplemental Assessment Monitoring

February 15, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on January 24, 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
Sherren Clark, SCS Engineers
Jenny Coughlin, Alliant Energy
Tom Karwoski, SCS ENGINEERS
Ryan Matzuk, SCS Engineers
Jeff Maxted, ALLIANT ENERGY
Marc Morandi, ALLIANT ENERGY



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
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 #: PA014572018-1
New Hampshire/TNI Certification #: 297617
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 #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
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
Wyoming Certification #: 8TMS-L

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40257413001	MW-304	Water	01/20/23 12:50	01/24/23 07:50
40257413002	FIELD BLANK PPOND	Water	01/20/23 13:40	01/24/23 07:50

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40257413001	MW-304	EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			CKV	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	SRK	1	PASI-G
		EPA 9040	YER	1	PASI-G
		EPA 300.0	HMB, TMK	3	PASI-G
		40257413002	FIELD BLANK PPOND	EPA 6020B	KXS
EPA 7470	AJT			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	SRK			1	PASI-G
EPA 9040	YER			1	PASI-G
EPA 300.0	HMB, TMK			3	PASI-G

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

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

Sample: MW-304 **Lab ID: 40257413001** Collected: 01/20/23 12:50 Received: 01/24/23 07:50 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	01/26/23 05:36	01/31/23 04:00	7440-36-0	1q
Arsenic	1.4	ug/L	1.0	0.28	1	01/26/23 05:36	01/31/23 04:00	7440-38-2	
Barium	30.7	ug/L	2.3	0.70	1	01/26/23 05:36	01/31/23 04:00	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	01/26/23 05:36	01/31/23 04:00	7440-41-7	
Boron	346	ug/L	100	30.3	10	01/26/23 05:36	01/30/23 18:53	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	01/26/23 05:36	01/31/23 04:00	7440-43-9	
Calcium	92700	ug/L	2540	762	10	01/26/23 05:36	01/30/23 18:53	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	01/26/23 05:36	01/31/23 13:35	7440-47-3	
Cobalt	0.37J	ug/L	1.0	0.12	1	01/26/23 05:36	01/31/23 04:00	7440-48-4	
Lead	0.24J	ug/L	1.0	0.24	1	01/26/23 05:36	01/31/23 04:00	7439-92-1	
Lithium	0.29J	ug/L	1.0	0.22	1	01/26/23 05:36	01/31/23 04:00	7439-93-2	
Molybdenum	2.4	ug/L	1.5	0.44	1	01/26/23 05:36	01/31/23 04:00	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	01/26/23 05:36	01/31/23 04:00	7782-49-2	
Thallium	0.23J	ug/L	1.0	0.14	1	01/26/23 05:36	01/31/23 04:00	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	01/25/23 10:40	01/26/23 07:09	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.00	Std. Units			1		01/20/23 12:50		
Field Specific Conductance	664.8	umhos/cm			1		01/20/23 12:50		
Oxygen, Dissolved	0.14	mg/L			1		01/20/23 12:50	7782-44-7	
REDOX	115.3	mV			1		01/20/23 12:50		
Turbidity	3.69	NTU			1		01/20/23 12:50		
Static Water Level	788.08	feet			1		01/20/23 12:50		
Temperature, Water (C)	10.0	deg C			1		01/20/23 12:50		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	398	mg/L	20.0	8.7	1		01/24/23 15:17		
9040 pH									
Analytical Method: EPA 9040									
Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.5	Std. Units	0.10	0.010	1		01/31/23 07:21		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	12.7	mg/L	2.0	0.43	1		01/25/23 14:39	16887-00-6	
Fluoride	0.32	mg/L	0.32	0.095	1		02/03/23 00:53	16984-48-8	M0, R1
Sulfate	31.3	mg/L	2.0	0.44	1		01/25/23 14:39	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

Sample: FIELD BLANK PPOND **Lab ID: 40257413002** Collected: 01/20/23 13:40 Received: 01/24/23 07:50 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	01/26/23 05:36	01/31/23 04:30	7440-36-0	1q
Arsenic	<0.28	ug/L	1.0	0.28	1	01/26/23 05:36	01/31/23 04:30	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	01/26/23 05:36	01/31/23 04:30	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	01/26/23 05:36	01/31/23 04:30	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	01/26/23 05:36	01/31/23 04:30	7440-42-8	
Cadmium	0.20J	ug/L	1.0	0.15	1	01/26/23 05:36	01/31/23 04:30	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	01/26/23 05:36	01/31/23 13:20	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	01/26/23 05:36	01/31/23 13:20	7440-47-3	
Cobalt	0.23J	ug/L	1.0	0.12	1	01/26/23 05:36	01/31/23 04:30	7440-48-4	
Lead	0.30J	ug/L	1.0	0.24	1	01/26/23 05:36	01/31/23 04:30	7439-92-1	
Lithium	0.33J	ug/L	1.0	0.22	1	01/26/23 05:36	01/31/23 04:30	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	01/26/23 05:36	01/31/23 04:30	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	01/26/23 05:36	01/31/23 04:30	7782-49-2	
Thallium	0.32J	ug/L	1.0	0.14	1	01/26/23 05:36	01/31/23 04:30	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	01/25/23 10:40	01/26/23 07:11	7439-97-6	
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		01/24/23 15:17		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	5.7	Std. Units	0.10	0.010	1		01/31/23 07:37		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		01/25/23 15:18	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		02/03/23 02:22	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		01/25/23 15:18	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

QC Batch: 436462

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40257413001, 40257413002

METHOD BLANK: 2509695

Matrix: Water

Associated Lab Samples: 40257413001, 40257413002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	01/26/23 06:39	

LABORATORY CONTROL SAMPLE: 2509696

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	4.9	99	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2509697 2509698

Parameter	Units	40257378001		2509697		2509698		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Mercury	ug/L	<0.066	5	5	4.7	4.7	94	94	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

QC Batch: 436525 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40257413001, 40257413002

METHOD BLANK: 2510527 Matrix: Water

Associated Lab Samples: 40257413001, 40257413002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	01/31/23 03:46	
Arsenic	ug/L	<0.28	1.0	01/31/23 03:46	
Barium	ug/L	<0.70	2.3	01/31/23 03:46	
Beryllium	ug/L	<0.25	1.0	01/31/23 03:46	
Boron	ug/L	<3.0	10.0	01/31/23 03:46	
Cadmium	ug/L	<0.15	1.0	01/31/23 03:46	
Calcium	ug/L	<76.2	254	01/31/23 03:46	
Chromium	ug/L	<1.0	3.4	01/31/23 13:13	
Cobalt	ug/L	<0.12	1.0	01/31/23 03:46	
Lead	ug/L	<0.24	1.0	01/31/23 03:46	
Lithium	ug/L	<0.22	1.0	01/31/23 03:46	
Molybdenum	ug/L	<0.44	1.5	01/31/23 03:46	
Selenium	ug/L	<0.32	1.1	01/31/23 03:46	
Thallium	ug/L	<0.14	1.0	01/31/23 03:46	

LABORATORY CONTROL SAMPLE: 2510528

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	261	104	80-120	
Arsenic	ug/L	250	255	102	80-120	
Barium	ug/L	250	255	102	80-120	
Beryllium	ug/L	250	255	102	80-120	
Boron	ug/L	250	239	95	80-120	
Cadmium	ug/L	250	261	104	80-120	
Calcium	ug/L	10000	10300	103	80-120	
Chromium	ug/L	250	247	99	80-120	
Cobalt	ug/L	250	250	100	80-120	
Lead	ug/L	250	258	103	80-120	
Lithium	ug/L	250	255	102	80-120	
Molybdenum	ug/L	250	259	104	80-120	
Selenium	ug/L	250	263	105	80-120	
Thallium	ug/L	250	251	100	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2510529		2510530		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40257413001 Result	MS Spike Conc.	MSD Spike Conc.									
Antimony	ug/L	<0.15	250	250	266	256	106	102	75-125	4	20		
Arsenic	ug/L	1.4	250	250	264	258	105	103	75-125	2	20		
Barium	ug/L	30.7	250	250	286	282	102	100	75-125	1	20		
Beryllium	ug/L	<0.25	250	250	256	250	102	100	75-125	2	20		
Boron	ug/L	346	250	250	612	588	106	97	75-125	4	20		
Cadmium	ug/L	<0.15	250	250	260	251	104	100	75-125	3	20		
Calcium	ug/L	92700	10000	10000	105000	102000	123	96	75-125	3	20		
Chromium	ug/L	<1.0	250	250	243	240	97	96	75-125	1	20		
Cobalt	ug/L	0.37J	250	250	254	248	101	99	75-125	2	20		
Lead	ug/L	0.24J	250	250	262	255	105	102	75-125	3	20		
Lithium	ug/L	0.29J	250	250	256	249	102	100	75-125	3	20		
Molybdenum	ug/L	2.4	250	250	261	262	104	104	75-125	0	20		
Selenium	ug/L	<0.32	250	250	273	265	109	106	75-125	3	20		
Thallium	ug/L	0.23J	250	250	255	251	102	100	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

QC Batch: 436380

Analysis Method: SM 2540C

QC Batch Method: SM 2540C

Analysis Description: 2540C Total Dissolved Solids

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40257413001, 40257413002

METHOD BLANK: 2509357

Matrix: Water

Associated Lab Samples: 40257413001, 40257413002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	01/24/23 15:07	

LABORATORY CONTROL SAMPLE: 2509358

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	596	542	91	80-120	

SAMPLE DUPLICATE: 2509359

Parameter	Units	40257369001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	578	590	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

QC Batch: 436819

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40257413001, 40257413002

SAMPLE DUPLICATE: 2511795

Parameter	Units	40257413001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.5	7.5	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

QC Batch: 436413 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40257413001, 40257413002

METHOD BLANK: 2509517 Matrix: Water
Associated Lab Samples: 40257413001, 40257413002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	01/25/23 14:14	
Fluoride	mg/L	<0.095	0.32	02/03/23 00:23	
Sulfate	mg/L	<0.44	2.0	01/25/23 14:14	

LABORATORY CONTROL SAMPLE: 2509518

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.2	101	90-110	
Fluoride	mg/L	2	2.0	98	90-110	
Sulfate	mg/L	20	19.8	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2509519 2509520

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40257413001	Result	Conc.	Conc.								
Chloride	mg/L	12.7	20	20	34.4	34.2	109	108	90-110	0	15		
Fluoride	mg/L	0.32	2	2	2.3	2.7	100	121	90-110	17	15	M0, L1	
Sulfate	mg/L	31.3	20	20	52.3	52.0	105	104	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

Sample: MW-304 **Lab ID: 40257413001** Collected: 01/20/23 12:50 Received: 01/24/23 07:50 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	0.397 ± 0.469 (0.737) C:NA T:97%	pCi/L	02/07/23 13:37	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.548 ± 0.281 (0.479) C:90% T:97%	pCi/L	02/06/23 11:42	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.945 ± 0.750 (1.22)	pCi/L	02/08/23 16:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

Sample: FIELD BLANK PPOND **Lab ID: 40257413002** Collected: 01/20/23 13:40 Received: 01/24/23 07:50 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	-0.214 ± 0.578 (1.24) C:NA T:90%	pCi/L	02/07/23 13:37	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.602 ± 0.330 (0.571) C:90% T:82%	pCi/L	02/06/23 11:42	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.602 ± 0.908 (1.81)	pCi/L	02/08/23 16:58	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

QC Batch: 563009

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: 40257413001, 40257413002

METHOD BLANK: 2734748

Matrix: Water

Associated Lab Samples: 40257413001, 40257413002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.248 ± 0.285 (0.168) C:NA T:83%	pCi/L	02/07/23 13:37	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

QC Batch: 563010

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: 40257413001, 40257413002

METHOD BLANK: 2734749

Matrix: Water

Associated Lab Samples: 40257413001, 40257413002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.488 ± 0.304 (0.562) C:93% T:83%	pCi/L	02/06/23 11:42	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25222157 COL CCR PRIM POND

Pace Project No.: 40257413

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.

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 Analyte was measured in the associated method blank at a concentration of -0.26ug/L.

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.

R1 RPD value was outside control limits.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25222157 COL CCR PRIM POND
Pace Project No.: 40257413

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40257413001	MW-304	EPA 3010A	436525	EPA 6020B	436664
40257413002	FIELD BLANK PPOND	EPA 3010A	436525	EPA 6020B	436664
40257413001	MW-304	EPA 7470	436462	EPA 7470	436477
40257413002	FIELD BLANK PPOND	EPA 7470	436462	EPA 7470	436477
40257413001	MW-304				
40257413001	MW-304	EPA 903.1	563009		
40257413002	FIELD BLANK PPOND	EPA 903.1	563009		
40257413001	MW-304	EPA 904.0	563010		
40257413002	FIELD BLANK PPOND	EPA 904.0	563010		
40257413001	MW-304	Total Radium Calculation	565663		
40257413002	FIELD BLANK PPOND	Total Radium Calculation	565663		
40257413001	MW-304	SM 2540C	436380		
40257413002	FIELD BLANK PPOND	SM 2540C	436380		
40257413001	MW-304	EPA 9040	436819		
40257413002	FIELD BLANK PPOND	EPA 9040	436819		
40257413001	MW-304	EPA 300.0	436413		
40257413002	FIELD BLANK PPOND	EPA 300.0	436413		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

40257413

Table 2. Sampling Points and Parameters - CCR Rule Sampling Program
Groundwater Monitoring - Columbia Energy Center / SCS Engineers Project #25219067

		COL PONDS CCR	COC #1 - Primary Pond				
		Parameter	MW-303	MW-304	MW-305	M-4R	FIELD BLANK - PPOND
Lab Parameters	Appendix III Parameters (Detection Monitoring)	Boron		X			X
		Calcium		X			X
		Chloride		X			X
		Fluoride		X			X
		pH		X			X
		Sulfate		X			X
		TDS		X			X
	Appendix IV Parameters (Assessment Monitoring)	Antimony		X			X
		Arsenic		X			X
		Barium		X			X
		Beryllium		X			X
		Cadmium		X			X
		Chromium		X			X
		Cobalt		X			X
		Fluoride		X			X
		Lead		X			X
		Lithium		X			X
		Mercury		X			X
		Molybdenum		X			X
		Selenium		X			X
Thallium		X			X		
Radium 226+228		X			X		
Field Parameters	CCR Rule Field Parameters	Groundwater Elevation		X			
		pH		X			
	Low-Flow Sampling Field Parameters	Well Depth					
		Specific Conductance		X			
		Dissolved Oxygen		X			
		ORP		X			
		Temperature		X			
		Turbidity		X			
		Color		X			
		Odor		X			

Sample Preservation Receipt Form

Client Name: SCS

All containers needing preservation have been checked and noted below

Project # LIOS 7413
 Yes No N/A
 Lab Lot# of pH paper 1000722 Lab Std #ID of preservation (if pH adjusted):

Initial when completed mt

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
001								2		1														2									2.5 / 5
002								2		1														2									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

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	<u>1 Liter poly HNO3</u>
						GN 2		

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SCS

WO#: **40257413**

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

Person examining contents:
 Date: 1/24/23 / Initials: mt
 Labeled By Initials: YAP

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: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	2. <u>pg # mt 1/24/23</u>
Chain of Custody Relinquished: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt <input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time
Short Hold Time Analysis (<72hr): <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6.
Rush Turn Around Time Requested: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	8.
Correct Containers Used: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace	
Containers Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W</u>	
Trip Blank Present: <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 logir

C3 – April 2023 Assessment Monitoring

May 26, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 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
- Pace Analytical Services - Greensburg

Revised Report: REDOX has been added to the field data list for MW-84A.

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
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 #: PA014572018-1
New Hampshire/TNI Certification #: 297617
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 #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
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
Wyoming Certification #: 8TMS-L

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40261460001	MW-301	Water	04/27/23 12:20	04/28/23 08:40
40261460002	MW-84A	Water	04/27/23 14:05	04/28/23 08:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40261460001	MW-301	EPA 6020B	TXW	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	JLJ	1	PASI-PA
		EPA 904.0	VAL	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	HNT	1	PASI-G
		EPA 9040	SRK	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40261460002	MW-84A	EPA 6020B	TXW
EPA 7470	AJT			1	PASI-G
	LB			7	PASI-G
EPA 903.1	JLJ			1	PASI-PA
EPA 904.0	VAL			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	HNT			1	PASI-G
EPA 9040	SRK			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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

Sample: MW-301 **Lab ID: 40261460001** Collected: 04/27/23 12:20 Received: 04/28/23 08:40 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	05/01/23 06:24	05/15/23 08:01	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	05/01/23 06:24	05/15/23 08:01	7440-38-2	
Barium	9.8	ug/L	2.3	0.70	1	05/01/23 06:24	05/15/23 08:01	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	05/01/23 06:24	05/15/23 08:01	7440-41-7	
Boron	20.1	ug/L	10.0	3.0	1	05/01/23 06:24	05/15/23 08:01	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	05/01/23 06:24	05/15/23 08:01	7440-43-9	
Calcium	120000	ug/L	254	76.2	1	05/01/23 06:24	05/15/23 08:01	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	05/01/23 06:24	05/15/23 08:01	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	05/01/23 06:24	05/15/23 08:01	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	05/01/23 06:24	05/15/23 08:01	7439-92-1	
Lithium	0.62J	ug/L	1.0	0.22	1	05/01/23 06:24	05/15/23 08:01	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	05/01/23 06:24	05/15/23 08:01	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	05/01/23 06:24	05/15/23 08:01	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/01/23 06:24	05/15/23 08:01	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	05/08/23 10:55	05/09/23 09:00	7439-97-6	M0
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	6.65	Std. Units			1		04/27/23 12:20		
Field Specific Conductance	857.0	umhos/cm			1		04/27/23 12:20		
Oxygen, Dissolved	6.50	mg/L			1		04/27/23 12:20	7782-44-7	
REDOX	95.3	mV			1		04/27/23 12:20		
Turbidity	0.00	NTU			1		04/27/23 12:20		
Static Water Level	787.57	feet			1		04/27/23 12:20		
Temperature, Water (C)	8.0	deg C			1		04/27/23 12:20		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	526	mg/L	20.0	8.7	1		05/01/23 10:51		
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		05/02/23 16:48		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	1.5J	mg/L	2.0	0.43	1		05/12/23 16:00	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/12/23 16:00	16984-48-8	
Sulfate	12.3	mg/L	2.0	0.44	1		05/12/23 16:00	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

Sample: MW-84A **Lab ID: 40261460002** Collected: 04/27/23 14:05 Received: 04/28/23 08:40 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	05/01/23 06:24	05/15/23 08:08	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	05/01/23 06:24	05/15/23 08:08	7440-38-2	
Barium	12.6	ug/L	2.3	0.70	1	05/01/23 06:24	05/15/23 08:08	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	05/01/23 06:24	05/15/23 08:08	7440-41-7	
Boron	10.3	ug/L	10.0	3.0	1	05/01/23 06:24	05/15/23 08:08	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	05/01/23 06:24	05/15/23 08:08	7440-43-9	
Calcium	68600	ug/L	254	76.2	1	05/01/23 06:24	05/15/23 08:08	7440-70-2	
Chromium	1.7J	ug/L	3.4	1.0	1	05/01/23 06:24	05/15/23 08:08	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	05/01/23 06:24	05/15/23 08:08	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	05/01/23 06:24	05/15/23 08:08	7439-92-1	
Lithium	0.71J	ug/L	1.0	0.22	1	05/01/23 06:24	05/15/23 08:08	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	05/01/23 06:24	05/15/23 08:08	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	05/01/23 06:24	05/15/23 08:08	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/01/23 06:24	05/15/23 08:08	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	05/08/23 10:55	05/09/23 09:12	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	7.01	Std. Units			1		04/27/23 14:05		
Field Specific Conductance	556.6	umhos/cm			1		04/27/23 14:05		
Field Oxidation Potential	103.4	mV			1		04/27/23 14:05		
Oxygen, Dissolved	9.37	mg/L			1		04/27/23 14:05	7782-44-7	
Turbidity	0.72	NTU			1		04/27/23 14:05		
Static Water Level	786.97	feet			1		04/27/23 14:05		
Temperature, Water (C)	10.7	deg C			1		04/27/23 14:05		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	326	mg/L	20.0	8.7	1		05/01/23 10:51		
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		05/02/23 16:52		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.0	mg/L	2.0	0.43	1		05/12/23 16:59	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/12/23 16:59	16984-48-8	
Sulfate	1.3J	mg/L	2.0	0.44	1		05/12/23 16:59	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

QC Batch: 444256 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261460001, 40261460002

METHOD BLANK: 2550653 Matrix: Water

Associated Lab Samples: 40261460001, 40261460002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	05/09/23 08:56	

LABORATORY CONTROL SAMPLE: 2550654

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.5	110	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550655 2550656

Parameter	Units	40261460001		2550655		2550656		% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec				
Mercury	ug/L	<0.066	5	5	5.8	5.9	115	119	85-115	3	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

QC Batch: 443628 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261460001, 40261460002

METHOD BLANK: 2547530 Matrix: Water
Associated Lab Samples: 40261460001, 40261460002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	05/11/23 17:42	
Arsenic	ug/L	<0.28	1.0	05/11/23 17:42	
Barium	ug/L	<0.70	2.3	05/11/23 17:42	
Beryllium	ug/L	<0.25	1.0	05/11/23 17:42	
Boron	ug/L	<3.0	10.0	05/11/23 17:42	
Cadmium	ug/L	<0.15	1.0	05/11/23 17:42	
Calcium	ug/L	<76.2	254	05/11/23 17:42	
Chromium	ug/L	<1.0	3.4	05/11/23 17:42	
Cobalt	ug/L	<0.12	1.0	05/11/23 17:42	
Lead	ug/L	<0.24	1.0	05/11/23 17:42	
Lithium	ug/L	<0.22	1.0	05/11/23 17:42	
Molybdenum	ug/L	<0.44	1.5	05/11/23 17:42	
Selenium	ug/L	<0.32	1.1	05/11/23 17:42	
Thallium	ug/L	<0.14	1.0	05/11/23 17:42	

LABORATORY CONTROL SAMPLE: 2547531

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	250	100	80-120	
Arsenic	ug/L	250	255	102	80-120	
Barium	ug/L	250	234	94	80-120	
Beryllium	ug/L	250	233	93	80-120	
Boron	ug/L	250	220	88	80-120	
Cadmium	ug/L	250	254	102	80-120	
Calcium	ug/L	10000	10200	102	80-120	
Chromium	ug/L	250	241	96	80-120	
Cobalt	ug/L	250	241	96	80-120	
Lead	ug/L	250	241	96	80-120	
Lithium	ug/L	250	237	95	80-120	
Molybdenum	ug/L	250	245	98	80-120	
Selenium	ug/L	250	257	103	80-120	
Thallium	ug/L	250	227	91	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

Parameter	Units	2547532		2547533		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40261434001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	0.52J	250	250	268	263	107	105	75-125	2	20		
Arsenic	ug/L	12.4	250	250	264	262	100	100	75-125	1	20		
Barium	ug/L	128	250	250	405	384	111	102	75-125	5	20		
Beryllium	ug/L	0.83J	250	250	261	259	104	103	75-125	1	20		
Boron	ug/L	43.8	250	250	309	302	106	103	75-125	2	20		
Cadmium	ug/L	0.56J	250	250	249	243	99	97	75-125	3	20		
Calcium	ug/L	147000	10000	10000	163000	156000	157	94	75-125	4	20	P6	
Chromium	ug/L	30.1	250	250	279	274	100	98	75-125	2	20		
Cobalt	ug/L	19.2	250	250	257	254	95	94	75-125	1	20		
Lead	ug/L	26.6	250	250	280	274	102	99	75-125	2	20		
Lithium	ug/L	23.9	250	250	277	276	101	101	75-125	0	20		
Molybdenum	ug/L	1.3J	250	250	246	241	98	96	75-125	2	20		
Selenium	ug/L	1.9J	250	250	267	264	106	105	75-125	1	20		
Thallium	ug/L	0.44J	250	250	250	251	100	100	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

QC Batch: 443675 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40261460001, 40261460002

METHOD BLANK: 2547666 Matrix: Water
Associated Lab Samples: 40261460001, 40261460002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	05/01/23 10:47	

LABORATORY CONTROL SAMPLE: 2547667

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	552	95	80-120	

SAMPLE DUPLICATE: 2547668

Parameter	Units	40261457001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	448	464	4	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

QC Batch: 443847

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261460001, 40261460002

SAMPLE DUPLICATE: 2548305

Parameter	Units	40261459003 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.3	7.3	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

QC Batch: 444310	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261460001, 40261460002

METHOD BLANK: 2550800 Matrix: Water

Associated Lab Samples: 40261460001, 40261460002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	05/12/23 14:40	
Fluoride	mg/L	<0.095	0.32	05/12/23 14:40	
Sulfate	mg/L	<0.44	2.0	05/12/23 14:40	

LABORATORY CONTROL SAMPLE: 2550801

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	19.5	98	90-110	
Fluoride	mg/L	2	2.0	101	90-110	
Sulfate	mg/L	20	19.7	99	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550802 2550803

Parameter	Units	MS		MSD		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40261459001 Result	Spike Conc.	Spike Conc.	Conc.								
Chloride	mg/L	2.3	20	20	22.6	22.7	102	102	90-110	0	15		
Fluoride	mg/L	<0.095	2	2	2.1	2.1	105	104	90-110	0	15		
Sulfate	mg/L	11.0	20	20	31.5	31.5	103	103	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

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

Sample: MW-301 **Lab ID: 40261460001** Collected: 04/27/23 12:20 Received: 04/28/23 08:40 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 ± 0.387 (0.805) C:NA T:99%	pCi/L	05/18/23 14:53	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.417 ± 0.322 (0.623) C:80% T:87%	pCi/L	05/15/23 15:22	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.417 ± 0.709 (1.43)	pCi/L	05/22/23 12:45	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

Sample: MW-84A **Lab ID: 40261460002** Collected: 04/27/23 14:05 Received: 04/28/23 08:40 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 ± 0.365 (0.772) C:NA T:95%	pCi/L	05/18/23 15:08	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.326 ± 0.316 (0.647) C:79% T:93%	pCi/L	05/15/23 15:22	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.326 ± 0.681 (1.42)	pCi/L	05/22/23 12:45	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

QC Batch: 585758

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: 40261460001, 40261460002

METHOD BLANK: 2845167

Matrix: Water

Associated Lab Samples: 40261460001, 40261460002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.356 ± 0.319 (0.642) C:76% T:89%	pCi/L	05/15/23 15:19	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

QC Batch: 585757

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: 40261460001, 40261460002

METHOD BLANK: 2845166

Matrix: Water

Associated Lab Samples: 40261460001, 40261460002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	-0.0428 ± 0.195 (0.397) C:NA T:94%	pCi/L	05/18/23 14:53	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25223067 COLUMBIA CCR BCKGRND

Pace Project No.: 40261460

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

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR BCKGRND
Pace Project No.: 40261460

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40261460001	MW-301	EPA 3010A	443628	EPA 6020B	443733
40261460002	MW-84A	EPA 3010A	443628	EPA 6020B	443733
40261460001	MW-301	EPA 7470	444256	EPA 7470	444285
40261460002	MW-84A	EPA 7470	444256	EPA 7470	444285
40261460001	MW-301				
40261460002	MW-84A				
40261460001	MW-301	EPA 903.1	585757		
40261460002	MW-84A	EPA 903.1	585757		
40261460001	MW-301	EPA 904.0	585758		
40261460002	MW-84A	EPA 904.0	585758		
40261460001	MW-301	Total Radium Calculation	589747		
40261460002	MW-84A	Total Radium Calculation	589747		
40261460001	MW-301	SM 2540C	443675		
40261460002	MW-84A	SM 2540C	443675		
40261460001	MW-301	EPA 9040	443847		
40261460002	MW-84A	EPA 9040	443847		
40261460001	MW-301	EPA 300.0	444310		
40261460002	MW-84A	EPA 300.0	444310		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Page

CHAIN-OF-CUSTODY / Analytical Request Document

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

40261460

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

Section A Required Client Information: Company SCS ENGINEERS Address 2880 Dairy Drive Madison, WI 53718

Section B Required Project Information: Report To Meghan Blodgett Copy To Purchase Order # Project Name 25223067 Columbia CCR Background Project # 25223067

Section C Invoice Information: Attention Company Name Address Pace Quote Pace Project Manager dan.milewsky@pacelabs.com, Pace Profile #:

Regulatory Agency State / Location WI

Page : 1 Of 1

Main data table with columns: ITEM #, SAMPLE ID, MATRIX CODE, SAMPLE TYPE, DATE, TIME, ANALYSES TEST, etc.

SAMPLER NAME AND SIGNATURE: PRINT Name of SAMPLER: Bridget Russell, SIGNATURE of SAMPLER: [Signature], DATE Signed: 4/27/2023

Client Name: SCS Engineers
 All containers needing preservation have been checked and noted below:

Sample Preservation Receipt Form
 Project # 40261460
 Yes No N/A
 Lab Lot# of pH paper: 10007022 Lab Std #ID of preservation (if pH adjusted):

Initial when completed: SG 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																																				
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	

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	1L poly HNO3
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Project #: _____

Client Name: SLS Engineers

WO#: **40261460**

Courier: CS Logistics Fed Ex Speedee UPS Walto
 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 - 9 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.0 / Corr: 2.0

Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 4/28/23 Initials: SG
 Labeled By Initials: mit

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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>002 same "1045"</u>
-Includes date/time/ID/Analysis Matrix: <u>W3</u>		<u>4/28/23 SG</u>
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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: chest used white out on bottle types 4/28/23 SG

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

May 31, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 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
- 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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
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 #: PA014572018-1
New Hampshire/TNI Certification #: 297617
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 #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
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
Wyoming Certification #: 8TMS-L

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40261454001	MW-303	Water	04/24/23 14:00	04/28/23 08:40
40261454002	FIELD BLANK-PPOND	Water	04/26/23 09:35	04/28/23 08:40
40261454003	MW-304	Water	04/25/23 00:00	04/28/23 08:40
40261454004	MW-305	Water	04/25/23 00:00	04/28/23 08:40
40261454005	M-4R	Water	04/25/23 00:00	04/28/23 08:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40261454001	MW-303	EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	JLJ	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	SRK	1	PASI-G
		EPA 9040	YER	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40261454002	FIELD BLANK-PPOND	EPA 6020B	KXS
EPA 7470	AJT			1	PASI-G
EPA 903.1	JLJ			1	PASI-PA
EPA 904.0	ZPC			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	SRK			1	PASI-G
EPA 9040	YER			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40261454003	MW-304		LB	1	PASI-G
40261454004	MW-305		LB	1	PASI-G
40261454005	M-4R		LB	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Sample: MW-303 **Lab ID: 40261454001** Collected: 04/24/23 14:00 Received: 04/28/23 08:40 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	05/03/23 05:31	05/09/23 14:25	7440-36-0	
Arsenic	4.0	ug/L	1.0	0.28	1	05/03/23 05:31	05/09/23 14:25	7440-38-2	
Barium	31.0	ug/L	2.3	0.70	1	05/03/23 05:31	05/09/23 14:25	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	05/03/23 05:31	05/09/23 14:25	7440-41-7	
Boron	2720	ug/L	100	30.3	10	05/03/23 05:31	05/09/23 13:40	7440-42-8	P6
Cadmium	<0.15	ug/L	1.0	0.15	1	05/03/23 05:31	05/09/23 14:25	7440-43-9	
Calcium	43600	ug/L	254	76.2	1	05/03/23 05:31	05/09/23 14:25	7440-70-2	
Chromium	45.0	ug/L	3.4	1.0	1	05/03/23 05:31	05/09/23 14:25	7440-47-3	
Cobalt	0.26J	ug/L	1.0	0.12	1	05/03/23 05:31	05/09/23 14:25	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	05/03/23 05:31	05/09/23 14:25	7439-92-1	
Lithium	4.4	ug/L	1.0	0.22	1	05/03/23 05:31	05/09/23 14:25	7439-93-2	
Molybdenum	41.3	ug/L	1.5	0.44	1	05/03/23 05:31	05/09/23 14:25	7439-98-7	
Selenium	9.7	ug/L	1.1	0.32	1	05/03/23 05:31	05/09/23 14:25	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/03/23 05:31	05/09/23 14:25	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	05/01/23 10:55	05/02/23 07:33	7439-97-6	
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Field pH	8.44	Std. Units			1		04/24/23 14:00		
Field Specific Conductance	575	umhos/cm			1		04/24/23 14:00		
Oxygen, Dissolved	9.48	mg/L			1		04/24/23 14:00	7782-44-7	
REDOX	45.9	mV			1		04/24/23 14:00		
Turbidity	0.00	NTU			1		04/24/23 14:00		
Static Water Level	784.38	feet			1		04/24/23 14:00		
Temperature, Water (C)	10.5	deg C			1		04/24/23 14:00		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	420	mg/L	20.0	8.7	1		04/28/23 15:37		
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		05/02/23 10:45		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	3.5J	mg/L	10.0	2.2	5		05/12/23 05:06	16887-00-6	D3
Fluoride	<0.48	mg/L	1.6	0.48	5		05/12/23 05:06	16984-48-8	D3
Sulfate	229	mg/L	10.0	2.2	5		05/12/23 05:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Sample: FIELD BLANK-PPOND **Lab ID: 40261454002** Collected: 04/26/23 09:35 Received: 04/28/23 08:40 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	05/03/23 05:31	05/09/23 12:56	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	05/03/23 05:31	05/09/23 12:56	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	05/03/23 05:31	05/09/23 12:56	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	05/03/23 05:31	05/09/23 12:56	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	05/03/23 05:31	05/09/23 12:56	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	05/03/23 05:31	05/09/23 12:56	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	05/03/23 05:31	05/09/23 12:56	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	05/03/23 05:31	05/09/23 12:56	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	05/03/23 05:31	05/09/23 12:56	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	05/03/23 05:31	05/09/23 12:56	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	05/03/23 05:31	05/09/23 12:56	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	05/03/23 05:31	05/09/23 12:56	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	05/03/23 05:31	05/09/23 12:56	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/03/23 05:31	05/09/23 12:56	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	05/01/23 10:55	05/02/23 07:35	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	12.0J	mg/L	20.0	8.7	1		04/28/23 15:37		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.1	Std. Units	0.10	0.010	1		05/02/23 10:59		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		05/12/23 05:21	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/12/23 05:21	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		05/12/23 05:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: MW-304 **Lab ID: 40261454003** Collected: 04/25/23 00:00 Received: 04/28/23 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
	Analytical Method: Pace Analytical Services - Green Bay								
Static Water Level	784.03	feet			1		04/25/23 00:00		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: MW-305 **Lab ID: 40261454004** Collected: 04/25/23 00:00 Received: 04/28/23 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Well Dry	Y	no units			1		04/25/23 00:00		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: M-4R **Lab ID: 40261454005** Collected: 04/25/23 00:00 Received: 04/28/23 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Well Dry	Y	no units			1		04/25/23 00:00		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 443687

Analysis Method: EPA 7470

QC Batch Method: EPA 7470

Analysis Description: 7470 Mercury

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2547707

Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	05/02/23 06:58	

LABORATORY CONTROL SAMPLE: 2547708

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2547709 2547710

Parameter	Units	40261076001		2547709		2547710		% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Mercury	ug/L	<0.066	5	5	5.1	5.1	101	101	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 443871	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2548462 Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	05/09/23 12:49	
Arsenic	ug/L	<0.28	1.0	05/09/23 12:49	
Barium	ug/L	<0.70	2.3	05/09/23 12:49	
Beryllium	ug/L	<0.25	1.0	05/09/23 12:49	
Boron	ug/L	<3.0	10.0	05/09/23 12:49	
Cadmium	ug/L	<0.15	1.0	05/09/23 12:49	
Calcium	ug/L	<76.2	254	05/09/23 12:49	
Chromium	ug/L	<1.0	3.4	05/09/23 12:49	
Cobalt	ug/L	<0.12	1.0	05/09/23 12:49	
Lead	ug/L	<0.24	1.0	05/09/23 12:49	
Lithium	ug/L	<0.22	1.0	05/09/23 12:49	
Molybdenum	ug/L	<0.44	1.5	05/09/23 12:49	
Selenium	ug/L	<0.32	1.1	05/09/23 12:49	
Thallium	ug/L	<0.14	1.0	05/09/23 12:49	

LABORATORY CONTROL SAMPLE: 2548463

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	254	102	80-120	
Arsenic	ug/L	250	251	100	80-120	
Barium	ug/L	250	241	96	80-120	
Beryllium	ug/L	250	248	99	80-120	
Boron	ug/L	250	238	95	80-120	
Cadmium	ug/L	250	250	100	80-120	
Calcium	ug/L	10000	9870	99	80-120	
Chromium	ug/L	250	242	97	80-120	
Cobalt	ug/L	250	242	97	80-120	
Lead	ug/L	250	259	104	80-120	
Lithium	ug/L	250	244	97	80-120	
Molybdenum	ug/L	250	245	98	80-120	
Selenium	ug/L	250	258	103	80-120	
Thallium	ug/L	250	249	99	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Parameter	Units	MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2548464		2548465		MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40261454001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result								
Antimony	ug/L	<0.15	250	250	257	263	103	105	75-125	2	20		
Arsenic	ug/L	4.0	250	250	261	260	103	103	75-125	0	20		
Barium	ug/L	31.0	250	250	277	279	99	99	75-125	1	20		
Beryllium	ug/L	<0.25	250	250	246	242	98	97	75-125	2	20		
Boron	ug/L	2720	250	250	2960	2860	96	54	75-125	4	20	P6	
Cadmium	ug/L	<0.15	250	250	251	255	100	102	75-125	2	20		
Calcium	ug/L	43600	10000	10000	54800	54400	111	108	75-125	1	20		
Chromium	ug/L	45.0	250	250	289	288	98	97	75-125	0	20		
Cobalt	ug/L	0.26J	250	250	245	246	98	98	75-125	0	20		
Lead	ug/L	<0.24	250	250	270	276	108	110	75-125	2	20		
Lithium	ug/L	4.4	250	250	250	251	98	99	75-125	0	20		
Molybdenum	ug/L	41.3	250	250	288	292	99	100	75-125	1	20		
Selenium	ug/L	9.7	250	250	272	275	105	106	75-125	1	20		
Thallium	ug/L	<0.14	250	250	258	266	103	106	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 443595	Analysis Method: SM 2540C
QC Batch Method: SM 2540C	Analysis Description: 2540C Total Dissolved Solids
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2547072 Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/28/23 15:33	

LABORATORY CONTROL SAMPLE: 2547073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	548	94	80-120	

SAMPLE DUPLICATE: 2547074

Parameter	Units	40261401001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	840	824	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 443778

Analysis Method: EPA 9040

QC Batch Method: EPA 9040

Analysis Description: 9040 pH

Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

SAMPLE DUPLICATE: 2547973

Parameter	Units	40261401001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	8.0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 444304	Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0	Analysis Description: 300.0 IC Anions
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2550775 Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	05/12/23 00:39	
Fluoride	mg/L	<0.095	0.32	05/12/23 00:39	
Sulfate	mg/L	<0.44	2.0	05/12/23 00:39	

LABORATORY CONTROL SAMPLE: 2550776

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	104	90-110	
Fluoride	mg/L	2	2.1	107	90-110	
Sulfate	mg/L	20	21.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550777 2550778

Parameter	Units	40261416005		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result							
Chloride	mg/L	28.3	100	100	131	131	103	102	90-110	1	15			
Fluoride	mg/L	0.84J	10	10	11.5	11.4	106	106	90-110	1	15			
Sulfate	mg/L	132	100	100	230	228	98	96	90-110	1	15			

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550779 2550780

Parameter	Units	40261456001		MS		MSD		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	Conc.	Spike Conc.	Conc.	Result	Result							
Chloride	mg/L	139	100	100	230	232	90	92	90-110	1	15			
Fluoride	mg/L	<0.48	10	10	10.4	10.8	104	108	90-110	4	15			
Sulfate	mg/L	91.1	100	100	187	191	96	99	90-110	2	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

This report shall not be reproduced, except in full, without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Sample: MW-303 **Lab ID: 40261454001** Collected: 04/24/23 14:00 Received: 04/28/23 08:40 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	-0.193 ± 0.420 (0.968) C:NA T:93%	pCi/L	05/19/23 14:12	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.292 ± 0.402 (0.863) C:83% T:90%	pCi/L	05/12/23 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.292 ± 0.822 (1.83)	pCi/L	05/22/23 12:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: FIELD BLANK-PPOND **Lab ID:** 40261454002 Collected: 04/26/23 09:35 Received: 04/28/23 08:40 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	0.0717 ± 0.507 (1.01) C:NA T:92%	pCi/L	05/19/23 14:12	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.396 ± 0.370 (0.756) C:85% T:83%	pCi/L	05/12/23 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.468 ± 0.877 (1.77)	pCi/L	05/22/23 12:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 585857

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: 40261454001, 40261454002

METHOD BLANK: 2845633

Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0964 ± 0.220 (0.131) C:NA T:86%	pCi/L	05/19/23 14:12	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 585859

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: 40261454001, 40261454002

METHOD BLANK: 2845642

Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.159 ± 0.298 (0.655) C:87% T:85%	pCi/L	05/12/23 15:53	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

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

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.

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40261454001	MW-303	EPA 3010A	443871	EPA 6020B	443949
40261454002	FIELD BLANK-PPOND	EPA 3010A	443871	EPA 6020B	443949
40261454001	MW-303	EPA 7470	443687	EPA 7470	443719
40261454002	FIELD BLANK-PPOND	EPA 7470	443687	EPA 7470	443719
40261454001	MW-303				
40261454003	MW-304				
40261454004	MW-305				
40261454005	M-4R				
40261454001	MW-303	EPA 903.1	585857		
40261454002	FIELD BLANK-PPOND	EPA 903.1	585857		
40261454001	MW-303	EPA 904.0	585859		
40261454002	FIELD BLANK-PPOND	EPA 904.0	585859		
40261454001	MW-303	Total Radium Calculation	589741		
40261454002	FIELD BLANK-PPOND	Total Radium Calculation	589741		
40261454001	MW-303	SM 2540C	443595		
40261454002	FIELD BLANK-PPOND	SM 2540C	443595		
40261454001	MW-303	EPA 9040	443778		
40261454002	FIELD BLANK-PPOND	EPA 9040	443778		
40261454001	MW-303	EPA 300.0	444304		
40261454002	FIELD BLANK-PPOND	EPA 300.0	444304		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

40261454



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 #		Pace Quote			
Phone 608-216-7362 Fax		Project Name 25223067 Columbia CCR Primary Pond		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				SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives								Requested Analysis Filtered (Y/N)					Residual Chlorine (Y/N)		
				START		END				Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test	Radium 226	Radium 228	Metals	chloride, fluoride, sulfate		TDS and pH	
				DATE	TIME	DATE	TIME																		N
1		WT																							
2	MW-303	WT		4/24	1400			5	2	3															001
3	MW-304	WT																							Void
4	MW-305	WT																							Void
5	M-4B	WT																							Void
6	FIELD BLANK-PPOND	WT		4/26	935			5	2	3															002
7																									
8																									
9																									
10																									
11																									
12																									

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
Full List Metals = B, Ca, Sb, As, Ba, Be, Cd, Cr, Co, Pb, Li, Hg, Mo, Se, Tl ALL SAMPLES UNFILTERED	Bridget Russell	4/27	1600				
	CS Logistics	4/28/23	0840	[Signature]	4/28/23	0840	20 Y Y 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: 4/27/2023					

Effective Date: 8/16/2022

Client Name: SCS Engineers

Sample Preservation Receipt Form

Project # 40261454

All containers needing preservation have been checked and noted below.

Yes No N/A

Lab Lot# of pH paper: 1000722

Lab Std #ID of preservation (if pH adjusted):

Initial when completed: SG 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	BP1U	BP3U	BP3B	BP3N	BP3S	BP2Z	VG9C	DG9T	VG9U	VG9H	VG9M	VG9D	JGFU	JG9U	WGFU	WPFU	SP5T								ZPLC	GN 1	GN 2						
001																																							
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	

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	1L poly HNO3
						GN 2	

Sample Condition Upon Receipt Form (SCUR)

Client Name: SLS Engineers
 Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____

Project #: _____
WO# : 40261454

 40261454

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 - 9 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.0 / Corr: 2.0
 Temp Blank Present: yes no Biological Tissue is Frozen: yes no

Person examining contents:
 Date: 4/28/23 Initials: SG
 Labeled By Initials: mt

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:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W3</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 logir
 Page 2 of 2

C4 – May 2023 Supplemental Assessment Monitoring

May 10, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

Dear Meghan Blodgett:

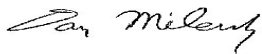
Enclosed are the analytical results for sample(s) received by the laboratory on May 06, 2023. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted 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



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40261817001	MW-316	Water	05/05/23 12:05	05/06/23 09:05
40261817002	FIELD BLANK	Water	05/05/23 12:05	05/06/23 09:05

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40261817001	MW-316	EPA 6020B	KXS	1
			LB	7
40261817002	FIELD BLANK	EPA 6020B	KXS	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40261817001	MW-316					
EPA 6020B	Arsenic	1.2	ug/L	1.0	05/09/23 18:49	
	Field pH	8.32	Std. Units		05/05/23 12:05	
	Field Specific Conductance	636.1	umhos/cm		05/05/23 12:05	
	Oxygen, Dissolved	0.09	mg/L		05/05/23 12:05	
	REDOX	-167.2	mV		05/05/23 12:05	
	Turbidity	0.05	NTU		05/05/23 12:05	
	Static Water Level	NS	feet		05/05/23 12:05	
	Temperature, Water (C)	12.8	deg C		05/05/23 12:05	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Sample: MW-316 **Lab ID: 40261817001** Collected: 05/05/23 12:05 Received: 05/06/23 09:05 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							
Arsenic	1.2	ug/L	1.0	0.28	1	05/09/23 05:24	05/09/23 18:49	7440-38-2	
Field Data		Analytical Method: Pace Analytical Services - Green Bay							
Field pH	8.32	Std. Units			1		05/05/23 12:05		
Field Specific Conductance	636.1	umhos/cm			1		05/05/23 12:05		
Oxygen, Dissolved	0.09	mg/L			1		05/05/23 12:05	7782-44-7	
REDOX	-167.2	mV			1		05/05/23 12:05		
Turbidity	0.05	NTU			1		05/05/23 12:05		
Static Water Level	NS	feet			1		05/05/23 12:05		
Temperature, Water (C)	12.8	deg C			1		05/05/23 12:05		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Sample: FIELD BLANK **Lab ID: 40261817002** Collected: 05/05/23 12:05 Received: 05/06/23 09:05 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									
Arsenic	<0.28	ug/L	1.0	0.28	1	05/09/23 05:24	05/09/23 17:21	7440-38-2	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

QC Batch: 444332	Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A	Analysis Description: 6020B MET
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261817001, 40261817002

METHOD BLANK: 2550885 Matrix: Water

Associated Lab Samples: 40261817001, 40261817002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	<0.28	1.0	05/09/23 17:14	

LABORATORY CONTROL SAMPLE: 2550886

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	250	246	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550887 2550888

Parameter	Units	2550887		2550888		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40261817001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Arsenic	ug/L	1.2	250	250	251	251	100	100	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

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.

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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40261817001	MW-316	EPA 3010A	444332	EPA 6020B	444424
40261817002	FIELD BLANK	EPA 3010A	444332	EPA 6020B	444424
40261817001	MW-316				

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



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 or List Pace Workorder Number or MTJL Log-in Number Here

40261817

ALL SHADED AREAS are for LAB USE ONLY

Company: SCS Engineers		Billing Information: Same as contact	
Address: 2830 Dairy Dr		Email To: mblodgett@scsengineers.com	
Report To: Meg Blodgett		Site Collection Info/Address:	
Copy To:		Customer Project Name/Number: 25223067	
State: WI		County/City: WI	
Time Zone Collected: [] PT [] MT [X] CT [] ET		Compliance Monitoring? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Phone: _____	Site/Facility ID #: _____	Purchase Order #: _____	
Email: _____		Quote #: _____	
Collected By (print): Ryan Matzke		DW PWS ID #: _____	
		DW Location Code: _____	
Collected By (signature): <i>[Signature]</i>	Turnaround Date Required: _____	Immediately Packed on Ice: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
Sample Disposal: <input type="checkbox"/> Dispose as appropriate <input type="checkbox"/> Return <input type="checkbox"/> Archive: _____ <input type="checkbox"/> Hold: _____	Rush: <input type="checkbox"/> Same Day <input type="checkbox"/> Next Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day <input type="checkbox"/> 5 Day (Expedite Charges Apply)	Field Filtered (if applicable): <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Analysis: _____			

Container Preservative Type **										Lab Project Manager:									
Analyses										Lab Profile/Line:									
Lab Sample Receipt Checklist:																			
Custody Seals Present/Intact Y N NA																			
Custody Signatures Present Y N NA																			
Collector Signature Present Y N NA																			
Bottles Intact Y N NA																			
Correct Bottles <input checked="" type="checkbox"/> Y N NA																			
Sufficient Volume Y N NA																			
Samples Received on Ice Y N NA																			
VOA - Headspace Acceptable Y N NA																			
USDA Regulated Solids Y N NA																			
Samples in Holding Tank Y N NA																			
Residual Chlorine Present Y N NA																			
Cl Strips: _____ Y N NA																			
Sample pH Acceptable Y N NA																			
pH Strips: _____ Y N NA																			
Sulfide Present Y N NA																			
Lead Acetate Strips: _____ Y N NA																			
LAB USE ONLY: Lab Sample # / Comments:																			
<div style="display: flex; justify-content: space-between;"> Arsenic (6020B) 901 </div>																			
<div style="display: flex; justify-content: space-between;"> X 202 </div>																			

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)									
Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns	
			Date	Time	Date	Time			
MW-316	GW	6	5/5	1205				1	X
Field Blank	W	6	5/5	1205				1	X

Customer Remarks / Special Conditions / Possible Hazards:		Type of Ice Used: <input checked="" type="checkbox"/> Wet <input type="checkbox"/> Blue <input type="checkbox"/> Dry <input type="checkbox"/> None			SHORT HOLDS PRESENT (<72 hours): Y N N/A			Lab Sample Temperature Info:	
		Packing Material Used: <input checked="" type="checkbox"/>			Lab Tracking #: 2730557			Temp Blank Received: Y N NA	
		Radchem sample(s) screened (<500 cpm): Y N NA			Samples received via: FEDEX UPS Client Courier Pace Courier			Therm ID#: _____	
					MTJL LAB USE ONLY			Cooler 1 Temp Upon Receipt: _____ oC	
Relinquished by/Company: (Signature) <i>[Signature] SCS</i>		Date/Time: 5/5/23 1500			Received by/Company: (Signature) <i>[Signature]</i>			Cooler 1 Therm Corr. Factor: _____ oC	
Relinquished by/Company: (Signature) <i>[Signature]</i>		Date/Time: 5/6/23 0905			Received by/Company: (Signature) <i>[Signature]</i>			Cooler 1 Corrected Temp: _____ oC	
Relinquished by/Company: (Signature) <i>[Signature]</i>		Date/Time: _____			Received by/Company: (Signature) _____			Comments:	
02/26/2024 - Classification: Internal - ECRM 3238759								Trip Blank Received: Y N NA	
								HCL MeOH TSP Other	
								Non Conformance(s): Page 11 of 13	
								YES / NO of: _____	

Sample Condition Upon Receipt Form (SCUR)

Project #:

Client Name: SJS Engineers

WO#: **40261817**

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 - 9 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.5 /Corr: 2.5

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: 5/6/23 Initials: SG
 Labeled By Initials: ARG

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time: _____
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>001 no time</u>
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>5/6/23 SG</u>
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 logir



Appendix D

Historical Monitoring Results

Single Location

Name: WPL - Columbia

Location ID: M-4R																					
Number of Sampling Dates: 20																					
Parameter Name	Units	12/22/2015	4/4/2016	7/7/2016	10/12/2016	1/25/2017	4/11/2017	6/5/2017	8/9/2017	10/24/2017	4/23/2018	8/7/2018	10/24/2018	4/1/2019	10/7/2019	5/27/2020	10/7/2020	4/13/2021	10/11/2021	4/11/2022	10/25/2022
Boron	ug/L	1000	461	453	793	866	512	464	973	1910	905	704	1140	788	1120	644	1360	730	2290	1160	1590
Calcium	ug/L	105000	79400	68900	94300	103000	84800	90300	91600	67100	86400	99700	84100	106000	82400	106000	98000	110000	90400	75900	110000
Chloride	mg/L	45.9	23.8	37.2	33.6	36.5	44	37.1	40.8	49.3	51.6	48.2	26.3	31.4	33.9	50	53.3	49.6	67.8	65.5	58.6
Fluoride	mg/L	0.22	<0.2	<0.2	0.16	0.38	0.18	0.2	0.23	<0.5	0.16	0.13	<0.1	0.17	0.17	0.13	0.27	0.23	0.26	0.29	0.23
Field pH	Std. Units	7.41	7.55	7.26	7.67	7.27	7.55	7.07	7.13	7.52	7.44	7.18	7.13	7.24	7.44	7.29	7.47	7.18	7.41	7.05	7.23
Sulfate	mg/L	112	102	88.5	82.8	144	127	131	139	187	162	151	89.2	149	128	162	203	193	236	184	282
Total Dissolved Solids	mg/L	544	440	410	468	570	484	494	544	474	516	646	424	524	432	594	604	556	628	476	670
Antimony	ug/L	0.13	0.14	0.13	<0.073	0.24	0.14	0.26	0.15	--	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	0.23	0.2	0.28
Arsenic	ug/L	0.17	0.2	0.18	0.25	0.47	<0.099	0.33	<0.28	--	0.36	<0.28	<0.28	<0.28	0.37	0.39	0.44	<0.28	<0.28	<0.28	0.4
Barium	ug/L	25.4	16.3	17.6	27.5	24	22.5	22.3	23.8	--	16.5	23.9	23.7	24.1	21	24.2	25.3	25.1	25.8	21.2	34.3
Beryllium	ug/L	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	0.3	<0.18	<0.18	<0.18	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Cadmium	ug/L	<0.089	<0.089	0.21	<0.089	0.1	<0.089	0.084	<0.081	--	<0.081	--	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15	<0.15
Chromium	ug/L	0.68	1.6	<0.39	0.49	0.4	0.7	<1	<1	--	<1	<1	1.3	<1	1.4	1.2	<1	<1	<1	<1	<1
Cobalt	ug/L	0.33	0.11	0.16	0.11	0.31	0.32	0.27	0.21	--	0.16	0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	<0.12	0.14
Lead	ug/L	0.067	<0.04	0.73	<0.04	0.094	<0.04	<0.2	<0.2	--	<0.2	--	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Lithium	ug/L	4.3	1.7	1.5	2.6	6.1	3.2	1.2	3.7	--	4.8	1.9	1.1	1.8	1.8	1.4	2.2	1.8	2.5	2.2	1.7
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	--	<0.084	--	<0.066	<0.066	<0.066	<0.066
Molybdenum	ug/L	14.6	9.9	13.2	11.6	17.6	14.5	11.9	15.8	--	19.1	14.7	15.4	29.4	27.6	25.6	27.6	41.1	60.7	42.5	34.5
Selenium	ug/L	3	6.4	15.3	7.7	10.5	13.3	9.7	15	--	8.6	5.5	4.1	12.6	1.8	11.7	1.6	3.7	2.3	3	5.8
Thallium	ug/L	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	0.18	<0.14	--	0.21	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14
Total Radium	pCi/L	0.771	0.247	1.74	0.549	1.7	1.21	0.936	0.689	--	0.741	0.48	0.33	0.76	0.244	0.123	0.485	0.139	0.498	0.427	0.181
Radium-226	pCi/L	0.764	0.16	0.635	0.467	0.984	0.933	0.168	0.439	--	0.217	0.239	0.139	0.211	0.103	0.119	0	-0.073	-0.174	0.0901	-0.246
Radium-228	pCi/L	0.007	0.0865	1.1	0.0824	0.72	0.274	0.768	0.25	--	0.524	0.241	0.191	0.549	0.141	0.0036	0.485	0.139	0.498	0.337	0.181
Field Specific Conductance	umhos/cm	954	535	662	1332	819	1212	660.4	751	612	790	881	819	888	705	869	948	845	955	754	988
Oxygen, Dissolved	mg/L	0.9	3.63	0.1	0.68	0.11	0.92	1.71	0.1	0.6	1.16	0.28	1.12	1.21	2.65	4	0.11	0.27	--	0.63	0.38
Field Oxidation Potential	mV	106	129.6	52.4	20.9	-0.5	46	82.2	-53.6	170	40.1	118.6	137.3	190.4	177.4	203.6	217.8	128.7	150.5	208.8	103.1
Groundwater Elevation	feet	801.22	811.83	801.07	801.52	789.64	787.95	787.83	788.54	788	790.43	787.63	788.47	789.44	790.65	787.73	787.74	786.34	786.33	788.26	--
Temperature	deg C	15	11.7	13.9	16.5	14.9	11.7	12.1	15	15.8	10.6	13.9	16.4	11.2	15	11	14.3	10.3	15.6	10.3	13.6
Turbidity	NTU	--	0	0.05	0.24	0.43	0.23	0.39	0.47	2.71	0.42	0.08	3.54	1.56	1.6	0.16	0	0	0	0	0
pH at 25 Degrees C	Std. Units	7.3	7.6	7.3	7.1	7.2	7.5	7.4	7.6	7.5	7.4	7.3	7.4	7.4	7.4	7.7	7.5	7.5	7.8	7.6	7.4

Single Location

Name: WPL - Columbia

Location ID: MW-84A		Number of Sampling Dates: 24																							
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	2/3/2020	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023
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	15.7	10	9.7	14.3	11.1	10.5	12.2	10.3
Calcium	mg/L	74000	72200	67600	--	74000	76000	70800	73200	76100	74900	77500	76600	76000	74000	80100	73500	72700	77600	69200	69100	75300	75100	78400	68600
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	3.7	3.7	4.3	4.4	3.5	5.2	3.4	3
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	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
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	7.51	7.34	7.49	7.34	7.42	7.34	7.31	7.01
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	<2.2	1.5	1.3	1.4	1.3	1.4	1.1	1.3
Total Dissolved Solids	mg/L	316	322	316	--	324	316	328	342	344	342	314	328	372	330	318	310	316	340	320	328	326	334	302	326
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	--	<0.15	<0.15	0.55	<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	0.38	0.34	0.49	0.91	0.41	0.31	0.72	<0.28
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	14	13.9	12.6	13.4	12.9	13.5	13.7	12.6
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	--	<0.25	<0.25	0.47	<0.25	<0.25	<0.25	<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	--	<0.15	<0.15	0.53	<0.15	<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	1.6	1.7	1.6	2.6	1.9	2.2	2.2	1.7
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	<0.12	<0.12	<0.12	0.52	0.12	<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	--	<0.24	<0.24	0.55	<0.24	<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	0.58	0.4	0.39	1	0.28	0.36	0.41	0.71
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	--	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066
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	<0.44	<0.44	<0.44	0.62	<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	<0.32	<0.32	<0.32	0.48	<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	<0.14	<0.14	<0.14	0.66	0.19	<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	0.1	0.395	0.39	0.285	0.243	0.611	0.673	0.326
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	0.1	0.368	0	-0.289	0	0.254	0.267	0
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	-0.153	0.0273	0.39	0.285	0.243	0.357	0.406	0.326
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	618.4	613.7	610.1	610.9	598.9	600.2	585.2	556.6
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	8.43	9.81	9.39	9.8	9.25	9.33	8.31	9.37
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	121.5	135	153.2	95.6	89.7	200.6	39.9	103.4
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	786.5	787.02	786.1	785.84	784.96	785.02	784.57	786.97
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	10.3	10.6	11.9	10.2	12.5	9.9	11.7	10.7
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	1.23	2.15	0	2.45	3.41	0	0	0.72
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	7.4	7.6	7.6	7.6	7.8	7.6	7.4	7.6

Single Location

Name: WPL - Columbia

Location ID: MW-301																								
Number of Sampling Dates: 23																								
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	5/29/2020	10/8/2020	4/14/2021	10/14/2021	4/13/2022	10/27/2022	4/27/2023
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	21.3	28.8	22.2	31.4	28.7	37.5	20.1
Calcium	ug/L	126000	115000	108000	118000	129000	124000	120000	111000	108000	87200	112000	105000	101000	126000	114000	113000	112000	93000	117000	67800	97300	62800	120000
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	2	3.4	1.5	2.7	1.9	2.3	1.5
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	--	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095	<0.095
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	6.73	6.95	6.66	7.01	6.6	6.8	6.65
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	11.5	25.1	8.5	17.4	12.7	11.6	12.3
Total Dissolved Solids	mg/L	478	486	464	490	444	514	502	458	462	362	464	502	424	462	418	462	452	412	472	334	422	282	526
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	--	<0.15	0.33	<0.15	<0.15	0.31	<0.15	<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	0.33	0.62	<0.28	0.35	0.47	0.3	<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	9.8	9.4	8.9	7.7	7.8	7.5	9.8
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	--	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<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	--	<0.15	0.19	<0.15	<0.15	0.3	<0.15	<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	<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	<0.12	0.29	<0.12	0.34	0.32	0.52	<0.12
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	--	<0.24	0.25	<0.24	<0.24	3.1	<0.24	<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	0.47	0.46	0.58	0.46	0.56	0.37	0.62
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	--	<0.084	<0.066	<0.066	<0.093	<0.066	<0.066	<0.066
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	<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	<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	0.48	<0.14	<0.14	<0.14	<0.14	--	<0.14	0.3	<0.14	0.48	<0.14	<0.14	<0.14	0.3	<0.14	0.17	0.32	<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	0.193	0.38	1.16	0.172	0.179	0.00292	0.417
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	0	0.0511	0.418	0.172	0	-0.169	0
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	0.193	0.329	0.739	-0.0327	0.179	0.00292	0.417
Field Specific Conductance	umhos/cm	897	573	796	1464	859	1018	1354	698.4	691.7	561	774	799	767	883	801	868	797	760	857	597.2	747	507.5	857
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	2	1.22	3.9	0.25	2.47	0.1	6.5
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	118.7	183.9	102.9	57.8	207.5	80.9	95.3
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	787.77	786.53	786.5	785.28	785.44	784.91	787.57
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	8.1	11	7.4	11.1	7.1	10.8	8
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	0	0	2.41	3.21	0	0	0
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	7	7.2	6.9	7.3	7	7.1	6.9

Single Location

Name: WPL - Columbia

Location ID: MW-303																													
Number of Sampling Dates: 28																													
Parameter Name	Units	12/21/2015	4/4/2016	7/7/2016	7/28/2016	10/12/2016	1/26/2017	4/10/2017	6/6/2017	8/8/2017	10/23/2017	4/24/2018	8/8/2018	9/21/2018	10/24/2018	4/1/2019	6/19/2019	10/7/2019	5/27/2020	10/7/2020	2/25/2021	4/12/2021	7/20/2021	10/12/2021	2/24/2022	4/12/2022	7/27/2022	10/28/2022	4/24/2023
Boron	ug/L	3000	2130	1680	--	1770	1790	1990	1970	2080	1870	2330	1410	--	2360	2770	--	2560	2700	2520	--	2440	--	2690	--	2890	--	2730	2720
Calcium	ug/L	9830	36000	14200	--	44500	7330	33700	35500	20700	8850	4610	25600	--	28200	9290	--	22300	27400	19700	--	10400	--	5530	--	4950	--	2360	43600
Chloride	mg/L	29.6	8	45.9	--	<0.5	14.2	16.7	8.1	11.7	8.3	<10	<10	--	2.6	3.7	--	2.7	2.3	2	--	2.5	--	12.4	--	10.6	--	<8.6	3.5
Fluoride	mg/L	<2	0.28	<4	--	<0.1	<1	<2	0.3	<1	<0.5	<2	<2	--	0.16	0.54	--	0.19	<0.48	0.19	--	<0.95	--	<1.9	--	<1.9	--	<0.095	<0.48
Field pH	Std. Units	9.93	9.43	9.48	9.13	9.75	9.94	9.85	9.1	9	9.2	10.01	9.3	9.15	8.89	9.92	8.98	9.33	8.68	9.21	9.16	9.24	9.07	9.31	9.53	9.46	9.61	9.9	8.44
Sulfate	mg/L	597	311	352	--	438	453	506	445	356	467	527	449	--	327	390	--	299	326	312	--	345	--	369	--	634	--	442	229
Total Dissolved Solids	mg/L	1230	562	724	--	694	794	778	686	678	806	948	792	--	516	726	--	574	570	532	--	610	--	660	--	1090	--	930	420
Antimony	ug/L	0.92	0.23	0.32	--	0.076	0.23	0.14	<0.15	<0.15	--	0.28	0.15	--	<0.15	0.29	--	0.31	0.22	<0.15	--	0.93	--	0.55	--	0.31	--	0.7	<0.15
Arsenic	ug/L	49.2	12.6	27.9	--	13.4	27	12.1	9.1	12	--	39.1	8.7	6	7.8	33.2	5.3	10.2	5.9	9.5	7.7	10.4	13.9	18.6	28.8	27.1	29.4	52	4
Barium	ug/L	19.1	13.6	7.5	--	19.6	6.1	16	14.5	10.5	--	5.1	14.3	--	16.6	6.5	--	11.4	13.8	10	--	7.8	--	5.1	--	5.5	--	4	31
Beryllium	ug/L	<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	0.36	<0.25	--	<0.25	--	<0.25	--	<0.25	--	<0.25	<0.25
Cadmium	ug/L	<0.089	<0.089	<0.089	--	<0.089	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	--	<0.15	<0.15	--	<0.15	0.3	<0.15	--	0.67	--	0.27	--	<0.15	--	0.16	<0.15
Chromium	ug/L	50.6	60	66.3	--	79.9	73.4	71	65.1	65.3	--	97.1	56.8	--	49.1	71.2	--	62	42.8	46.4	--	44.1	--	50.2	--	44.1	--	46.3	45
Cobalt	ug/L	1.8	0.46	0.6	--	0.47	0.54	0.48	0.42	0.37	--	0.8	0.58	--	0.4	0.54	--	0.51	0.49	0.23	--	0.7	--	0.74	--	0.59	--	0.94	0.26
Lead	ug/L	1.4	0.11	0.15	--	<0.04	<0.04	<0.04	<0.2	<0.2	--	<0.2	--	--	<0.24	<0.24	--	<0.24	0.32	<0.24	--	0.76	--	0.32	--	<0.24	--	0.28	<0.24
Lithium	ug/L	1.6	1	0.77	--	1.3	0.59	1.2	1.1	0.86	--	0.61	1.1	--	1.3	0.74	--	1	1.2	0.69	--	0.93	--	0.62	--	0.31	--	0.34	4.4
Mercury	ug/L	<0.1	<0.1	<0.13	--	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	--	<0.084	<0.084	--	--	<0.084	--	--	<0.066	--	<0.066	--	<0.066	--	<0.066	<0.066
Molybdenum	ug/L	195	62.6	69.5	--	91.9	91.2	103	87	81.6	--	138	94.8	84.7	85.5	106	64.1	87	67.1	67.1	--	67.1	--	78	--	174	--	89.4	41.3
Selenium	ug/L	126	24	26.6	--	25	32.8	25.9	18.3	19.7	--	52.9	25.1	15.8	15.1	36.5	--	16.4	18.7	17.2	--	22.4	--	28.1	--	87.2	--	74.4	9.7
Thallium	ug/L	<0.14	<0.14	0.15	--	<0.14	<0.14	<0.14	<0.14	<0.14	--	<0.14	<0.14	--	<0.14	<0.14	--	<0.14	0.28	<0.14	--	0.89	--	0.3	--	<0.14	--	0.21	<0.14
Total Radium	pCi/L	1.65	0.56	--	0.591	0.0851	1.24	0.016	2.41	0.795	--	0.5	0.237	--	0.744	0.677	--	0.422	0.382	0.722	--	0.846	--	0.539	--	0.164	--	0.357	0.292
Radium-226	pCi/L	1.25	0.375	--	0.0662	-0.377	-0.776	-0.162	0.145	0.459	--	0.0558	0	--	0.328	0.39	--	0.0995	0.168	0.0515	--	0.263	--	-0.355	--	-0.211	--	-0.175	-0.193
Radium-228	pCi/L	0.404	0.185	--	0.525	0.0851	1.24	0.016	2.26	0.336	--	0.444	0.237	--	0.416	0.287	--	0.322	0.214	0.67	--	0.583	--	0.539	--	0.164	--	0.357	0.292
Field Specific Conductance	umhos/cm	2130	641	1076	1154	1946	1134	1826	931	936	1093	1447	1095	856	823	1176	712	865	828	801	845	927	1058	1078	1439	1670	894	1396	575
Oxygen, Dissolved	mg/L	1.7	4.95	2.91	3.86	7.24	6.92	6.88	6.9	5.53	5.4	4.53	7.59	8.2	8.93	5.59	7.21	7.93	9.15	7.62	7.45	7.02	6.49	--	3.53	1.63	8.62	6.19	9.48
Field Oxidation Potential	mV	43	30.6	-2.3	22.1	26.2	-55.3	3.9	57.5	-22	285	-22.3	126.1	20.4	70.1	19.9	206.4	65.9	116.1	183	151	51.4	67.5	110.1	205	210.5	80.6	22.7	45.9
Groundwater Elevation	feet	784.11	783.58	784.6	784.35	786.18	785.28	786	786.49	785.42	783.92	783.27	785.2	786.5	787.51	786.52	786.81	787.02	785.56	785.16	784.27	784.07	783.64	783.09	782.34	783.4	783.07	774.74	784.38
Temperature	deg C	11.2	10.7	12.2	11.9	12.1	11.6	10.7	11.3	12.5	12.3	10.9	12.7	13.28	12.5	10.8	13	12.4	11.6	12.6	11	11.4	13.1	12.1	9.6	10.2	12.6	11	10.5
Turbidity	NTU	--	0	4.27	3.38	0.14	1.52	0.74	0.41	2.09	5.67	1.42	3.51	44.4	4.71	2.4	2.24	3.31	0	0	3.04	1.82	0.57	0	2.53	0	0	2.28	0
pH at 25 Degrees C	Std. Units	9.5	8.8	9	--	8.8	9.2	9.1	8.9	9.1	9.3	9.4	8.9	--	8.6	9.1	--	8.8	8.2	8.8	--	9	--	9.2	--	9.5	--	9.9	8.3

Single Location

Name: WPL - Columbia

Location ID: MW-304																							
Number of Sampling Dates: 22																							
Parameter Name	Units	12/21/2015	4/4/2016	7/7/2016	10/13/2016	1/26/2017	4/10/2017	6/5/2017	8/8/2017	10/23/2017	4/24/2018	8/8/2018	10/24/2018	4/2/2019	10/7/2019	5/27/2020	10/7/2020	4/12/2021	10/11/2021	4/11/2022	10/25/2022	1/20/2023	4/25/2023
Boron	ug/L	609	420	445	659	614	496	486	570	732	430	632	892	413	613	469	784	568	1090	664	--	346	--
Calcium	ug/L	78800	77600	72000	77000	65700	79100	75200	79700	78300	77900	84900	72400	88300	82900	84000	75100	78900	86600	84900	--	92700	--
Chloride	mg/L	34.2	29.3	34.2	31.4	42.8	23.5	42.3	37.5	39.5	30.1	39.1	36.9	30.8	29.4	25.2	43.9	44.7	56.6	52.9	--	12.7	--
Fluoride	mg/L	0.27	<0.2	0.23	<0.5	0.26	0.1	0.19	0.12	0.13	<0.1	<1	0.14	<0.1	<0.1	<0.095	0.17	0.16	0.15	<0.095	--	0.32	--
Field pH	Std. Units	7.17	7.45	7.25	7.71	7.59	7.64	7.2	7.13	7.78	7.16	7.21	7.11	7.28	7.35	7.09	7.18	7.3	7.07	7.22	--	7	--
Sulfate	mg/L	71.9	71.7	66.2	46.8	56.9	63.6	97.1	68.5	57.2	43.5	76	34.1	33.1	40	42.4	55.9	85.5	129	117	--	31.3	--
Total Dissolved Solids	mg/L	420	434	402	406	388	422	500	454	390	406	530	384	394	428	412	442	434	522	492	--	398	--
Antimony	ug/L	0.72	<0.073	<0.073	<0.073	<0.073	<0.073	<0.15	<0.15	--	<0.15	<0.15	<0.15	<0.15	0.29	0.25	<0.15	0.86	0.44	<0.15	--	<0.15	--
Arsenic	ug/L	2.3	1.1	1.2	1.8	0.99	0.98	1.1	1	--	0.64	0.76	1.6	0.63	3.2	1.3	2.8	1.8	1.6	0.87	--	1.4	--
Barium	ug/L	42.9	34.8	28.2	39.5	28.2	30.9	30.9	33.3	--	26.2	35.2	33.6	26.7	34.8	30.8	37.4	32.5	46.4	35.4	--	30.7	--
Beryllium	ug/L	0.34	<0.13	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	<0.18	<0.18	<0.18	<0.25	0.26	<0.25	0.86	<0.25	<0.25	--	<0.25	--
Cadmium	ug/L	0.64	<0.089	0.12	<0.089	<0.089	<0.089	<0.081	<0.081	--	<0.081	--	<0.15	<0.15	<0.15	0.19	<0.15	0.79	0.36	<0.15	--	<0.15	--
Chromium	ug/L	2.1	1.5	<0.39	<0.39	<0.39	0.65	1.9	<1	--	<1	<1	<1	<1	<1	<1	<1	1.1	<1	<1	--	<1	--
Cobalt	ug/L	1.9	1.2	0.62	0.83	0.73	0.62	0.76	0.8	--	0.36	1.1	0.88	0.67	0.92	0.69	0.65	0.84	1.2	0.79	--	0.37	--
Lead	ug/L	1.1	0.47	0.43	<0.04	<0.04	0.16	<0.2	<0.2	--	<0.2	--	<0.24	<0.24	<0.24	0.29	<0.24	0.89	0.52	<0.24	--	0.24	--
Lithium	ug/L	0.93	0.51	0.17	0.14	<0.11	0.16	<0.14	<0.14	--	<0.14	<0.14	<0.19	<0.19	<0.22	0.3	<0.22	1.1	0.45	<0.22	--	0.29	--
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	--	<0.084	--	<0.066	<0.066	<0.066	--	<0.066	--
Molybdenum	ug/L	15.6	9.2	21.9	17.1	14.4	10.1	15.6	11.8	--	3.2	12.3	10.2	3	4.8	3.9	12	13	13.5	9.8	--	2.4	--
Selenium	ug/L	1	<0.21	<0.21	<0.21	<0.21	<0.21	<0.32	<0.32	--	<0.32	<0.32	<0.32	<0.32	<0.32	0.33	<0.32	1.1	0.35	<0.32	--	<0.32	--
Thallium	ug/L	0.68	0.15	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	0.15	<0.14	<0.14	<0.14	<0.14	0.33	<0.14	1	0.46	<0.14	--	0.23	--
Total Radium	pCi/L	1.03	0.474	2.24	0.885	1.25	0.74	1.88	0.777	--	0.94	0.474	0.678	0.911	0.443	0.302	0.435	1.22	0.371	0.256	--	0.945	--
Radium-226	pCi/L	0.759	0.18	-0.084	0	0.426	0.413	0.437	0.266	--	0.136	-0.061	0.244	0.703	-0.154	0.0533	0	0.219	-0.184	0	--	0.397	--
Radium-228	pCi/L	0.267	0.294	2.24	0.885	0.819	0.327	1.44	0.511	--	0.804	0.474	0.434	0.208	0.443	0.249	0.435	1	0.371	0.256	--	0.548	--
Field Specific Conductance	umhos/cm	770	535	680	1211	624.9	1.105	660	704	628	686.4	785	707	747	729	711	776	751	847	830	--	664.8	--
Oxygen, Dissolved	mg/L	0.8	0.45	0.33	0.59	1.96	0.58	1.37	0.69	0.3	1.45	0.29	1.08	0.3	0.28	0.61	0.31	0.36	--	0.21	--	0.14	--
Field Oxidation Potential	mV	96	-65.2	21.2	-68.7	-58.7	-22.2	-15.3	-43.7	94	-18	24.8	-43	14.2	-97	54.2	-99.7	27.3	63.9	197.6	--	115.3	--
Groundwater Elevation	feet	786.13	792.16	787.36	788.18	789.34	788.22	788.58	789.52	788.97	789.69	788.25	789.05	789.72	790.41	789.3	788.52	787.99	787.78	788.2	781.79	788.08	784.03
Temperature	deg C	13.7	9.7	16.4	16.3	12.4	10.4	13.4	17.9	17.4	10.6	20.1	16.7	8.3	18.5	16.2	18.3	10.6	18.3	10.6	--	10	--
Turbidity	NTU	--	0	2.57	2.19	1.2	5.43	12.84	1.54	6.2	1.22	2.35	5.89	5.27	2.61	4.35	1.1	3.19	0.38	0.96	--	3.69	--
pH at 25 Degrees C	Std. Units	7.3	7.4	7.3	7.3	7.7	7.6	7.4	7.4	7.5	7.4	7.3	7.5	7.3	7.3	7.6	7.4	7.4	7.7	7.4	--	7.5	--

Single Location

Name: WPL - Columbia

Location ID: MW-305


Number of Sampling Dates: 24

Parameter Name	Units	12/21/2015	4/4/2016	7/8/2016	10/13/2016	1/25/2017	6/5/2017	8/7/2017	10/24/2017	4/23/2018	8/7/2018	10/24/2018	4/1/2019	10/7/2019	5/27/2020	10/7/2020	12/11/2020	2/25/2021	4/12/2021	7/20/2021	10/11/2021	2/24/2022	4/11/2022	7/27/2022	10/25/2022
Boron	ug/L	1020	525	1110	1270	733	1240	2470	2200	1200	1360	1600	692	1430	1040	1650	--	--	668	--	1650	--	957	--	1610
Calcium	ug/L	46400	37500	47300	56700	96500	75500	80200	94100	64800	91200	60200	74700	93000	103000	112000	--	--	235000	--	149000	--	97000	--	71600
Chloride	mg/L	37.1	25.3	32.4	29.4	46.1	37.1	46.9	50.2	50.6	45.7	26.2	35.8	29.3	51.3	44.9	--	--	68.2	--	63	--	58.5	--	55.5
Fluoride	mg/L	0.76	0.7	0.44	0.65	0.53	0.41	0.46	0.64	0.37	0.18	0.36	0.33	0.36	0.3	0.47	--	--	<0.095	--	0.31	--	0.21	--	0.32
Field pH	Std. Units	7.93	8.68	8.04	8.25	8.17	7.72	7.82	8.48	9.12	8.01	7.7	8.04	7.75	8.48	8.64	8.43	8.68	8.67	8.71	8.95	9.36	8.52	9.12	9.31
Sulfate	mg/L	105	78.7	99.2	108	274	185	243	252	191	276	123	200	480	305	391	--	--	649	--	446	--	274	--	261
Total Dissolved Solids	mg/L	258	228	282	298	530	408	490	490	386	614	312	418	496	556	572	--	--	1020	--	730	--	484	--	474
Antimony	ug/L	0.81	0.32	0.43	0.51	0.71	0.55	0.68	--	0.26	0.42	0.58	0.16	0.46	0.3	0.42	--	--	0.31	--	0.59	--	0.33	--	0.47
Arsenic	ug/L	0.56	0.34	0.26	0.27	0.78	0.37	0.43	--	0.48	0.42	0.4	<0.28	0.49	0.75	0.95	--	--	0.95	--	1.4	--	0.59	--	1.3
Barium	ug/L	9.8	3.9	6.4	9.4	12.7	8.2	12.9	--	6	13.5	11	8.4	15	14.2	20.2	--	--	30	--	29.3	--	16.9	--	10.8
Beryllium	ug/L	0.19	<0.13	<0.13	<0.13	<0.13	<0.18	<0.18	--	<0.18	<0.18	<0.18	<0.18	<0.25	<0.25	<0.25	--	--	<0.25	--	<0.25	--	<0.25	--	<0.25
Cadmium	ug/L	0.31	<0.089	<0.089	<0.089	0.34	0.18	0.13	--	<0.081	--	<0.15	<0.15	<0.15	<0.15	<0.15	--	--	<0.15	--	<0.15	--	<0.15	--	<0.15
Chromium	ug/L	1.4	1.6	1.1	0.83	1.5	1.5	<1	--	<1	<1	1.1	1.3	1.1	<1	<1	--	--	<1	--	1.1	--	1.3	--	<1
Cobalt	ug/L	0.37	0.069	0.07	<0.036	0.44	0.26	0.2	--	<0.085	<0.085	0.13	<0.12	<0.12	<0.12	<0.12	--	--	<0.12	--	<0.12	--	<0.12	--	<0.12
Lead	ug/L	0.38	0.056	0.27	0.2	0.38	<0.2	<0.2	--	<0.2	--	<0.24	<0.24	<0.24	<0.24	<0.24	--	--	<0.24	--	<0.24	--	<0.24	--	<0.24
Lithium	ug/L	0.5	0.24	<0.11	0.34	0.21	0.17	0.15	--	<0.14	<0.14	0.24	<0.19	<0.22	<0.22	<0.22	--	--	<0.22	--	<0.22	--	<0.22	--	<0.22
Mercury	ug/L	<0.1	<0.1	<0.13	<0.13	<0.13	<0.13	<0.13	--	<0.13	--	<0.084	<0.084	--	<0.084	--	--	--	<0.066	--	<0.066	--	<0.066	--	<0.066
Molybdenum	ug/L	33.2	37.3	34.8	40.2	69.1	41.3	68.7	--	54.4	55.7	45.6	47.7	56.2	60.5	102	99	107	106	77	124	35.8	45.9	35.1	44.9
Selenium	ug/L	3.7	3	4.8	3.7	6.8	3.9	5.2	--	6.9	4.8	5.4	3.2	7.7	4.2	7.6	--	--	8	--	4.5	--	21.5	--	9.1
Thallium	ug/L	0.44	<0.14	<0.14	<0.14	0.45	0.15	0.2	--	0.16	<0.14	<0.14	<0.14	<0.14	<0.14	<0.14	--	--	<0.14	--	<0.14	--	<0.14	--	<0.14
Total Radium	pCi/L	0.253	0.0515	1.43	0.99	0.838	0.839	0.103	--	0.353	0.717	0.924	0.799	0.727	0.71	0.577	--	--	0.418	--	0.483	--	0.761	--	0.309
Radium-226	pCi/L	0.253	-0.037	0.112	0.594	0	0.128	-0.121	--	0.189	0.219	0.578	0.39	0.232	0.0976	0.0596	--	--	-0.199	--	0.0522	--	-0.114	--	0
Radium-228	pCi/L	-0.223	0.0515	1.32	0.396	0.838	0.711	0.103	--	0.164	0.498	0.346	0.409	0.495	0.612	0.517	--	--	0.418	--	0.431	--	0.761	--	0.309
Field Specific Conductance	umhos/cm	492	285.6	489.1	861	727	558.4	689	630	579.5	813	565	683	751	814	857	834	955	1373	1046	1068	677	755	633	704
Oxygen, Dissolved	mg/L	5.5	5.6	1.17	1.38	2.31	3.06	0.55	1.3	0.78	2.04	2.78	5.14	3.53	3.16	1.53	1.75	2.33	2.7	2.38	--	1.28	4.09	5.07	1.49
Field Oxidation Potential	mV	234	67.3	96.1	-31.4	-27.6	73.6	99.5	115	-3.3	129.9	102.6	164.8	165.5	211.2	215.8	112.4	170	51.5	103.3	151.8	203.5	203.7	77.4	104.1
Groundwater Elevation	feet	788.96	812.15	789.26	789.78	789.36	789.79	789.3	788.14	787.67	788.56	790.04	790.07	790.36	787.78	787.96	788.19	788.36	788.11	788.39	787.75	786.49	787.87	787.03	784.97
Temperature	deg C	24.3	10.9	17	26.1	18.2	12.8	21.8	26.7	12.1	19.6	25.7	11.8	23.4	12.1	21.9	20.8	15.9	13.6	18.2	24.2	17.2	14	15.3	18.7
Turbidity	NTU	--	0	0.96	0.59	1.61	0	0.56	2.67	5.98	0.05	3.52	1.34	1.97	0	0	0	0.85	1.14	0	0	0.09	0	0	0
pH at 25 Degrees C	Std. Units	7.9	7.9	7.9	7.3	8	7.9	7.8	8	8.2	8.1	7.8	7.9	7.7	8.4	8.4	--	--	8.3	--	8.7	--	8.4	--	9.1

Single Location

Name: WPL - Columbia

Location ID:	MW-316	
Number of Sampling Dates:	1	
Parameter Name	Units	5/5/2023
Field pH	Std. Units	8.32
Arsenic	ug/L	1.2
Field Specific Conductance	umhos/cm	636.1
Oxygen, Dissolved	mg/L	0.09
Field Oxidation Potential	mV	-167.2
Temperature	deg C	12.8
Turbidity	NTU	0.05



Appendix E

Statistical Evaluations

E1 – October 2022 LCLs

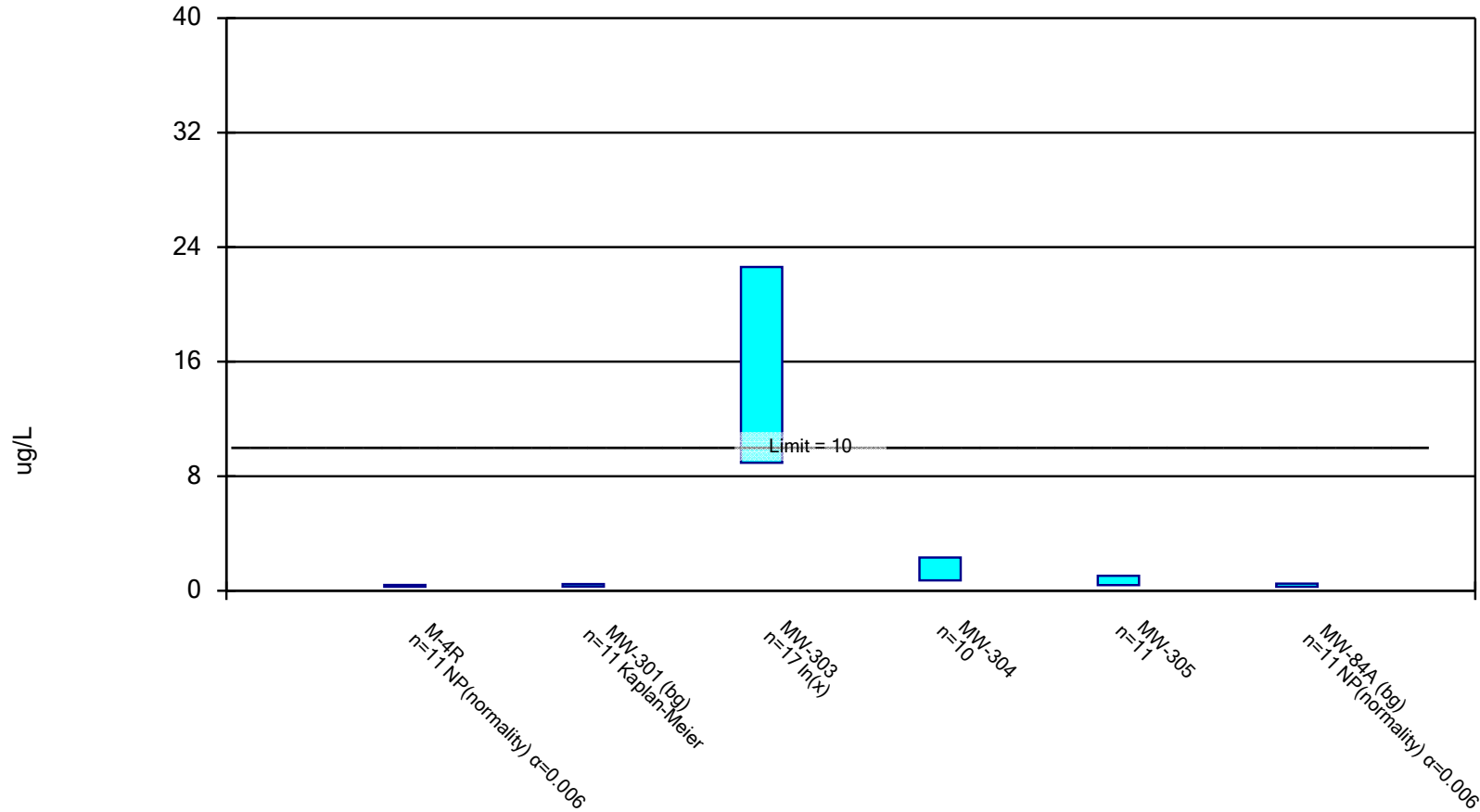
Confidence Interval

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020 Printed 12/19/2022, 12:12 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (ug/L)	M-4R	0.4	0.28	10	No	11	54.55	No	0.006	NP (normality)
Arsenic (ug/L)	MW-301 (bg)	0.4637	0.2926	10	No	11	36.36	No	0.01	Param.
Arsenic (ug/L)	MW-303	22.61	8.937	10	No	17	0	ln(x)	0.01	Param.
Arsenic (ug/L)	MW-304	2.316	0.7238	10	No	10	0	No	0.01	Param.
Arsenic (ug/L)	MW-305	1.045	0.3862	10	No	11	9.091	No	0.01	Param.
Arsenic (ug/L)	MW-84A (bg)	0.49	0.28	10	No	11	27.27	No	0.006	NP (normality)
Molybdenum (ug/L)	M-4R	42.03	19.46	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-301 (bg)	0.44	0.44	100	No	11	100	No	0.006	NP (NDs)
Molybdenum (ug/L)	MW-303	110.3	71.09	100	No	13	0	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-304	13	3.2	100	No	10	0	No	0.011	NP (normality)
Molybdenum (ug/L)	MW-305	82.74	48.15	100	No	16	0	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-84A (bg)	0.44	0.44	100	No	11	90.91	No	0.006	NP (NDs)
Selenium (ug/L)	M-4R	8.736	2.3	50	No	11	0	No	0.01	Param.
Selenium (ug/L)	MW-301 (bg)	0.49	0.32	50	No	11	81.82	No	0.006	NP (NDs)
Selenium (ug/L)	MW-303	45.68	17.37	50	No	12	0	ln(x)	0.01	Param.
Selenium (ug/L)	MW-304	0.35	0.32	50	No	10	70	No	0.011	NP (normality)
Selenium (ug/L)	MW-305	10.05	4.299	50	No	11	0	ln(x)	0.01	Param.
Selenium (ug/L)	MW-84A (bg)	0.32	0.32	50	No	11	90.91	No	0.006	NP (NDs)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based



Constituent: Arsenic Analysis Run 12/19/2022 12:11 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

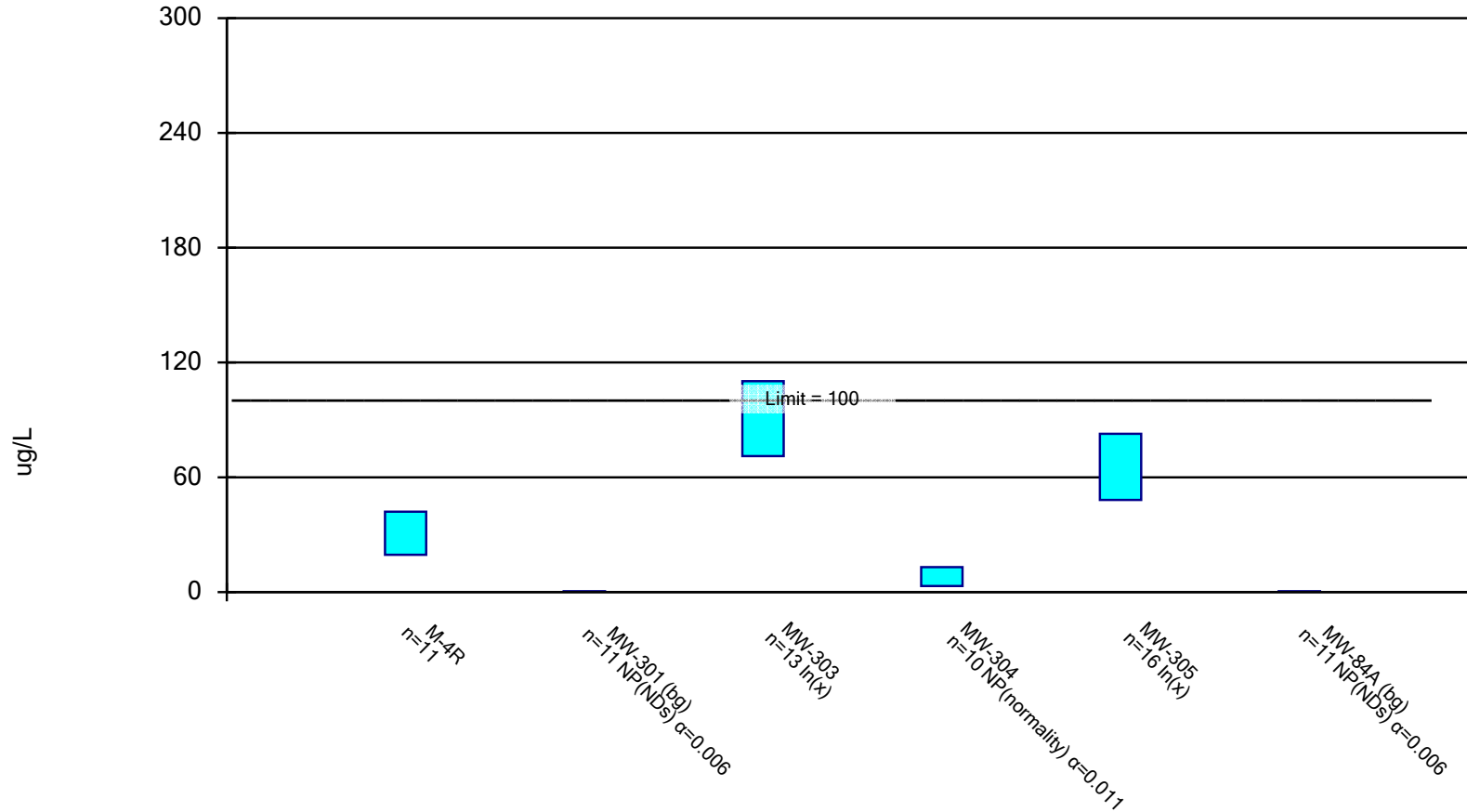
Confidence Interval

Constituent: Arsenic (ug/L) Analysis Run 12/19/2022 12:12 PM View: COL Primary Pond
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/23/2018	0.36 (J)				0.48 (J)	
4/24/2018			39.1	0.64 (J)		
4/25/2018		<0.28 (U)				<0.28 (U)
8/7/2018	<0.28 (U)				0.42 (J)	
8/8/2018		0.45 (J)	8.7	0.76 (J)		<0.28 (U)
9/21/2018			6			
10/24/2018	<0.28 (U)	<0.28 (U)	7.8	1.6	0.4 (J)	0.33 (J)
4/1/2019	<0.28 (U)		33.2		<0.28 (U)	
4/2/2019		0.4 (J)		0.63 (J)		
4/3/2019						<0.28 (U)
6/19/2019			5.3			
10/7/2019	0.37 (J)		10.2	3.2	0.49 (J)	
10/9/2019		0.42 (J)				0.46 (J)
2/3/2020		<0.28 (U)				0.38 (J)
5/27/2020	0.39 (J)		5.9	1.3	0.75 (J)	
5/29/2020		0.33 (J)				0.34 (J)
10/7/2020	0.44 (J)		9.5	2.8	0.95 (J)	
10/8/2020		0.62 (J)				0.49 (J)
2/25/2021			7.7			
4/12/2021			10.4	1.8	0.95 (J)	
4/13/2021	<0.28 (U)					
4/14/2021		<0.28 (U)				0.91 (J)
7/20/2021			13.9			
10/11/2021	<0.28 (U)			1.6	1.4	
10/12/2021			18.6			
10/14/2021		0.35 (J)				0.41 (J)
2/24/2022			28.8			
4/11/2022	<0.28 (U)			0.87 (J)	0.59 (J)	
4/12/2022			27.1			
4/13/2022		0.47 (J)				0.31 (J)
7/27/2022			29.4			
10/25/2022	0.4				1.3	
10/26/2022			52			
Mean	0.3309	0.3782	18.45	1.52	0.7155	0.4064
Std. Dev.	0.06172	0.1077	13.95	0.8924	0.3952	0.1821
Upper Lim.	0.4	0.4637	22.61	2.316	1.045	0.49
Lower Lim.	0.28	0.2926	8.937	0.7238	0.3862	0.28

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based



Constituent: Molybdenum Analysis Run 12/19/2022 12:11 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

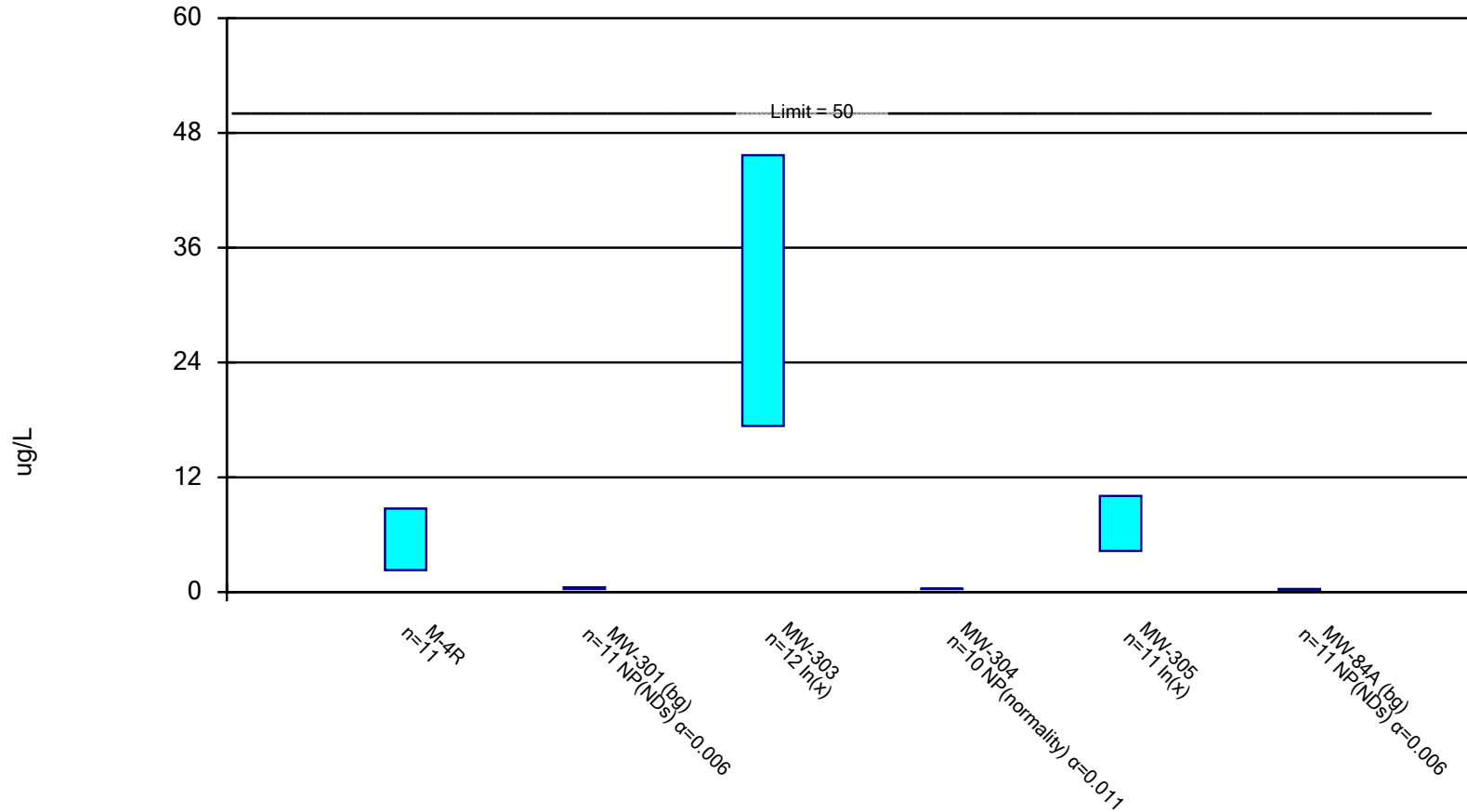
Confidence Interval

Constituent: Molybdenum (ug/L) Analysis Run 12/19/2022 12:12 PM View: COL Primary Pond
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/23/2018	19.1				54.4	
4/24/2018			138	3.2		
4/25/2018		<0.44 (U)				<0.44 (U)
8/7/2018	14.7				55.7	
8/8/2018		<0.44 (U)	94.8	12.3		<0.44 (U)
9/21/2018			84.7			
10/24/2018	15.4	<0.44 (U)	85.5	10.2	45.6	<0.44 (U)
4/1/2019	29.4		106		47.7	
4/2/2019		<0.44 (U)		3		
4/3/2019						<0.44 (U)
6/19/2019			64.1			
10/7/2019	27.6		87	4.8	56.2	
10/9/2019		<0.44 (U)				<0.44 (U)
2/3/2020		<0.44 (U)				<0.44 (U)
5/27/2020	25.6		67.1	3.9	60.5	
5/29/2020		<0.44 (U)				<0.44 (U)
10/7/2020	27.6		67.1	12	102	
10/8/2020		<0.44 (U)				<0.44 (U)
12/11/2020					99	
2/25/2021					107	
4/12/2021			67.1	13	106	
4/13/2021	41.1					
4/14/2021		<0.44 (U)				0.62 (J)
7/20/2021					77	
10/11/2021	60.7			13.5	124	
10/12/2021			78			
10/14/2021		<0.44 (U)				<0.44 (U)
2/24/2022					35.8	
4/11/2022	42.5			9.8	45.9	
4/12/2022			174			
4/13/2022		<0.44 (U)				<0.44 (U)
7/27/2022					35.1	
10/25/2022	34.5				44.9	
10/26/2022			89.4			
Mean	30.75	0.44	92.52	8.57	68.55	0.4564
Std. Dev.	13.54	0	31.63	4.342	29.3	0.05427
Upper Lim.	42.03	0.44	110.3	13	82.74	0.44
Lower Lim.	19.46	0.44	71.09	3.2	48.15	0.44

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based



Constituent: Selenium Analysis Run 12/19/2022 12:11 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

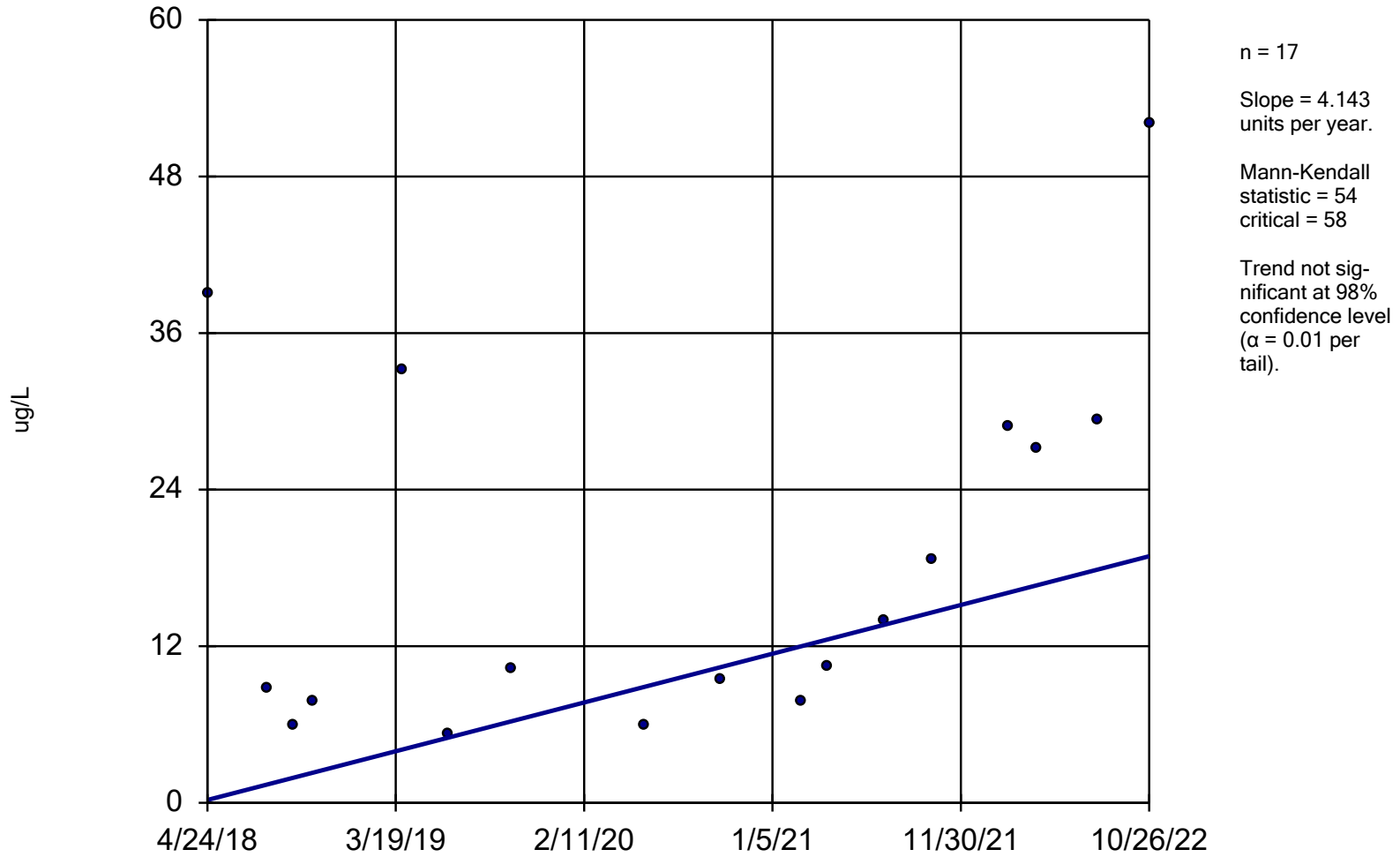
Confidence Interval

Constituent: Selenium (ug/L) Analysis Run 12/19/2022 12:12 PM View: COL Primary Pond
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/23/2018	8.6				6.9	
4/24/2018			52.9	<0.32 (U)		
4/25/2018		<0.32 (U)				<0.32 (U)
8/7/2018	5.5				4.8	
8/8/2018		0.71 (J)	25.1	<0.32 (U)		<0.32 (U)
9/21/2018			15.8			
10/24/2018	4.1	<0.32 (U)	15.1	<0.32 (U)	5.4	<0.32 (U)
4/1/2019	12.6		36.5		3.2	
4/2/2019		0.49 (J)		<0.32 (U)		
4/3/2019						<0.32 (U)
10/7/2019	1.8		16.4	<0.32 (U)	7.7	
10/9/2019		<0.32 (U)				<0.32 (U)
2/3/2020		<0.32 (U)				<0.32 (U)
5/27/2020	11.7		18.7	0.33 (J)	4.2	
5/29/2020		<0.32 (U)				<0.32 (U)
10/7/2020	1.6		17.2	<0.32	7.6	
10/8/2020		<0.32 (U)				<0.32 (U)
4/12/2021			22.4	1.1	8	
4/13/2021	3.7					
4/14/2021		<0.32 (U)				0.48 (J)
10/11/2021	2.3			0.35 (J)	4.5	
10/12/2021			28.1			
10/14/2021		<0.32 (U)				<0.32 (U)
4/11/2022	3			<0.32 (U)	21.5	
4/12/2022			87.2			
4/13/2022		<0.32 (U)				<0.32 (U)
10/25/2022	5.8				9.1	
10/26/2022			74.4			
Mean	5.518	0.3709	34.15	0.402	7.536	0.3345
Std. Dev.	3.862	0.1235	24.47	0.2454	4.993	0.04824
Upper Lim.	8.736	0.49	45.68	0.35	10.05	0.32
Lower Lim.	2.3	0.32	17.37	0.32	4.299	0.32

Arsenic

MW-303



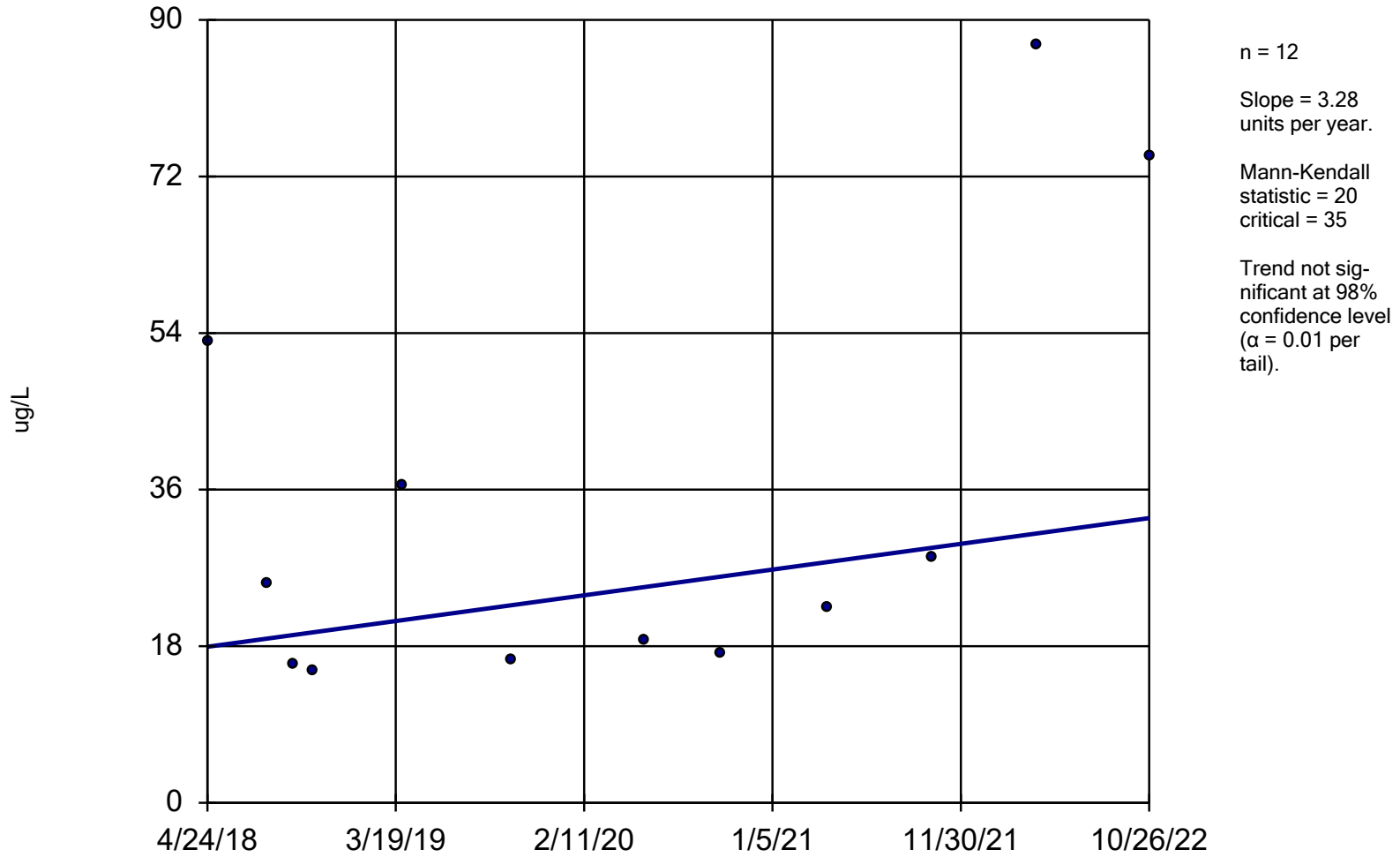
Sen's Slope Estimator

Constituent: Arsenic (ug/L) Analysis Run 2/19/2023 2:39 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-303
4/24/2018	39.1
8/8/2018	8.7
9/21/2018	6
10/24/2018	7.8
4/1/2019	33.2
6/19/2019	5.3
10/7/2019	10.2
5/27/2020	5.9
10/7/2020	9.5
2/25/2021	7.7
4/12/2021	10.4
7/20/2021	13.9
10/12/2021	18.6
2/24/2022	28.8
4/12/2022	27.1
7/27/2022	29.4
10/26/2022	52

Selenium

MW-303



Sen's Slope and 98% Confidence Band Analysis Run 2/19/2023 2:38 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Sen's Slope Estimator

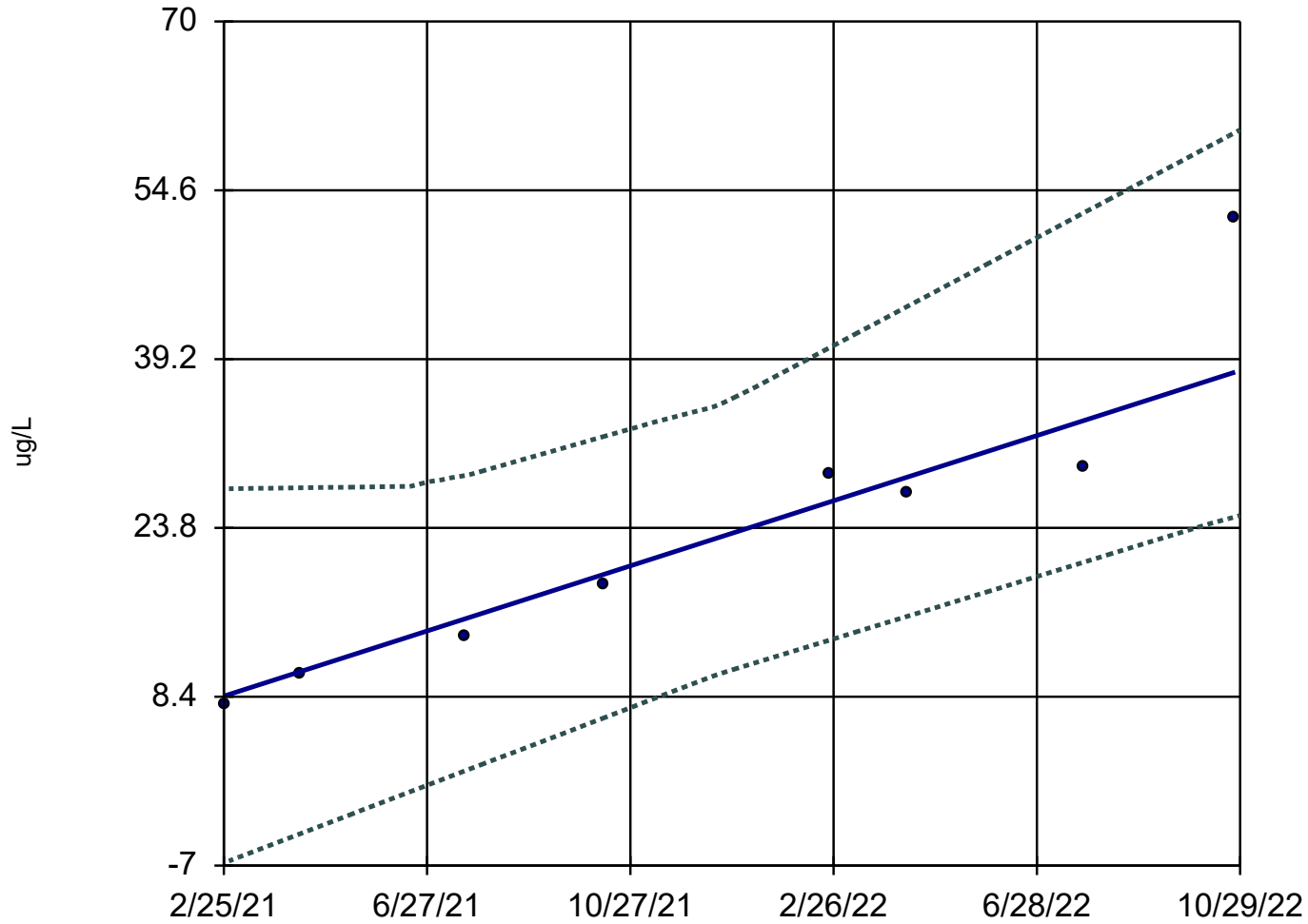
Constituent: Selenium (ug/L) Analysis Run 2/19/2023 2:39 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

MW-303

4/24/2018	52.9
8/8/2018	25.1
9/21/2018	15.8
10/24/2018	15.1
4/1/2019	36.5
10/7/2019	16.4
5/27/2020	18.7
10/7/2020	17.2
4/12/2021	22.4
10/12/2021	28.1
4/12/2022	87.2
10/26/2022	74.4

Arsenic

MW-303



n = 8
Slope = 17.74 units per year.
Mann-Kendall statistic = 26
critical = 20
Increasing trend significant at 98% confidence level ($\alpha = 0.01$ per tail).

Sen's Slope and 98% Confidence Band Analysis Run 1/4/2023 5:15 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

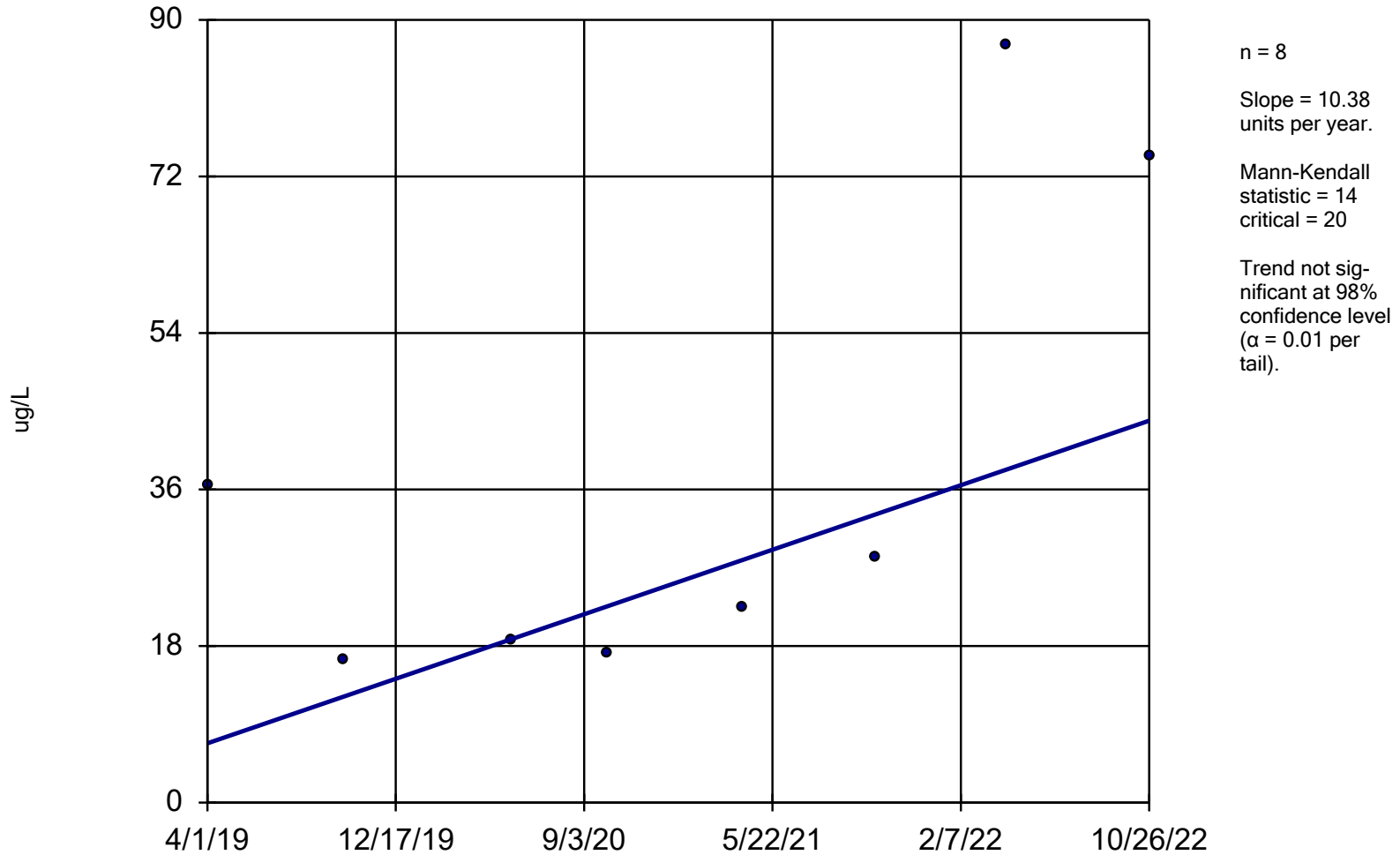
Sen's Slope Estimator

Constituent: Arsenic (ug/L) Analysis Run 1/4/2023 5:16 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-303	LCL	UCL
2/25/2021	7.7	-6.758	27.37
4/12/2021	10.4	-4.092	27.46
7/20/2021	13.9	1.647	28.54
10/12/2021	18.6	6.504	32.16
2/24/2022	28.8	13.56	40.22
4/12/2022	27.1	15.74	44.01
7/27/2022	29.4	20.67	52.54
10/26/2022	52	24.8	59.86

Selenium

MW-303



Sen's Slope and 98% Confidence Band Analysis Run 2/19/2023 3:47 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Sen's Slope Estimator

Constituent: Selenium (ug/L) Analysis Run 2/19/2023 3:54 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-303
4/1/2019	36.5
10/7/2019	16.4
5/27/2020	18.7
10/7/2020	17.2
4/12/2021	22.4
10/12/2021	28.1
4/12/2022	87.2
10/26/2022	74.4

E2 – April 2023 LCLs

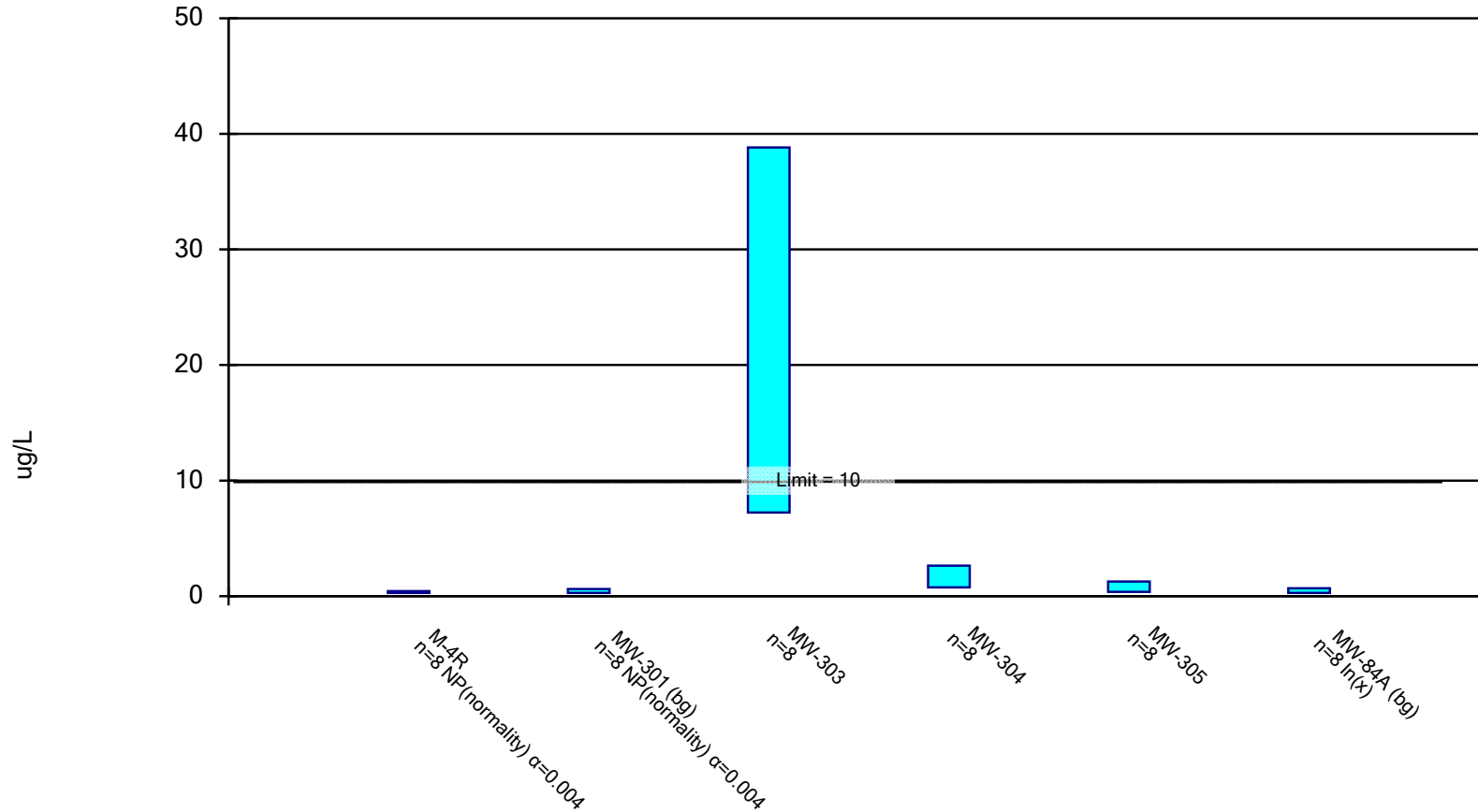
Confidence Interval

Columbia Energy Center Data: December - Chem- export-Dec2020 Printed 12/29/2023, 8:51 AM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>ND Adj.</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (ug/L)	M-4R	0.44	0.28	10	No	8	50	None	No	0.004	NP (normality)
Arsenic (ug/L)	MW-301 (bg)	0.62	0.28	10	No	8	37.5	None	No	0.004	NP (normality)
Arsenic (ug/L)	MW-303	38.82	7.231	10	No	8	0	None	No	0.01	Param.
Arsenic (ug/L)	MW-304	2.645	0.755	10	No	8	0	None	No	0.01	Param.
Arsenic (ug/L)	MW-305	1.266	0.377	10	No	8	12.5	None	No	0.01	Param.
Arsenic (ug/L)	MW-84A (bg)	0.6869	0.2854	10	No	8	12.5	None	ln(x)	0.01	Param.
Molybdenum (ug/L)	M-4R	47.4	25.39	100	No	8	0	None	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-301 (bg)	0.44	0.44	100	No	8	100	None	No	0.004	NP (NDs)
Molybdenum (ug/L)	MW-303	119.2	50.54	100	No	8	0	None	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-304	13.52	3.02	100	No	8	0	None	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-305	110.4	33.54	100	No	8	0	None	No	0.01	Param.
Molybdenum (ug/L)	MW-84A (bg)	0.62	0.44	100	No	8	87.5	None	No	0.004	NP (NDs)
Selenium (ug/L)	M-4R	9.29	1.705	50	No	8	0	None	ln(x)	0.01	Param.
Selenium (ug/L)	MW-301 (bg)	0.32	0.32	50	No	8	100	None	No	0.004	NP (NDs)
Selenium (ug/L)	MW-303	58.3	11.6	50	No	8	0	None	ln(x)	0.01	Param.
Selenium (ug/L)	MW-304	1.1	0.32	50	No	8	62.5	None	No	0.004	NP (normality)
Selenium (ug/L)	MW-305	13.01	3.73	50	No	8	0	None	ln(x)	0.01	Param.
Selenium (ug/L)	MW-84A (bg)	0.48	0.32	50	No	8	87.5	None	No	0.004	NP (NDs)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Arsenic Analysis Run 12/29/2023 8:51 AM View: COL Primary Pond
Columbia Energy Center Data: December - Chem- export-Dec2020

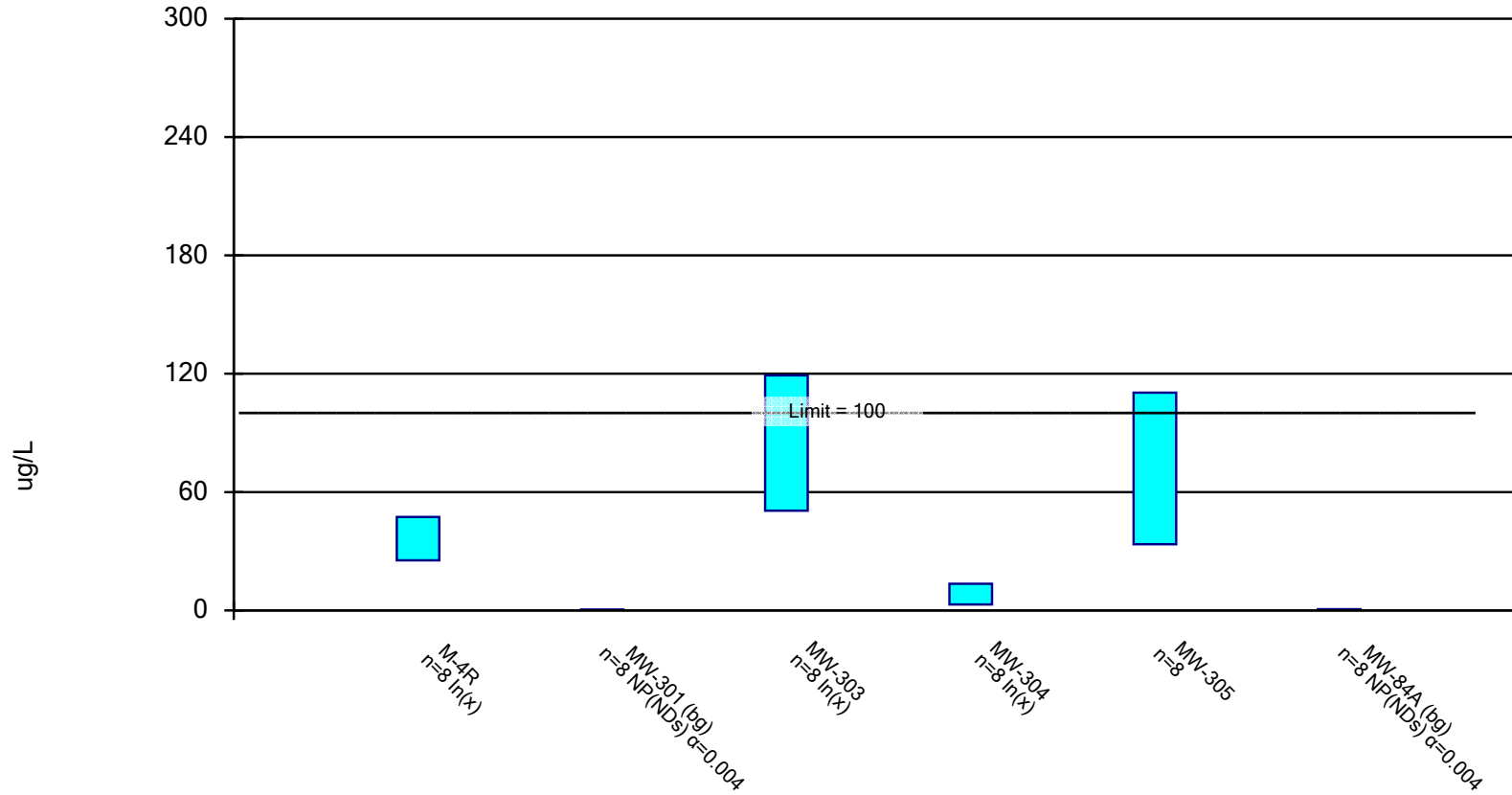
Confidence Interval

Constituent: Arsenic (ug/L) Analysis Run 12/29/2023 8:51 AM View: COL Primary Pond
Columbia Energy Center Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/1/2019	<0.28 (U)				<0.28 (U)	
4/2/2019				0.63 (J)		
10/7/2019	0.37 (J)			3.2	0.49 (J)	
2/3/2020		<0.28 (U)				0.38 (J)
5/27/2020	0.39 (J)			1.3	0.75 (J)	
5/29/2020		0.33 (J)				0.34 (J)
10/7/2020	0.44 (J)			2.8	0.95 (J)	
10/8/2020		0.62 (J)				0.49 (J)
4/12/2021			10.4	1.8	0.95 (J)	
4/13/2021	<0.28 (U)					
4/14/2021		<0.28 (U)				0.91 (J)
7/20/2021			13.9			
10/11/2021	<0.28 (U)			1.6	1.4	
10/12/2021			18.6			
10/14/2021		0.35 (J)				0.41 (J)
2/24/2022			28.8			
4/11/2022	<0.28 (U)			0.87 (J)	0.59 (J)	
4/12/2022			27.1			
4/13/2022		0.47 (J)				0.31 (J)
7/27/2022			29.4			
10/25/2022	0.4 (J)				1.3	
10/26/2022			52			
10/27/2022		0.3 (J)				0.72 (J)
1/20/2023				1.4		
4/24/2023			4			
4/27/2023		<0.28 (U)				<0.28 (U)
Mean	0.34	0.3638	23.03	1.7	0.8213	0.48
Std. Dev.	0.06698	0.1215	14.9	0.8915	0.4191	0.2223
Upper Lim.	0.44	0.62	38.82	2.645	1.266	0.6869
Lower Lim.	0.28	0.28	7.231	0.755	0.377	0.2854

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Molybdenum Analysis Run 12/29/2023 8:51 AM View: COL Primary Pond
Columbia Energy Center Data: December - Chem- export-Dec2020

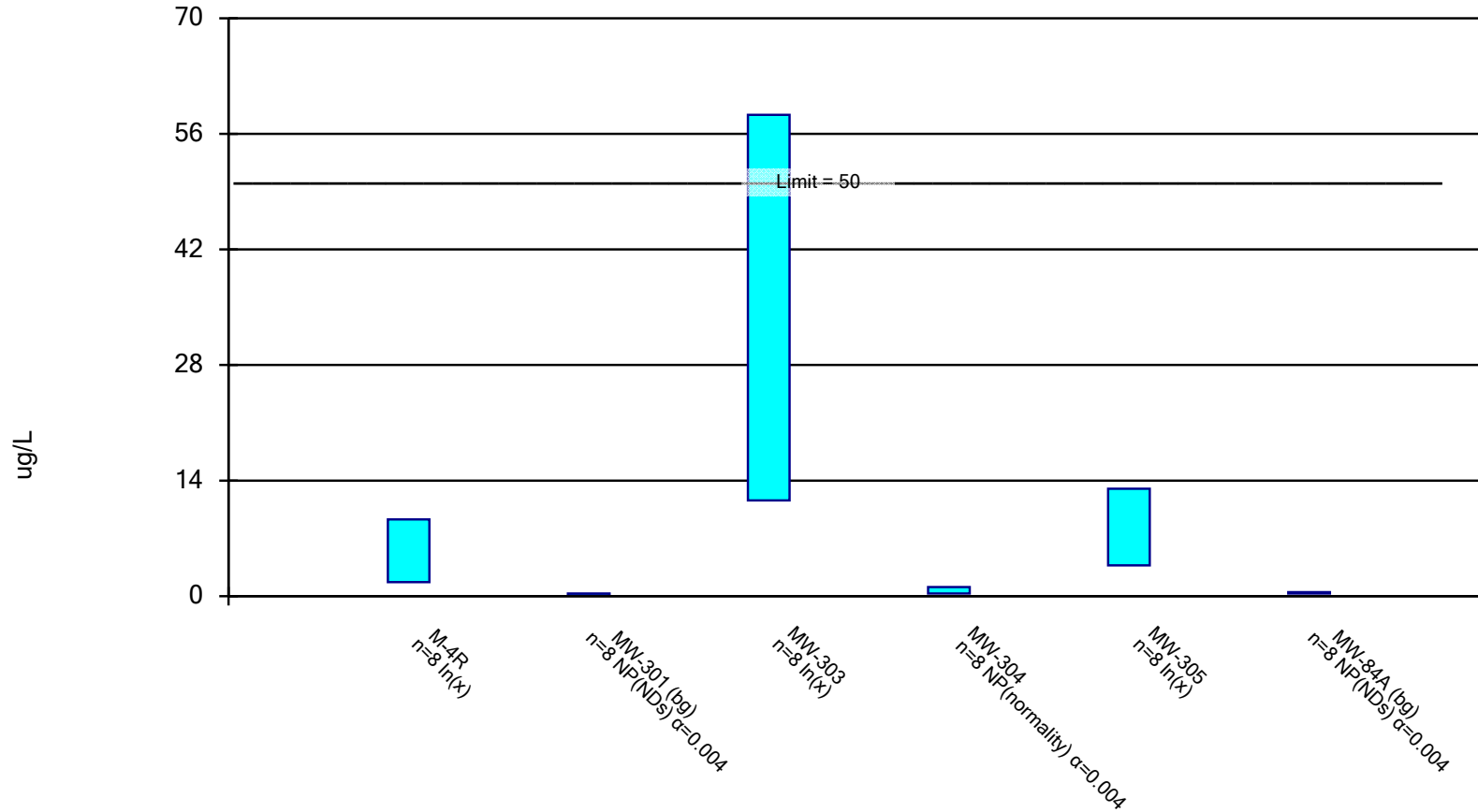
Confidence Interval

Constituent: Molybdenum (ug/L) Analysis Run 12/29/2023 8:51 AM View: COL Primary Pond
Columbia Energy Center Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/1/2019	29.4					
4/2/2019				3		
10/7/2019	27.6		87	4.8		
2/3/2020		<0.44 (U)				<0.44 (U)
5/27/2020	25.6		67.1	3.9		
5/29/2020		<0.44 (U)				<0.44 (U)
10/7/2020	27.6		67.1	12		
10/8/2020		<0.44 (U)				<0.44 (U)
2/25/2021					107	
4/12/2021			67.1	13	106	
4/13/2021	41.1					
4/14/2021		<0.44 (U)				0.62 (J)
7/20/2021					77	
10/11/2021	60.7			13.5	124	
10/12/2021			78			
10/14/2021		<0.44 (U)				<0.44 (U)
2/24/2022					35.8	
4/11/2022	42.5			9.8	45.9	
4/12/2022			174			
4/13/2022		<0.44 (U)				<0.44 (U)
7/27/2022					35.1	
10/25/2022	34.5				44.9	
10/26/2022			89.4			
10/27/2022		<0.44 (U)				<0.44 (U)
1/20/2023				2.4		
4/24/2023			41.3			
4/27/2023		<0.44 (U)				<0.44 (U)
Mean	36.13	0.44	83.88	7.8	71.96	0.4625
Std. Dev.	11.79	0	39.38	4.745	36.25	0.06364
Upper Lim.	47.4	0.44	119.2	13.52	110.4	0.62
Lower Lim.	25.39	0.44	50.54	3.02	33.54	0.44

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based on n.




Constituent: Selenium Analysis Run 12/29/2023 8:51 AM View: COL Primary Pond
Columbia Energy Center Data: December - Chem- export-Dec2020

Confidence Interval

Constituent: Selenium (ug/L) Analysis Run 12/29/2023 8:51 AM View: COL Primary Pond
Columbia Energy Center Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/1/2019	12.6				3.2	
4/2/2019				<0.32 (U)		
10/7/2019	1.8		16.4	<0.32 (U)	7.7	
2/3/2020		<0.32 (U)				<0.32 (U)
5/27/2020	11.7		18.7	0.33 (J)	4.2	
5/29/2020		<0.32 (U)				<0.32 (U)
10/7/2020	1.6		17.2	<0.32	7.6	
10/8/2020		<0.32 (U)				<0.32 (U)
4/12/2021			22.4	1.1	8	
4/13/2021	3.7					
4/14/2021		<0.32 (U)				0.48 (J)
10/11/2021	2.3			0.35 (J)	4.5	
10/12/2021			28.1			
10/14/2021		<0.32 (U)				<0.32 (U)
4/11/2022	3			<0.32 (U)	21.5	
4/12/2022			87.2			
4/13/2022		<0.32 (U)				<0.32 (U)
10/25/2022	5.8				9.1	
10/26/2022			74.4			
10/27/2022		<0.32 (U)				<0.32 (U)
1/20/2023				<0.32 (U)		
4/24/2023			9.7			
4/27/2023		<0.32 (U)				<0.32 (U)
Mean	5.313	0.32	34.26	0.4225	8.225	0.34
Std. Dev.	4.429	0	29.39	0.274	5.77	0.05657
Upper Lim.	9.29	0.32	58.3	1.1	13.01	0.48
Lower Lim.	1.705	0.32	11.6	0.32	3.73	0.32



Appendix F
Alternative Source Demonstration

Alternative Source Demonstration October 2022 Assessment Monitoring

Primary Ash Pond
Columbia Energy Center
Pardeeville, Wisconsin

Prepared for:



SCS ENGINEERS

25223067.00 | June 9, 2023

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

Table of Contents

Section	Page
PE Certification	iii
1.0 Introduction	1
1.1 §257.95(G)(3)(ii) Alternative Source Demonstration Requirements.....	1
1.2 Site Information and Map.....	1
1.3 Statistically Significant Levels Identified.....	2
1.4 Overview of Alternative Source Demonstration.....	3
2.0 Background	3
2.1 Regional Geology and Hydrogeology.....	4
2.1.1 Regional Information.....	4
2.1.2 Site Information.....	4
2.2 CCR Rule Monitoring System.....	4
2.3 Other Monitoring Wells.....	5
3.0 Methodology and Analysis Review	5
3.1 Sampling and Field Analysis.....	5
3.2 Laboratory Analysis Review.....	5
3.3 Statistical Evaluation Review.....	6
3.4 Summary of Methodology and Analysis Review Findings.....	6
4.0 Alternative Sources	6
4.1 Potential Causes of SSL.....	6
4.1.1 Natural Variation.....	6
4.1.2 Man-Made Alternative Sources.....	7
4.2 Lines of Evidence.....	7
4.2.1 Low Arsenic Concentration in Well MW-316.....	7
4.2.2 Low Arsenic in Other Primary Pond Wells.....	8
4.2.3 Groundwater Dewatering Impacts on Arsenic Concentration in Well MW-303.....	8
5.0 Alternative Source Demonstration Conclusions	9
6.0 Site Groundwater Monitoring Recommendations	9
7.0 References	9

Tables

Table 1.	Groundwater Analytical Results Summary – October 2022 Event
Table 2.	Historical Analytical Results for Arsenic
Table 3.	Groundwater Elevation – State Monitoring Program and CCR Well Network

Figures



- Figure 1. Site Location Map
- Figure 2. Site Plan and Monitoring Well Locations
- Figure 3. Water Table Map – October 2020
- Figure 4. Water Table Map – October 2022
- Figure 5. Water Table Map – May 2023

Appendices

- Appendix A October 2022 Statistical Evaluation
- Appendix B Trend Plots for CCR Wells
- Appendix C Regional Information
- Appendix D MW-316 Construction Information
- Appendix E MW-316 and MW-303 Laboratory Reports

I:\25223067.00\Deliverables\COL PP ASD - October 2022\230609_COL_PPond_Oct22 ASD_Final.docx

PE CERTIFICATION

	<p>I, Sherren Clark, hereby certify that the information in this alternative source demonstration is accurate and meets the requirements of 40 CFR 257.95(g)(3)(ii). This certification is based on my review of the groundwater data and related site information available for the Columbia Energy Center Primary Ash Pond. I am a duly licensed Professional Engineer under the laws of the State of Wisconsin.</p>
	
	<p>June 9, 2023</p>
	<p>(signature) (date)</p>
	<p>Sherren Clark, PE (printed or typed name)</p> <p>License number E-29863</p> <p>My license renewal date is July 31, 2024.</p> <p>Pages or sheets covered by this seal: Alternative Source Demonstration, October 2022 Assessment Monitoring, Primary Ash Pond, Columbia Energy Center, Pardeeville, Wisconsin</p>

[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 257.95(g)(3)(ii). The applicable sections of the Rule are provided below in *italics*.

1.1 §257.95(G)(3)(II) ALTERNATIVE SOURCE DEMONSTRATION REQUIREMENTS

40 CFR 257.95(g)(3): Within 90 days of finding that any of the constituents listed in Appendix IV to this part have been detected at a statistically significant level exceeding the groundwater protection standards the owner or operator must either:

- (i) Initiate an assessment of corrective measures as required by § 257.96; or*
- (ii) Demonstrate that a source other than the CCR unit caused the contamination, or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. Any such demonstration must be supported by a report that includes the factual or evidentiary basis for any conclusions and must be certified to be accurate by a qualified professional engineer or approval from the Participating State Director or approval from EPA where EPA is the permitting authority. If a successful demonstration is made, the owner or operator must continue monitoring in accordance with the assessment monitoring program pursuant to this section, and may return to detection monitoring if the constituents in Appendix III and Appendix IV of this part are at or below background as specified in paragraph (e) of this section. The owner or operator must also include the demonstration in the annual groundwater monitoring and corrective action report required by § 257.90(e), in addition to the certification by a qualified professional engineer or the approval from the Participating State Director or the approval from EPA where EPA is the permitting authority.*

An ASD is completed when there are exceedances of one or more benchmarks established within the groundwater monitoring program 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 that arsenic was identified to be at a statistically significant level (SSL) above the groundwater protection standard (GPS) during assessment monitoring under the CCR Rule.

This ASD report evaluates an SSL observed in the statistical evaluation of the October 2022 assessment monitoring event at the Columbia Energy Center (COL) Primary Ash Pond CCR Unit. This is the first ASD prepared for this facility unit since monitoring began in December 2015.

1.2 SITE INFORMATION AND MAP

The COL site is located at W8375 Murray Road, Pardeeville, Columbia County, Wisconsin (**Figure 1**). It 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

CCR surface impoundments, the Primary Pond (existing CCR surface impoundment), and the Secondary Pond (inactive CCR surface impoundment). This ASD will evaluate the conditions at the site for the Primary Ash Pond only.

The groundwater monitoring system monitors the following CCR Unit:

- COL Primary Ash Pond (existing CCR surface impoundment)

The system is designed to detect monitored constituents at the waste boundary of the Primary Ash Pond as required by 40 CFR 257.91(d). The groundwater monitoring system consists of two background monitoring wells (MW-84A and MW-301) and four downgradient monitoring wells (M-4R, MW-303, MW-304, and MW-305). A temporary monitoring well, MW-316, was installed to evaluate groundwater quality between compliance well MW-303 and the Primary Pond (**Figure 2**).

A map showing the CCR Units 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 the Secondary Ash Pond and Modules 1-3, Modules 4-6, and Modules 10-11 of the COL Dry Ash Disposal Facility (ADF).

1.3 STATISTICALLY SIGNIFICANT LEVELS IDENTIFIED

The October 2022 results for Appendix IV parameters were compared to the Groundwater Protection Standards (GPSs) established under 40 CFR 257.95(h) to evaluate whether any Appendix IV parameter was present at an SSL above the GPS. The October 2022 results and GPS values, along with the May 2023 MW-316 arsenic result, are shown in **Table 1**.

For the October 2022 monitoring event, assessment monitoring parameters for which an individual monitoring result exceeded the GPS at a compliance well included the following:

- Arsenic: MW-303
- Selenium: MW-303

The U.S. EPA's Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at Resource Conservation and Recovery Act (RCRA) Facilities (EPA 530-R-09-007, March 2009) recommends the use of confidence intervals for comparison of assessment monitoring data to fixed GPS values. Specifically, the suggested approach for comparing assessment groundwater monitoring data to GPS values based on long-term chronic health risk, such as drinking water Maximum Contaminant Levels (MCLs), is to compare the lower confidence limit (LCL) around the arithmetic mean with the fixed GPS.

An LCL evaluation was completed for each Appendix IV parameter that has been detected at a concentration exceeding the GPS in at least one sample result since assessment monitoring was initiated, which includes arsenic, molybdenum, and selenium. The LCLs were calculated with Sanitas™ using historical concentrations measured since assessment monitoring began in April 2018. The evaluation is provided in **Appendix A**.

The October 2022 arsenic and selenium results at MW-303 were higher than previous results; therefore, the arsenic and selenium results for this well were also evaluated for a potential increasing trend using a Mann-Kendall analysis (**Appendix A**). Trend analysis for the arsenic and selenium results obtained since assessment monitoring was initiated indicated no significant trend

for either parameter. To focus on the more recent data, Mann-Kendall trend analysis was also performed for the last eight samples for each parameter (**Appendix A**). The analysis of the last eight samples indicated a significant increasing trend for arsenic, and the lower limit for the 98-percent confidence band around the trend line exceeded the GPS. Based on these results, arsenic is at an SSL above the GPS at MW-303. No significant trend was identified for the last eight selenium samples at MW-303.

Based on the LCL and trend evaluation, arsenic is at an SSL above the GPS at MW-303. The molybdenum and selenium results to date do not represent an SSL above the GPS.

A time series plot for arsenic at all of the Primary Pond monitoring wells is provided in **Appendix B**.

1.4 OVERVIEW OF ALTERNATIVE SOURCE DEMONSTRATION

This ASD report includes:

- Background information (**Section 2.0**).
- Evaluation of potential that SSLs are due to methodology or analysis (**Section 3.0**).
- Evaluation of potential that SSLs 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**).

The CCR Rule constituent results from background and compliance sampling for arsenic are provided in **Table 2**. The laboratory reports for the October 2022 assessment monitoring event were reviewed, finalized, and transmitted in January 2023, and will be included in the 2023 Annual Groundwater Monitoring and Corrective Action Report to be completed in January 2024. Complete laboratory reports for the background monitoring events and the previous detection 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

A more detailed discussion of the background information for the site is provided in the ASD for the COL Dry Ash Disposal Facility - Modules 1 - 3 for the October 2017 event (SCS, 2018).

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 the uppermost aquifer, as defined under 40 CFR 257.53. 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 C**. 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 C**.

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 C**.

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, 1978). During drilling of CCR wells MW-301, MW-303, MW-304, and MW-305, the unconsolidated materials were identified as consisting primarily of silty sand and sand. Boring logs for previously-installed monitoring wells MW-84A and M-4R show silty sand and sand as the primary unconsolidated materials at these locations. The boring logs for Primary Ash Pond CCR monitoring wells are provided in Appendix B of the 2022 Annual Report (SCS Engineers, 2023). All CCR monitoring wells are screened within the unconsolidated sand unit.

In the vicinity of the ash ponds, groundwater flow has historically been radially away from the ponds in all directions. The October 2020 water table is shown on **Figure 3** as an example of the typical historical flow patterns. The October 2022 water levels and apparent flow directions, shown on **Figure 4**, reflect the influence of a temporary groundwater dewatering system installed to lower groundwater levels in the area of the Secondary Pond as part of the closure project for that CCR Unit.

The groundwater dewatering pumps for the Secondary Pond were shut off on November 30, 2022. Groundwater dewatering pumps for the Primary Ash Pond were started up on March 8, 2023. The groundwater dewatering around the Primary Ash Pond is also having an influence on groundwater flow in the area of the ponds, with localized flow toward the Primary Ash Pond as shown on the May 2023 water table map (**Figure 5**).

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-303, MW-304, MW-305, and M-4R. The CCR Rule wells are installed within the sand and gravel aquifer. Well depths range from approximately 25 to 41 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.

A temporary monitoring well, MW-316, was installed in April 2023 to support the source evaluation for the arsenic SSL discussed in this report. Monitoring well MW-316 is located between well MW-303 and the Primary Ash Pond (**Figure 2**) and is also installed in the unconsolidated sand and gravel unit that comprises the uppermost aquifer. Well construction documentation for MW-316 is included in **Appendix D**.

3.0 METHODOLOGY AND ANALYSIS REVIEW

To evaluate the potential that an SSL 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 SSL. Potential field sampling errors or issues could include mislabeling of samples, improper sample handling, missed holding times, cross contamination during sampling, or other field errors. Field blank sample results were also reviewed for any indication of potential contamination from sampling equipment or containers.

Based on the review of field notes and comparison to previous results, no sampling error issues were identified in the laboratory analytical reports or the field notes that would indicate a sampling error may have caused or contributed to the observed SSL. The historical results for arsenic are summarized in **Table 2**.

3.2 LABORATORY ANALYSIS REVIEW

The laboratory reports for the October 2022 assessment monitoring event were reviewed to determine if any laboratory analysis error or issue may have caused or contributed to an observed SSL for arsenic. The laboratory report review included reviewing the laboratory quality control flags and narrative, verifying that correct methods were used and desired detection limits were achieved, and checking the field and laboratory blank sample results.

Based on the review of the laboratory reports, SCS did not identify any issues that indicate the SSL for arsenic may have been due to a laboratory analysis error. There were no laboratory quality control flags or issues identified in the laboratory reports that affect the usability of the data for assessment monitoring.

A time series plot of the arsenic 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 plot is provided in **Appendix B**. Arsenic concentrations at MW-303 have been highly variable since sampling began, but the variations do not appear to reflect a sampling or laboratory error.

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 SSL

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 that arsenic was at an SSL above the GPS for the October 2022 assessment monitoring event.

3.4 SUMMARY OF METHODOLOGY AND ANALYSIS REVIEW FINDINGS

In summary, the October 2022 event is the first occurrence of an SSL for this unit since initiation of assessment monitoring. There were no changes to the SSL determinations for the October 2022 monitoring event based on the methodology and analysis review. No other errors or issues causing or contributing to the reported SSL were identified.

4.0 ALTERNATIVE SOURCES

This section of the report discusses the potential alternative sources for the arsenic SSL at the monitoring well MW-303, 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 SSL.

4.1 POTENTIAL CAUSES OF SSL

4.1.1 Natural Variation

The statistical analysis was completed using an interwell approach, comparing the October 2022 detection monitoring results to the UPLs calculated based on the sampling of the background wells (MW-84A and MW-301). If concentrations of a constituent that is naturally present in the aquifer vary spatially, then the potential exists that the downgradient concentrations may be higher than upgradient concentrations due to natural variation. Previous monitoring results for arsenic at the COL Primary Pond are shown in **Table 2**.

Natural variation may be present in the shallow aquifer for any of the parameters and may have contributed to the SSL for arsenic in MW-303. Although natural variation is present in the shallow aquifer, it does not appear likely that natural variation is the primary source that caused the arsenic SSL.

4.1.2 Man-Made Alternative Sources

Man-made alternative sources that could potentially contribute to the arsenic SSL at Primary Pond monitoring well MW-303 could include the closed ash pond landfill, the product recycling area, or other CCR management activities.

Recent changes in groundwater flow due to dewatering activities make determination of man-made alternative sources uncertain. CCR removal activities from the Secondary Ash Pond and the Primary Pond in 2022 and 2023 could also contribute to movement of arsenic in groundwater from uncertain sources. Changes in groundwater flow direction and differing recharge patterns caused by dewatering and subsequent movement of surface water to the secondary pond could also affect the ambient redox conditions, and mobilize naturally occurring arsenic.

4.2 LINES OF EVIDENCE

The lines of evidence indicating that the SSL for arsenic is due to an alternative source include:

1. Temporary monitoring well MW-316 installed between well MW-303 and the Primary Pond has a low arsenic concentration.
2. CCR wells located immediately adjacent to the Primary Pond have always had low arsenic. The low arsenic concentration in the new temporary well is consistent with those results.
3. The effects of the ongoing dewatering activities on the arsenic concentrations at MW-303 indicate that the Primary Pond is not the source of arsenic at MW-303, and suggest the closed ash landfill is a more likely source.

4.2.1 Low Arsenic Concentration in Well MW-316

Temporary monitoring well MW-316, installed between well MW-303 and the Primary Pond, has a low arsenic concentration. Elevated arsenic concentrations would be expected at MW-316 if the Primary Pond is the source of the arsenic SSL at MW-303.

Temporary monitoring well MW-316 was installed between monitoring well MW-303 and the Primary Pond (**Figure 2**). Unlike the other Primary Pond compliance wells, which were installed at the edge of the Primary Pond, well MW-303 was installed approximately 700 feet south of the impounded water due to active ash management and beneficial use activities adjacent to the Primary Pond. Closure activities have since provided room to install the new well MW-316 approximately 500 feet closer to the Primary Pond. New well MW-316 was specifically installed to evaluate the Primary Pond as a potential source of the elevated arsenic in well MW-303. Prior to the groundwater dewatering and pond closure activities, groundwater flowed from the Primary Pond, past the location of the new MW-316 well, then toward well MW-303 (**Figures 2 and 3**).

Monitoring well MW-316 was installed on April 27, 2023, and sampled on May 5, 2023. The boring log and well construction form are located in **Appendix D**. The laboratory result for the groundwater arsenic concentration was 1.2 µg/L (**Appendix E**). Since well MW-316 is located on the historical groundwater flow path between the Primary Pond and well MW-303, it appears unlikely that the Primary Pond is the source of the elevated arsenic in well MW-303.

4.2.2 Low Arsenic in Other Primary Pond Wells

CCR wells located immediately adjacent to the Primary Pond have always had low arsenic. The low arsenic concentration in the new temporary well is consistent with those results. Due to historic radial flow outward from the Primary Pond, elevated arsenic concentrations at multiple compliance wells would be expected if the Primary Pond was the source of arsenic at MW-303.

Primary Pond compliance wells M-4R, MW-304, and MW-305 have a low historic range of arsenic concentrations (**Table 2**). The arsenic concentrations range from <0.099 µg/L to 0.47 µg/L in well MW-4R, 0.63 µg/L to 3.2 µg/L in well MW-304, and <0.28 µg/L to 1.4 µg/L in well MW-305. These wells are located immediately adjacent to the Primary Pond, which has historically been a source of groundwater infiltration with radial flow, while MW-303 is located much further from the Primary Pond, as discussed in **Section 4.2.1**. The result from the initial sampling of well MW-316 is consistent with the historical monitoring at Primary Pond wells M-4R, MW-304, and MW-305. Based on the historical arsenic results for the Primary Pond wells located immediately adjacent to the pond, it appears unlikely that the Primary Pond is the source of the elevated arsenic in well MW-303.

4.2.3 Groundwater Dewatering Impacts on Arsenic Concentration in Well MW-303

The effects of the ongoing groundwater dewatering activities on the arsenic concentrations at MW-303 indicate that the Primary Pond is not the source of arsenic at MW-303, and suggest the closed ash landfill is a more likely source. Arsenic concentrations at MW-303 increased in 2022, when groundwater dewatering was ongoing for the Secondary Pond closure, and decreased in 2023 when groundwater dewatering was ongoing for the Primary Pond closure.

The arsenic result for well MW-303 from the April 2023 sampling event was 4.0 µg/l (**Appendix E**). This is the lowest arsenic concentration detected at MW-303 since the initiation of baseline sampling in 2015. The full April 2023 results and statistical analysis will be discussed in the future Assessment Monitoring Report, due August 29, 2023. The previously observed increasing trend in arsenic in 2022, followed by a sharp decrease in 2023, are likely both related to temporary changes in flow direction induced by the dewatering systems operating around the Secondary Pond and Primary Pond during the pond closures.

Groundwater dewatering wells for closure of the Secondary Pond were installed from fall 2021 through summer 2022. The complete Secondary Pond groundwater dewatering system was operational by August 2, 2022, and continued to operate until November 30, 2022, discharging into the Primary Pond. In preparation for Primary Pond closure activities, discharge from the plant to the Primary Pond was reduced beginning in October 2022 and was terminated in March 2023. Groundwater dewatering for the Primary Pond closure began in March 2023. Historically, the ponds were a source of infiltration, with groundwater mounding and radial flow (October 2020, **Figure 3**). Under dewatering conditions, flow has been toward the dewatering wells around the Secondary Pond (October 2022, **Figure 4**) or the Primary Pond (May 2023, **Figure 5**). For the period when flow was toward the Secondary Pond in 2022, MW-303 was located between the closed fly ash landfill and the Secondary Pond, which suggests that the closed fly ash landfill may be a source of elevated arsenic in MW-303. In 2023, with flow toward the Primary Pond, MW-303 is no longer downgradient from the closed landfill, and the arsenic concentration has decreased. Prior to the start of the pond closures and associated dewatering, arsenic concentrations at MW-303 were highly variable, which may have been due to slight changes in groundwater flow direction or changes in redox conditions during periods of high or low recharge to the aquifer.

5.0 ALTERNATIVE SOURCE DEMONSTRATION CONCLUSIONS

The lines of evidence discussed above regarding the SSL reported for arsenic in downgradient monitoring well MW-303 demonstrate that the SSL is likely due to sources other than the CCR Unit. The CCR wells located immediately adjacent to the Primary Pond have always had low arsenic. The low arsenic concentration in the new MW-316 well, located between the Primary Pond and MW-303, is consistent with those results. Based on the recent flow direction changes associated with dewatering for the Primary and Secondary Pond closures and the observed changes in arsenic concentration at MW-303, the closed fly ash landfill is a likely source of the elevated arsenic at MW-303.

6.0 SITE GROUNDWATER MONITORING RECOMMENDATIONS

In accordance with section 257.95(g)(3)(ii) of the CCR Rule, the Primary Pond CCR Unit may continue with assessment monitoring based on this ASD. The ASD report will be included in the 2023 Annual Report due January 31, 2024.

7.0 REFERENCES

SCS Engineers, 2018, Alternative Source Demonstration, October 2017 Detection Monitoring, Columbia Energy Center Dry Ash Disposal Facility, April 2018.

SCS Engineers, 2023, 2022 Annual Groundwater Monitoring and Corrective Action Report, Primary Ash Pond, Columbia Energy Center, January 31, 2023.

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., 1979, and Preliminary Engineering Concepts, Columbia Site, Wisconsin Power and Light Company, Town of Pacific, Columbia County, WI, January 1978.

Tables

- 1 Groundwater Analytical Results Summary – October 2022 Event
- 2 Historical Analytical Results for Arsenic
- 3 Groundwater Elevation – State Monitoring Program and CCR Well Network

**Table 1. Groundwater Analytical Results Summary - Detection Monitoring
Columbia Energy Center - Primary Pond / SCS Engineers Project #25223067.00**

Parameter Name	UPL Method	UPL		Background Wells		Compliance Wells				Temporary Well
				MW-84A	MW-301	M-4R	MW-303	MW-304	MW-305	MW-316
				10/27/2022	10/27/2022	10/26/2022	10/26/2022	10/26/2022	10/26/2022	5/5/2023
Groundwater Elevation, ft amsl				784.57	784.91	783.85	778.94	781.79 [^]	784.97	780.49
Appendix III										
Boron, ug/L	P	35.6		12.2	37.5	1,590	2,730 P6	--	1,610	--
Calcium, ug/L	NP	129,000		78,400	62,800 P6	110,000	2,360	--	71,600	--
Chloride, mg/L	P	6.2		3.4	2.3	58.6	<8.6 D3	--	55.5	--
Fluoride, mg/L	DQ	DQ		<0.095	<0.095 M0	0.23 J	<0.095	--	0.32	--
Field pH, Std. Units	P	7.78		7.31	6.80	7.23	9.90	--	9.31	8.32
Sulfate, mg/L	P	30.3		1.1 J	11.6	282	442	--	261	--
Total Dissolved Solids, mg/L	NP	514		302	282	670	930	--	474	--
Appendix IV										
		UPL	GPS							
Antimony, ug/L	NP*	0.4	6	<0.15	<0.15	0.28 J	0.70 J	--	0.47 J	--
Arsenic, ug/L	P*	0.53	10	0.72 J	0.30 J	0.40 J	52	--	1.3	1.2
Barium, ug/L	P	18.3	2000	13.7	7.5	34.3	4.0	--	10.8	--
Beryllium, ug/L	NP*	0.37	4	<0.25	<0.25	<0.25	<0.25	--	<0.25	--
Cadmium, ug/L	NP*	0.32	5	<0.15	<0.15	<0.15	0.16 J	--	<0.15	--
Chromium, ug/L	P*	3.13	100	2.2 J	<1.0	<1.0	46.3	--	<1.0	--
Cobalt, ug/L	NP*	0.38	6	<0.12	0.52 J	0.14 J	0.94 J	--	<0.12	--
Fluoride, mg/L	DQ	DQ	4	<0.095	<0.095 M0	0.23 J	<0.095	--	0.32	--
Lead, ug/L	NP*	0.48	15	<0.24	<0.24	<0.24	0.28 J	--	<0.24	--
Lithium, ug/L	P*	0.86	40	0.41 J	0.37 J	1.7	0.34 J	--	<0.22	--
Mercury, ug/L	DQ	DQ	2	<0.066	<0.066	<0.066	<0.066	--	<0.066	--
Molybdenum, ug/L	NP*	0.44	100	<0.44	<0.44	34.5	89.4	--	44.9	--
Selenium, ug/L	NP*	0.71	50	<0.32	<0.32	5.8	74.4	--	9.1	--
Thallium, ug/L	NP*	0.48	2	<0.14	<0.14	<0.14	0.21 J	--	<0.14	--
Radium 226/228 Combined, pCi/L	P	1.93	5	0.673	0.00292	0.181	0.357	--	0.309	--

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

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

**Table 1. Groundwater Analytical Results Summary - Detection Monitoring
Columbia Energy Center - Primary Pond / SCS Engineers Project #25223067.00**

Abbreviations:

mg/L = milligrams per liter
 ug/L = micrograms per liter
 -- = Not Analyzed

LOD = Limit of Detection
 LOQ = Limit of Quantitation
 DQ = Double Quantification Rule (not detected in background)

P = Parametric UPL with 1-of-2 retesting
 NP = Nonparametric UPL (highest background value)

Lab Notes:

J = Estimated concentration at or above the LOD and below the LOQ.
 P6 = Matrix spike recovery was outside laboratory control limits due to a parent sample concentration notably higher than the
 D3 = Sample was diluted due to the presence of high levels of non-target analytes or other matrix interference.

Notes:

1. An individual result above the UPL or GPS does not constitute a statistically significant increase (SSI) above background or statistically significant level above the GPS. See the accompanying letter text for identification of statistically significant results.
 2. GPS is the United States Environmental Protection Agency (USEPA) Maximum Contamination Level (MCLs), if established; otherwise, the values from 40 CFR 257.95(h)(2).
 3. Interwell UPLs calculated based on results from background wells MW-84 and MW-301.
 4. Intrawell UPL for fluoride is based on the double quantification rule, because fluoride was not detected above the LOQ in the background samples.
- * = UPL is below the LOQ for background sampling. For compliance wells, only results confirmed above the LOQ are evaluated as potential SSIs above background
 ^ = No sample was collected from MW-304 in October 2022 because the groundwater elevation was below the bottom of the dedicated pump.

Created by:	<u>NDK</u>	Date:	<u>5/1/2018</u>
Last revision by:	<u>RM</u>	Date:	<u>6/7/2023</u>
Checked by:	<u>TK</u>	Date:	<u>6/7/2023</u>
Proj Mgr QA/QC:	<u>TK</u>	Date:	<u>6/7/2023</u>

**Table 2. Historical Analytical Results for Arsenic
Columbia Dry Ash Disposal Facility - Primary Pond**

Well Group	Well	Collection Date	Arsenic (µg/L)
Background	MW-301	12/22/2015	0.26 J
		4/5/2016	0.26 J
		7/8/2016	0.19 J, 1q
		10/13/2016	0.24 J
		12/29/2016	0.40 J, 1q
		1/25/2017	0.13 J
		4/11/2017	0.18 J, 1q
		6/6/2017	<0.28
		8/8/2017	<0.28
		4/25/2018	<0.28
		8/8/2018	0.45 J
		10/24/2018	<0.28
		4/2/2019	0.40 J
		10/9/2019	0.42 J
		2/3/2020	<0.28
		5/29/2020	0.33 J
		10/8/2020	0.62 J
		4/14/2021	<0.28
		10/14/2021	0.35 J
	4/13/2022	0.47 J	
	10/27/2022	0.30 J	
	MW-84A	12/22/2015	0.15 J
		4/5/2016	0.29 J
		7/8/2016	0.14 J, 1q
		10/13/2016	0.35 J
		12/29/2016	0.19 J, 1q
		1/25/2017	0.35 J
		4/11/2017	<0.099 1q
		6/6/2017	<0.28
		8/8/2017	0.28 J
		4/25/2018	<0.28
		8/8/2018	<0.28
		10/24/2018	0.33 J
		4/3/2019	<0.28
10/9/2019		0.46 J	
2/3/2020		0.38 J	
5/29/2020	0.34 J		
10/8/2020	0.49 J		
4/14/2021	0.91 J		
10/14/2021	0.41 J		
4/13/2022	0.31 J		
10/27/2022	0.72 J		

**Table 2. Historical Analytical Results for Arsenic
Columbia Dry Ash Disposal Facility - Primary Pond**

Well Group	Well	Collection Date	Arsenic (µg/L)
Compliance	M-4R	12/22/2015	0.17 J
		4/4/2016	0.2 J
		7/7/2016	0.18 J
		10/12/2016	0.25 J
		1/25/2017	0.47 J
		4/11/2017	<0.099
		6/5/2017	0.33 J
		8/9/2017	<0.28
		4/23/2018	0.36 J
		8/7/2018	<0.28
		10/24/2018	<0.28
		4/1/2019	<0.28
		10/7/2019	0.37 J
		5/27/2020	0.39 J
		10/7/2020	0.44 J
		4/13/2021	<0.28
		10/11/2021	<0.28
	4/11/2022	<0.28	
	10/25/2022	0.40 J	
	MW-303	12/21/2015	49.2
		4/4/2016	12.6
		7/7/2016	27.9
		10/12/2016	13.4
		1/26/2017	27
		4/10/2017	12.1
		6/6/2017	9.1
		8/8/2017	12.0
		4/24/2018	39.1
		8/8/2018	8.7
		9/21/2018	6.0
		10/24/2018	7.8
		4/1/2019	33.2
		6/19/2019	5.3
		10/7/2019	10.2
5/27/2020		5.9	
10/7/2020		9.5	
2/25/2021	7.7		
4/12/2021	10.4		
7/20/2021	13.9		
10/12/2021	18.6		
2/24/2022	28.8		
4/12/2022	27.1		
7/27/2022	29.4		
10/26/2022	52		

**Table 2. Historical Analytical Results for Arsenic
Columbia Dry Ash Disposal Facility - Primary Pond**

Well Group	Well	Collection Date	Arsenic (µg/L)
Compliance	MW-304	12/21/2015	2.3
		4/4/2016	1.1
		7/7/2016	1.2
		10/13/2016	1.8
		1/26/2017	0.99 J
		4/10/2017	0.98 J, 1q
		6/5/2017	1.1
		8/8/2017	1.0
		4/24/2018	0.64 J
		8/8/2018	0.76 J
		10/24/2018	1.6
		4/2/2019	0.63 J
		10/7/2019	3.2
		5/27/2020	1.3
		10/7/2020	2.8
		4/12/2021	1.8
		10/11/2021	1.6
	4/11/2022	0.87 J	
	MW-305	12/21/2015	0.56 J
		4/4/2016	0.34 J
		7/8/2016	0.26 J, 1q
		10/13/2016	0.27 J
		1/25/2017	0.78 J
		4/10/2017	0.20 J, 1q
		6/5/2017	0.37 J
		8/7/2017	0.43 J
		4/23/2018	0.48 J
		8/7/2018	0.42 J
		10/24/2018	0.40 J
		4/1/2019	<0.28
		10/7/2019	0.49 J
		5/27/2020	0.75 J
		10/7/2020	0.95 J
4/12/2021		0.95 J	
10/11/2021	1.4		
4/11/2022	0.59 J		
10/25/2022	1.3		

Abbreviations:

µg/L = micrograms per liter or parts per billion (ppb)

J = Estimated value below the laboratory's limit of quantitation

1q = Analyte was measured in the associated method blank at a negative concentration.

Notes:

(1) Analytical laboratory reports provided in the Annual Groundwater Monitoring and Corrective Action Reports.

Created by:	<u> NLB </u>	Date:	<u> 5/15/2023 </u>
Last revision by:	<u> MDB </u>	Date:	<u> 5/31/2023 </u>
Scientist Check:	<u> TK </u>	Date:	<u> 6/2/2023 </u>

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25223067.00**

Dry Ash Facility (Facility ID #03025)	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	
	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	adand	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	adand	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	NI	NI	NI		
April 11-13, 2022	aband	adand	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		
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		

Ash Pond Facility (Facility ID #02325)	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	792.90	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	789.14	793.85	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⁾	791.33	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	791.70	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	791.58	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	793.40	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	792.52	dry	dry		
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	793.85	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	793.45	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	793.25	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	794.60	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	795.20	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		
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 #25223067.00**

Well Number	MW-301	MW-302	MW-303	MW-304	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
Top of Casing Elevation (feet amsl)	806.89	813.00	815.72	805.42	806.32	806.10	808.29	805.95	814.28	807.63	806.89	806.9	813.27	813.62	809.74	826.786	820.30	821.57	819.78
Screen Length (ft)	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	25.6	39.58	31.08	35.43	40.21	27	26.5	28	37.67	38.41	36.19	52.5			
Top of Well Screen Elevation (ft)	787.49	789.40	785.72	789.72	790.72	776.52	787.21	780.52	784.07	790.63	790.39	788.90	785.60	785.21	783.55	784.29			
Measurement Date																			
December 21-22, 2015	785.56	784.78	784.11	786.13	788.96	787.58	783.77	783.50	785.31	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
April 4-5, 2016	786.78	785.81	785.48	788.08	789.61	789.09	785.29	785.63	786.37	--	--	--	--	--	--	NI	NI	NI	NI
July 7-8, 2016	786.31	786.28	784.60	787.36	789.26	787.43	785.19	785.05	785.89	--	--	--	--	--	--	NI	NI	NI	NI
July 28, 2016	NM	NM	784.35	NM	NM	NM	NM	784.86	785.61	--	--	--	--	--	--	NI	NI	NI	NI
October 11-13, 2016	787.64	787.76	786.18	788.18	789.78	787.88	787.36	786.45	787.22	--	--	--	--	--	--	NI	NI	NI	NI
December 29, 2016	787.37	787.05	NM	NM	NM	NM	785.66	785.72	786.63	--	--	--	--	--	--	NI	NI	NI	NI
January 25-26, 2017	787.27	786.89	785.28	789.34	789.36	789.64	785.88	785.98	786.70	785.50	785.36	785.73	--	--	--	NI	NI	NI	NI
April 10 & 11, 2017	787.89	787.55	786.00	788.22	789.57	787.95	786.39	786.30	787.16	786.22	785.64	786.51	--	--	--	NI	NI	NI	NI
June 6, 2017	788.25	788.37	786.49	788.58	789.79	787.83	787.27	786.66	787.63	786.85	786.07	786.46	--	--	--	NI	NI	NI	NI
August 7-9, 2017	787.34	787.55	785.42	789.52	789.30	788.54	786.11	785.81	786.68	785.69	785.19	785.37	--	--	--	NI	NI	NI	NI
October 23-24, 2017	785.89	785.94	783.92	788.97	788.14	788.00	784.13	784.50	785.32	783.97	784.79	784.17	--	--	--	NI	NI	NI	NI
February 21, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.19	783.05	783.02	NI	NI	NI	NI
March 23, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.10	783.10	783.00	NI	NI	NI	NI
April 23-25, 2018	785.29	784.37	783.27	789.69	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
May 24, 2018	NM	NM	NM	NM	NM	NM	NM	NM	785.79	785.09	NM	NM	785.45	785.97	786.11	NI	NI	NI	NI
June 23, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.03	786.64	786.47	NI	NI	NI	NI
July 23, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.27	786.35	786.55	NI	NI	NI	NI
August 7, 2018	787.06	NM	785.20	788.25	788.56	787.63	NM	NM	786.55	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
August 22, 2018	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.54	785.40	785.46	NI	NI	NI	NI
September 21, 2018	NM	788.37	786.50	NM	NM	NM	787.90	787.01	NM	NM	NM	NM	787.08	787.24	787.66	NI	NI	NI	NI
October 22-24, 2018	788.98	789.16	787.51	789.05	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
April 1-4, 2019	787.04	787.56	786.52	789.72	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
June 12, 2019	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	787.25	NM	NI	NI	NI	NI
June 19, 2019	NM	NM	786.81	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
October 7-9, 2019	788.47	788.31	787.02	790.41	790.36	790.65	NM	NM	NM	787.47	786.99	787.18	787.26	787.94	787.64	NI	NI	NI	NI
December 13, 2019	--	--	--	--	--	--	--	--	--	787.03	785.68	786.43	--	--	--	NI	NI	NI	NI
December 23, 2019	--	--	--	--	--	--	--	--	--	--	--	--	--	775.22	--	NI	NI	NI	NI
January 17, 2020	--	--	785.58	--	--	--	--	--	--	--	--	--	--	--	--	NI	NI	NI	NI
February 3, 2020	787.24	NM	NM	NM	NM	NM	NM	NM	786.50	785.77	785.57	786.48	NM	NM	NM	NI	NI	NI	NI
May 27-29, 2020	787.77	787.29	785.56	789.30	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
June 30, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	786.18	NM	NM	NI	NI	NI	NI
August 6, 2020	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	785.93	NM	NM	NI	NI	NI	NI
October 7-8, 2020	786.53	786.74	785.16	788.52	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
December 11, 2020	NM	NM	NM	NM	788.19	NM	NM	NM	NM	NM	NM	NM	785.26	785.26	NM	NI	NI	NI	NI
February 25, 2021	NM	NM	784.27	NM	788.36	NM	NM	784.75	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
April 12, 2021	786.50	785.77	784.07	787.99	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
June 11, 2021	NM	NM	NM	NM	NM	NM	784.19	784.66	NM	NM	NM	NM	784.20	784.05	NM	NI	NI	NI	NI
July 20, 2021	NM	NM	783.64	NM	788.39	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
October 11-12, 14, 2021	785.28	785.09	783.09	787.78	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
December 21, 2021	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	782.93	NM	NM	NI	NI	NI	NI
February 24, 2022	NM	NM	782.34	NM	786.49	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
April 11-13, 2022	785.44	784.42	783.40	788.20	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
July 27, 2022	NM	NM	783.07	NM	787.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NI	NI	NI	NI
October 25-27, 2022	784.91	784.62	778.94	781.79	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
November 30, 2022	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	781.62	781.14	781.15	NI	NI	NI	NI
December 2, 2022	785.12	784.48	NM	783.97	NM	NM	781.91	783.71	784.76	778.52	779.54	NM	NM	NM	NM	NI	NI	NI	NI
January 12-13, 2023	785.20	784.55	NM	NM	NM	NM	782.75	784.10	784.88	NM	NM	NM	782.57	782.45	782.32	NI	NI	NI	NI
January 20, 2023	NM	NM	NM	788.08	NM	NM	NM	NM	NM	782.15	782.11	784.98	NM	NM	NM	NM	NM	NM	NM
January 24, 2023	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	783.36	783.63	783.77
February 20-23, 2023	785.56	784.98	NM	NM	NM	NM	NM	NM	NM	783.04	782.91	785.32	783.31	783.34	783.40	NM	783.59	783.82	783.96
Bottom of Well Elevation (ft)	777.49	779.40	775.72	779.72	780.72	766.52	777.21	770.52	774.07	780.63	780.39	778.90	775.60	775.21	773.55	774.29	820.30	821.57	819.78

CCR Rule Wells

**Table 3. Groundwater Elevation - State Monitoring Program and CCR Well Network
Columbia Dry Ash and Ash Pond Disposal Facilities / SCS Engineers Project #25223067.00**

Notes:
NM = not measured

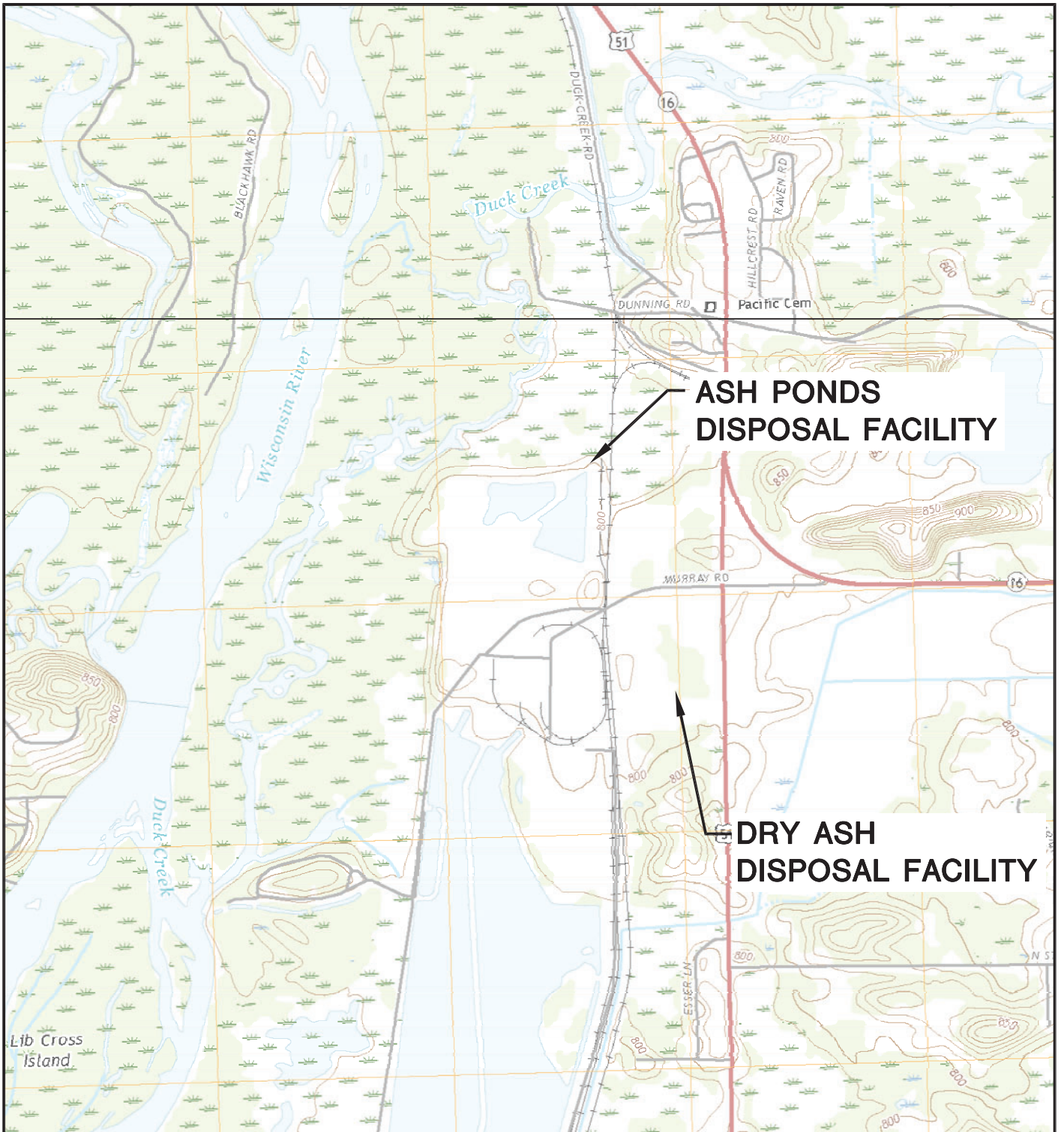
Created by: <u>MDB</u>	Date: <u>5/6/2013</u>
Last revision by: <u>NLB</u>	Date: <u>4/25/2023</u>
Checked by: <u>RM</u>	Date: <u>5/1/2023</u>

- (1) The elevation for SG-1 is read off of the staff gauge (rather than measured from the top of the gauge).
- (2) SG-2 could not be located during the April 2013 event.
- (3) SG-3 could not be located during the October 2013 event. SG-1 could not be safely accessed during the October 2013 event.
- (4) LH-2 measurements are given as leachate depth, measured by a transducer.
- (5) LH-2 and LH-3 measurements were collected by WPL staff on October 9, 2017.
- (6) The depth to water at MW-84A was not measured prior to purging for sampling during the October 3-5 sampling event. The level was allowed to return to static and was measured on 10/10/2017.
- (7) BC = Brian Clepper; NS= Nate Sievers - Columbia Site employees.
- (8) 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'.

I:\25223067.00\Deliverables\COL PP ASD - October 2022\Tables\[Table 3 - GW Elevations.xls]levels

Figures

- 1 Site Location Map
- 2 Site Plan and Monitoring Well Locations
- 3 Water Table Map – October 2020
- 4 Water Table Map – October 2022
- 5 Water Table Map – May 2023

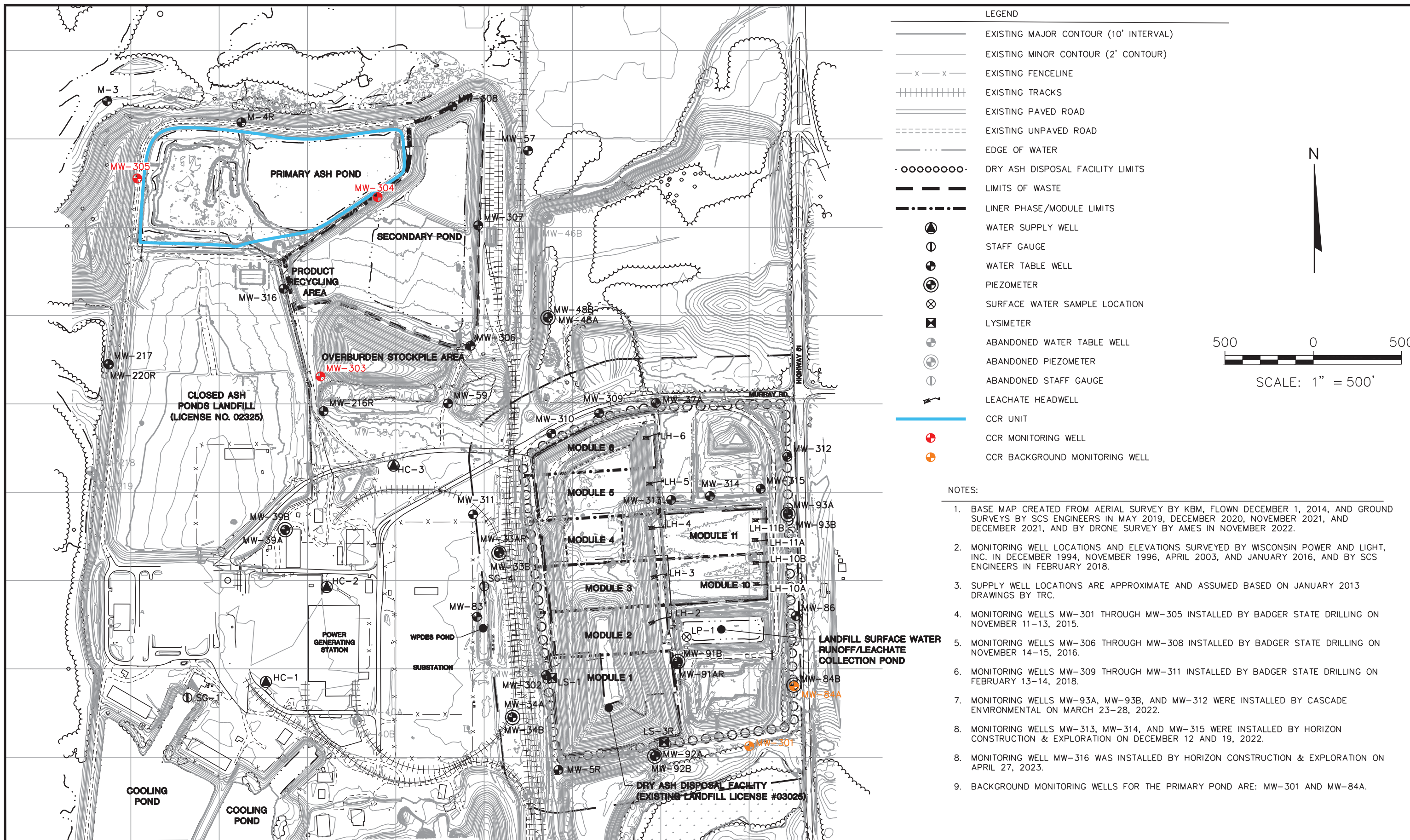


POYNETTE QUADRANGLE
 WISCONSIN-COLUMBIA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 2018
 SCALE: 1" = 2,000'

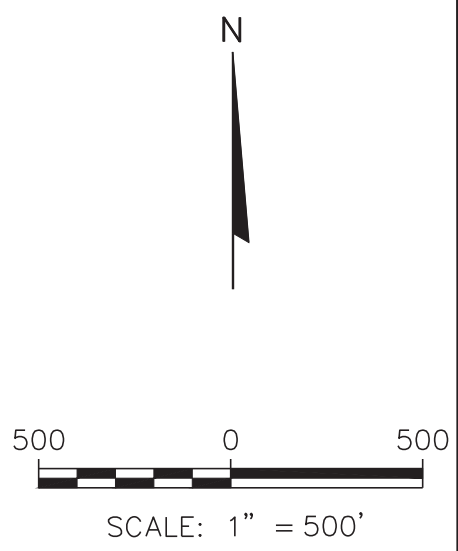


CLIENT	ALLIANT ENERGY COLUMBIA ENERGY CENTER W8375 MURRAY ROAD PARDEEVILLE, WI 53954		SITE	ALLIANT ENERGY COLUMBIA ENERGY CENTER PARDEEVILLE, WI		ENGINEER	SITE LOCATION MAP	
	PROJECT NO.	25220067.00		DRAWN BY:	BSS		SCS ENGINEERS 2830 DAIRY DRIVE MADISON, WI 53718-6751 PHONE: (608) 224-2830	FIGURE
	DRAWN:	12/02/2019		CHECKED BY:	MDB			1
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



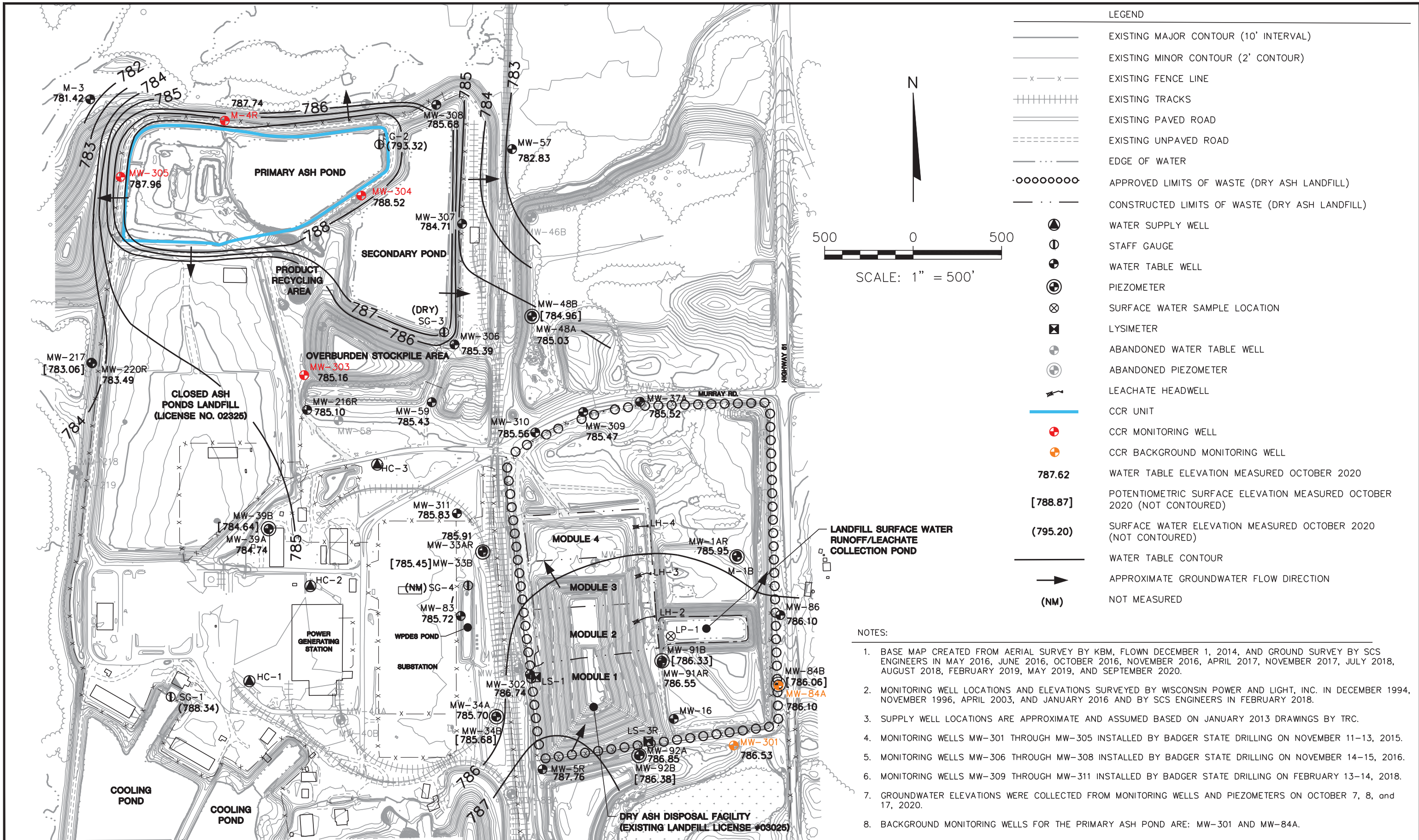
- LEGEND**
- EXISTING MAJOR CONTOUR (10' INTERVAL)
 - EXISTING MINOR CONTOUR (2' CONTOUR)
 - x - x - EXISTING FENCELINE
 - ||||| EXISTING TRACKS
 - ==== EXISTING PAVED ROAD
 - EXISTING UNPAVED ROAD
 - . - . - . EDGE OF WATER
 - · · · · · · · · · · · DRY ASH DISPOSAL FACILITY LIMITS
 - — — — — LIMITS 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
 - ⊕ ABANDONED STAFF GAUGE
 - ↖ 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 WELLS MW-313, MW-314, AND MW-315 WERE INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON DECEMBER 12 AND 19, 2022.
 8. MONITORING WELL MW-316 WAS INSTALLED BY HORIZON CONSTRUCTION & EXPLORATION ON APRIL 27, 2023.
 9. BACKGROUND MONITORING WELLS FOR THE PRIMARY POND ARE: MW-301 AND MW-84A.

PROJECT NO. 25223067.00	DRAWN BY: KP	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	SITE PLAN AND MONITORING WELL LOCATIONS	FIGURE
DRAWN: 12/02/2019	CHECKED BY: NLB								2
REVISED: 06/01/2023	APPROVED BY: TK 6/5/2023								

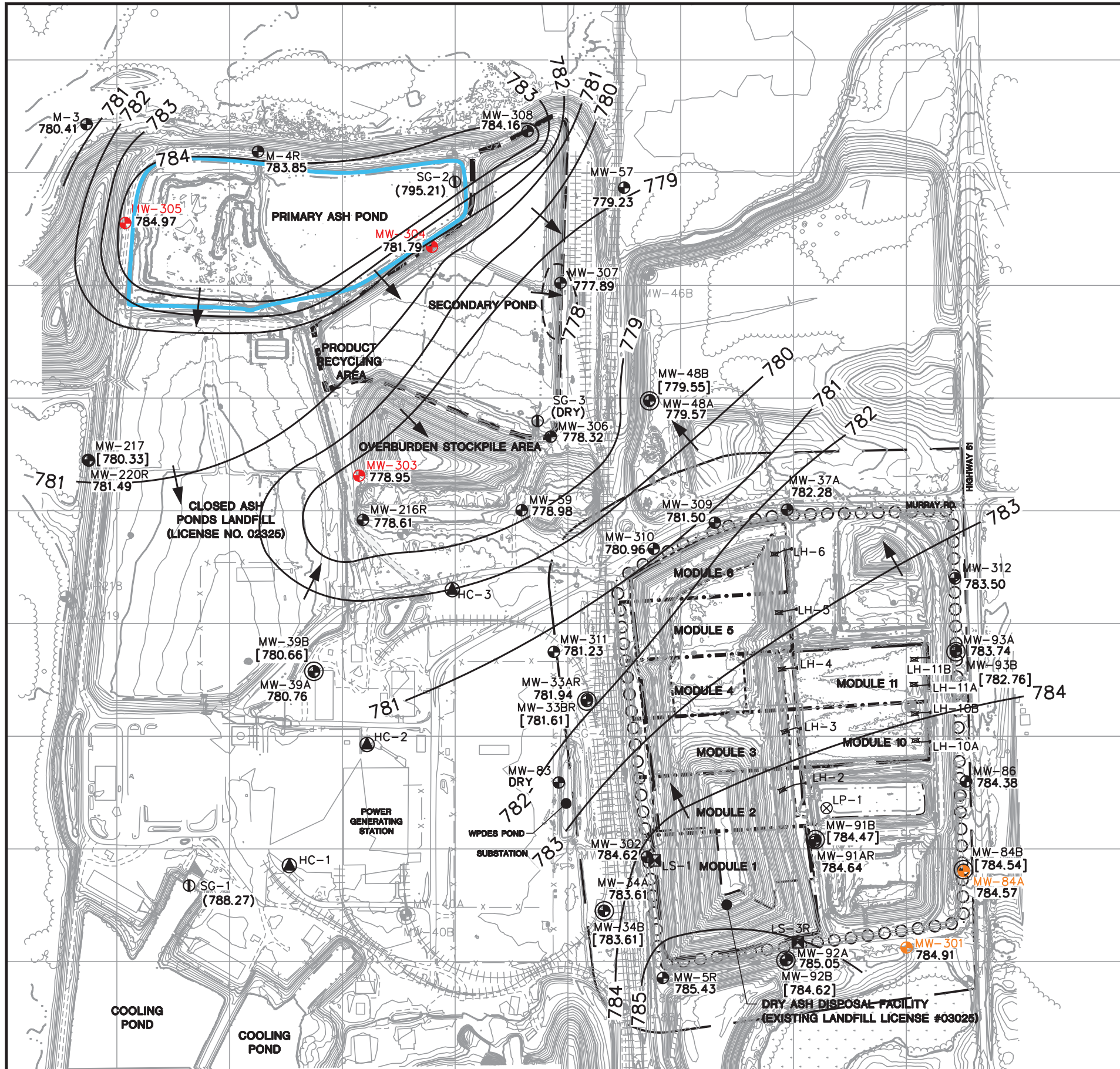
I:\25223067.00\Drawings\Primary Ash Pond\Site Plan and Monitoring Well Locations.dwg, 6/2/2023 3:02:38 PM



LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCE LINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	APPROVED LIMITS OF WASTE (DRY ASH LANDFILL)
	CONSTRUCTED LIMITS OF WASTE (DRY ASH LANDFILL)
	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 MEASURED OCTOBER 2020
[788.87]	POTENTIOMETRIC SURFACE ELEVATION MEASURED OCTOBER 2020 (NOT CONTOURED)
(795.20)	SURFACE WATER ELEVATION MEASURED OCTOBER 2020 (NOT CONTOURED)
	WATER TABLE CONTOUR
	APPROXIMATE GROUNDWATER FLOW DIRECTION
(NM)	NOT MEASURED

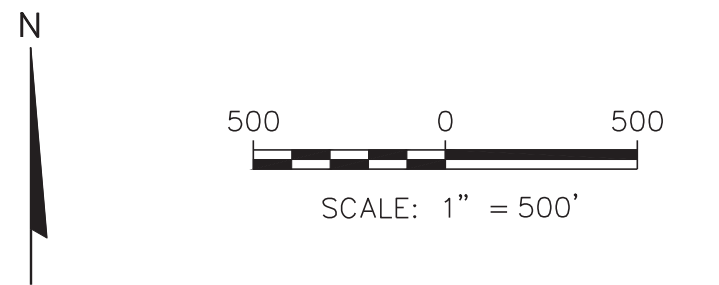
- NOTES:
1. BASE MAP CREATED FROM AERIAL SURVEY BY KBM, FLOWN DECEMBER 1, 2014, AND GROUND SURVEY BY SCS ENGINEERS IN MAY 2016, JUNE 2016, OCTOBER 2016, NOVEMBER 2016, APRIL 2017, NOVEMBER 2017, JULY 2018, AUGUST 2018, FEBRUARY 2019, MAY 2019, AND SEPTEMBER 2020.
 2. MONITORING WELL LOCATIONS AND ELEVATIONS 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 ELEVATIONS WERE COLLECTED FROM MONITORING WELLS AND PIEZOMETERS ON OCTOBER 7, 8, and 17, 2020.
 8. BACKGROUND MONITORING WELLS FOR THE PRIMARY ASH POND ARE: MW-301 AND MW-84A.

PROJECT NO. 25223067.00	DRAWN BY: KP/ZTW	 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 MAP OCTOBER 2020	FIGURE 3
DRAWN: 08/07/2020	CHECKED BY: TK					
REVISED: 01/05/2021	APPROVED BY: TK 6/5/2023					

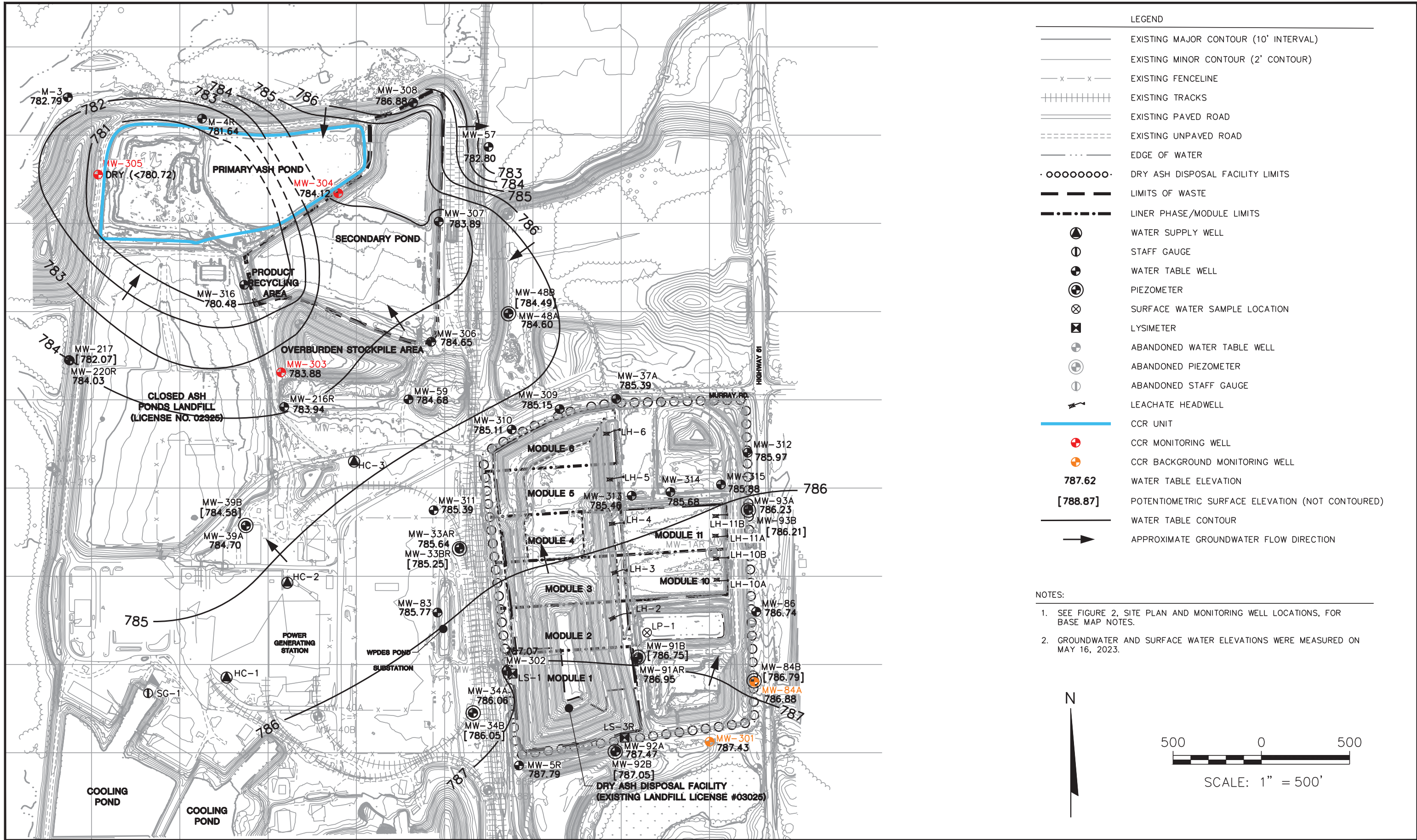


LEGEND	
	EXISTING MAJOR CONTOUR (10' INTERVAL)
	EXISTING MINOR CONTOUR (2' CONTOUR)
	EXISTING FENCELINE
	EXISTING TRACKS
	EXISTING PAVED ROAD
	EXISTING UNPAVED ROAD
	EDGE OF WATER
	DRY ASH DISPOSAL FACILITY LIMITS
	LIMITS OF WASTE
	LINER PHASE/MODULE LIMITS
	WATER SUPPLY WELL
	STAFF GAUGE
	WATER TABLE 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:
- SEE FIGURE 2, SITE PLAN AND MONITORING WELL LOCATIONS, FOR BASE MAP NOTES.
 - GROUNDWATER AND SURFACE WATER ELEVATIONS WERE MEASURED ON OCTOBER 25-27, 2022.
 - DEWATERING WELLS (NOT SHOWN) AROUND THE SECONDARY POND WERE PUMPING AND DISCHARGING TO THE PRIMARY POND DURING THE OCTOBER 2022 SAMPLING EVENT.



PROJECT NO. 25223067.00	DRAWN BY: KP	 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 MAP OCTOBER 2022	FIGURE 4
DRAWN: 12/15/2022	CHECKED BY: NLB					
REVISED: 06/01/2023	APPROVED BY: TK 6/5/2023					



PROJECT NO.	25223067.00	DRAWN BY:	KP
DRAWN:	06/01/2023	CHECKED BY:	NLB
REVISED:	06/01/2023	APPROVED BY:	TK 6/5/2023


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 MAP
 MAY 2023

FIGURE
 5



Appendix A
October 2022 Statistical Evaluation

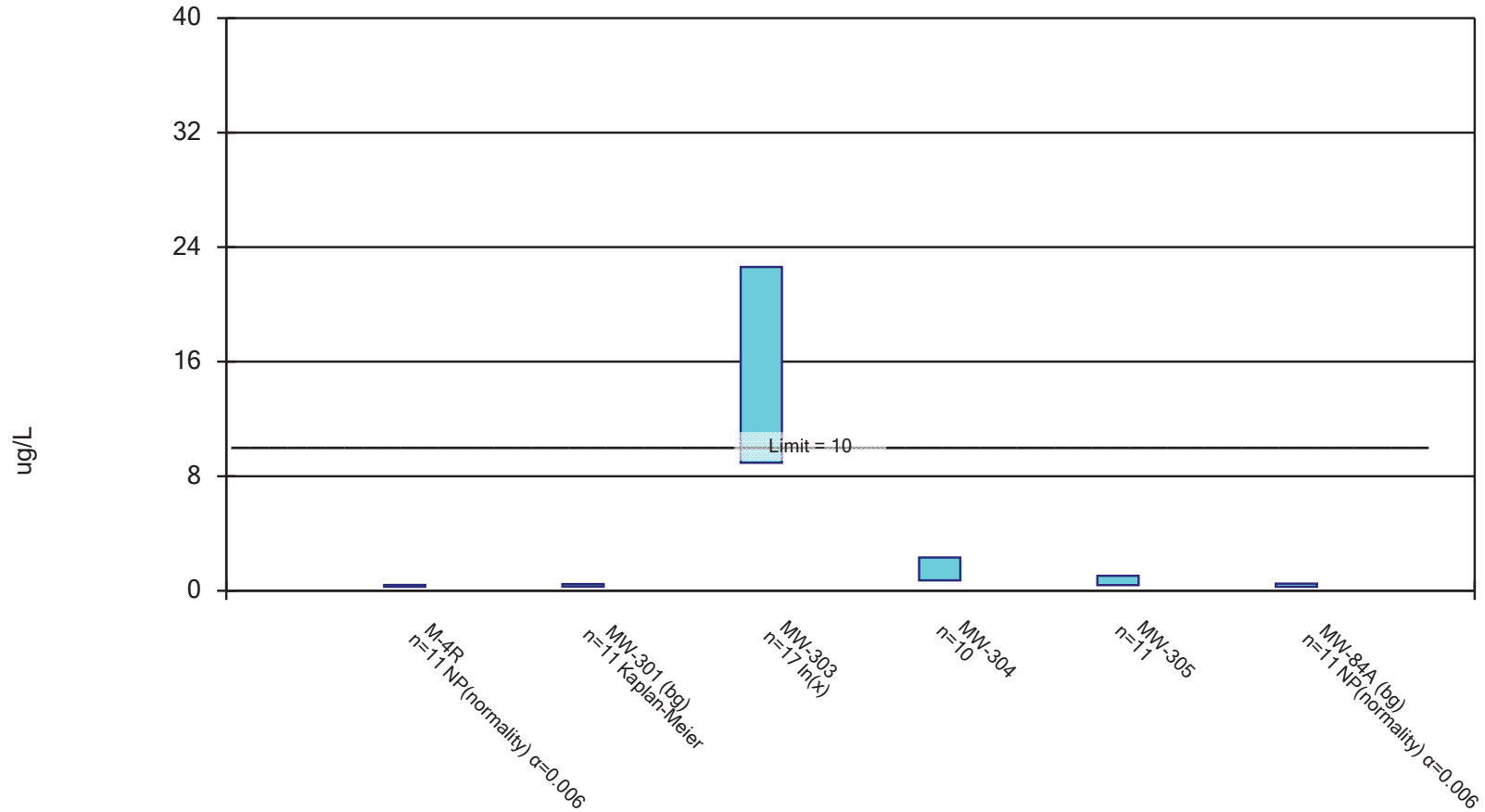
Confidence Interval

Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020 Printed 12/19/2022, 12:12 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Compliance</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Arsenic (ug/L)	M-4R	0.4	0.28	10	No	11	54.55	No	0.006	NP (normality)
Arsenic (ug/L)	MW-301 (bg)	0.4637	0.2926	10	No	11	36.36	No	0.01	Param.
Arsenic (ug/L)	MW-303	22.61	8.937	10	No	17	0	ln(x)	0.01	Param.
Arsenic (ug/L)	MW-304	2.316	0.7238	10	No	10	0	No	0.01	Param.
Arsenic (ug/L)	MW-305	1.045	0.3862	10	No	11	9.091	No	0.01	Param.
Arsenic (ug/L)	MW-84A (bg)	0.49	0.28	10	No	11	27.27	No	0.006	NP (normality)
Molybdenum (ug/L)	M-4R	42.03	19.46	100	No	11	0	No	0.01	Param.
Molybdenum (ug/L)	MW-301 (bg)	0.44	0.44	100	No	11	100	No	0.006	NP (NDs)
Molybdenum (ug/L)	MW-303	110.3	71.09	100	No	13	0	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-304	13	3.2	100	No	10	0	No	0.011	NP (normality)
Molybdenum (ug/L)	MW-305	82.74	48.15	100	No	16	0	ln(x)	0.01	Param.
Molybdenum (ug/L)	MW-84A (bg)	0.44	0.44	100	No	11	90.91	No	0.006	NP (NDs)
Selenium (ug/L)	M-4R	8.736	2.3	50	No	11	0	No	0.01	Param.
Selenium (ug/L)	MW-301 (bg)	0.49	0.32	50	No	11	81.82	No	0.006	NP (NDs)
Selenium (ug/L)	MW-303	45.68	17.37	50	No	12	0	ln(x)	0.01	Param.
Selenium (ug/L)	MW-304	0.35	0.32	50	No	10	70	No	0.011	NP (normality)
Selenium (ug/L)	MW-305	10.05	4.299	50	No	11	0	ln(x)	0.01	Param.
Selenium (ug/L)	MW-84A (bg)	0.32	0.32	50	No	11	90.91	No	0.006	NP (NDs)

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based



Constituent: Arsenic Analysis Run 12/19/2022 12:11 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

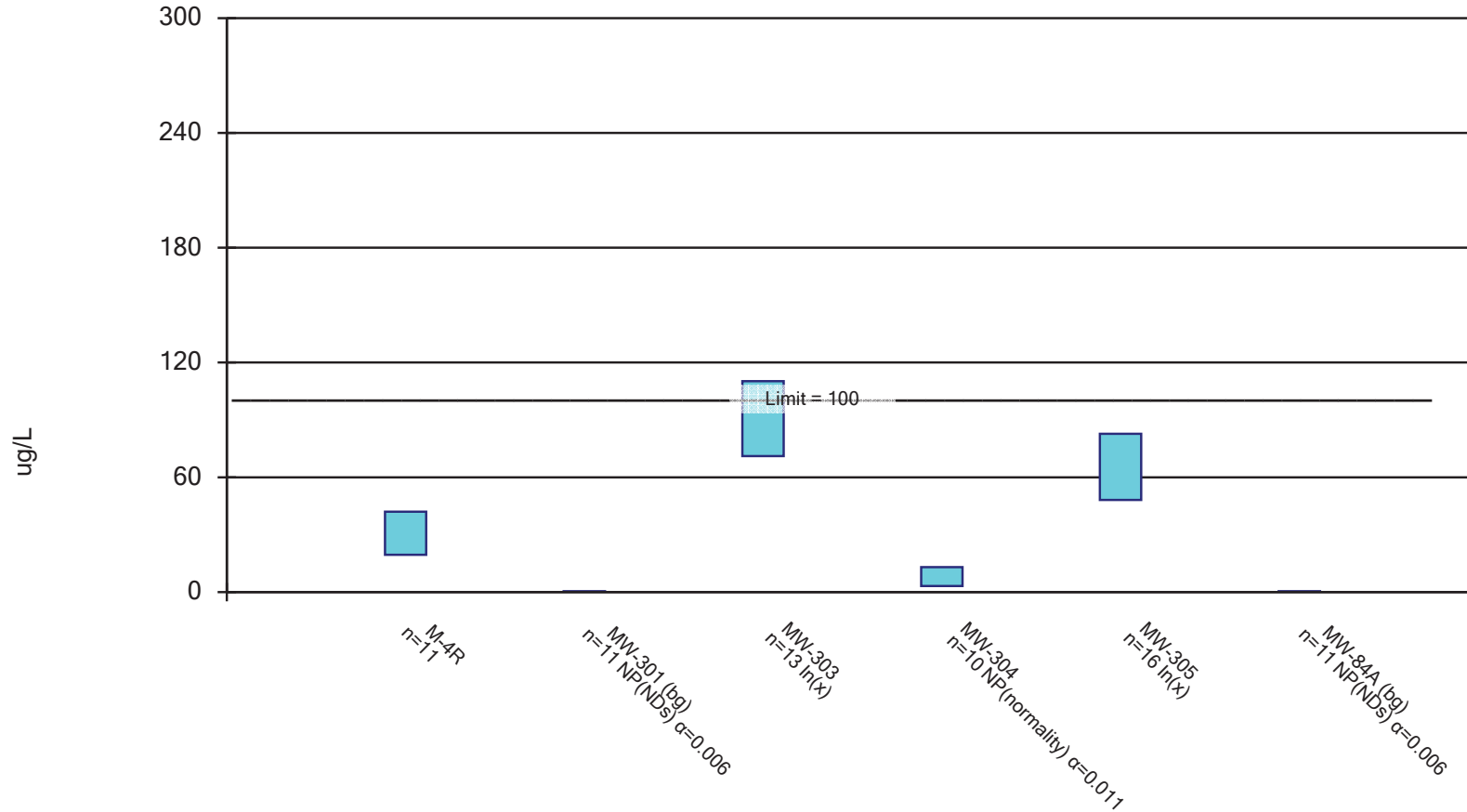
Confidence Interval

Constituent: Arsenic (ug/L) Analysis Run 12/19/2022 12:12 PM View: COL Primary Pond
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/23/2018	0.36 (J)				0.48 (J)	
4/24/2018			39.1	0.64 (J)		
4/25/2018		<0.28 (U)				<0.28 (U)
8/7/2018	<0.28 (U)				0.42 (J)	
8/8/2018		0.45 (J)	8.7	0.76 (J)		<0.28 (U)
9/21/2018			6			
10/24/2018	<0.28 (U)	<0.28 (U)	7.8	1.6	0.4 (J)	0.33 (J)
4/1/2019	<0.28 (U)		33.2		<0.28 (U)	
4/2/2019		0.4 (J)		0.63 (J)		
4/3/2019						<0.28 (U)
6/19/2019			5.3			
10/7/2019	0.37 (J)		10.2	3.2	0.49 (J)	
10/9/2019		0.42 (J)				0.46 (J)
2/3/2020		<0.28 (U)				0.38 (J)
5/27/2020	0.39 (J)		5.9	1.3	0.75 (J)	
5/29/2020		0.33 (J)				0.34 (J)
10/7/2020	0.44 (J)		9.5	2.8	0.95 (J)	
10/8/2020		0.62 (J)				0.49 (J)
2/25/2021			7.7			
4/12/2021			10.4	1.8	0.95 (J)	
4/13/2021	<0.28 (U)					
4/14/2021		<0.28 (U)				0.91 (J)
7/20/2021			13.9			
10/11/2021	<0.28 (U)			1.6	1.4	
10/12/2021			18.6			
10/14/2021		0.35 (J)				0.41 (J)
2/24/2022			28.8			
4/11/2022	<0.28 (U)			0.87 (J)	0.59 (J)	
4/12/2022			27.1			
4/13/2022		0.47 (J)				0.31 (J)
7/27/2022			29.4			
10/25/2022	0.4				1.3	
10/26/2022			52			
Mean	0.3309	0.3782	18.45	1.52	0.7155	0.4064
Std. Dev.	0.06172	0.1077	13.95	0.8924	0.3952	0.1821
Upper Lim.	0.4	0.4637	22.61	2.316	1.045	0.49
Lower Lim.	0.28	0.2926	8.937	0.7238	0.3862	0.28

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based



Constituent: Molybdenum Analysis Run 12/19/2022 12:11 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

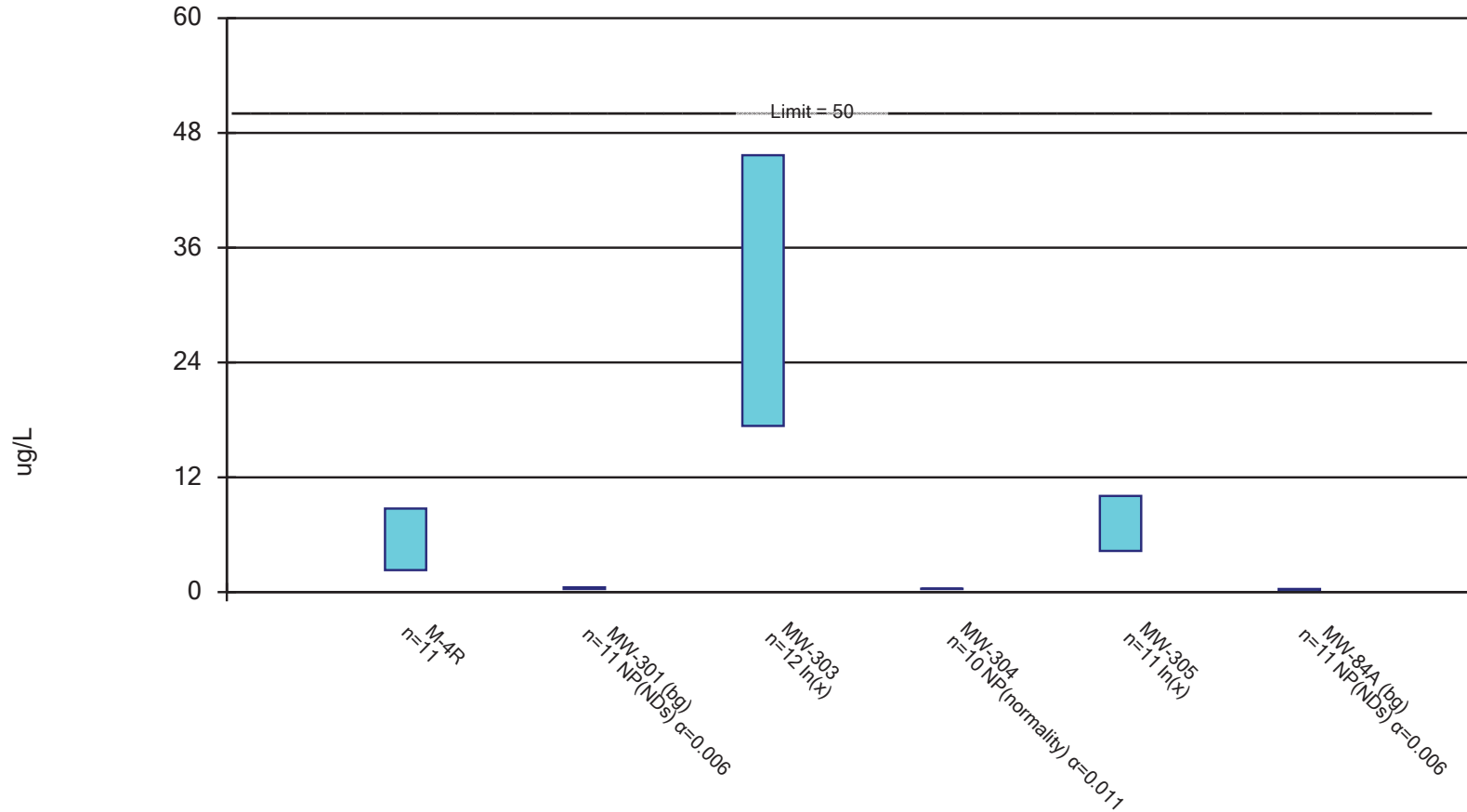
Confidence Interval

Constituent: Molybdenum (ug/L) Analysis Run 12/19/2022 12:12 PM View: COL Primary Pond
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/23/2018	19.1				54.4	
4/24/2018			138	3.2		
4/25/2018		<0.44 (U)				<0.44 (U)
8/7/2018	14.7				55.7	
8/8/2018		<0.44 (U)	94.8	12.3		<0.44 (U)
9/21/2018			84.7			
10/24/2018	15.4	<0.44 (U)	85.5	10.2	45.6	<0.44 (U)
4/1/2019	29.4		106		47.7	
4/2/2019		<0.44 (U)		3		
4/3/2019						<0.44 (U)
6/19/2019			64.1			
10/7/2019	27.6		87	4.8	56.2	
10/9/2019		<0.44 (U)				<0.44 (U)
2/3/2020		<0.44 (U)				<0.44 (U)
5/27/2020	25.6		67.1	3.9	60.5	
5/29/2020		<0.44 (U)				<0.44 (U)
10/7/2020	27.6		67.1	12	102	
10/8/2020		<0.44 (U)				<0.44 (U)
12/11/2020					99	
2/25/2021					107	
4/12/2021			67.1	13	106	
4/13/2021	41.1					
4/14/2021		<0.44 (U)				0.62 (J)
7/20/2021					77	
10/11/2021	60.7			13.5	124	
10/12/2021			78			
10/14/2021		<0.44 (U)				<0.44 (U)
2/24/2022					35.8	
4/11/2022	42.5			9.8	45.9	
4/12/2022			174			
4/13/2022		<0.44 (U)				<0.44 (U)
7/27/2022					35.1	
10/25/2022	34.5				44.9	
10/26/2022			89.4			
Mean	30.75	0.44	92.52	8.57	68.55	0.4564
Std. Dev.	13.54	0	31.63	4.342	29.3	0.05427
Upper Lim.	42.03	0.44	110.3	13	82.74	0.44
Lower Lim.	19.46	0.44	71.09	3.2	48.15	0.44

Parametric and Non-Parametric (NP) Confidence Interval

Compliance Limit is not exceeded. Per-well alpha = 0.01 except as noted. Normality Test: Shapiro Wilk, alpha based



Constituent: Selenium Analysis Run 12/19/2022 12:11 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

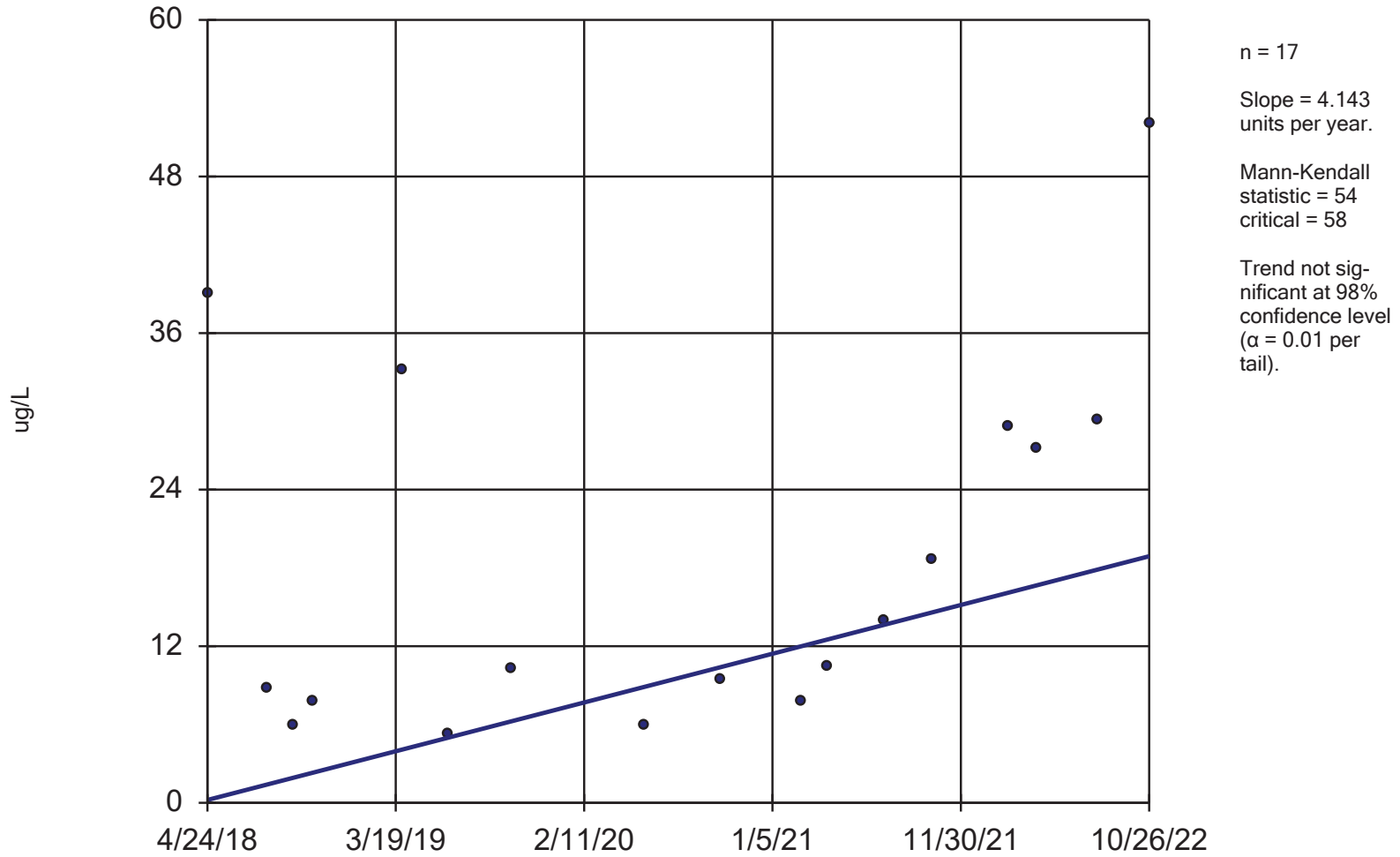
Confidence Interval

Constituent: Selenium (ug/L) Analysis Run 12/19/2022 12:12 PM View: COL Primary Pond
 Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	M-4R	MW-301 (bg)	MW-303	MW-304	MW-305	MW-84A (bg)
4/23/2018	8.6				6.9	
4/24/2018			52.9	<0.32 (U)		
4/25/2018		<0.32 (U)				<0.32 (U)
8/7/2018	5.5				4.8	
8/8/2018		0.71 (J)	25.1	<0.32 (U)		<0.32 (U)
9/21/2018			15.8			
10/24/2018	4.1	<0.32 (U)	15.1	<0.32 (U)	5.4	<0.32 (U)
4/1/2019	12.6		36.5		3.2	
4/2/2019		0.49 (J)		<0.32 (U)		
4/3/2019						<0.32 (U)
10/7/2019	1.8		16.4	<0.32 (U)	7.7	
10/9/2019		<0.32 (U)				<0.32 (U)
2/3/2020		<0.32 (U)				<0.32 (U)
5/27/2020	11.7		18.7	0.33 (J)	4.2	
5/29/2020		<0.32 (U)				<0.32 (U)
10/7/2020	1.6		17.2	<0.32	7.6	
10/8/2020		<0.32 (U)				<0.32 (U)
4/12/2021			22.4	1.1	8	
4/13/2021	3.7					
4/14/2021		<0.32 (U)				0.48 (J)
10/11/2021	2.3			0.35 (J)	4.5	
10/12/2021			28.1			
10/14/2021		<0.32 (U)				<0.32 (U)
4/11/2022	3			<0.32 (U)	21.5	
4/12/2022			87.2			
4/13/2022		<0.32 (U)				<0.32 (U)
10/25/2022	5.8				9.1	
10/26/2022			74.4			
Mean	5.518	0.3709	34.15	0.402	7.536	0.3345
Std. Dev.	3.862	0.1235	24.47	0.2454	4.993	0.04824
Upper Lim.	8.736	0.49	45.68	0.35	10.05	0.32
Lower Lim.	2.3	0.32	17.37	0.32	4.299	0.32

Arsenic

MW-303



Sen's Slope and 98% Confidence Band Analysis Run 2/19/2023 2:38 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

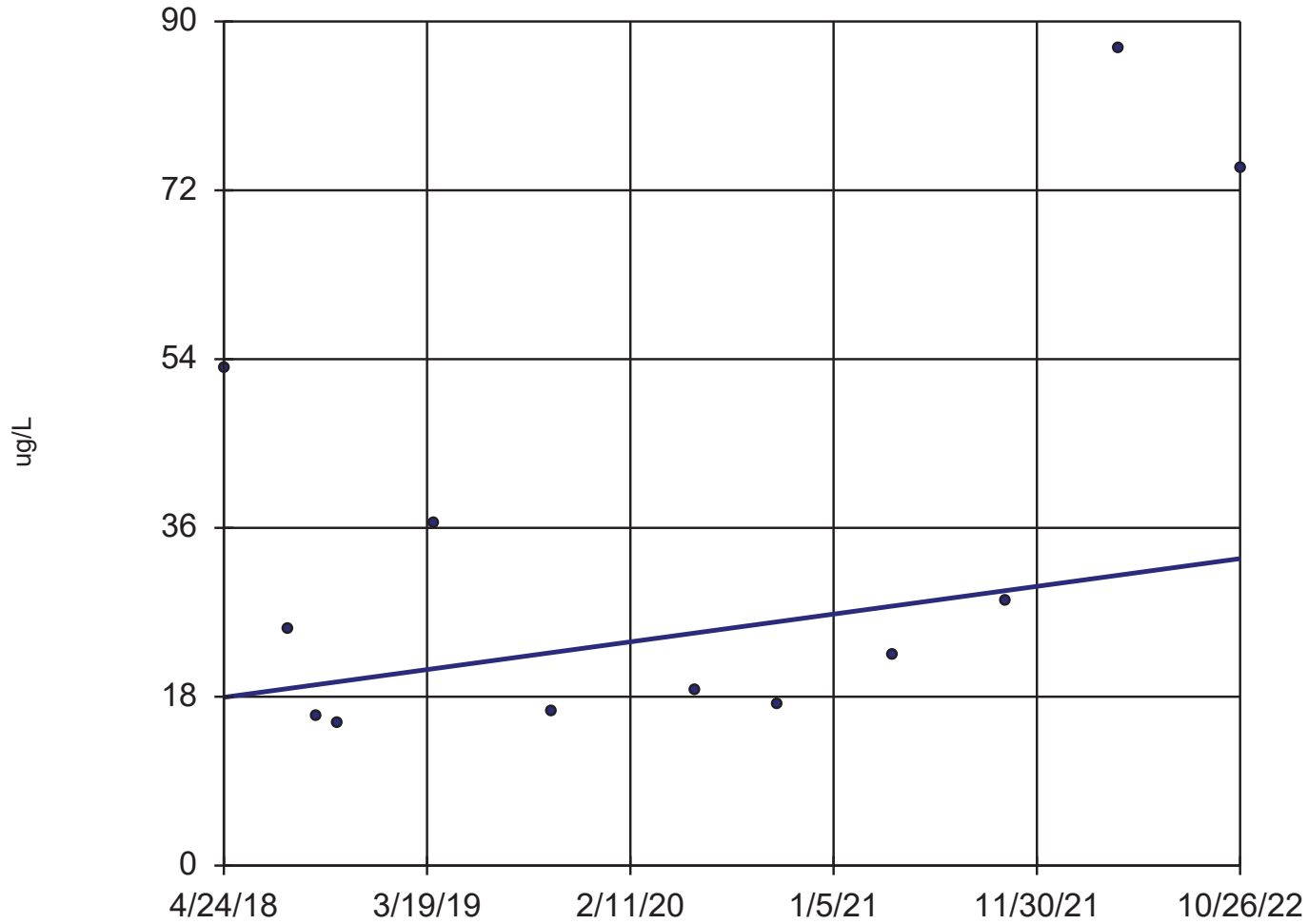
Sen's Slope Estimator

Constituent: Arsenic (ug/L) Analysis Run 2/19/2023 2:39 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-303
4/24/2018	39.1
8/8/2018	8.7
9/21/2018	6
10/24/2018	7.8
4/1/2019	33.2
6/19/2019	5.3
10/7/2019	10.2
5/27/2020	5.9
10/7/2020	9.5
2/25/2021	7.7
4/12/2021	10.4
7/20/2021	13.9
10/12/2021	18.6
2/24/2022	28.8
4/12/2022	27.1
7/27/2022	29.4
10/26/2022	52

Selenium

MW-303



n = 12
Slope = 3.28
units per year.
Mann-Kendall
statistic = 20
critical = 35
Trend not sig-
nificant at 98%
confidence level
($\alpha = 0.01$ per
tail).

Sen's Slope and 98% Confidence Band Analysis Run 2/19/2023 2:38 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Sen's Slope Estimator

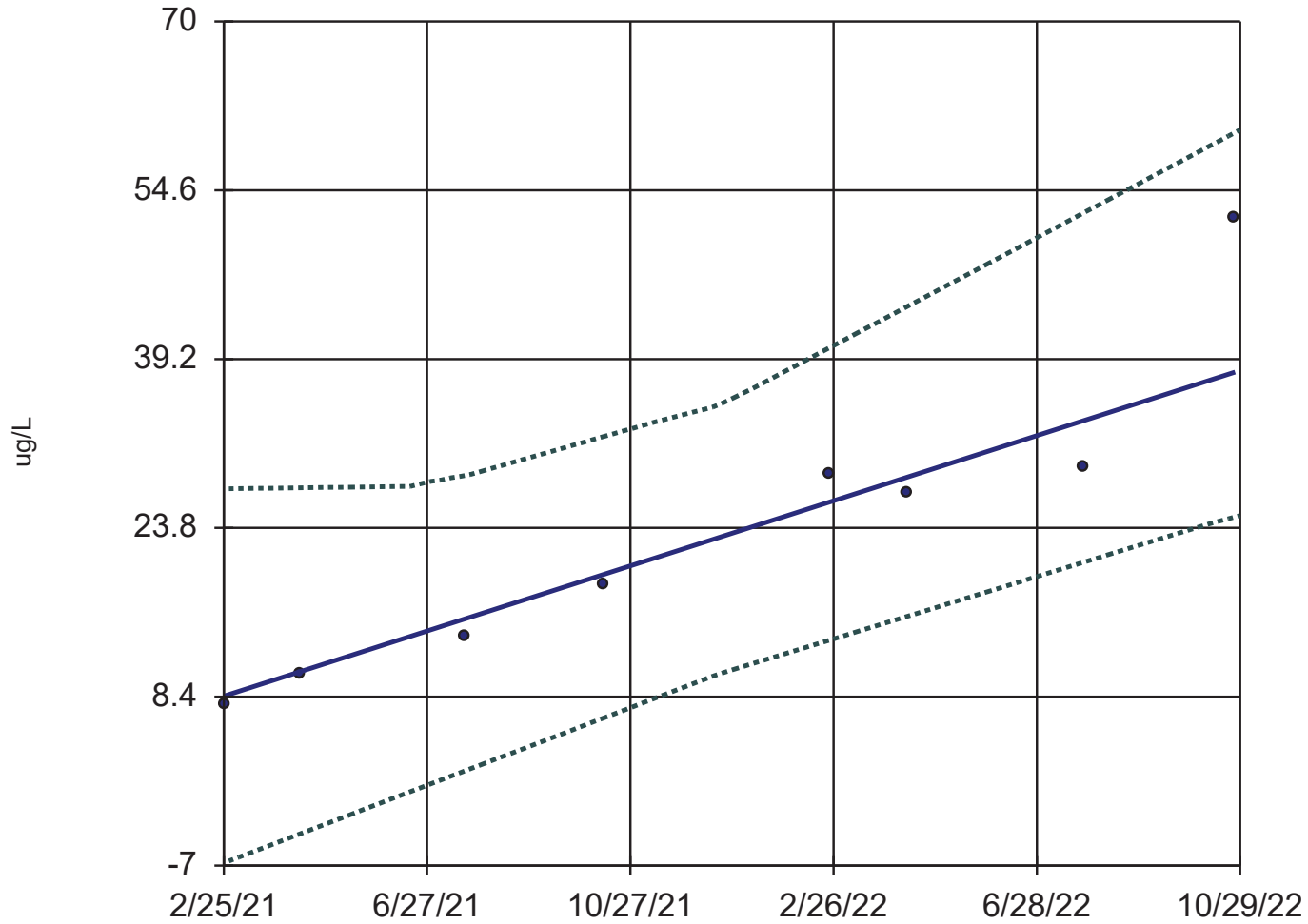
Constituent: Selenium (ug/L) Analysis Run 2/19/2023 2:39 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

MW-303

4/24/2018	52.9
8/8/2018	25.1
9/21/2018	15.8
10/24/2018	15.1
4/1/2019	36.5
10/7/2019	16.4
5/27/2020	18.7
10/7/2020	17.2
4/12/2021	22.4
10/12/2021	28.1
4/12/2022	87.2
10/26/2022	74.4

Arsenic

MW-303



n = 8
Slope = 17.74 units per year.
Mann-Kendall statistic = 26
critical = 20
Increasing trend significant at 98% confidence level ($\alpha = 0.01$ per tail).

Sen's Slope and 98% Confidence Band Analysis Run 1/4/2023 5:15 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

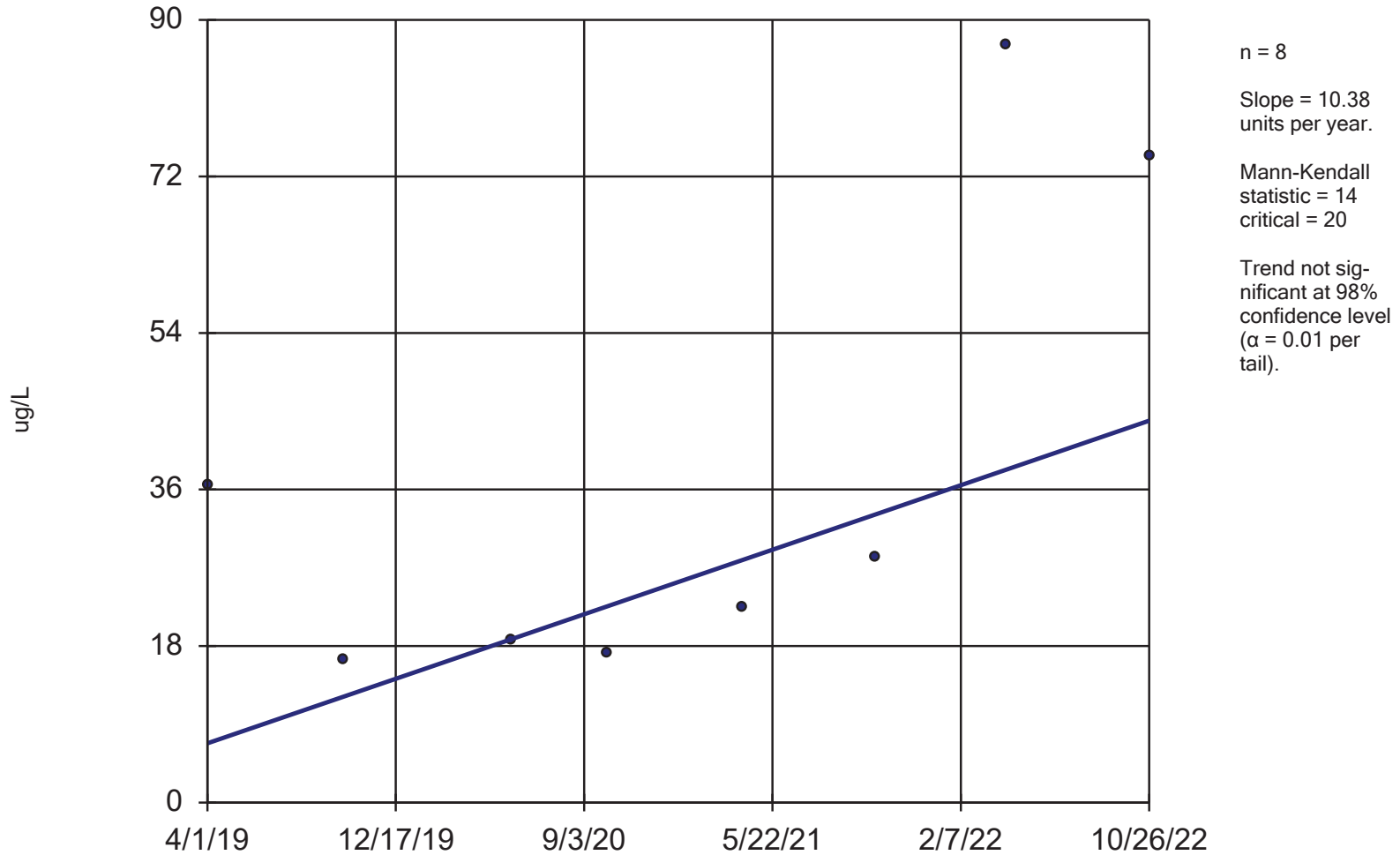
Sen's Slope Estimator

Constituent: Arsenic (ug/L) Analysis Run 1/4/2023 5:16 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-303	LCL	UCL
2/25/2021	7.7	-6.758	27.37
4/12/2021	10.4	-4.092	27.46
7/20/2021	13.9	1.647	28.54
10/12/2021	18.6	6.504	32.16
2/24/2022	28.8	13.56	40.22
4/12/2022	27.1	15.74	44.01
7/27/2022	29.4	20.67	52.54
10/26/2022	52	24.8	59.86

Selenium

MW-303



Sen's Slope and 98% Confidence Band Analysis Run 2/19/2023 3:47 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

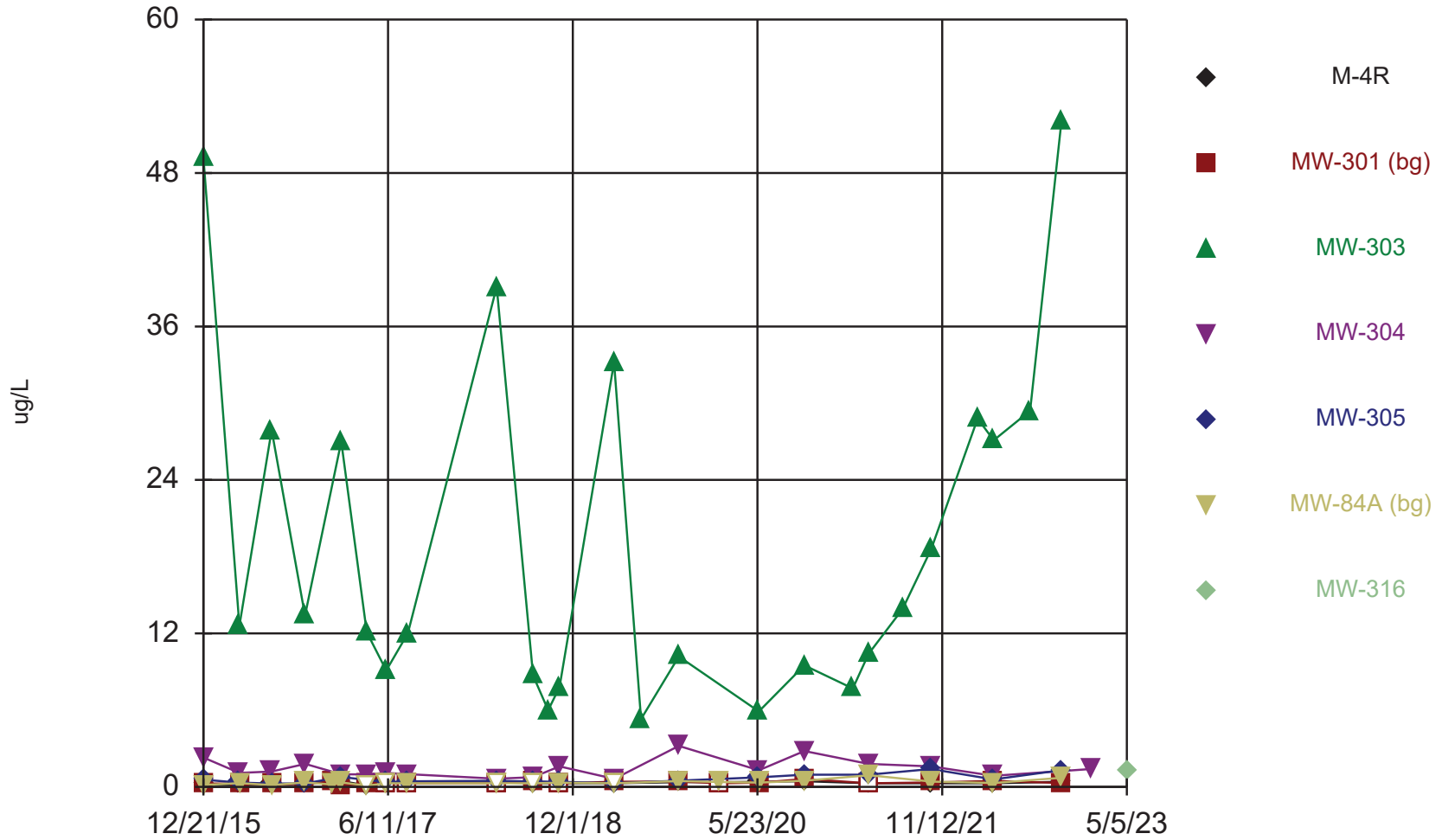
Sen's Slope Estimator

Constituent: Selenium (ug/L) Analysis Run 2/19/2023 3:54 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

	MW-303
4/1/2019	36.5
10/7/2019	16.4
5/27/2020	18.7
10/7/2020	17.2
4/12/2021	22.4
10/12/2021	28.1
4/12/2022	87.2
10/26/2022	74.4

Appendix B
Trend Plots for CCR Wells

Arsenic



Time Series Analysis Run 5/12/2023 12:14 PM View: COL Primary Pond
Columbia Energy Center Client: SCS Engineers Data: December - Chem- export-Dec2020

Appendix C

Regional Information

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

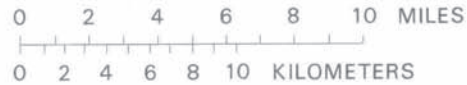
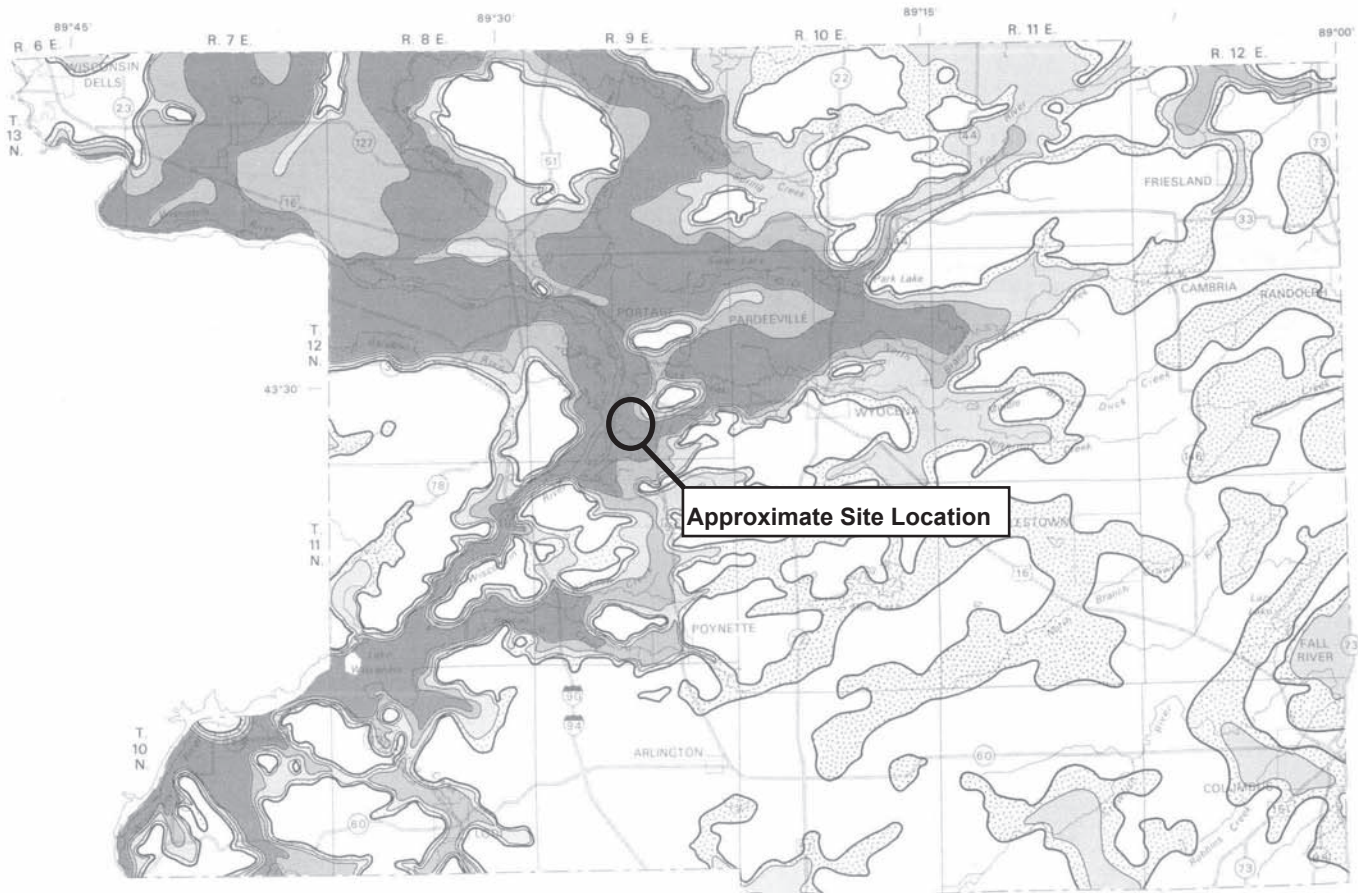
Approximate Age	Hydrogeologic Unit	General Thickness (feet)	Name of Rock Unit*	Predominant Lithology
Quaternary (0-1 million years old)	Surficial Aquifer	0 to 300+	Holocene & Pleistocene Deposits	<ul style="list-style-type: none"> Unconsolidated clay, silt, sand, gravel, cobbles, boulders, and organic matter
Ordovician (460 to 490 million years old)	Sandstone Aquifer	0 to 800+	Galena Decorah Platteville St. Peter Prairie du Chien	<ul style="list-style-type: none"> Dolomite and shaley dolomite Sandstone
Cambrian (490 to 500 million years old)			Trempeleau Franconia Galesville Eau Claire Mt. Simon	<ul style="list-style-type: none"> Sandstone
Precambrian (more than 1 billion years old)	Used for domestic supply in some areas	--	Precambrian	<ul style="list-style-type: none"> 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



EXPLANATION

Probable well yields

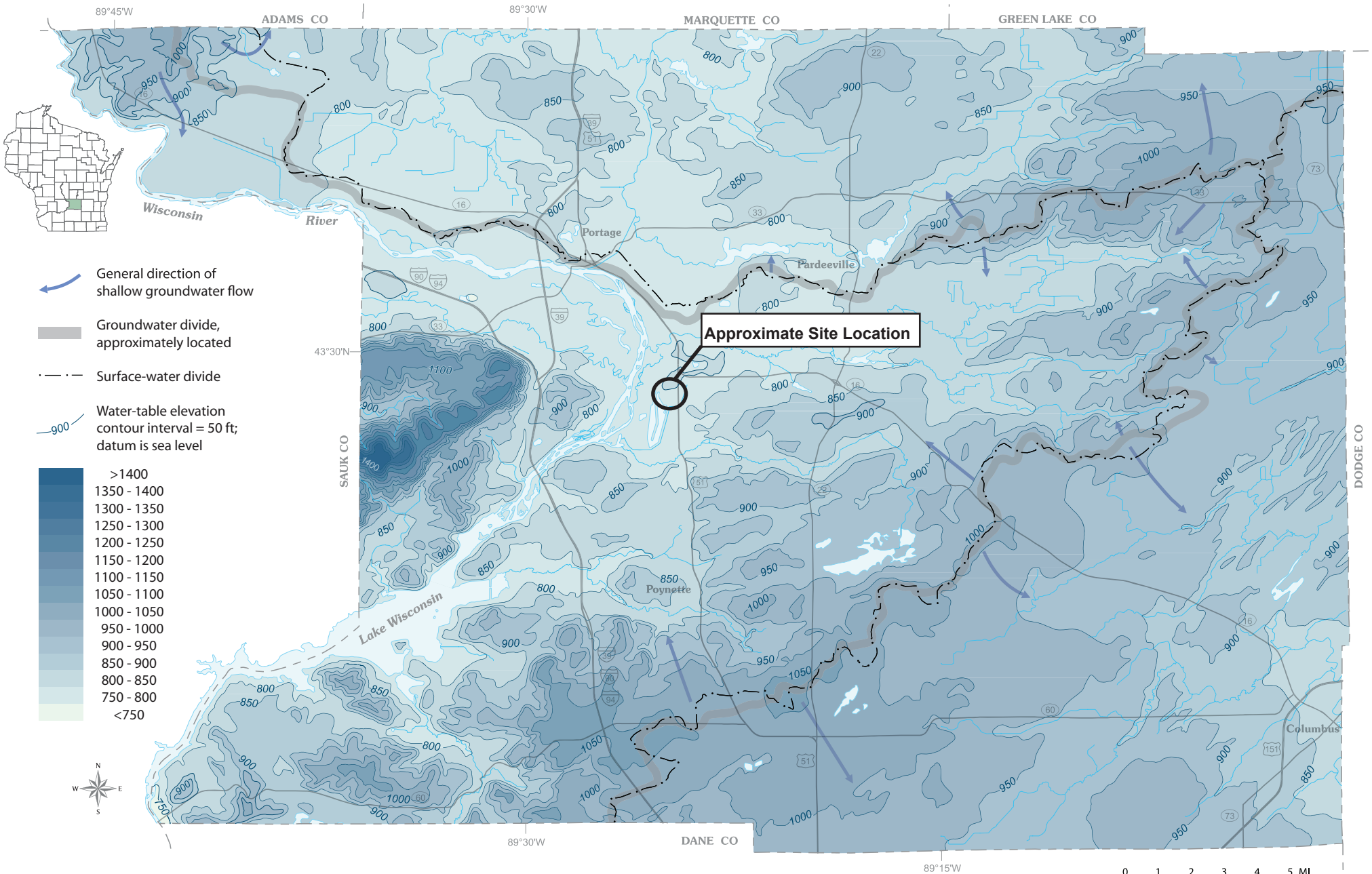
-  Chances of more than 100 gallons per minute are poor
-  Chances of 100-500 gallons per minute are good
-  Chances of 500-1000 gallons per minute are good
-  Chances of more than 1000 gallons per minute are good

Boundary of saturated sand-and-gravel aquifer

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 Wisconsin-Extension Geological and Natural History Survey Information Circular Number 37, 1978.
 02/26/2024 - Classification: Internal - ECRM13238759

Generalized water-table elevation in Columbia County, Wisconsin



Appendix D
MW-316 Construction Information

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

Facility/Project Name WPL - Columbia Generating Station SCS#: 25223067.00		License/Permit/Monitoring Number		Boring Number MW-316	
Boring Drilled By: Name of crew chief (first, last) and Firm Adam Sweet Horizon Construction and Exploration			Date Drilling Started 4/27/2023		Date Drilling Completed 4/27/2023
Drilling Method rotasonic		WI Unique Well No. WC189		DNR Well ID No.	Common Well Name MW-316
Final Static Water Level Feet MSL		Surface Elevation 808.49 Feet MSL		Borehole Diameter 6.0 in.	
Local Grid Origin <input type="checkbox"/> (estimated: <input type="checkbox"/>) or Boring Location <input checked="" type="checkbox"/> State Plane 544,152 N, 2,122,365 E S/C/N SW 1/4 of NW 1/4 of Section 27, T 12 N, R 9 E			Local Grid Location Feet <input type="checkbox"/> N <input type="checkbox"/> E <input type="checkbox"/> S <input type="checkbox"/> W		
Facility ID		County Columbia		County Code 11	Civil Town/City/ or Village 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	U S C S	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
									Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S0	0		0-10	Hydrovac to 10' below ground surface. Soils predominantly silt, sand and gravel.											
			10-16	No recovery.											
S1	0		16-22												
S2	0		22-24												

Drillers indicated that rig was spinning on a hard layer down to 20' bgs. From 20'-22' bgs drillers stated they felt "blow-out" and soils were likely silty sand or fine sand.

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

Signature 	Firm SCS Engineers 3900 Kilroy Airport Way Long Beach, CA 90806	Tel: 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 used for any other purpose. NOTE: See instructions for more information, including where the completed form should be sent.

Boring Number **MW-316** Use only as an attachment to Form 4400-122. Page **2** of **2**

Sample		Blow Counts	Depth In Feet	Soil/Rock Description And Geologic Origin For Each Major Unit	USCS	Graphic Log	Well Diagram	PID/FID	Soil Properties					RQD/ Comments	
Number and Type	Length Att. & Recovered (in)								Standard Penetration	Moisture Content	Liquid Limit	Plasticity Index	P 200		
S2	0		26												
S3	6		30												
			32	POORLY GRADED SAND AND GRAVEL, fine to coarse grained, light brown, with trace large cobbles. No recovery.	SP					W					
S4	0		38												
S5	0		44												
			46	End of boring at 47' below ground surface.											

Facility/Project Name WPL - Columbia Generating Station	Local Grid Location of Well ft. <input type="checkbox"/> N. <input type="checkbox"/> E. ft. <input type="checkbox"/> S. <input type="checkbox"/> W.	Well Name MW-316	
Facility License, Permit or Monitoring No.	Local Grid Origin (estimated: <input type="checkbox"/>) or Well Location <input type="checkbox"/> Lat. " Long. " or " or "	Wis. Unique Well No. WC189	DNR Well ID No.
Facility ID	St. Plane 544,151.67 ft. N, 2,122,364.52 ft. E. S/C/N	Date Well Installed 04 / 27 / 2023 m m d d y y y y	
Type of Well Well Code 11 / MW	Section Location of Waste/Source SW 1/4 of NW 1/4 of Sec. 27, T. 12 N, R. 9 <input checked="" type="checkbox"/> E <input type="checkbox"/> W	Well Installed By: Name (first, last) and Firm Adam Sweet	
Distance from Waste/Source ft.	Location of Well Relative to Waste/Source u <input type="checkbox"/> Upgradient s <input type="checkbox"/> Sidegradient d <input type="checkbox"/> Downgradient n <input type="checkbox"/> Not Known	Gov. Lot Number	Horizon Construction and Exploration

- A. Protective pipe, top elevation --- 809.20 ft. MSL
- B. Well casing, top elevation --- 808.49 ft. MSL
- C. Land surface elevation --- 806.31 ft. MSL
- D. Surface seal, bottom --- 804.31 ft. MSL or --- 2 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

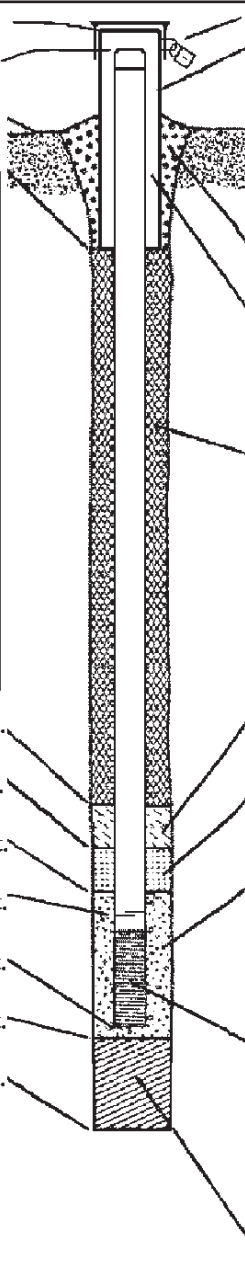
14. Drilling method used: Rotary 5 0
 Rotosonic Hollow Stem Auger 4 1
 Other

15. Drilling fluid used: Water 0 2 Air 0 1
 Drilling Mud 0 3 None 9 9

16. Drilling additives used? Yes No

Describe --

17. Source of water (attach analysis, if required):
 Horizon brought to site.



- 1. Cap and lock? Yes No
- 2. Protective cover pipe:
 - a. Inside diameter: --- 6 in.
 - b. Length: --- 5 ft.
 - c. Material: Steel 0 4
Other
 - d. Additional protection? Yes No
If yes, describe: Bumper Posts
- 3. Surface seal: Bentonite 3 0
Concrete 0 1
Other
- 4. Material between well casing and protective pipe: Bentonite 3 0
Other
- 5. Annular space seal:
 - a. Granular/Chipped Bentonite 3 3
 - b. ___ Lbs/gal mud weight... Bentonite-sand slurry 3 5
 - c. ___ Lbs/gal mud weight... Bentonite slurry 3 1
 - d. ___ % Bentonite... Bentonite-cement grout 5 0
 - e. 6 Ft³ volume added for any of the above
 - f. How installed: Tremie 0 1
Tremie pumped 0 2
Gravity 0 8
- 6. Bentonite seal:
 - a. Bentonite granules 3 3
 - b. 1/4 in. 3/8 in. 1/2 in. Bentonite chips 3 2
 - c. Other
- 7. Fine sand material: Manufacturer, product name & mesh size
 a. Red Flint #15
- b. Volume added 0.5 ft³
- 8. Filter pack material: Manufacturer, product name & mesh size
 a. Red Flint #40
- b. Volume added 4 ft³
- 9. Well casing: Flush threaded PVC schedule 40 2 3
 Flush threaded PVC schedule 80 2 4
 Other
- 10. Screen material: PVC
- a. Screen type: Factory cut 1 1
 Continuous slot 0 1
 Other
- b. Manufacturer Johnson
- c. Slot size: 0.010 in.
- d. Slotted length: --- 10 ft.
- 11. Backfill material (below filter pack): None 1 4
 Filter Sand

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

Signature  Firm SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 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.

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

Facility/Project Name Columbia Generating Station	County Name Columbia	Well Name MW-316	
Facility License, Permit or Monitoring Number	County Code --	Wis. Unique Well Number WC189	DNR Well ID Number --

1. Can this well be purged dry? Yes No
2. Well development method
- surged with bailer and bailed 4 1
 - surged with bailer and pumped 6 1
 - surged with block and bailed 4 2
 - surged with block and pumped 6 2
 - surged with block, bailed and pumped 7 0
 - compressed air 2 0
 - bailed only 1 0
 - pumped only 5 1
 - pumped slowly 5 0
 - Other Surged and purged with pump
3. Time spent developing well 110 min.
4. Depth of well (from top of well casing) 43.7 ft.
5. Inside diameter of well 2.01 in.
6. Volume of water in filter pack and well casing 10.2 gal.
7. Volume of water removed from well 105.0 gal.
8. Volume of water added (if any) -- gal.
9. Source of water added NA
10. Analysis performed on water added? Yes No
(If yes, attach results)

- | | | |
|--|---------------------------|--------------------------|
| | <u>Before Development</u> | <u>After Development</u> |
|--|---------------------------|--------------------------|
11. Depth to Water (from top of well casing)
- a. 27 65 ft. 27 66 ft.
- Date b. 04 / 27 / 2023 04 / 28 / 2023
m m d d y y y y m m d d y y y y
- Time c. 9:40 a.m. p.m. 11:30 a.m. p.m.
12. Sediment in well bottom -- inches -- inches
13. Water clarity
- | | |
|--|---|
| Clear <input type="checkbox"/> 1 0 | Clear <input checked="" type="checkbox"/> 2 0 |
| Turbid <input checked="" type="checkbox"/> 1 5 | Turbid <input type="checkbox"/> 2 5 |
- (Describe) Dark brown, cloudy Clear
- Fill in if drilling fluids were used and well is at solid waste facility:
14. Total suspended solids -- mg/l 134.0 mg/l
15. COD -- mg/l -- mg/l

16. Well developed by: Name (first, last) and Firm

First Name: Ryan Last Name: Matzuk

Firm: SCS ENGINEERS, 2830 Dairy Drive, Madison, WI 53718

17. Additional comments on development:
SURged and purged with pump over 110 minutes.

Name and Address of Facility Contact /Owner/Responsible Party

First Name: _____ Last Name: _____

Facility/Firm: _____

Street: _____

City/State/Zip: _____

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

Signature:

Print Name: Ryan Matzuk

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.

Appendix E

MW-303 and MW-316 Laboratory Reports

May 31, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on April 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
- 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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Pace Analytical Services Pennsylvania

1638 Roseytown Rd Suites 2,3&4, Greensburg, PA 15601
ANAB DOD-ELAP Rad Accreditation #: L2417
Alabama Certification #: 41590
Arizona Certification #: AZ0734
Arkansas Certification
California Certification #: 04222CA
Colorado Certification #: PA01547
Connecticut Certification #: PH-0694
Delaware Certification
EPA Region 4 DW Rad
Florida/TNI Certification #: E87683
Georgia Certification #: C040
Florida: Cert E871149 SEKS WET
Guam Certification
Hawaii Certification
Idaho Certification
Illinois Certification
Indiana Certification
Iowa Certification #: 391
Kansas/TNI Certification #: E-10358
Kentucky Certification #: KY90133
KY WW Permit #: KY0098221
KY WW Permit #: KY0000221
Louisiana DHH/TNI Certification #: LA180012
Louisiana DEQ/TNI Certification #: 4086
Maine Certification #: 2017020
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 #: PA014572018-1
New Hampshire/TNI Certification #: 297617
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 #: PA200002-010
Pennsylvania/TNI Certification #: 65-00282
Puerto Rico Certification #: PA01457
Rhode Island Certification #: 65-00282
South Dakota Certification
Tennessee Certification #: 02867
Texas/TNI Certification #: T104704188-17-3
Utah/TNI Certification #: PA014572017-9
USDA Soil Permit #: P330-17-00091
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
Wyoming Certification #: 8TMS-L

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40261454001	MW-303	Water	04/24/23 14:00	04/28/23 08:40
40261454002	FIELD BLANK-PPOND	Water	04/26/23 09:35	04/28/23 08:40
40261454003	MW-304	Water	04/25/23 00:00	04/28/23 08:40
40261454004	MW-305	Water	04/25/23 00:00	04/28/23 08:40
40261454005	M-4R	Water	04/25/23 00:00	04/28/23 08:40

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
40261454001	MW-303	EPA 6020B	KXS	14	PASI-G
		EPA 7470	AJT	1	PASI-G
			LB	7	PASI-G
		EPA 903.1	JLJ	1	PASI-PA
		EPA 904.0	ZPC	1	PASI-PA
		Total Radium Calculation	JAL	1	PASI-PA
		SM 2540C	SRK	1	PASI-G
		EPA 9040	YER	1	PASI-G
		EPA 300.0	HMB	3	PASI-G
		40261454002	FIELD BLANK-PPOND	EPA 6020B	KXS
EPA 7470	AJT			1	PASI-G
EPA 903.1	JLJ			1	PASI-PA
EPA 904.0	ZPC			1	PASI-PA
Total Radium Calculation	JAL			1	PASI-PA
SM 2540C	SRK			1	PASI-G
EPA 9040	YER			1	PASI-G
EPA 300.0	HMB			3	PASI-G
40261454003	MW-304		LB	1	PASI-G
40261454004	MW-305		LB	1	PASI-G
40261454005	M-4R		LB	1	PASI-G

PASI-G = Pace Analytical Services - Green Bay

PASI-PA = Pace Analytical Services - Greensburg

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: MW-303 **Lab ID: 40261454001** Collected: 04/24/23 14:00 Received: 04/28/23 08:40 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	05/03/23 05:31	05/09/23 14:25	7440-36-0	
Arsenic	4.0	ug/L	1.0	0.28	1	05/03/23 05:31	05/09/23 14:25	7440-38-2	
Barium	31.0	ug/L	2.3	0.70	1	05/03/23 05:31	05/09/23 14:25	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	05/03/23 05:31	05/09/23 14:25	7440-41-7	
Boron	2720	ug/L	100	30.3	10	05/03/23 05:31	05/09/23 13:40	7440-42-8	P6
Cadmium	<0.15	ug/L	1.0	0.15	1	05/03/23 05:31	05/09/23 14:25	7440-43-9	
Calcium	43600	ug/L	254	76.2	1	05/03/23 05:31	05/09/23 14:25	7440-70-2	
Chromium	45.0	ug/L	3.4	1.0	1	05/03/23 05:31	05/09/23 14:25	7440-47-3	
Cobalt	0.26J	ug/L	1.0	0.12	1	05/03/23 05:31	05/09/23 14:25	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	05/03/23 05:31	05/09/23 14:25	7439-92-1	
Lithium	4.4	ug/L	1.0	0.22	1	05/03/23 05:31	05/09/23 14:25	7439-93-2	
Molybdenum	41.3	ug/L	1.5	0.44	1	05/03/23 05:31	05/09/23 14:25	7439-98-7	
Selenium	9.7	ug/L	1.1	0.32	1	05/03/23 05:31	05/09/23 14:25	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/03/23 05:31	05/09/23 14:25	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	05/01/23 10:55	05/02/23 07:33	7439-97-6	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	8.44	Std. Units			1		04/24/23 14:00		
Field Specific Conductance	575	umhos/cm			1		04/24/23 14:00		
Oxygen, Dissolved	9.48	mg/L			1		04/24/23 14:00	7782-44-7	
REDOX	45.9	mV			1		04/24/23 14:00		
Turbidity	0.00	NTU			1		04/24/23 14:00		
Static Water Level	784.38	feet			1		04/24/23 14:00		
Temperature, Water (C)	10.5	deg C			1		04/24/23 14:00		
2540C Total Dissolved Solids									
Analytical Method: SM 2540C									
Pace Analytical Services - Green Bay									
Total Dissolved Solids	420	mg/L	20.0	8.7	1		04/28/23 15:37		
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		05/02/23 10:45		H6
300.0 IC Anions									
Analytical Method: EPA 300.0									
Pace Analytical Services - Green Bay									
Chloride	3.5J	mg/L	10.0	2.2	5		05/12/23 05:06	16887-00-6	D3
Fluoride	<0.48	mg/L	1.6	0.48	5		05/12/23 05:06	16984-48-8	D3
Sulfate	229	mg/L	10.0	2.2	5		05/12/23 05:06	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Sample: FIELD BLANK-PPOND **Lab ID: 40261454002** Collected: 04/26/23 09:35 Received: 04/28/23 08:40 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	05/03/23 05:31	05/09/23 12:56	7440-36-0	
Arsenic	<0.28	ug/L	1.0	0.28	1	05/03/23 05:31	05/09/23 12:56	7440-38-2	
Barium	<0.70	ug/L	2.3	0.70	1	05/03/23 05:31	05/09/23 12:56	7440-39-3	
Beryllium	<0.25	ug/L	1.0	0.25	1	05/03/23 05:31	05/09/23 12:56	7440-41-7	
Boron	<3.0	ug/L	10.0	3.0	1	05/03/23 05:31	05/09/23 12:56	7440-42-8	
Cadmium	<0.15	ug/L	1.0	0.15	1	05/03/23 05:31	05/09/23 12:56	7440-43-9	
Calcium	<76.2	ug/L	254	76.2	1	05/03/23 05:31	05/09/23 12:56	7440-70-2	
Chromium	<1.0	ug/L	3.4	1.0	1	05/03/23 05:31	05/09/23 12:56	7440-47-3	
Cobalt	<0.12	ug/L	1.0	0.12	1	05/03/23 05:31	05/09/23 12:56	7440-48-4	
Lead	<0.24	ug/L	1.0	0.24	1	05/03/23 05:31	05/09/23 12:56	7439-92-1	
Lithium	<0.22	ug/L	1.0	0.22	1	05/03/23 05:31	05/09/23 12:56	7439-93-2	
Molybdenum	<0.44	ug/L	1.5	0.44	1	05/03/23 05:31	05/09/23 12:56	7439-98-7	
Selenium	<0.32	ug/L	1.1	0.32	1	05/03/23 05:31	05/09/23 12:56	7782-49-2	
Thallium	<0.14	ug/L	1.0	0.14	1	05/03/23 05:31	05/09/23 12:56	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	05/01/23 10:55	05/02/23 07:35	7439-97-6	
2540C Total Dissolved Solids									
Analytical Method: SM 2540C Pace Analytical Services - Green Bay									
Total Dissolved Solids	12.0J	mg/L	20.0	8.7	1		04/28/23 15:37		
9040 pH									
Analytical Method: EPA 9040 Pace Analytical Services - Green Bay									
pH at 25 Degrees C	7.1	Std. Units	0.10	0.010	1		05/02/23 10:59		H6
300.0 IC Anions									
Analytical Method: EPA 300.0 Pace Analytical Services - Green Bay									
Chloride	<0.43	mg/L	2.0	0.43	1		05/12/23 05:21	16887-00-6	
Fluoride	<0.095	mg/L	0.32	0.095	1		05/12/23 05:21	16984-48-8	
Sulfate	<0.44	mg/L	2.0	0.44	1		05/12/23 05:21	14808-79-8	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: MW-304 **Lab ID: 40261454003** Collected: 04/25/23 00:00 Received: 04/28/23 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Static Water Level	784.03	feet			1		04/25/23 00:00		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: MW-305 **Lab ID: 40261454004** Collected: 04/25/23 00:00 Received: 04/28/23 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Well Dry	Y	no units			1		04/25/23 00:00		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: M-4R **Lab ID: 40261454005** Collected: 04/25/23 00:00 Received: 04/28/23 08:40 Matrix: Water

Parameters	Results	Units	LOQ	LOD	DF	Prepared	Analyzed	CAS No.	Qual
Field Data									
Analytical Method: Pace Analytical Services - Green Bay									
Well Dry	Y	no units			1		04/25/23 00:00		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 443687 Analysis Method: EPA 7470
QC Batch Method: EPA 7470 Analysis Description: 7470 Mercury
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2547707 Matrix: Water
Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Mercury	ug/L	<0.066	0.20	05/02/23 06:58	

LABORATORY CONTROL SAMPLE: 2547708

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Mercury	ug/L	5	5.1	103	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2547709 2547710

Parameter	Units	40261076001		2547709		2547710		% Rec Limits	RPD	Max RPD	Qual	
		MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec					
Mercury	ug/L	<0.066	5	5	5.1	5.1	101	101	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 443871 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2548462 Matrix: Water
Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Antimony	ug/L	<0.15	1.0	05/09/23 12:49	
Arsenic	ug/L	<0.28	1.0	05/09/23 12:49	
Barium	ug/L	<0.70	2.3	05/09/23 12:49	
Beryllium	ug/L	<0.25	1.0	05/09/23 12:49	
Boron	ug/L	<3.0	10.0	05/09/23 12:49	
Cadmium	ug/L	<0.15	1.0	05/09/23 12:49	
Calcium	ug/L	<76.2	254	05/09/23 12:49	
Chromium	ug/L	<1.0	3.4	05/09/23 12:49	
Cobalt	ug/L	<0.12	1.0	05/09/23 12:49	
Lead	ug/L	<0.24	1.0	05/09/23 12:49	
Lithium	ug/L	<0.22	1.0	05/09/23 12:49	
Molybdenum	ug/L	<0.44	1.5	05/09/23 12:49	
Selenium	ug/L	<0.32	1.1	05/09/23 12:49	
Thallium	ug/L	<0.14	1.0	05/09/23 12:49	

LABORATORY CONTROL SAMPLE: 2548463

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Antimony	ug/L	250	254	102	80-120	
Arsenic	ug/L	250	251	100	80-120	
Barium	ug/L	250	241	96	80-120	
Beryllium	ug/L	250	248	99	80-120	
Boron	ug/L	250	238	95	80-120	
Cadmium	ug/L	250	250	100	80-120	
Calcium	ug/L	10000	9870	99	80-120	
Chromium	ug/L	250	242	97	80-120	
Cobalt	ug/L	250	242	97	80-120	
Lead	ug/L	250	259	104	80-120	
Lithium	ug/L	250	244	97	80-120	
Molybdenum	ug/L	250	245	98	80-120	
Selenium	ug/L	250	258	103	80-120	
Thallium	ug/L	250	249	99	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Parameter	Units	40261454001		2548464		2548465		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
Antimony	ug/L	<0.15	250	250	257	263	103	105	75-125	2	20			
Arsenic	ug/L	4.0	250	250	261	260	103	103	75-125	0	20			
Barium	ug/L	31.0	250	250	277	279	99	99	75-125	1	20			
Beryllium	ug/L	<0.25	250	250	246	242	98	97	75-125	2	20			
Boron	ug/L	2720	250	250	2960	2860	96	54	75-125	4	20	P6		
Cadmium	ug/L	<0.15	250	250	251	255	100	102	75-125	2	20			
Calcium	ug/L	43600	10000	10000	54800	54400	111	108	75-125	1	20			
Chromium	ug/L	45.0	250	250	289	288	98	97	75-125	0	20			
Cobalt	ug/L	0.26J	250	250	245	246	98	98	75-125	0	20			
Lead	ug/L	<0.24	250	250	270	276	108	110	75-125	2	20			
Lithium	ug/L	4.4	250	250	250	251	98	99	75-125	0	20			
Molybdenum	ug/L	41.3	250	250	288	292	99	100	75-125	1	20			
Selenium	ug/L	9.7	250	250	272	275	105	106	75-125	1	20			
Thallium	ug/L	<0.14	250	250	258	266	103	106	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 443595 Analysis Method: SM 2540C
QC Batch Method: SM 2540C Analysis Description: 2540C Total Dissolved Solids
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2547072 Matrix: Water
Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Total Dissolved Solids	mg/L	<8.7	20.0	04/28/23 15:33	

LABORATORY CONTROL SAMPLE: 2547073

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Total Dissolved Solids	mg/L	582	548	94	80-120	

SAMPLE DUPLICATE: 2547074

Parameter	Units	40261401001 Result	Dup Result	RPD	Max RPD	Qualifiers
Total Dissolved Solids	mg/L	840	824	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 443778	Analysis Method: EPA 9040
QC Batch Method: EPA 9040	Analysis Description: 9040 pH
	Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261454001, 40261454002

SAMPLE DUPLICATE: 2547973

Parameter	Units	40261401001 Result	Dup Result	RPD	Max RPD	Qualifiers
pH at 25 Degrees C	Std. Units	7.9	8.0	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

QC Batch: 444304 Analysis Method: EPA 300.0
QC Batch Method: EPA 300.0 Analysis Description: 300.0 IC Anions
Laboratory: Pace Analytical Services - Green Bay
Associated Lab Samples: 40261454001, 40261454002

METHOD BLANK: 2550775 Matrix: Water
Associated Lab Samples: 40261454001, 40261454002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Chloride	mg/L	<0.43	2.0	05/12/23 00:39	
Fluoride	mg/L	<0.095	0.32	05/12/23 00:39	
Sulfate	mg/L	<0.44	2.0	05/12/23 00:39	

LABORATORY CONTROL SAMPLE: 2550776

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Chloride	mg/L	20	20.7	104	90-110	
Fluoride	mg/L	2	2.1	107	90-110	
Sulfate	mg/L	20	21.0	105	90-110	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550777 2550778

Parameter	Units	40261416005		2550777		2550778		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Chloride	mg/L	28.3	100	100	131	131	103	102	90-110	1	15		
Fluoride	mg/L	0.84J	10	10	11.5	11.4	106	106	90-110	1	15		
Sulfate	mg/L	132	100	100	230	228	98	96	90-110	1	15		

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550779 2550780

Parameter	Units	40261456001		2550779		2550780		% Rec	% Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec						
Chloride	mg/L	139	100	100	230	232	90	92	90-110	1	15		
Fluoride	mg/L	<0.48	10	10	10.4	10.8	104	108	90-110	4	15		
Sulfate	mg/L	91.1	100	100	187	191	96	99	90-110	2	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Parameters	Method	Act ± Unc (MDC) Carr Trac	Units	Analyzed	CAS No.	Qual
Pace Analytical Services - Greensburg						
Radium-226	EPA 903.1	-0.193 ± 0.420 (0.968) C:NA T:93%	pCi/L	05/19/23 14:12	13982-63-3	
Pace Analytical Services - Greensburg						
Radium-228	EPA 904.0	0.292 ± 0.402 (0.863) C:83% T:90%	pCi/L	05/12/23 15:54	15262-20-1	
Pace Analytical Services - Greensburg						
Total Radium	Total Radium Calculation	0.292 ± 0.822 (1.83)	pCi/L	05/22/23 12:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

Sample: FIELD BLANK-PPOND **Lab ID:** 40261454002 Collected: 04/26/23 09:35 Received: 04/28/23 08:40 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	0.0717 ± 0.507 (1.01) C:NA T:92%	pCi/L	05/19/23 14:12	13982-63-3	
	Pace Analytical Services - Greensburg					
Radium-228	EPA 904.0	0.396 ± 0.370 (0.756) C:85% T:83%	pCi/L	05/12/23 15:54	15262-20-1	
	Pace Analytical Services - Greensburg					
Total Radium	Total Radium Calculation	0.468 ± 0.877 (1.77)	pCi/L	05/22/23 12:37	7440-14-4	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 585857

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: 40261454001, 40261454002

METHOD BLANK: 2845633

Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-226	0.0964 ± 0.220 (0.131) C:NA T:86%	pCi/L	05/19/23 14:12	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL - RADIOCHEMISTRY

Project: 25223067 COLUMBIA CCR PRIMARY

Pace Project No.: 40261454

QC Batch: 585859

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: 40261454001, 40261454002

METHOD BLANK: 2845642

Matrix: Water

Associated Lab Samples: 40261454001, 40261454002

Parameter	Act ± Unc (MDC) Carr Trac	Units	Analyzed	Qualifiers
Radium-228	0.159 ± 0.298 (0.655) C:87% T:85%	pCi/L	05/12/23 15:53	

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

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

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.

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 COLUMBIA CCR PRIMARY
Pace Project No.: 40261454

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40261454001	MW-303	EPA 3010A	443871	EPA 6020B	443949
40261454002	FIELD BLANK-PPOND	EPA 3010A	443871	EPA 6020B	443949
40261454001	MW-303	EPA 7470	443687	EPA 7470	443719
40261454002	FIELD BLANK-PPOND	EPA 7470	443687	EPA 7470	443719
40261454001	MW-303				
40261454003	MW-304				
40261454004	MW-305				
40261454005	M-4R				
40261454001	MW-303	EPA 903.1	585857		
40261454002	FIELD BLANK-PPOND	EPA 903.1	585857		
40261454001	MW-303	EPA 904.0	585859		
40261454002	FIELD BLANK-PPOND	EPA 904.0	585859		
40261454001	MW-303	Total Radium Calculation	589741		
40261454002	FIELD BLANK-PPOND	Total Radium Calculation	589741		
40261454001	MW-303	SM 2540C	443595		
40261454002	FIELD BLANK-PPOND	SM 2540C	443595		
40261454001	MW-303	EPA 9040	443778		
40261454002	FIELD BLANK-PPOND	EPA 9040	443778		
40261454001	MW-303	EPA 300.0	444304		
40261454002	FIELD BLANK-PPOND	EPA 300.0	444304		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

Sample Condition Upon Receipt Form (SCUR)

Client Name: SLS Engineers

Project #: _____

Courier: CS Logistics Fed Ex Speedee UPS Walco
 Client Pace Other: _____

WO#: 40261454



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 - 9 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.0 / 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: 4/28/23 Initials: SG
 Labeled By Initials: mt

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	12.
-Includes date/time/ID/Analysis Matrix: <u>W3</u>		
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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 logir

May 10, 2023

Meghan Blodgett
SCS ENGINEERS
2830 Dairy Drive
Madison, WI 53718

RE: Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

Dear Meghan Blodgett:

Enclosed are the analytical results for sample(s) received by the laboratory on May 06, 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



REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

CERTIFICATIONS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE SUMMARY

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

Lab ID	Sample ID	Matrix	Date Collected	Date Received
40261817001	MW-316	Water	05/05/23 12:05	05/06/23 09:05
40261817002	FIELD BLANK	Water	05/05/23 12:05	05/06/23 09:05

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SAMPLE ANALYTE COUNT

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

Lab ID	Sample ID	Method	Analysts	Analytes Reported
40261817001	MW-316	EPA 6020B	KXS	1
			LB	7
40261817002	FIELD BLANK	EPA 6020B	KXS	1

PASI-G = Pace Analytical Services - Green Bay

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

SUMMARY OF DETECTION

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Lab Sample ID	Client Sample ID					
Method	Parameters	Result	Units	Report Limit	Analyzed	Qualifiers
40261817001	MW-316					
EPA 6020B	Arsenic	1.2	ug/L	1.0	05/09/23 18:49	
	Field pH	8.32	Std. Units		05/05/23 12:05	
	Field Specific Conductance	636.1	umhos/cm		05/05/23 12:05	
	Oxygen, Dissolved	0.09	mg/L		05/05/23 12:05	
	REDOX	-167.2	mV		05/05/23 12:05	
	Turbidity	0.05	NTU		05/05/23 12:05	
	Static Water Level	NS	feet		05/05/23 12:05	
	Temperature, Water (C)	12.8	deg C		05/05/23 12:05	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Sample: MW-316 **Lab ID: 40261817001** Collected: 05/05/23 12:05 Received: 05/06/23 09:05 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									
Arsenic	1.2	ug/L	1.0	0.28	1	05/09/23 05:24	05/09/23 18:49	7440-38-2	
Field Data									
Analytical Method:									
Pace Analytical Services - Green Bay									
Field pH	8.32	Std. Units			1		05/05/23 12:05		
Field Specific Conductance	636.1	umhos/cm			1		05/05/23 12:05		
Oxygen, Dissolved	0.09	mg/L			1		05/05/23 12:05	7782-44-7	
REDOX	-167.2	mV			1		05/05/23 12:05		
Turbidity	0.05	NTU			1		05/05/23 12:05		
Static Water Level	NS	feet			1		05/05/23 12:05		
Temperature, Water (C)	12.8	deg C			1		05/05/23 12:05		

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

ANALYTICAL RESULTS

Project: 25223067 ALLIANT COLUMBIA

Pace Project No.: 40261817

Sample: FIELD BLANK **Lab ID: 40261817002** Collected: 05/05/23 12:05 Received: 05/06/23 09:05 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									
Arsenic	<0.28	ug/L	1.0	0.28	1	05/09/23 05:24	05/09/23 17:21	7440-38-2	

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

QC Batch: 444332 Analysis Method: EPA 6020B
QC Batch Method: EPA 3010A Analysis Description: 6020B MET
Laboratory: Pace Analytical Services - Green Bay

Associated Lab Samples: 40261817001, 40261817002

METHOD BLANK: 2550885 Matrix: Water
Associated Lab Samples: 40261817001, 40261817002

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Arsenic	ug/L	<0.28	1.0	05/09/23 17:14	

LABORATORY CONTROL SAMPLE: 2550886

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Arsenic	ug/L	250	246	98	80-120	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 2550887 2550888

Parameter	Units	2550887		2550888		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		40261817001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result						
Arsenic	ug/L	1.2	250	250	251	251	100	100	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

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALIFIERS

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

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.

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.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: 25223067 ALLIANT COLUMBIA
Pace Project No.: 40261817

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
40261817001	MW-316	EPA 3010A	444332	EPA 6020B	444424
40261817002	FIELD BLANK	EPA 3010A	444332	EPA 6020B	444424
40261817001	MW-316				

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of Pace Analytical Services, LLC.



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 or List Pace Workorder Number or MTJL Log-in Number Here

40261817

ALL SHADED AREAS are for LAB USE ONLY

Company: SCS Engineers Billing Information: Same as contact

Address: 2830 Dairy Dr

Report To: Meg Blodgett Email To: mblodgett@scsengineers.com

Copy To: Site Collection Info/Address:

Customer Project Name/Number: 25223067 State: WI County/City: _____ Time Zone Collected: [] PT [] MT [X] CT [] ET

Container Preservative Type **

Lab Project Manager:

** Preservative Types (1) nitric acid, (2) sulfuric acid, (3) hydrochloric acid, (4) sodium hydroxide, (5) zinc acetate, (6) methanol, (7) sodium bisulfate, (8) sodium thiosulfate, (9) hexane, (A) ascorbic acid, (B) ammonium sulfate, (C) ammonium hydroxide, (D) TSP, (U) Unpreserved, (O) Other _____

Phone: _____ Site/Facility ID #: _____ Compliance Monitoring? Yes No

Email: _____

Collected By (print): Ryan Matzke Purchase Order #: _____ DW PWS ID #: _____
Quote #: _____ DW Location Code: _____

Collected By (signature): [Signature] Turnaround Date Required: _____ Immediately Packed on Ice: Yes No

Sample Disposal: _____ Rush: Same Day Next Day 2 Day 3 Day 4 Day 5 Day Hold: _____ Field Filtered (if applicable): Yes No
Analysis: _____

Analyses										Lab Profile/Line:
										Lab Sample Receipt Checklist:
										Custody Seals Present/Intact Y N NA
										Custody Signatures Present Y N NA
										Collector Signature Present Y N NA
										Bottles Intact Y N NA
										Correct Bottles Y N NA
										Sufficient Volume Y N NA
										Samples Received on Ice Y N NA
										VOA - Headspace Acceptable Y N NA
										USDA Regulated Solids Y N NA
										Samples in Holding Time Y N NA
										Residual Chlorine Present Y N NA
										Cl Strips: _____
										Sample pH Acceptable Y N NA
										pH Strips: _____
										Sulfide Present Y N NA
										Lead Acetate Strips: _____

* Matrix Codes (Insert in Matrix box below): Drinking Water (DW), Ground Water (GW), Wastewater (WW), Product (P), Soil/Solid (SL), Oil (OL), Wipe (WP), Air (AR), Tissue (TS), Bioassay (B), Vapor (V), Other (OT)

Customer Sample ID	Matrix *	Comp / Grab	Collected (or Composite Start)		Composite End		Res Cl	# of Ctns
			Date	Time	Date	Time		
MW-316	GW	6	5/5	1205				1
Field Blank	W	6	5/5	1205				1

LAB USE ONLY:

Lab Sample # / Comments: 901
002

Customer Remarks / Special Conditions / Possible Hazards: _____

Type of Ice Used: Wet Blue Dry None None

Packing Material Used: _____

Radchem sample(s) screened (<500 cpm): Y N NA

SHORT HOLDS PRESENT (<72 hours): Y N N/A

Lab Tracking #: 2730557

Samples received via: FEDEX UPS Client Courier Pace Courier

Lab Sample Temperature Info:

Temp Blank Received: Y N NA

Therm ID#: _____

Cooler 1 Temp Upon Receipt: _____ oC

Cooler 1 Therm Corr. Factor: _____ oC

Cooler 1 Corrected Temp: _____ oC

Comments: _____

Relinquished by/Company: (Signature) [Signature] SCS Date/Time: 5/5/23 1500

Relinquished by/Company: (Signature) [Signature] Date/Time: 5/6/23 0905

Relinquished by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) [Signature] Date/Time: 5/6/23 0905

Received by/Company: (Signature) _____ Date/Time: _____

Received by/Company: (Signature) _____ Date/Time: _____

MTJL LAB USE ONLY

Table #: _____

Acctnum: [Signature]

Template: _____

Prelogin: _____

PM: _____

PB: _____

Trip Blank Received: Y N NA

HCL MeOH TSP Other

Non Conformance(s): _____

YES / NO

Sample Condition Upon Receipt Form (SCUR)

Project #:

WO#: 40261817



40261817

Client Name: S&S 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 - 9 Type of Ice: Wet Blue Dry None Meltwater Only

Cooler Temperature Uncorr: 1.5 /Corr: 2.5

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: 5/6/23 Initials: SB

Labeled By Initials: ARJ

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	1.
Chain of Custody Filled Out:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	3.
Sampler Name & Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	4.
Samples Arrived within Hold Time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
- DI VOA Samples frozen upon receipt	<input type="checkbox"/> Yes <input type="checkbox"/> No	Date/Time:
Short Hold Time Analysis (<72hr):	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	6.
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:		8.
For Analysis: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No MS/MSD: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A		
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Correct Type: <u>Pace Green Bay</u> , Pace IR, Non-Pace		
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Filtered volume received for Dissolved tests	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	11.
Sample Labels match COC:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	12. <u>no / no time</u>
-Includes date/time/ID/Analysis Matrix: <u>W</u>		<u>5/6/23 SB</u>
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> 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