

2024 Annual Groundwater Monitoring and Corrective Action Report

AVS CCR Landfill

Antelope Valley Station Beulah, North Dakota

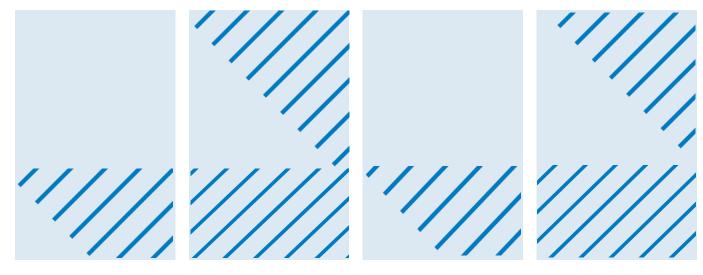
Prepared for Basin Electric Power Cooperative

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January 2025

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2024 Annual Groundwater Monitoring and Corrective Action Report

January 2025

Contents

Ε	xecutive	Summary	i
1		troduction	
	1.1	Physical Setting	. 1
	1.2	Purpose	. 2
	1.3	CCR Rule Requirements	. 2
2	G	roundwater Monitoring Program	. 4
	2.1	Groundwater Monitoring System	
	2.1.1	Changes to Groundwater Monitoring System	. 5
	2.2	Actions Completed/Problems Encountered	. 5
	2.3	Data and Collection Summary	. 6
	2.3.1	June 2024 Detection Monitoring Event	. 6
	2.3.2	October 2024 Detection Monitoring Event	. 6
	2.4	Activities for Upcoming Year	. 6
3	R	eferences	. 7



Tables

Table 1	3	
Table 2	Groundwater Monitoring System	
Table 3	Sampling Summary	
Table 4	Statistical Evaluation Summary	
Table 5	Water Quality Analytical Data Summary	4
	Figures	
Figure 1	Site Location	6
Figure 2	Monitoring Network	7
Figure 3	Spring 2024 Potentiometric Surface Map	
Figure 4	Fall 2024 Potentiometric Surface Map	
	Appendices	
Appendix A	Lab and Field Reports	
Appendix B	Alternative Source Demonstration	
Appendix C	Groundwater Flow Rate	
Appendix D	Baseline Sample Results	
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Abbreviations

asml above mean sea level

ASD Alternative Source Demonstration

AVS Antelope Valley Station
bgs below ground surface
CCR Coal Combustion Residu

CCR Coal Combustion Residuals
CFR Code of Federal Regulations

cm centimeters

EPA Environmental Protection Agency

FGD flue gas desulfurization

ft feet

NDAC North Dakota Administrative Code

NDDEQ North Dakota Department of Environmental Quality

SAP Sampling and Analysis Plan

sec second

SSI Statistically Significant Increase

TDS Total Dissolved Solids

Executive Summary

This 2024 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Coal Combustion Residuals (CCR) landfill at Basin Electric Power Cooperative's (Basin Electric) Antelope Valley Station (Site). The permitted landfill is the only CCR Unit at this Site. Content of this report is to satisfy requirements of the federal CCR rule.

In 2018 the CCR Unit began operating under a detection monitoring program as described in 40 CFR § 257.94 and NDAC 33.1-20-08-06-04. At the beginning, end, and throughout 2024, the CCR Unit was operating under a detection monitoring program with semi-annual detection monitoring events conducted in the early summer and fall. Landfill expansion required the installation of three additional monitoring wells in September 2020: background well MW-21(S) and downgradient wells MW-22(S) and MW-24(S). In late 2023, three new downgradient landfill expansion wells, MW-25(S), MW-26(S), and MW-27(S), were installed at the Site. In May 2023, CCR waste began being placed into the landfill expansion area. Chloride in monitoring well MW-24(S) was verified as an SSI at the end of the 2023 reporting year, and a successful ASD was completed in 2024. During this report timeframe, and pursuant to § 257.94 and NDAC 33.1-20-08-06-04, statistically significant increases (SSIs) were determined for:

- June 2024: chloride at MW-16(S), MW-20(S), MW-24(S), MW-25(S), and MW-26(S) and boron, calcium, chloride, and total dissolved solids (TDS) at MW-27(S)
- October 2024: chloride at MW-16(S), MW-20(S), MW-24(S), MW-25(S), and MW-26(S) and boron, calcium, and chloride at MW-27(S)

Subsequent determinations and actions (if any) will be addressed in the 2025 Annual Report. Successful alternative source demonstrations (ASDs) were completed for the SSIs determined during the October 2023 and June 2024 sampling events. The ASD documentation for SSIs determined for both the fall 2023 and spring 2024 monitoring events are included in this report under Appendix B. An ASD for the October 2024 detection monitoring results is in progress, and results of the ASD are anticipated in 2025. Therefore, no assessment monitoring program (§ 257.95 and NDAC 33.1-20-08-06-04) or related corrective or remedial measures (§§ 257.96, 257.97, and 257.98; NDAC 33.1-20-08-06-06, -07, and -08) were necessary.

i

1 Introduction

Basin Electric Power Cooperative (Basin Electric) owns and operates Antelope Valley Station (AVS), comprised of a coal-fired generating station consisting of two power generating units, located in Beulah, North Dakota (Figure 1). Unit 1 coal-based operations began in 1984 and Unit 2 operations began in 1986. One coal combustion residual (CCR) unit, as defined by 40 CFR 257.53 and North Dakota Administrative Code (NDAC) 33.1-20-08-01, is located on the property. The landfill (Site or CCR Landfill) was permitted by the North Dakota Department of Environmental Quality (NDDEQ) in 1995 under Permit SP-160 (now designated 0160) and began accepting CCR in 1996. The most recent Permit 0160 was issued by NDDEQ in early 2022, and the most recent cell including a composite liner system and leachate collection system was constructed the same year.

The CCRs including fly ash, bottom ash, and flue gas desulfurization (FGD) waste are managed at the Site along with other minor wastes accepted as per the NDDEQ permit. The CCR unit is required to comply with the provisions of the US Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261, Disposal of Coal Combustion Residuals from Electric Utilities) and the NDDEQ CCR Rule (NDAC Title 33.1, Article 20, Chapter 8).

This 2024 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the CCR landfill. No corrective actions were required or conducted in 2024.

Basin Electric utilizes a consulting firm, Barr Engineering Co. (Barr) to assist in groundwater reporting and analysis. Barr is familiar with the Site and installed and certified the most recent added to the network wells (MW-25(S), MW-26(S), and MW-27(S)). Barr has reviewed the historical groundwater data, CCR information for the Site, and is knowledgeable about facility design and operation.

Additional Site monitoring information, including CCR reports and certifications can be found on Basin Electric's CCR website: Section 7 CCR Landfill - AVS - Basin Electric Power Cooperative.

1.1 Physical Setting

The geology underlying the Site includes mine spoils underlain by the Sentinel Butte Formation. This formation is comprised of continental deposits more than 1,000-feet thick, consisting of dense clay, weakly cemented sandstone, mudstone, and lignite beds.

The base of the CCR Landfill is underlain by 115 to 200 feet (approximately) of clay-rich mine spoil that overlies the Lower Sentinel Butte Formation. At the Site, the Sentinel Butte is comprised primarily of dense clay with a trace of very fine sand and lignite beds typically ranging from 6- to 9-feet thick.

The uppermost aquifer is found within the 6- to 9-foot unmined lignite bed, mapped locally as the Spaer Bed or Spaer Lignite, located at depths ranging roughly from 180 to 260 feet below ground surface (ft bgs). The elevation of the Spaer Lignite varies across the Site by approximately 35 feet from 1,844 feet above mean sea level (ft amsl) at MW-18(S) to 1,879 ft amsl at MW-23(S). The potentiometric surface reflects that variation.

Across the southern portions of the landfill, the potentiometric surface generally slopes to the east with groundwater elevations ranging from approximately 1,893 ft amsl on the western side of the CCR Landfill to 1,886 ft amsl on the eastern side. In the northern portion of the landfill, the potentiometric surface

generally slopes to the northeast with groundwater elevations ranging from 1,893 ft amsl in the southwestern corner to 1,864 ft amsl in the northeastern corner. Field hydraulic conductivity measurements from 2017 for the uppermost aquifer range from 1.65 x 10⁻⁴ centimeters per second (cm/sec) in MW-19(S) to 2.48 x 10⁻⁹ cm/sec in Well MW-16(S).

Additional Site information can be found on Basin Electric's CCR website in the CCR Groundwater Monitoring System Report (AECOM, 2017).

1.2 Purpose

As stated in § 257.90(e) and NDAC 33.1-20-08-06-01(e), the Annual Report must:

- Document the status of groundwater monitoring and any corrective action programs 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.

1.3 CCR Rule Requirements

Additional requirements for the Annual Report, as outlined in § 257.90(e) and NDAC 33.1-20-08-06-01(e), and this Site's compliance with the CCR Rules, are summarized in Table 1.

Table 1 CCR Rule Requirements and Compliance

EPA CCR Rule Reference (40 CFR)	NDDEQ CCR Rule Reference (NDAC)	Content Required in Report	Location
§ 257.90(e)(1)	§ 33.1-20-08- 06-01(e)(1)	Monitoring System Figure: 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.	Section 2.1 Groundwater Monitoring System; see Figure 1
§ 257.90(e)(2)	§ 33.1-20-08- 06-01(e)(2)	Monitoring System Adjustments: 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.	Section 2.1.1 Changes to Groundwater Monitoring System
§ 257.90(e)(3)	§ 33.1-20-08- 06-01(e)(3)	Data and Collection Summary: In addition to all the monitoring data obtained under §257.90 through §257.98 and §33.1-20-08-06, a summary including the number of groundwater samples that were collected, and whether the sample was required by the detection monitoring or assessment monitoring programs.	Section 2.3 Data and Collection Summary; monitoring data included in Table 3, Table 4, Table 5, Appendix A, and Appendix C
§ 257.90(e)(4)	§ 33.1-20-08- 06-01(e)(4)	Monitoring Program: 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).	Not applicable – No transition between monitoring programs was necessary
§ 257.90(e)(5)	§ 33.1-20-08- 06-01(e)(5)	Other Information: Other information required, if applicable, to be included in the annual report as specified in §257.90 through §257.98 and §33.1-20-08-06.	Section 2.2 Actions Completed/Problems Encountered; Appendix B
§ 257.90(e)(6)	<u>n/a</u>	Executive Summary: 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.	Executive Summary

2 Groundwater Monitoring Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR unit in 2024. A description of the groundwater monitoring system is included in Section 2.1, key actions completed and problems encountered are described in Section 2.2, the monitoring and analytical results are described in Section 2.3, and key activities planned for 2025 are described in Section 2.4.

2.1 Groundwater Monitoring System

The certified groundwater monitoring well network around the CCR unit consists of three background wells and nine downgradient wells, sampled for groundwater analysis on a semi-annual basis as described in Table 2 below:

Table 2 Groundwater Monitoring System

CCR Unit	Background Wells	Downgradient Wells
Active Landfill	MW-18(S), MW-19(S)	MW-15(S), MW-16(S), MW-17(S), MW-20(S)
Landfill Expansion Area	MW-21(S)	MW-22(S), MW-24(S), MW-25(S), MW-26(S), MW-27(S)

The wells monitor the uppermost aquifer underlying the CCR unit in the lignite bed mapped locally as the Spaer Bed or the Spaer Lignite, within the Sentinel Butte Formation approximately 180 to 260 ft bgs. Well locations are shown on Figure 2. Monitoring wells MW-21(S), MW-22(S), MW-23(S), and MW-24(S) were installed in September 2020 in advance of northward landfill expansion to be used as background and downgradient monitoring wells. Wells MW-25(S), MW-26(S), and MW-27(S) were installed in late-2023 to provide enhanced downgradient coverage for the future expansion area. Background wells monitor background water quality that is not potentially influenced by the presence of the CCR unit.

Two monitoring wells, MW-14(S) and MW-23(S) have been historically excluded from the groundwater monitoring network due to insufficient water production. The wells remain in place for optional collection of groundwater level measurements for potential inclusion in the potentiometric evaluation of the Site.

Baseline monitoring was initiated in August 2016 for wells in the pre-expansion portion of the monitoring network and included sampling groundwater over ten baseline monitoring events. Baseline monitoring for wells MW-21(S), MW-22(S), MW-23(S), and MW-24(S) began in the spring of 2021 and continued through 2022. These wells were added to the well network in May 2023. The results of baseline monitoring are discussed in previous Annual Reports.

Detection monitoring events in 2024 and prior to 2024 were performed in general accordance with procedures established in the site-specific Sampling and Analysis Plan (SAP) (AECOM, 2018), which is included in the facility's Operating Record. The CCR Landfill was placed in Detection monitoring in October 2017, with the first Detection monitoring groundwater sampling event completed in April 2018. Detection monitoring events have been completed semi-annually since April 2018. The results of previous

Detection monitoring events were presented and discussed in the previous Annual Reports, which can be found on Basin Electric's CCR website.

2.1.1 Changes to Groundwater Monitoring System

Monitoring locations MW-25(S), MW-26(S), and MW-27(S) were added to the monitoring network in late 2023 in anticipation of waste placement in the landfill expansion area. Baseline monitoring and inclusion in detection monitoring began in June 2024 and will continue until at least eight samples have been collected. Baseline sampling results are included in Appendix D. The system described in Section 2.1 and shown on Figure 2 are described in the Groundwater Monitoring System Certification (Barr, 2024).

2.2 Actions Completed/Problems Encountered

The following actions were completed in 2024:

- Background Update: Background was statistically evaluated and updated to include data
 through 2023 from upgradient wells MW-18(S), MW-19(S), and MW-21(S) in accordance with the
 Groundwater Statistical Method Selection Certification (AECOM, 2017). The updated prediction
 limits were used for the spring and fall 2024 detection monitoring events.
- **Baseline Sampling:** Baseline Groundwater samples were collected at MW-25(S), MW-26(S), and MW-27(S) in June and October 2024 (Appendix D).
- **Detection Monitoring Sampling:** Groundwater samples were collected from each well in the groundwater monitoring system on June 11-13 and 17, 2024 and October 1-2 and 8, 2024. Groundwater samples were analyzed for Appendix III constituents, per the detection monitoring program of the CCR Rules (§ 257.94 and NDAC 33.1-20-08-06-04) (Table 3).
- **SSI Evaluation:** SSI evaluations were conducted in accordance with the Groundwater Statistical Method Selection Certification (AECOM, 2017) for the June 2024 and October 2024 detection monitoring events. Both detection monitoring events resulted in verified SSIs (Table 4).
- Alternative Source Demonstration (ASD): ASDs were conducted on the verified SSIs for the October 2023 and June 2024 detection monitoring events. The October 2023 SSIs were identified in the 2023 Annual Report (AECOM, 2024). Both ASDs demonstrated an alternative source, as allowed by the CCR Rules (§ 257.94(e)(2) and NDAC 33.1-20-08-06-04(e)(2)). An ASD for the October 2024 detection monitoring event is in progress and will be completed within 90 days of the SSI determination. More details are provided in Section 2.3. Subsequent determinations and actions (if any) will be addressed in the 2025 Annual Report.

Problems encountered in 2024:

 The water levels and field turbidity for samples collected at MW-27(S) suggest the well was screened in a low yielding interval of the uppermost aquifer. Groundwater may not fully recharge for the Site's semi-annual sampling frequency.

2.3 Data and Collection Summary

2.3.1 June 2024 Detection Monitoring Event

Groundwater samples were collected from the twelve groundwater monitoring network wells at the Site on June 11-13 and 17, 2024. Nine SSIs (chloride at MW-16(S), MW-20(S), MW-24(S), MW-25(S), MW-26(S) and boron, calcium, chloride, and total dissolved solids (TDS) at MW-27(S)) were identified. No verification resampling was performed. A summary of results is included in Table 5. Field data sheets and analytical laboratory reports for detection monitoring sampling are included in Appendix A. Water level contours are shown on Figure 3, and flow calculations are included in Appendix C.

An ASD was conducted on the verified SSIs and was able to successfully demonstrate that a natural variation in groundwater quality and/or "a source other than the CCR unit" and/or statistical methods and/or sampling methods resulted in the SSIs, as allowed by § 257.94(e)(2) and NDAC 33.1-20-08-06-04(e)(2). The Alternative Source Demonstration: June 2024 Event Report is included in Appendix B.

2.3.2 October 2024 Detection Monitoring Event

Groundwater samples were collected from the twelve groundwater monitoring network wells at the Site on October 1-2 and 8, 2024. Eight SSIs (chloride at MW-16(S), MW-20(S), MW-24(S), MW-25(S), MW-26(S) and boron, calcium, and chloride at MW-27(S)) were identified. No verification resampling was performed. A summary of results is included in Table 5. Field data sheets and analytical laboratory reports for detection monitoring sampling are included in Appendix A. Water level contours are shown on Figure 4, and flow calculations are included in Appendix C.

An ASD was ongoing at the end of 2024. If the ASD is not successful, appropriate actions will be initiated per the CCR Rule as applicable.

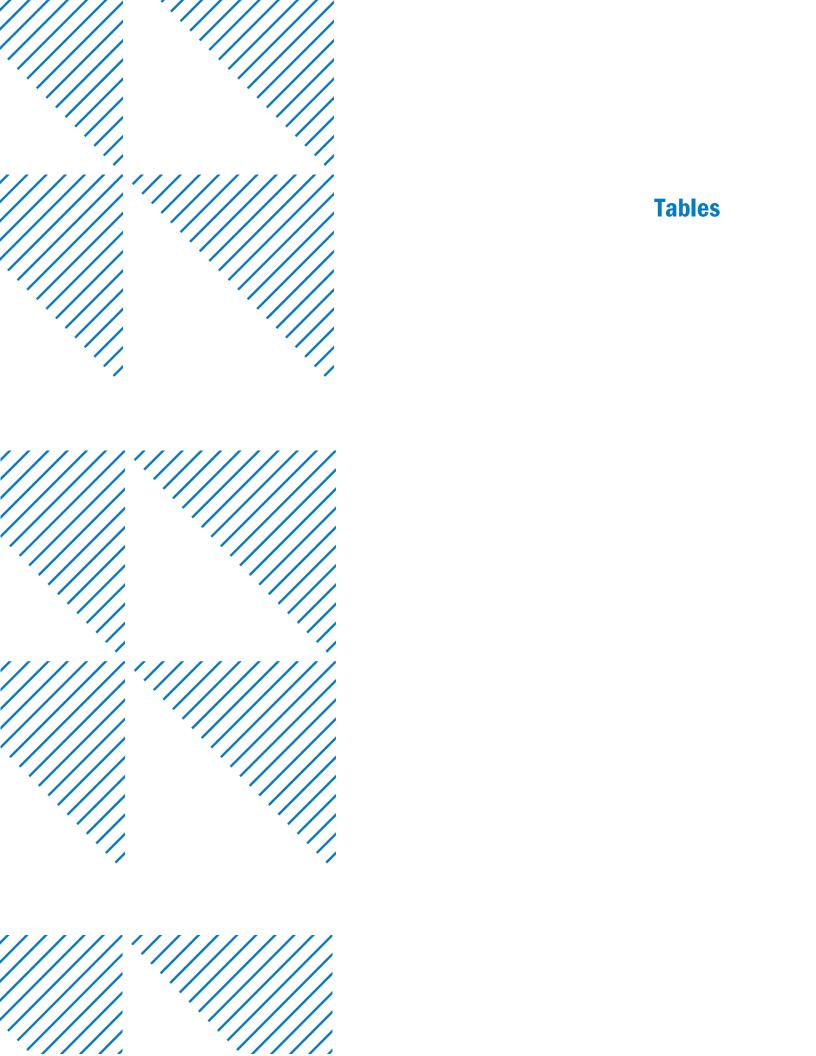
2.4 Activities for Upcoming Year

The following key activities for analytical results and statistical evaluations are planned for 2025:

- Complete the ASD or assessment monitoring determination for the October 2024 detection monitoring event in accordance with the Statistical Certification (AECOM, 2017).
- Evaluate analytical results from 2025 semi-annual detection monitoring events for SSIs according to the Statistical Certification (AECOM, 2017).
- Continue baseline sample collection at MW-25(S), MW-26(S), and MW-27(S) until eight baseline samples have been collected.
- Evaluate sampling frequency and recharge rates at MW-27(S).
- Review the conceptual site model and consider recommendations for improvements to the monitoring well network if needed.

3 References

- AECOM, 2017. CCR Groundwater Monitoring System Report, Antelope Valley Station. Prepared for Basin Electric Power Cooperative. October 2017.
- AECOM, 2018. Sampling and Analysis Plan, CCR Monitoring Program, Antelope Valley Station. Prepared for Basin Electric Power Cooperative. January 2018.
- AECOM, 2024. 2023 Annual Groundwater Monitoring and Corrective Action Report: AVS CCR Landfill. Prepared for Basin Electric Power Cooperative. January 2024.
- Barr Engineering Co. (Barr), 2024. Groundwater Monitoring System Certification, Antelope Valley Station Landfill. Prepared for Basin Electric Power Cooperative. June 2024.



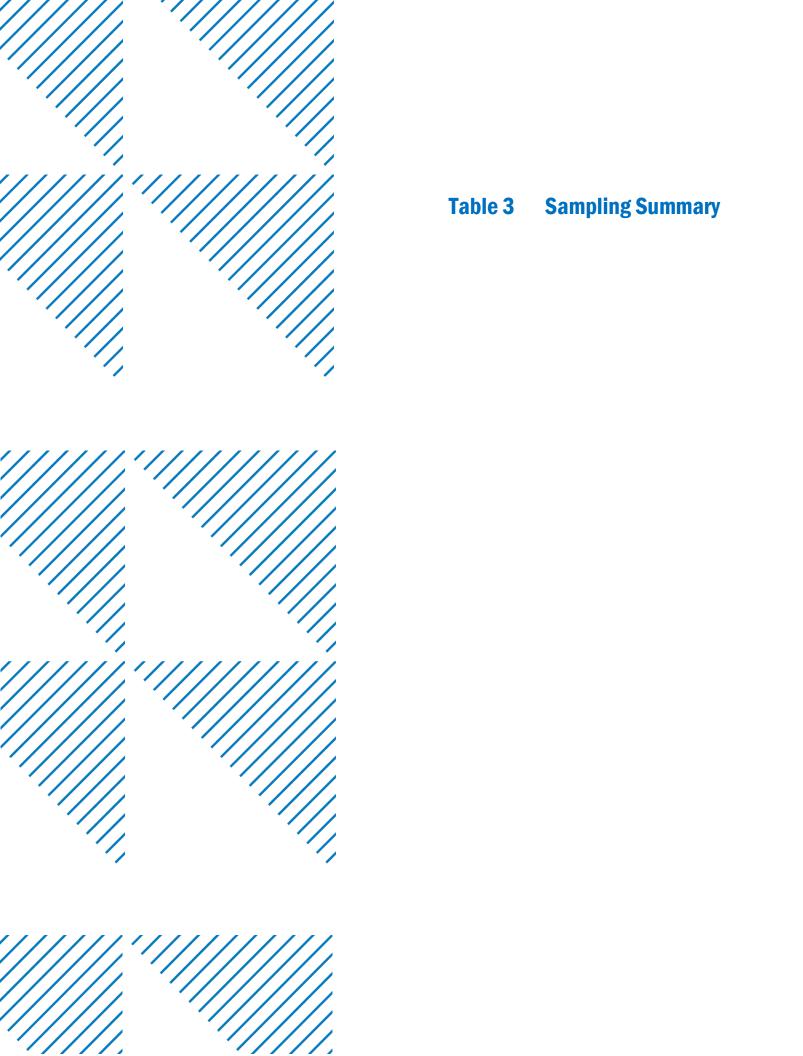


Table 3 Sampling Summary 2024 Annual Monitoring Report AVS CCR Groundwater Compliance

Event Classification and Number	Monitoring Well	Up or Down Gradient	Event date	No. Samples
Detection Monitoring Event #1	MW-15S	Down	6/11/2024	1
Detection Monitoring Event #1	MW-16S	Down	6/12/2024	1
Detection Monitoring Event #1	MW-17S	Down	6/12/2024	1
Detection Monitoring Event #1	MW-18S	Up	6/12/2024	1
Detection Monitoring Event #1	MW-19S	Up	6/12/2024	2
Detection Monitoring Event #1	MW-20S	Down	6/11/2024	1
Detection Monitoring Event #1	MW-21S	Up	6/13/2024	1
Detection Monitoring Event #1	MW-22S	Down	6/13/2024	1
Detection Monitoring Event #1	MW-24S	Down	6/13/2024	2
Detection Monitoring Event #1	MW-25S	Down	6/17/2024	1
Detection Monitoring Event #1	MW-26S	Down	6/13/2024	1
Detection Monitoring Event #1	MW-27S	Down	6/17/2024	1
Detection Monitoring Event #2	MW-15S	Down	10/1/2024	1
Detection Monitoring Event #2	MW-16S	Down	10/2/2024	1
Detection Monitoring Event #2	MW-17S	Down	10/2/2024	1
Detection Monitoring Event #2	MW-18S	Up	10/8/2024	1
Detection Monitoring Event #2	MW-19S	Up	10/8/2024	2
Detection Monitoring Event #2	MW-20S	Down	10/1/2024	1
Detection Monitoring Event #2	MW-21S	Up	10/8/2024	1
Detection Monitoring Event #2	MW-22S	Down	10/2/2024	2
Detection Monitoring Event #2	MW-24S	Down	10/2/2024	1
Detection Monitoring Event #2	MW-25S	Down	10/2/2024	1
Detection Monitoring Event #2	MW-26S	Down	10/2/2024	1
Detection Monitoring Event #2	MW-27S	Down	10/2/2024	1

Table 4 Statistical Evaluation Summary

Table 4 Statistical Evaluation Summary 2024 Annual Monitoring Report AVS CCR Groundwater Compliance

Spring 2024

	Appendix III Constituents												
Well	Boron (T)	Calcium (T)	Chloride	Fluoride	рН	Sulfate	TDS						
MW-15(S)													
MW-16(S)													
MW-17(S)													
MW-20(S)													
MW-22(S)													
MW-24(S)													
MW-25(S)													
MW-26(S)													
MW-27(S)													

Fall 2024

		Appendix III Constituents												
Well	Boron (T)	Calcium (T)	Chloride	Fluoride	рН	Sulfate	TDS							
MW-15(S)														
MW-16(S)														
MW-17(S)														
MW-20(S)														
MW-22(S)														
MW-24(S)														
MW-25(S)														
MW-26(S)														
MW-27(S)														

Sample had a value higher than the prediction limit determined from background data and is a verified SSI Sample did not have a value higher than the prediction limit determined from background data pH: two-sided prediction limit; color indicates sample higher and/or lower than prediction limits

No data at MW-14(S) and MW-23(S) as they have been historically dry

Table 5 Water Quality Analytical Data Summary

Table 5
Water Quality Analytical Data Summary
2024 Annual Monitoring Report
AVS CCR Groundwater Compliance

			MW-15S 6/11/2024	MW-15S	MW-16S 6/12/2024	MW-16S 10/02/2024	MW-17S 6/12/2024	MW-17S	MW-18S 6/12/2024	MW-18S	MW 6/12/	-19S 2024	MW-	-19S /2024	MW-20S 6/11/2024	MW-20S	MW-21S 6/13/2024	MW-21S
	Sample Type		N	N	N	N	N	N	N	N	N	FD	N	FD	N	N	N	N
Parameter	Analysis Location	Units																
Appendix III																		
Boron, total	Lab	mg/l	0.12	0.12	0.14	0.14	0.12	0.13	< 0.1 U	0.10	0.12	0.12	0.14	0.14	0.12	0.13	0.11	0.13
Calcium, total	Lab	mg/l	3.96	3.80	1.72	2.22	3.90	3.76	4.70	7.14	4.18	4.16	4.39	4.35	4.80	4.49	4.84	4.78
Chloride	Lab	mg/l	13.2	14.1	32.7	26.0	12.7	13.6	8.0	8.9	19.1	19.3	19.4	19.6	25.9	25.8	19.2	19.2
Fluoride	Lab	mg/l	1.36	1.30	2.31	2.16	1.48	1.53	1.23	1.23	0.67	0.74	0.67	0.64	1.17	1.12	1.49	1.51
рН	Field	pH units	8.04	8.07	9.0	8.2	7.91	7.97	9.37	9.31	8.06	-	8.03		8.27	8.04	7.98	7.91
Solids, total dissolved	Lab	mg/l	1880	1870	936	1150	1700	1720	1770	1770	2170	2150	2180	2100	1780	1720	2100	1980
Sulfate, as SO4	Lab	mg/l	407	412	67.8	131	295	284	564	536	811	777	763	762	69.9	69.6	491	458

⁻⁻ Not analyzed/Not available.

N Sample Type: Normal

FD: Sample Type: Field Duplicate

U: The analyte was analyzed for, but was

not detected.

Table 5 Water Quality Analytical Data Summary 2024 Annual Monitoring Report AVS CCR Groundwater Compliance

Location			MW-22S	MW	-228	MW	-248	MW-24S	MW	-25S	MW-25S	MW-26S	MW-26S	MW-27S	MW-27S
	Date			3/2024 10/02/2024		6/13/	6/13/2024		6/17/2024		10/02/2024	6/13/2024	10/02/2024	6/17/2024	10/02/2024
	Sam	ple Type	N	N	FD	N	FD	N	N	FD	N	N	N	N	N
Parameter	Analysis Location	Units													
Appendix III															
Boron, total	Lab	mg/l	0.12	0.13	0.13	0.10	0.10	0.11	0.12	0.11	0.12	0.13	0.14	0.19	0.40
Calcium, total	Lab	mg/l	2.45	2.59	2.62	4.26	4.31	4.46	6.12	5.95	4.88	4.10	3.51	28.3	206
Chloride	Lab	mg/l	12.1	12.3	12.1	48.8	48.2	50.0	43.8	43.3	42.3	29.7	29.7	80.8	62.0
Fluoride	Lab	mg/l	1.69	1.59	1.72	1.43	1.42	1.44	1.29	1.29	1.30	1.34	1.33	1.17	1.27
рН	Field	pH units	8.18	8.19		8.13		8.14	8.18		8.19	8.15	8.17	8.03	8.08
Solids, total dissolved	Lab	mg/l	1590	1620	1610	1970	1960	1980	1900	1900	1900	1760	1730	2290	2160
Sulfate, as SO4	Lab	mg/l	233	228	235	61.9	61.9	64.7	24.6	24.7	40.2	45.1	41.0	252	6.83

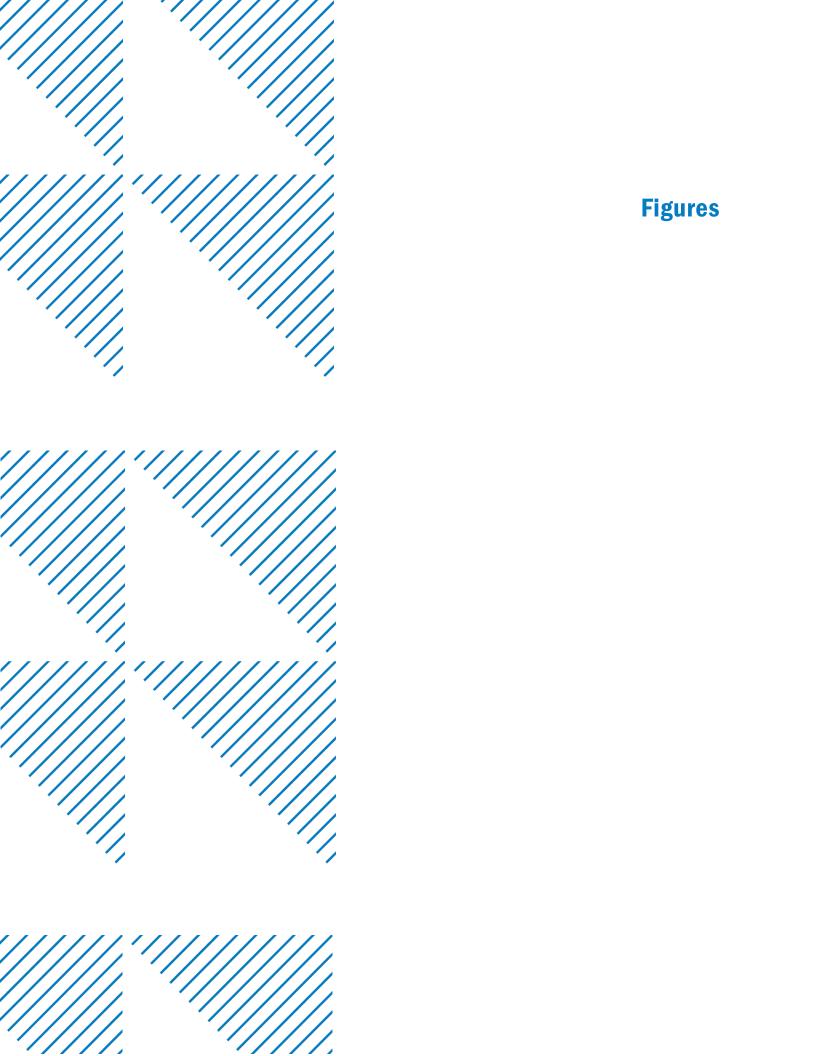
-- Not analyzed/Not available.

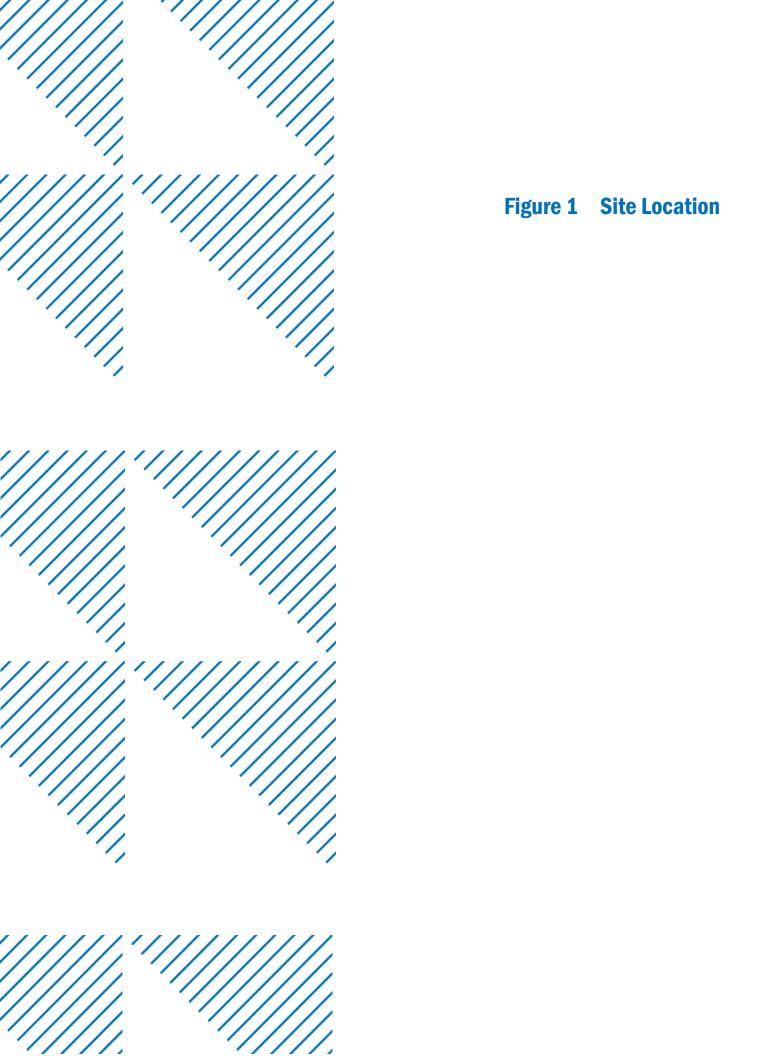
N Sample Type: Normal

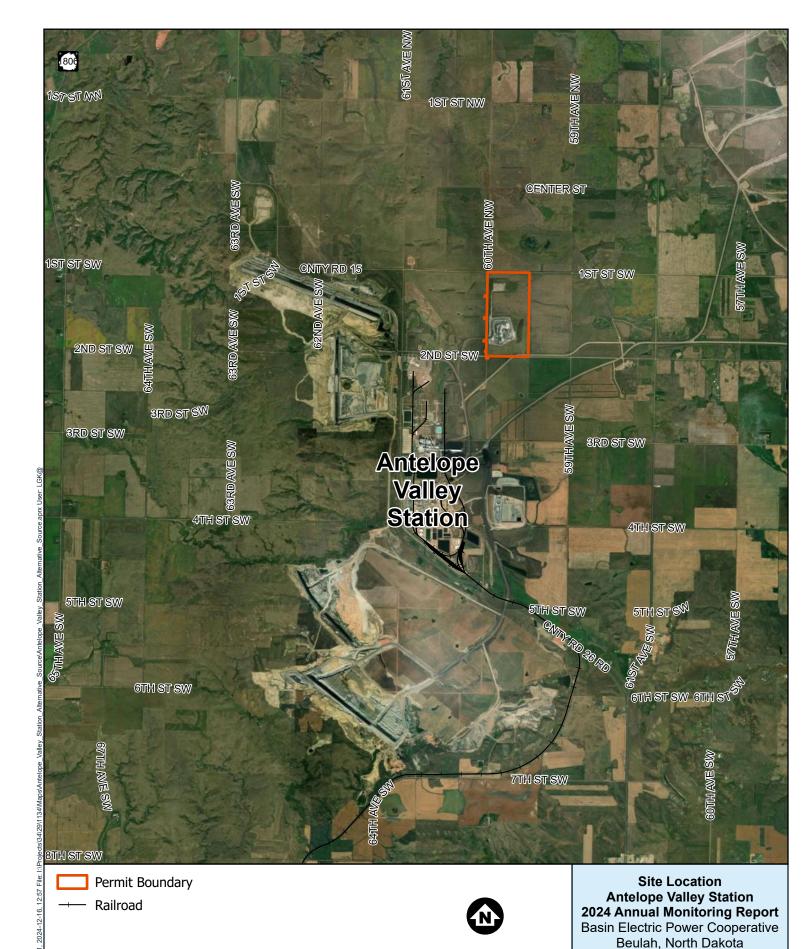
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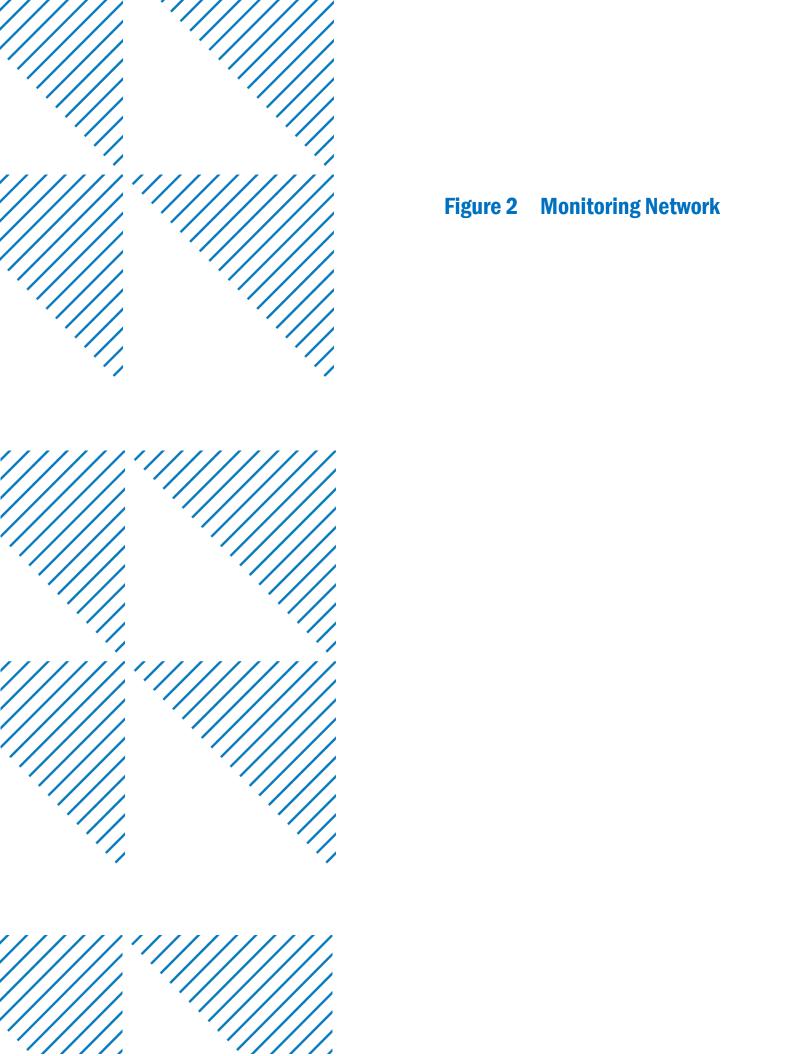


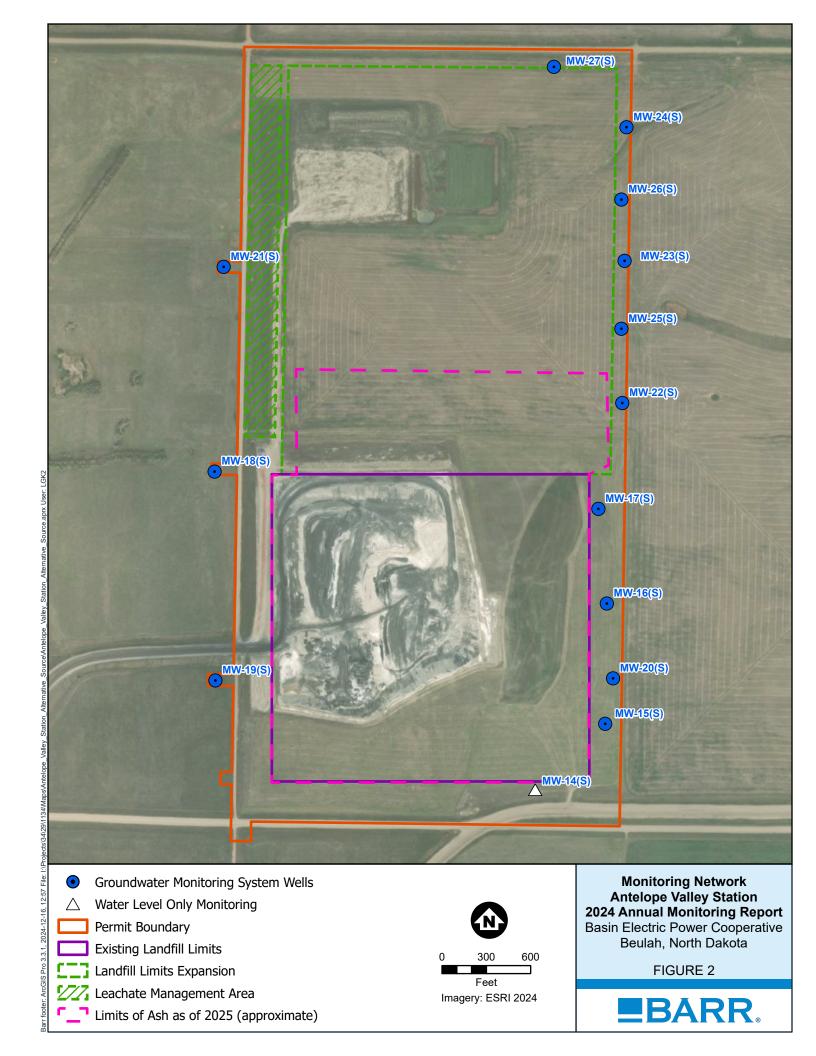
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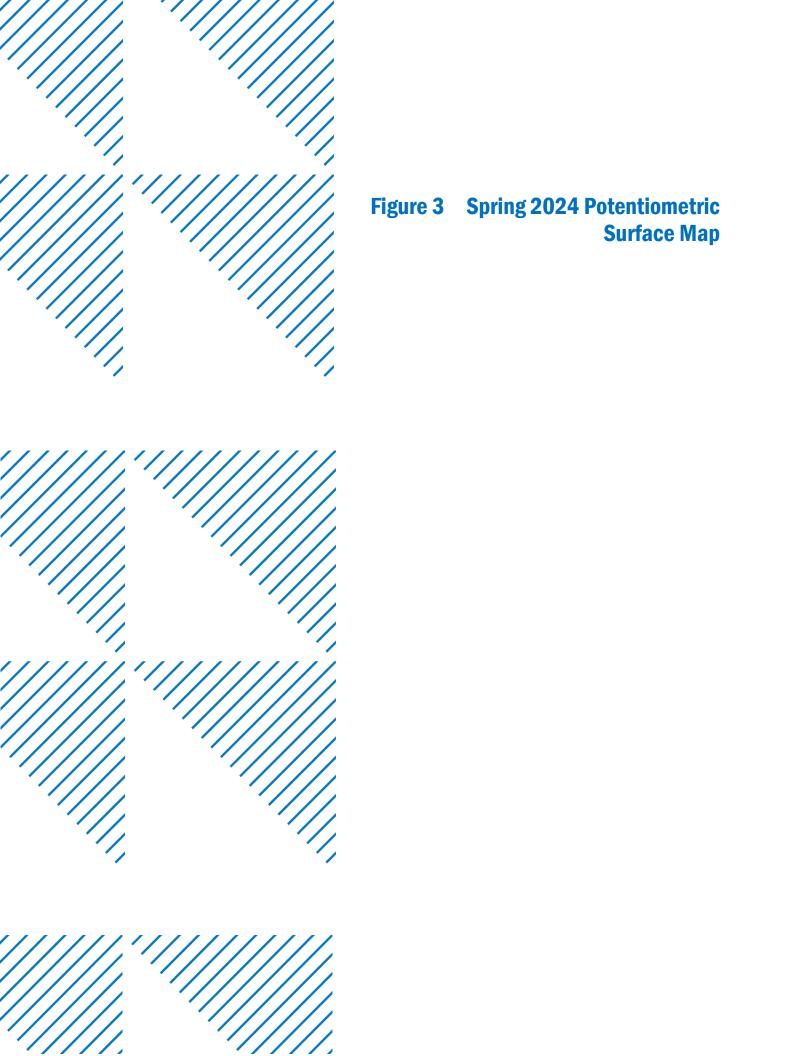
FIGURE 1

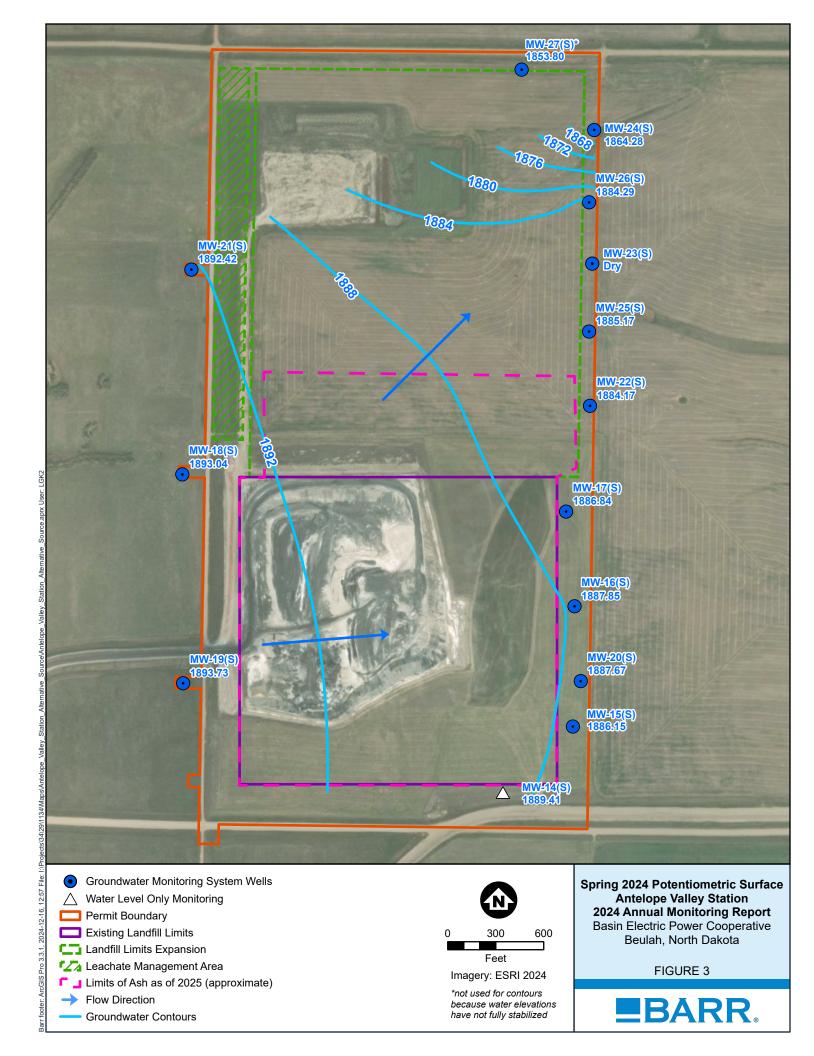
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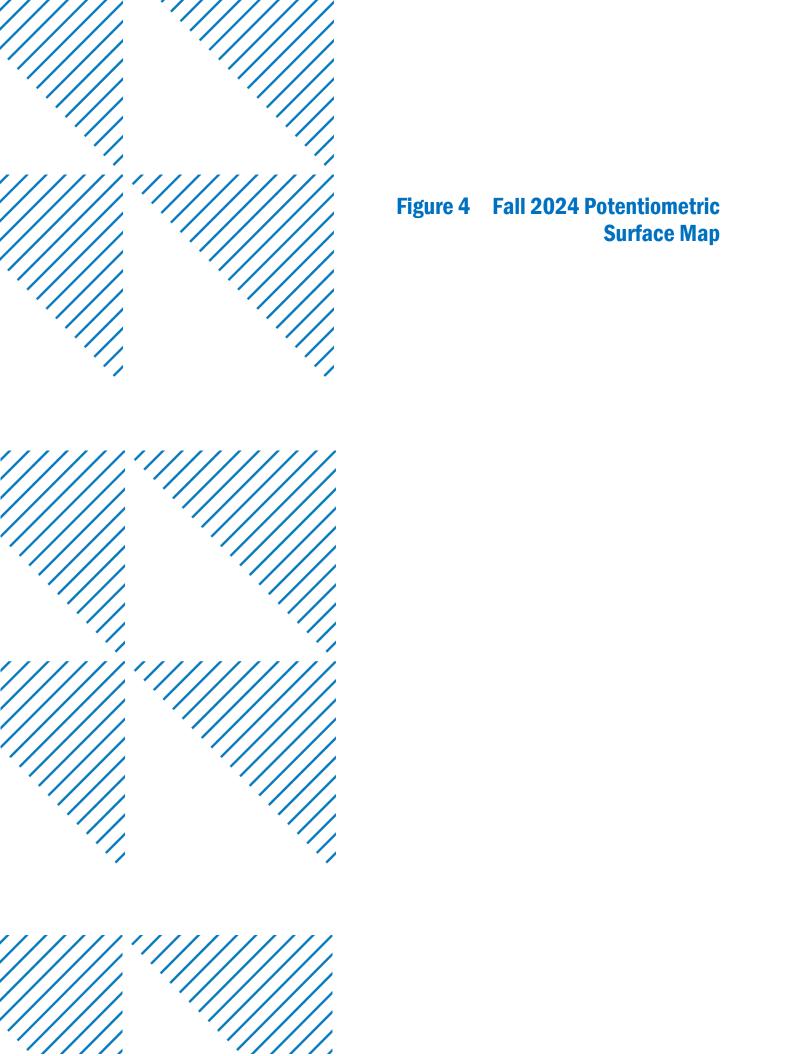
Feet Imagery: ESRI 2024

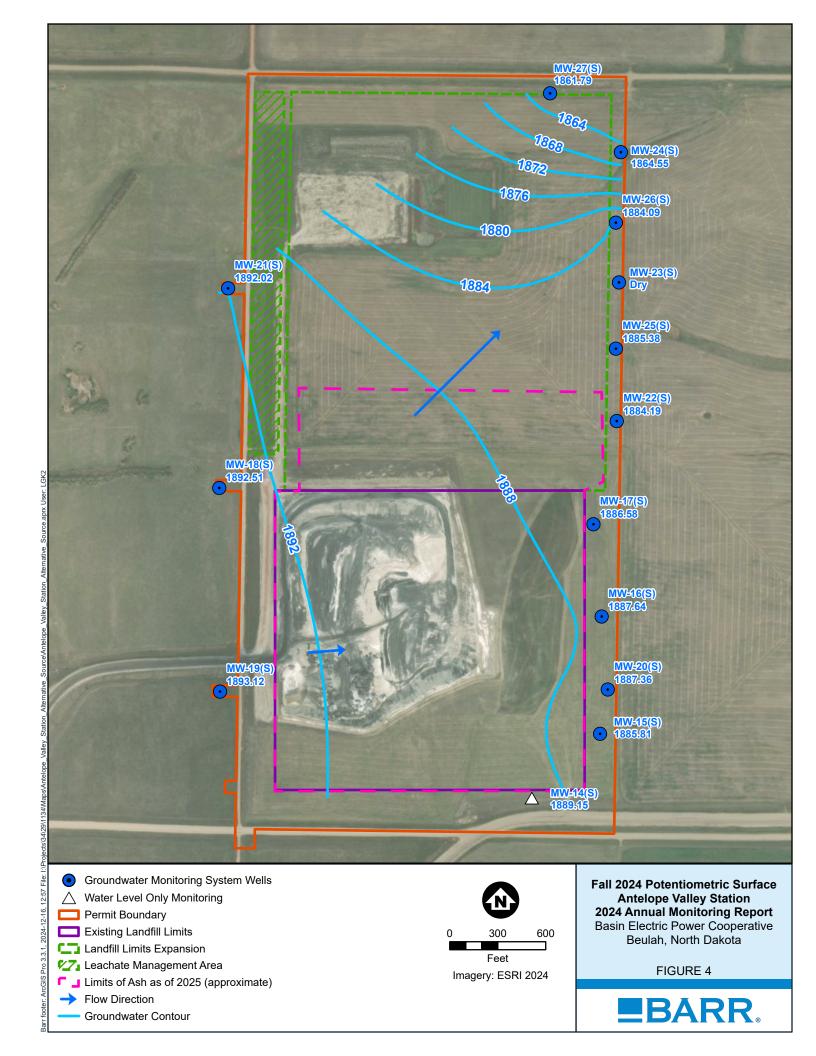


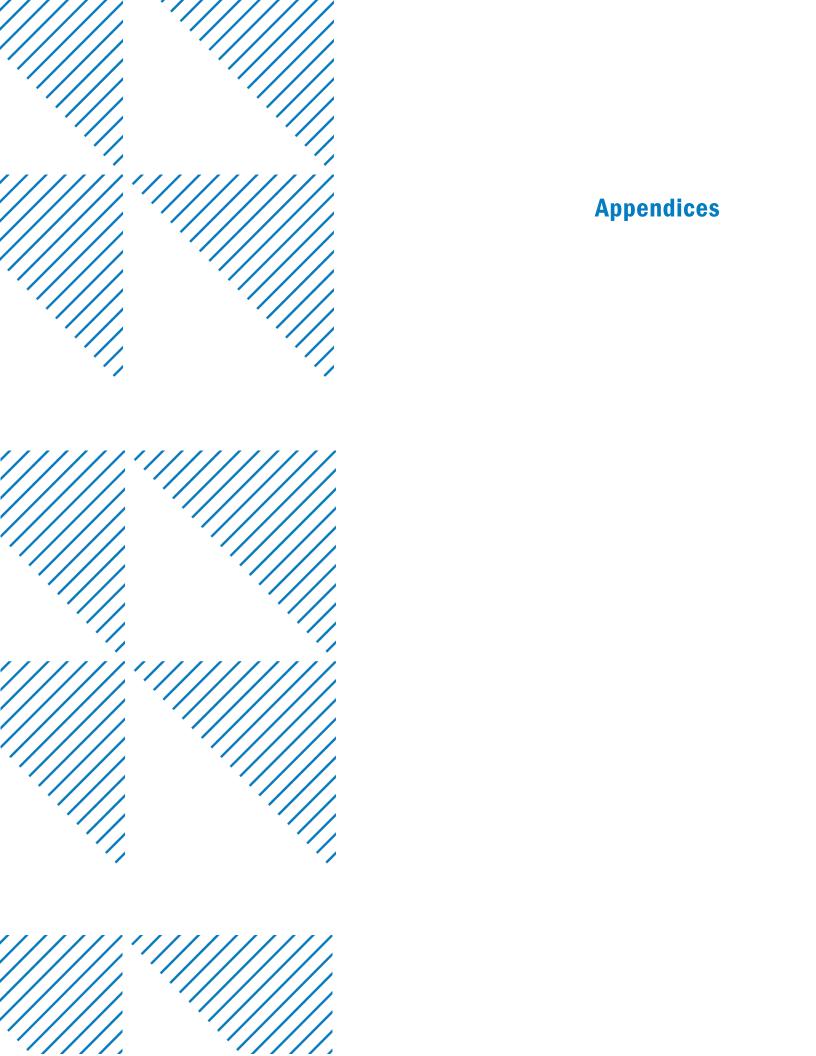
















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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS Landfill (51646) **PO:** 790708-01

Mark Dihle Basin Electric Power Cooperative 1717 E. Interstate Avenue Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Carrell

Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Wednesday, July 3, 2024 10:09:37 AM



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51646001
 Date Collected:
 06/11/2024 10:00
 Matrix:
 Groundwater

 Sample ID:
 MW-15s
 Date Received:
 06/13/2024 15:04
 Collector:
 Client

remp @ Receipt (C). 2.1	Received on	ice. Tes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	407	mg/L	25	5		06/19/2024 11:38	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:08	
Calcium	3.96	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:34	
Method: SM4500-CI-E 2011							
Chloride	13.2	mg/L	2.0	1		06/18/2024 11:59	
Chloride	10.2	mg/L	2.0	•		00/10/2024 11.00	
Method: SM4500-F-C-2011							
Fluoride	1.36	mg/L	0.1	1		06/18/2024 12:38	
Method: USGS I-1750-85							
Total Dissolved Solids	1880	mg/L	10	1		06/14/2024 11:20	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51646002
 Date Collected:
 06/11/2024 10:25
 Matrix:
 Groundwater

 Sample ID:
 MW-20s
 Date Received:
 06/13/2024 15:04
 Collector:
 Client

remp @ Receipt (C): 2.1	Received on	ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	69.9	mg/L	5	1		06/19/2024 11:44	
Method: EPA 6010D							
Wethou. EFA 60 10D							
Boron	0.12	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:09	
Calcium	4.80	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:37	
Made at 0144500 OLF 0044							
Method: SM4500-CI-E 2011							
Chloride	25.9	mg/L	2.0	1		06/18/2024 12:00	
Method: SM4500-F-C-2011							
Fluoride	1.17	mg/L	0.1	1		06/18/2024 12:44	
Method: USGS I-1750-85							
Total Dissolved Solids	1780	mg/L	10	1		06/14/2024 11:20	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51646003
 Date Collected:
 06/12/2024 09:35
 Matrix:
 Groundwater

 Sample ID:
 MW-16s
 Date Received:
 06/13/2024 15:04
 Collector:
 Client

remp @ Receipt (C): 2.1	Received of	nice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	67.8	mg/L	5	1		06/19/2024 11:45	
Method: EPA 6010D							
Boron	0.14	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:09	
Calcium	1.72	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:38	
Method: SM4500-CI-E 2011							
Chloride	32.7	mg/L	2.0	1		06/18/2024 12:01	
Method: SM4500-F-C-2011							
Fluoride	2.31	mg/L	0.1	1		06/18/2024 12:50	
Method: USGS I-1750-85							
Total Dissolved Solids	936	mg/L	10	1		06/14/2024 11:20	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51646004
 Date Collected:
 06/12/2024 10:10
 Matrix:
 Groundwater

 Sample ID:
 MW-17s
 Date Received:
 06/13/2024 15:04
 Collector:
 Client

remp @ Receipt (C). 2.1	Received of	rice. res					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	295	mg/L	25	5		06/19/2024 11:50	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:10	
Calcium	3.90	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:39	
Method: SM4500-CI-E 2011							
Chloride	12.7	mg/L	2.0	1		06/18/2024 12:02	
		3					
Method: SM4500-F-C-2011							
Fluoride	1.48	mg/L	0.1	1		06/18/2024 12:56	
Method: USGS I-1750-85							
Total Dissolved Solids	1700	mg/L	10	1		06/14/2024 11:20	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51646005
 Date Collected:
 06/12/2024 11:06
 Matrix:
 Groundwater

 Sample ID:
 MW-19s
 Date Received:
 06/13/2024 15:04
 Collector:
 Client

remp @ Receipt (C). 2.1	Received of	ice. 168					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	811	mg/L	25	5		06/19/2024 11:51	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:11	
Calcium	4.18	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:43	
Method: SM4500-CI-E 2011							
Chloride	19.1	mg/L	2.0	1		06/18/2024 12:03	
Method: SM4500-F-C-2011							
Fluoride	0.67	mg/L	0.1	1		06/18/2024 13:02	
Tuonde	0.07	mg/L	0.1	'		00/10/2024 13.02	
Method: USGS I-1750-85							
Total Dissolved Solids	2170	mg/L	10	1		06/14/2024 11:20	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51646006
 Date Collected:
 06/12/2024 13:19
 Matrix:
 Groundwater

 Sample ID:
 MW-18s
 Date Received:
 06/13/2024 15:04
 Collector:
 Client

remp @ Neceipt (c). 2.1	Neceiveu o	11100. 103					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	564	mg/L	25	5		06/19/2024 11:52	
Method: EPA 6010D							
Boron	<0.1	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:11	
Calcium	4.70	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:44	
Method: SM4500-CI-E 2011							
Chloride	8.0	mg/L	2.0	1		06/18/2024 12:04	
Mada at 0044500 F 0 0044							
Method: SM4500-F-C-2011	4.00		0.4			00/40/0004 40 00	
Fluoride	1.23	mg/L	0.1	1		06/18/2024 13:08	
Method: USGS I-1750-85							
Total Dissolved Solids	1770	mg/L	10	1		06/14/2024 11:20	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

Lab ID:51646007Date Collected:06/11/2024 14:05Matrix:GroundwaterSample ID:AVS LeachateDate Received:06/13/2024 15:04Collector:Client

Temp @ Receipt (C): 2.1	Received or	ı Ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	503	mg/L	25	5		06/19/2024 11:53	
Method: EPA 6010D							
Boron	0.43	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 10:12	
Calcium	124	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:46	
Method: SM4500-CI-E 2011							
Chloride	13.3	mg/L	2.0	1		06/18/2024 12:06	
Method: SM4500-F-C-2011							
Fluoride	0.46	mg/L	0.1	1		06/18/2024 13:14	
Method: USGS I-1750-85							
Total Dissolved Solids	906	mg/L	10	1		06/14/2024 11:20	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

Lab ID:51646008Date Collected:06/12/2024 07:45Matrix:GroundwaterSample ID:LOS LeachateDate Received:06/13/2024 15:04Collector:Client

Received on	ice: Yes					
Results	Units	RDL	DF	Prepared	Analyzed	Qual
10600	mg/L	250	50		06/19/2024 12:05	
27.3	mg/L	2.5	25	06/13/2024 17:15	07/02/2024 12:48	
400	mg/L	10	10	06/13/2024 17:15	06/18/2024 13:47	
733	mg/L	10.0	5		06/18/2024 12:14	
2.73	mg/L	0.1	1		06/18/2024 13:20	
15700	mg/L	10	1		06/14/2024 11:20	
	10600 27.3 400	Results Units 10600 mg/L 27.3 mg/L 400 mg/L 733 mg/L 2.73 mg/L	Results Units RDL 10600 mg/L 250 27.3 mg/L 2.5 400 mg/L 10 733 mg/L 10.0 2.73 mg/L 0.1	Results Units RDL DF 10600 mg/L 250 50 27.3 mg/L 2.5 25 400 mg/L 10 10 733 mg/L 10.0 5 2.73 mg/L 0.1 1	Results Units RDL DF Prepared 10600 mg/L 250 50 27.3 mg/L 2.5 25 06/13/2024 17:15 400 mg/L 10 10 06/13/2024 17:15 733 mg/L 10.0 5 2.73 mg/L 0.1 1	Results Units RDL DF Prepared Analyzed 10600 mg/L 250 50 06/19/2024 12:05 27.3 mg/L 2.5 25 06/13/2024 17:15 07/02/2024 12:48 400 mg/L 10 10 06/13/2024 17:15 06/18/2024 13:47 733 mg/L 10.0 5 06/18/2024 12:14 2.73 mg/L 0.1 1 06/18/2024 13:20



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

Lab ID:51646009Date Collected:06/12/2024 11:06Matrix:GroundwaterSample ID:DuplicateDate Received:06/13/2024 15:04Collector:Client

remp @ Receipt (C). 2.1	Received of	rice. res					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	777	mg/L	25	5		06/19/2024 11:55	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	06/13/2024 17:15	07/02/2024 12:46	
Calcium	4.16	mg/L	1	1	06/13/2024 17:15	06/18/2024 13:48	
Method: SM4500-CI-E 2011							
Chloride	19.3	mg/L	2.0	1		06/18/2024 12:15	
Mathada CM4500 F C 2044							
Method: SM4500-F-C-2011		_					
Fluoride	0.74	mg/L	0.1	1		06/18/2024 13:26	
Method: USGS I-1750-85							
Total Dissolved Solids	2150	mg/L	10	1		06/14/2024 11:20	





Account #: 2040 Client: Basin Electric Power Cooperative

C Resul	ts Summary						WO #:	5164	16
Sulfate				Units: mg/l					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
.FB			100	102.0		85	115		
FB			100	101.0		85	115		
FB			100	100.0		85	115		
FB			100	104.0		85	115		
FB			100	99.5		85	115		
FB			100	97.4		85	115		
FB			100	109.0		85	115		
FB			100	101.0		85	115		
			100	101.0		63	115		
ИB		<5							
ИВ		<5							
ИΒ		<5							
ИВ		<5							
ИB		<5							
ИВ		<5							
ИΒ		<5							
ИΒ		<5							
VIS/MSD	51572002		100	100.0	96.8	85	115	2.6	20
NS/WSO	31372002		100	100.0	30.0	65	113	2.0	20
MS/MSD	51572009		100	98.8	96.1	85	115	1.8	20
/IS/MSD	51671003		500	96.1	96.1	85	115	0.0	20
/IS/MSD	51714006		500	104.9	105.2	85	115	0.3	20
/IS/MSD	51770005		100	89.5	87.7	85	115	2.0	20
/IS/MSD	51856007		100	104.4	107.1	85	115	2.8	20
MS/MSD	51858003		500	92.9	101.3	85	115	4.7	20
Chloride				Units: mg/l	-				
QС Туре	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
FB			30	101.0		90	110		
FB			30	101.0		90	110		
FB			30	100.0		90	110		
FB			30	100.0		90	110		





Account #: 2040

Client: Basin Electric Power Cooperative

Chloride				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			30	99.5		90	110		
LFB			30	98.9		90	110		
LFB			30	99.1		90	110		
LFB			30	98.8		90	110		
LFB			30	97.6		90	110		
LFB			30	96.7		90	110		
LFB			30	99.7		90	110		
LFB			30	97.9		90	110		
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
MB		<2.0							
МВ		<2.0							
МВ		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	51175006		30	101.4	102.1	80	120	0.6	20
MS/MSD	51498017		30	102.7	102.2	80	120	0.3	20
MS/MSD	51510004		30	100.9	101.0	80	120	0.3	20
MS/MSD	51646006		30	98.5	99.1	80	120	0.5	20
MS/MSD	51770003		30	102.3	102.1	80	120	0.3	20
MS/MSD	51838003		30	90.6	90.0	80	120	0.3	20
Boron QC Type	Original Sample ID	Blank Result	Spike Amount	Units: mg/L Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	102.0	~ necovery	85	115		





Account #: 2040

Client: Basin Electric Power Cooperative

Calcium				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MI			100	111.0		85	115		
MB		<1							
PDS/PDSD	51175003		100	113.0	113.0	75	125	0.4	20
F03/F030	311/3003		100		113.0	/3	123	0.4	20
PDS/PDSD	51498003		100	105.0	105.0	75	125	0.1	20
PDS/PDSD	51498012		100	103.0	105.0	75	125	0.8	20
PDS/PDSD	51498022		100	104.0	103.0	75	125	0.1	20
DUP	51557001							17.5	20
PDS/PDSD	51572004		100	107.0	109.0	75	125	1.6	20
PDS/PDSD	51572008		100	111.0	111.0	75	125	0.3	20
PDS/PDSD	51572009		100	108.0	108.0	75	125	0.2	20
DUP	51646001							0.0	20
DUP	51646001							0.3	20
DUP	51646009							5.7	20
DUP	51646009							0.0	20
PDS/PDSD	51770003		100	111.0	109.0	75	125	1.2	20
PDS/PDSD	51770004		100	105.0	107.0	75	125	1.1	20
Florede				11-14 /1					
Fluoride QC Type	Original Sample ID	Blank Result	Spike Amount	Units: mg/L Spike %	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
CRM-F									
CHIVI-F			3.06	Recovery 106.0	% Recovery	Limit (%) 83.99	Limit (%) 111.11		
				106.0	% Recovery	Limit (%) 83.99	111.11		
LFB-F			3.06		% Recovery	Limit (%)			
				106.0	% Recovery	Limit (%) 83.99	111.11		
LFB-F			0.5	106.0	% Recovery	Limit (%) 83.99	111.11		
LFB-F			0.5	106.0 102.0 102.0	% Recovery	Limit (%) 83.99 90	111.11		
LFB-F			0.5	106.0 102.0 102.0 104.0	% Recovery	Limit (%) 83.99 90 90	111.11 110 110		
LFB-F LFB-F		<0.1	0.5 0.5 0.5	106.0 102.0 102.0 104.0	% Recovery	90 90 90	111.11 110 110 110		
LFB-F LFB-F LFB-F		<0.1	0.5 0.5 0.5	106.0 102.0 102.0 104.0	% Recovery	90 90 90	111.11 110 110 110		
LFB-F LFB-F LFB-F MB-F			0.5 0.5 0.5	106.0 102.0 102.0 104.0	% Recovery	90 90 90	111.11 110 110 110		
LFB-F LFB-F LFB-F MB-F MB-F		<0.1	0.5 0.5 0.5	106.0 102.0 102.0 104.0	% Recovery	90 90 90	111.11 110 110 110		
LFB-F LFB-F LFB-F MB-F MB-F MB-F		<0.1 <0.1 <0.1	0.5 0.5 0.5	106.0 102.0 102.0 104.0	% Recovery	90 90 90	111.11 110 110 110		
LFB-F LFB-F LFB-F MB-F MB-F		<0.1	0.5 0.5 0.5	106.0 102.0 102.0 104.0	% Recovery	90 90 90	111.11 110 110 110		





Account #: 2040

Client: Basin Electric Power Cooperative

Fluoride				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MS/MSD	51770005		0.5	102.0		102.0	80	120	0.0	20
MS/MSD	51856005		0.5	100.0		100.0	80	120	0.0	20
MS/MSD	51856007		0.5	102.0		106.0	80	120	3.9	20
Total Dissolv	ved Solids			Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	102.0			90.35	110.33		
MB		<10								
DUP	51057001								0.0	20



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Account #: 2040 Client: **Basin Electric Power Cooperative**

Basin Electric Power Coope **Chain of Custody** Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue WO: 51646 Page __1__ of __1__ Bismarck, ND 58501 none: (701) 258-9720 Work Order # Lab Use Only Toll Free: (800) 279-6885 Fax: (701) 258-9724 **Company Name and Address** Account # Phone # 701-745-7238 701-557-5488 2040 Basin Electric Power Coop. Emails **Leland Olds Station** Contact mdihle@bepc.com aknutson@bepc.com **Mark Dihle** 3901 Highway 200A Name of Sampler Ksolie@barr.com Stanton, ND 58571 Myles Shettler Billing Address (indicate if different from above) **Quote Number Attn: Liabilities** 6/13/2024 Project Name/Number Purchase Order # 790708-01 **AVS Landfill** Lab Use Only Bottles Sample Matrix Time Date **Analysis Required** Sampled Sample ID Sampled Lab GW 2 N B,Ca,CI,F,SO4,TDS (Y) 6/11/2024 1000 MW-15s GW 002 6/11/2024 1025 N B,Ca,CI,F,SO4,TDS MW-20s GW 2 N B,Ca,CI,F,SO4,TDS 003 6/12/2024 935 **MW-16s** GW 004 2 N B,Ca,CI,F,SO4,TDS MW-17s 6/12/2024 1010 GW 2 N B,Ca,CI,F,SO4,TDS 005 6/12/2024 1106 MW-19s GW 2 N B,Ca,CI,F,SO4,TDS 6/12/2024 1319 MW-18s 006 6/11/2024 1405 2 N B,Ca,CI,F,SO4,TDS 007 **AVS Leachate** sw 6/12/2024 745 2 N B,Ca,CI,F,SO4,TDS 008 **LOS Leachate** GW 2 N B,Ca,CI,F,SO4,TDS 6/12/2024 1106 009 **Duplicate** Comments: ROI Therm. # Received by Date Time Temp Transferred by Date Time (Y)N TOGAL 1. Y/N

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Wednesday, July 3, 2024 10:09:37 AM Report Date:

2



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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS CCR Wells (51753) **PO:** 790708-01

Mark Dihle Basin Electric Power Cooperative 1717 E. Interstate Avenue Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:



Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Report Date: Tuesday, July 9, 2024 12:04:00 PM





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51753001
 Date Collected:
 06/13/2024 10:52
 Matrix:
 Groundwater

 Sample ID:
 MW 26 S
 Date Received:
 06/14/2024 14:51
 Collector:
 Client

Temp @ Receipt (C): 4.5 Received on Ice: Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	45.1	mg/L	5	1		06/19/2024 12:26	
Mathadi EDA 045 4							
Method: EPA 245.1	10.0000		0.0002	1	06/24/2024 09:50	06/24/2024 16:38	
Mercury	<0.0002	mg/L	0.0002	1	06/24/2024 09.50	00/24/2024 10.36	
Method: EPA 6010D							
Boron	0.13	mg/L	0.1	1	06/14/2024 15:51	07/02/2024 10:19	
Calcium	4.10	mg/L	1	1	06/14/2024 15:51	06/18/2024 14:07	
Lithium	0.0490	mg/L	0.02	1	06/14/2024 15:51	06/20/2024 14:15	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	06/14/2024 15:51	07/08/2024 18:31	
•		Ū					
Arsenic	<0.002	mg/L	0.002	5	06/14/2024 15:51	07/08/2024 18:31	
Barium	0.0486	mg/L	0.002	5	06/14/2024 15:51	07/08/2024 18:31	
Beryllium	<0.0005	mg/L	0.0005	5	06/14/2024 15:51	07/08/2024 18:31	
Cadmium	<0.0005	mg/L	0.0005	5	06/14/2024 15:51	07/08/2024 18:31	
Chromium	<0.002	mg/L	0.002	5	06/14/2024 15:51	07/08/2024 18:31	
Cobalt	<0.002	mg/L	0.002	5	06/14/2024 15:51	07/08/2024 18:31	
Lead	<0.0005	mg/L	0.0005	5	06/14/2024 15:51	07/08/2024 18:31	
Molybdenum	0.0052	mg/L	0.002	5	06/14/2024 15:51	07/08/2024 18:31	
Selenium	<0.005	mg/L	0.005	5	06/14/2024 15:51	07/08/2024 18:31	
Thallium	<0.0005	mg/L	0.0005	5	06/14/2024 15:51	07/08/2024 18:31	
Method: SM4500-CI-E 2011							
Chloride	29.7	mg/L	2.0	1		06/18/2024 14:06	
Method: SM4500-F-C-2011							
Fluoride	1.34	mg/L	0.1	1		06/18/2024 13:32	
Method: USGS I-1750-85							
Total Dissolved Solids	1760	mg/L	10	1		06/19/2024 10:55	

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Report Date: Tuesday, July 9, 2024 12:04:00 PM





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51753002
 Date Collected:
 06/13/2024 09:13
 Matrix:
 Groundwater

 Sample ID:
 MW 22 S
 Date Received:
 06/14/2024 14:51
 Collector:
 Client

remp @ Receipt (C). 4.5	Received of	ilce. 165					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	233	mg/L	25	5		06/19/2024 12:20	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	06/14/2024 15:51	07/02/2024 10:22	
Calcium	2.45	mg/L	1	1	06/14/2024 15:51	06/18/2024 14:08	
Method: SM4500-CI-E 2011							
Chloride	12.1	mg/L	2.0	1		06/18/2024 14:07	
Chloride	12.1	mg/L	2.0	•		00/10/2024 14:07	
Method: SM4500-F-C-2011							
Fluoride	1.69	mg/L	0.1	1		06/18/2024 14:24	
Method: USGS I-1750-85							
Wethou. 0303 1-1750-65							
Total Dissolved Solids	1590	mg/L	10	1		06/19/2024 10:55	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51753003
 Date Collected:
 06/13/2024 12:03
 Matrix:
 Groundwater

 Sample ID:
 MW 24 S
 Date Received:
 06/14/2024 14:51
 Collector:
 Client

Temp @ Receipt (C): 4.5	Received on	ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	61.9	mg/L	5	1		06/19/2024 12:27	
Method: EPA 6010D							
Wethod: EPA 6010D							
Boron	0.10	mg/L	0.1	1	06/14/2024 15:51	07/02/2024 10:22	
Calcium	4.26	mg/L	1	1	06/14/2024 15:51	06/18/2024 14:10	
Method: SM4500-CI-E 2011							
Chloride	48.8	mg/L	2.0	1		06/18/2024 14:08	
Method: SM4500-F-C-2011							
Fluoride	1.43	mg/L	0.1	1		06/18/2024 14:30	
		-					
Method: USGS I-1750-85							
Total Dissolved Solids	1970	mg/L	10	1		06/19/2024 10:55	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51753004
 Date Collected:
 06/13/2024 12:03
 Matrix:
 Groundwater

 Sample ID:
 DUP
 Date Received:
 06/14/2024 14:51
 Collector:
 Client

remp @ Receipt (C). 4.5	Received on	ice. res					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	61.9	mg/L	5	1		06/19/2024 12:28	
Method: EPA 6010D							
Boron	0.10	mg/L	0.1	1	06/14/2024 15:51	07/02/2024 10:23	
Calcium	4.31	mg/L	1	1	06/14/2024 15:51	06/18/2024 14:11	
Method: SM4500-CI-E 2011							
	40.0		2.0	4		00/40/0004 44-40	
Chloride	48.2	mg/L	2.0	1		06/18/2024 14:10	
Method: SM4500-F-C-2011							
Fluoride	1.42	mg/L	0.1	1		06/18/2024 14:36	
Method: USGS I-1750-85							
Total Dissolved Solids	1960	mg/L	10	1		06/19/2024 10:55	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51753005
 Date Collected:
 06/13/2024 14:31
 Matrix:
 Groundwater

 Sample ID:
 MW 21 S
 Date Received:
 06/14/2024 14:51
 Collector:
 Client

remp @ Receipt (C): 4.5	Received or	ice: res					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	491	mg/L	25	5		06/19/2024 12:48	
Method: EPA 6010D							
Boron	0.11	mg/L	0.1	1	06/14/2024 15:51	07/02/2024 10:23	
Calcium	4.84	mg/L	1	1	06/14/2024 15:51	06/18/2024 14:12	
Method: SM4500-CI-E 2011							
Chloride	19.2	mg/L	2.0	1		06/18/2024 14:11	
Method: SM4500-F-C-2011							
Fluoride	1.49	mg/L	0.1	1		06/18/2024 14:43	
ridonae	1.40	mg/L	0.1	'		00/10/2024 14.40	
Method: USGS I-1750-85							
Total Dissolved Solids	2100	mg/L	10	1		06/19/2024 10:55	





Account #: 2040 Client: Basin Electric Power Cooperative

C Resul	ts Summary						WO #:	5179	53
Sulfate QC Type	Original Sample ID	Blank Result	Spike Amount	Units: mg/	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB			100	Recovery 97.4	% Recovery	Limit (%) 85	Limit (%) 115		
LFB			100	102.0		85	115		
LFB			100	101.0		85	115		
LFB			100	100.0		85	115		
LFB			100	99.5		85	115		
.FB			100	109.0		85	115		
LFB			100	101.0		85	115		
LFB			100	104.0		85	115		
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
ИВ		<5							
MB		<5							
MB		<5							
MS/MSD	51572002		100	100.0	96.8	85	115	2.6	20
MS/MSD	51572009		100	98.8	96.1	85	115	1.8	20
MS/MSD	51671003		500	96.1	96.1	85	115	0.0	20
MS/MSD	51714006		500	104.9	105.2	85	115	0.3	20
MS/MSD	51770005		100	89.5	87.7	85	115	2.0	20
MS/MSD	51856007		100	104.4	107.1	85	115	2.8	20
MS/MSD	51858003		500	92.9	101.3	85	115	4.7	20
Chloride				Units: mg/	L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			30	97.6		90	110		
LFB			30	100.0		90	110		
LFB			30	100.0		90	110		
LFB			30	101.0		90	110		





Account #: 2040

Client: Basin Electric Power Cooperative

Chloride				Units: m	g/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			30	101.0		90	110		
LFB			30	98.9		90	110		
LFB			30	97.9		90	110		
LFB			30	99.5		90	110		
LFB			30	96.7		90	110		
LFB			30	99.7		90	110		
LFB			30	98.8		90	110		
LFB			30	99.1		90	110		
MB		<2.0							
MB		<2.0							
MB		<2.0							
МВ		<2.0							
MB		<2.0							
MB		<2.0							
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
MB		<2.0							
		<2.0							
MS/MSD	51175006		30	101.4	102.1	80	120	0.6	20
MS/MSD	51498017		30	102.7	102.2	80	120	0.3	20
MS/MSD	51510004		30	100.9	101.0	80	120	0.3	20
MS/MSD	51646006		30	98.5	99.1	80	120	0.5	20
MS/MSD	51770003		30	102.3	102.1	80	120	0.3	20
MS/MSD	51838003		30	90.6	90.0	80	120	0.3	20
Boron		al a la a		Units: m				PRD (***	
QC Type LFB-OE	Original Sample ID	Blank Result	Spike Amount 0.5	Spike % Recovery 105.0	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)





Account #: 2040

Client: Basin Electric Power Cooperative

Boron				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	mg/ L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
MS/MSD	51753001		0.4	98.1		% Recovery 90.2	Limit (%) 75	Limit (%) 125	6.3	20
				50.00						
Calcium	Original Seconds ID	Blank Result	Calles Assessed	Units:	mg/L	Caile Dualisata	I CtI	Hanna Cantral	BDD (W)	RPD Limit (%)
QC Type	Original Sample ID	biank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD LIMIT (76)
LFB-MI			100	112.0			85	115		
MB		<1								
PDS/PDSD	51175003		100	113.0		113.0	75	125	0.4	20
PDS/PDSD	51498003		100	105.0		105.0	75	125	0.1	20
PDS/PDSD	51498012		100	103.0		105.0	75	125	0.8	20
PDS/PDSD	51498022		100	104.0		103.0	75	125	0.1	20
PDS/PDSD	51572004		100	107.0		109.0	75	125	1.6	20
PDS/PDSD	51572008		100	111.0		111.0	75	125	0.3	20
PDS/PDSD	51572009		100	108.0		108.0	75	125	0.2	20
DUP	51714006								0.7	20
PDS/PDSD	51770003		100	111.0		109.0	75	125	1.2	20
PDS/PDSD	51770004		100	105.0		107.0	75	125	1.1	20
Lithium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.5	104.0			85	115		
MB		<0.04								
MS/MSD	51753001		0.4	97.8		91.7	75	125	5.8	20
Antimony				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	mg/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 103.0		% Recovery	Limit (%)	Limit (%)		
MB		<0.001								
MS/MSD	51753001		0.4	105.0		98.7	75	125	6.1	20
VIII 1944										
Arsenic	211			Units:	mg/L					99200 0000
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	103.0			80	120		
MB		<0.002								
MS/MSD	51753001		0.4	106.0		100.0	75	125	6.3	20
Barium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	98.5			80	120		



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Barium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
МВ		<0.002								
MS/MSD	51753001		0.4	97.8		91.8	75	125	5.6	20
Beryllium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	11.6/ -	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 102.0		% Recovery	Limit (%)	Limit (%) 120	V	
МВ		<0.0005								
MS/MSD	51753001		0.4	104.0		99.7	75	125	3.9	20
Cadmium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 101.0		% Recovery	Limit (%) 80	Limit (%) 120		
MB		<0.0005								
MS/MSD	51753001		0.4	100.0		93.2	75	125	7.0	20
Chromium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	6/ -	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	107.0			80	120		
MB		<0.002								
WID		~0.00Z								
MS/MSD	51753001		0.4	103.0		96.9	75	125	6.5	20
Cobalt				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	106.0			80	120		
MB		<0.002								
MS/MSD	51753001		0.4	102.0		94.9	75	125	6.9	20
Lead				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 107.0		% Recovery	Limit (%) 80	Limit (%) 120		
MB		<0.0005								
MS/MSD	51753001		0.4	100.0		96.3	75	125	3.8	20
20000E00 00000										
Molybdenum				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	105.0		.a necovery	80 80	120		
MB		<0.002								
						94.7	75	125	5.6	20





Account #: 2040

Client: Basin Electric Power Cooperative

Selenium				Units: m	g/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	97.7	% Recovery	80	120		
МВ		<0.005							
MS/MSD	51753001		0.4	103.0	97.8	75	125	5.7	20
IVIS/IVISO	31733001		0.4	103.0	37.6	73	123	3.7	20
Thallium					g/L				
QC Type LFB-MS	Original Sample ID	Blank Result	Spike Amount 0.1	Spike % Recovery 107.0	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
			0.1	107.0			110		
МВ		<0.0005							
MS/MSD	51753001		0.4	98.3	94.3	75	125	4.2	20
Mercury				Units: m	g/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB			0.002	Recovery 98.8	% Recovery	Limit (%) 85	Limit (%) 115		
LFB			0.002	94.8		85	115		
LFB			0.002	91.4		85	115		
LRB		<0.0002							
МВ		<0.0002							
MB		<0.0002							
MB		<0.0002							
MS/MSD	51498002		0.002	96.3	97.7	70	130	5.1	20
MS/MSD	51498012		0.002	87.6	90.8	70	130	0.0	20
MS/MSD	51498022		0.002	96.8	100.0	70	130	5.1	20
MS/MSD	51753001		0.002	93.2	98.8	70	130	5.1	20
MS/MSD	51856007		0.002	91.4	92.8	70	130	0.0	20
Fluoride				Units: m	g/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-F			3.06	106.0	N INCOMELY	83.99	111.11		
LFB-F			0.5	102.0		90	110		
LFB-F			0.5	102.0		90	110		
LFB-F			0.5	100.0		90	110		
LFB-F			0.5	104.0		90	110		
LFB-F			0.5	102.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
		NO.1							





Account #: 2040 Client: Basin Electric Power Cooperative

Fluoride				Units: mg	g/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD	51753001		0.5	94.0	94.0	80	120	0.0	20
MS/MSD	51770005		0.5	102.0	102.0	80	120	0.0	20
MS/MSD	51856005		0.5	100.0	100.0	80	120	0.0	20
MS/MSD	51856007		0.5	102.0	106.0	80	120	3.9	20
Total Dissolve	ed Solids			Units: m	g/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	101.0	70 Necovery	90.35	110.33		
CRM			736 736		Altecovery				
		<10		101.0	xicorety	90.35	110.33		
CRM		<10		101.0	in the overy	90.35	110.33		
CRM MB	51856005			101.0	in the order y	90.35	110.33	1.5	20
CRM MB	51856005 52102002			101.0	in the second of	90.35	110.33	1.5	20
MB MB				101.0	in the source of	90.35	110.33		





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Account # 2040		2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address					Basin Electric Power Coop WO: 51753				Chain of Custody Page of		
Leland Olds Station 3901 Highway 2004 Stanton, ND 58571 Name of Sampler Msoline Mark Dihle Msoline@bepc.com aknutson@bepc.	Company Name a			W.	Account #		_		Phone #				
Sample Mark Dihle Mark D					Contact	2040			Emaile	<u>701-745-7238</u>	701-557-5	488	
Stanton, ND 58571 Name of Sampler Mis Missing Address (Indicate if different from above) Quote Number Quote Number Date Submitted 6/14/2024 Project Name/Number AVS CCR Wells Purchase Order # 790708-01 Lab Use Only Lab Sample ID Sample Matrix GW - Groundwater Sampled Sa					Contact	Mark Dihl	е			bepc.com akr	utson@be	epc.com	
Quote Number Date Submitted S/14/2024 Project Name/Number AVS CCR Wells Purchase Order # T90708-01					Name of S	Sampler		-					
Sample ID Sample Matrix GW - Groundwater Only Lab Use Only Lab Sample ID Sample Matrix GW - Groundwater Sampled Sampled Sampled Sampled Sampled Sampl	Billing Address (i	ndicate if different f	rom above)										
Project Name/Number					Quote Nu	mber							
AVS CCR Wells 790708-01					Project Na	ame/Numb	er			_			
Only Sample ID Sample Matrix GW - Groundwater GW - GW - Groundwater GW - GW - Groundwater GW - GW					,			ells					
MW 26 S GW 6/13/2024 1052 3 B, Ca, CI, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr CL, Hg, Mo, Se, TI, Ra226, Ra228, TDS MW 22 S GW 6/13/2024 913 2 N B, Ca, CI, F, SO ₄ , TDS MW 24 S GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS DUP GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS MW 21 S GW 6/13/2024 1431 2 N B, Ca, CI, F, SO ₄ , TDS	Only	Sam	nle ID		Date	Time	sottles	N.		Analysis Pa	aguirod		
MW 26 S GW 6/13/2024 1052 3 N Li, Hg, Mo, Se, TI, Ra226, Ra228, TDS MW 22 S GW 6/13/2024 913 2 N B, Ca, Cl, F, SO ₄ , TDS MW 24 S GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS DUP GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS MW 21 S GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS	Lab	Jani	pie ib		Sampleu	Sampleu	Ш	_	D C+ CL E			0 . 0 . DI	
OO3 MW 24 S GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS OO4 DUP GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS OO5 MW 21 S GW 6/13/2024 1431 2 N B, Ca, CI, F, SO ₄ , TDS	001	MW	26 S	GW	6/13/2024	1052	3	N					
OCH DUP GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS OCS MW 21 S GW 6/13/2024 1431 2 N B, Ca, Cl, F, SO ₄ , TDS	002	MW	1 22 S	GW	6/13/2024	913	2	N	B, Ca, CI, F,	SO ₄ , TDS			
OCH DUP GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS CC5 MW 21 S GW 6/13/2024 1431 2 N B, Ca, Cl, F, SO ₄ , TDS	003	MW	1 24 S	GW	6/13/2024	1203	2	N	B, Ca, Cl, F,	SO ₄ , TDS			
OCS MW 21 S GW 6/13/2024 1431 2 N B, Ca, Cl, F, SO ₄ , TDS	CYY	D	up.	CW	0/40/0004	4000							
	OCE	DUP		GW			100						
Comments:	005	MW	/ 21 S	GW	6/13/2024	1431	2	N	B, Ca, CI, F,	SO ₄ , TDS			
Comments:													
Comments:											De:		
Comments:													
	Comments:												
Transferred by Date Time Received by Date Time Temp ROI 1			Date	Time	^ Received	by	Г	Dat	e Time	Temp	ROI	Therm. #	
		PRESS	6/14/2024	7	WXI	~	14.	Ju	124 145			TM920	

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Tuesday, July 9, 2024 12:04:00 PM

Form # 80-910005-1



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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS CCR Wells (51754) **PO**: 790708-01

Mark Dihle Basin Electric Power Cooperative 1717 E. Interstate Avenue Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:



Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016 SD SDWA

Subcontracted Analyses

Analyzed By	Company	Address	Phone	Certification
SUBv	Energy Labs Casper	2393 Salt Creek Highway, Casper. WY 82601	307-235-0515	CERT

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Report Date: Wednesday, July 24, 2024 1:38:04 PM





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 51754001
 Date Collected:
 06/13/2024 10:52
 Matrix:
 Groundwater

 Sample ID:
 MW 26 S
 Date Received:
 06/14/2024 14:51
 Collector:
 Client

Temp @ Receipt (C): 4.5 Received on Ice: Yes

Parameter Results **RDL** DF Prepared Analyzed Qual **Method: Contracted Result** 07/24/2024 13:04 Radium 226 See Attached 1 Radium 228 See Attached 1 07/24/2024 13:04



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ANALYTICAL SUMMARY REPORT

July 20, 2024

Minnesota Valley Testing Laboratories

1126 N Front St

New Ulm. MN 56073-1176

Work Order:

C24060726 Quote ID: C15480

Project Name: 51754

Energy Laboratories, Inc. Casper WY received the following 1 sample for Minnesota Valley Testing Laboratories on 6/19/2024

Lab ID Client Sample ID Collect Date Receive Date Matrix C24060726-001 51754-001, MW 26 S 06/13/24 10:52 06/19/24 Groundwater pH Check for Nitric Radiochem FIRST

Radium 226 + Radium 228, Total Radium 226, Total Radium 228, Total

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.



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Client: Basin Electric Power Cooperative Account #: 2040



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Report Date: 07/20/24 Client: Minnesota Valley Testing Laboratories 51754 Collection Date: 06/13/24 10:52 Project: DateReceived: 06/19/24 C24060726-001 Lab ID: Client Sample ID: 51754-001, MW 26 S Matrix: Groundwater

			MCL	1	
Analyses	Result Un	its Qualifiers	RL QCL		Analysis Date / By
RADIONUCLIDES, TOTAL					
Radium 226	0.08 pC	i/L U		E903.0	07/02/24 15:33 / alb
Radium 226 precision (±)	0.2 pC	i/L		E903.0	07/02/24 15:33 / alb
Radium 226 MDC	0.3 pC	i/L		E903.0	07/02/24 15:33 / alb
Radium 228	0.5 pC	i/L U		RA-05	06/27/24 13:47 / trs
Radium 228 precision (±)	0.8 pC	i/L		RA-05	06/27/24 13:47 / trs
Radium 228 MDC	1.2 pC	i/L		RA-05	06/27/24 13:47 / trs
Radium 226 + Radium 228	0.7 pC	i/L U		A7500-RA	07/03/24 11:19 / dmf
Radium 226 + Radium 228 precision (±)	0.8 pC	i/L		A7500-RA	07/03/24 11:19 / dmf
Radium 226 + Radium 228 MDC	1.2 pC	i/L		A7500-RA	07/03/24 11:19 / dmf

Report Definitions RL - Analyte Reporting Limit QCL - Quality Control Limit

U - Not detected at Minimum Detectable Concentration

MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

Page 2 of 6



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QA/QC Summary Report

Prepared by Casper, WY Branch

sota Valley Testing Laboratories	Work Order: C24060726	Report Date: 07/03/24

Client:	Minnesota Valley Te	sting Lab	oratories		Work Order:	C2406	60726	Report	Date:	07/03/24	
Analyte		Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	E903.0									Batch: RA2	26-11355
Lab ID:	LCS-RA226-11355	3 Lab	oratory Cor	trol Sample	9		Run: TENN	ELEC-3_240621I	В	07/02/	24 13:28
Radium 2	226		9.9	pCi/L		99	70	130			
Radium 2	226 precision (±)		1.9	pCi/L							
Radium 2	226 MDC		0.23	pCi/L							
Lab ID:	MB-RA226-11355	3 Met	thod Blank				Run: TENN	ELEC-3_240621I	В	07/02/	24 13:28
Radium 2	226		0.06	pCi/L							U
Radium 2	226 precision (±)		0.1	pCi/L							
Radium 2	226 MDC		0.2	pCi/L							
Lab ID:	C24060770-007ADUP	3 Sar	mple Duplica	ate			Run: TENN	ELEC-3_240621I	В	07/02/	24 15:33
Radium 2	226		0.074	pCi/L					180	30	UR
Radium 2	226 precision (±)		0.15	pCi/L							
Radium 2	226 MDC		0.24	pCi/L							
Radium 2			0.24	pCi/L	or the DED is lose	than as a	aval to the limi	t of 2 the DED seem	lt in 0 22		

⁻ Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.33.

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected at Minimum Detectable Concentration (MDC)

Page 3 of 6



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client:	Minnesota Valley Testing Laboratories	Work Order: C24060726	Report Date: 07/03/24

Olicit: Willingsold Valley Testing Edbordtones				TTOIR GIGGI: GZ-GGG726			Report Bute: 01/00/24				
Analyte		Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	RA-05									Batch: RA	228-7423
Lab ID:	LCS-228-RA226-1135	5 3 Lab	oratory Cor	ntrol Sample			Run: TENN	IELEC-4_240621	В	06/27	/24 13:47
Radium 2	228		9.8	pCi/L		94	70	130			
Radium 2	228 precision (±)		2.0	pCi/L							
Radium 2	228 MDC		1.1	pCi/L							
Lab ID:	MB-RA226-11355	3 Met	hod Blank				Run: TENN	IELEC-4_240621	В	06/27	/24 13:47
Radium 2	228		-0.3	pCi/L							U
Radium 2	228 precision (±)		0.6	pCi/L							
Radium 2	228 MDC		1	pCi/L							
Lab ID:	C24060770-007ADUP	3 San	nple Duplica	ate			Run: TENN	IELEC-4_240621	В	06/27	/24 13:47
Radium 2	228		-0.042	pCi/L					130	30	UR
Radium 2	228 precision (±)		0.62	pCi/L							
Radium 2	228 MDC		1.0	pCi/L							
D I'm	to DDD to solution of the same		- f 41-1	backer I become	- the DED is less	41	second to the Best	4 -40 H- DED	W 1- 0 47	,	

⁻ Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 0.17.

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected at Minimum Detectable Concentration (MDC)

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LABORATORIES	www.energylab.com	Gillette, WY 307.686.7175 • Helena, MT 406.442.071

Work Order Receipt Checklist

WIII II CSOLA VAIICVII CSLIIIU LADOLALOLICS (./411hti//	Minnesota \	Vallev	Testing Laboratories	C24060726
---	-------------	--------	----------------------	-----------

Login completed by:	Lisa X. Quezada	Date Received: 6/19/2024					
Reviewed by:	cjohnson	Received by: CCS					
Reviewed Date:	6/27/2024	Carrier name: UPS Ground					
Custody seals intact on all s Chain of custody present?	hipping container(s)/cooler(s)? ample bottles? en relinquished and received?	Yes	No	Not Present ☐ Not Present ☑ Not Present ☑			
Samples in proper container/bottle?		Yes ✓	No 🗆				
Sample containers intact?		Yes ✓	No 🗌				
Sufficient sample volume for	indicated test?	Yes 🗸	No 🗌				
All samples received within (Exclude analyses that are c such as pH, DO, Res Cl, Su	onsidered field parameters	Yes ✓	No 🗌				
Temp Blank received in all s	hipping container(s)/cooler(s)?	Yes	No 🗹	Not Applicable			
Container/Temp Blank temp	erature:	12.7°C No Ice					
Containers requiring zero he bubble that is <6mm (1/4").	adspace have no headspace or	Yes	No 🗌	No VOA vials submitted ✓			
Water - pH acceptable upon	•	Yes	No 🔽	Not Applicable			

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

The sample for Radionuclides was received at pH \sim 7. Nitric acid (15 mL) was added to preserve to pH<2. In accordance with the method, these samples must held for 16 hours prior to analysis. LQ 6/20/24

Page 5 of 6

Report Date: Page 8 of 9

Wednesday, July 24, 2024 1:38:04 PM

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Account #:

2040

Bismarck, ND 58501 Phone: (701) 258-9720 Work Order # 51754 C24060726 Fax: (701) 258-9724 Toll Free: (800) 279-6885 Phone #: Account #: Company Name and Address: 701-258-9720 Fax #: Contact: MVTL For faxed report check box Claudette 2616 E Broadway Bismarck, ND 58501 ccarroll@mvtl.com E-mail: Name of Sampler: For e-mail report check box Billing Address (indicate if different from above): **Date Submitted: Quote Number** Client: 17-Jun-24 C15480 v5 PO Box 249 Purchase Order #: Project Name/Number: New Ulm, MN 56073 **BL6885 Analysis Bottle Type** Sample Information Gallon HNO3 VOC Vials Basin Electric Power Cooperative Glass Jar Time Sample Date **Analysis Required** Sampled Sampled Client Sample ID Type **MVTL Lab Number** Ra226 & Ra228 1052 GW 13-Jun-24 51754001 MW 26 S Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Chain of Custody Record

LABORATORIES, Inc. 2616 E Broadway Ave

			O L O ditions	Received by:	Date:	Temp:
Transferred by:	Date:	Time:	Sample Condition:	A Received by:	1 0 0211	12
T Olson	17-Jun-24	1700		anfrit	6-19-44 10:00	

Page 6 of 6







Account #: 2040 Client: Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address				Electric P	OW	er		Chain of Custody Page of Work Order #
Company N			Account #				Phone	
	Basin Electric Power Coop.			2040				<u>701-745-7238</u> <u>701-557-5488</u>
	<u>Leland Olds Station</u> 3901 Highway 200A		Contact	Mark Dihle			Emails	Dbepc.com aknutson@bepc.com
	Stanton, ND 58571		Name of S					Dbarr.com
Billing Addr	ess (indicate if different from above)	/	mls				i coniecc	godii.com
			Quote Nur	nber				Date Submitted 6/14/2024
			Project Na	me/Numbe		ells		Purchase Order # <u>790708-01</u>
Lab Use						_		
Only		Sample Matrix GW - Groundwater	Date	Time	ottles	N/A		
Lab	Sample ID		Sampled	Sampled	ğ	≻		Analysis Required
001	MW 26 S	GW	6/13/2024	1052	3			F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Se, TI <mark>, Ra226, Ra228</mark> , TDS
/	MW 22 S	GW	6/13/2024	913	2	N	B, Ca, CI, F	, SO ₄ , TDS
/	MW 24 S	GW	6/13/2024	1203	2	N	B, Ca, Cl, F	, SO ₄ , TDS
	DUP	GW	6/13/2024	1203	2	N	B, Ca, CI, F	F, SO ₄ , TDS
_	MW 21 S	GW	6/13/2024	1431	2	N	B, Ca, CI, F	F, SO ₄ , TDS
		-						
7 (2.2)								
Comments:								

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Received by

Date

14Jun24

Time

ROI

YN Y/N

Effective Date: 26 Aug 2022

Therm. #

TM920

Temp

Report Date: Wednesday, July 24, 2024 1:38:04 PM

Transferred by

Form # 80-910005-1

MILLENNIUM EXPRESS

Date

6/14/2024

Time

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number



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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS CCR Wells (52087) **PO**: 790708-01

Mark Dihle Basin Electric Power Cooperative 1717 E. Interstate Avenue Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Courted

Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 52087001
 Date Collected:
 06/17/2024 10:40
 Matrix:
 Groundwater

 Sample ID:
 MW 27 S
 Date Received:
 06/18/2024 14:46
 Collector:
 Client

Temp @ Receipt (C): 3.4 Received on Ice: Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	252	mg/L	25	5		06/26/2024 09:08	
Method: EPA 245.1							
Mercury	<0.0002	mg/L	0.0002	1	06/27/2024 11:38	06/27/2024 13:49	
Welcury	\0.0002	mg/L	0.0002	•	00/21/2024 11:50	00/21/2024 13:49	
Method: EPA 6010D							
Boron	0.19	mg/L	0.1	1	06/19/2024 07:07	07/02/2024 10:38	
Calcium	28.3	mg/L	1	1	06/19/2024 07:07	06/25/2024 09:41	
Lithium	0.0755	mg/L	0.02	1	06/19/2024 07:07	06/20/2024 14:28	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	06/19/2024 07:07	07/09/2024 12:26	
Arsenic	0.0116	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 12:26	
Barium	0.3396	mg/L	0.004	10	06/19/2024 07:07	07/09/2024 13:43	
Beryllium	0.0015	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 12:26	
Cadmium	0.0007	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 12:26	
Chromium	0.0863	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 12:26	
Cobalt	0.0141	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 12:26	
Lead	0.0206	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 12:26	
Molybdenum	0.1457	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 12:26	
Selenium	<0.005	mg/L	0.005	5	06/19/2024 07:07	07/09/2024 12:26	
Thallium	<0.0005	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 12:26	
Method: SM4500-CI-E 2011							
Chloride	80.8	mg/L	10.0	5		06/19/2024 14:54	
Method: SM4500-F-C-2011							
Fluoride	1.17	mg/L	0.1	1		06/19/2024 21:17	
i idolide	1.17	my/L	0.1	1		00/13/2024 21.17	
Method: USGS I-1750-85							
Total Dissolved Solids	2290	mg/L	10	1		06/19/2024 10:55	

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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 52087002
 Date Collected:
 06/17/2024 09:20
 Matrix:
 Groundwater

 Sample ID:
 MW 25 S
 Date Received:
 06/18/2024 14:46
 Collector:
 Client

Temp @ Receipt (C): 3.4 Received on Ice: Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	24.6	mg/L	5	1		06/26/2024 09:21	
Method: EPA 245.1							
Mercury	<0.0002	mg/L	0.0002	1	06/27/2024 11:38	06/27/2024 13:49	
Welcury	\0.0002	mg/L	0.0002	•	00/21/2024 11:50	00/21/2024 13:49	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	06/19/2024 07:07	07/02/2024 10:39	
Calcium	6.12	mg/L	1	1	06/19/2024 07:07	06/25/2024 09:42	
Lithium	0.0430	mg/L	0.02	1	06/19/2024 07:07	06/20/2024 14:29	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	06/19/2024 07:07	07/09/2024 13:04	
Arsenic	<0.002	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 13:04	
Barium	0.0994	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 13:04	
Beryllium	<0.0005	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 13:04	
Cadmium	<0.0005	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 13:04	
Chromium	0.0025	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 13:04	
Cobalt	<0.002	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 13:04	
Lead	0.0006	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 13:04	
Molybdenum	0.0033	mg/L	0.002	5	06/19/2024 07:07	07/09/2024 13:04	
Selenium	<0.005	mg/L	0.005	5	06/19/2024 07:07	07/09/2024 13:04	
Thallium	<0.0005	mg/L	0.0005	5	06/19/2024 07:07	07/09/2024 13:04	
Method: SM4500-CI-E 2011							
Chloride	43.8	mg/L	2.0	1		06/19/2024 14:55	
Method: SM4500-F-C-2011							
Fluoride	1.29	mg/L	0.1	1		06/19/2024 21:23	
Method: USGS I-1750-85							
Total Dissolved Solids	1900	mg/L	10	1		06/19/2024 10:55	

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Report Date: Wednesday, July 10, 2024 2:00:13 PM





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 52087003
 Date Collected:
 06/17/2024 09:20
 Matrix:
 Groundwater

 Sample ID:
 DUP
 Date Received:
 06/18/2024 14:46
 Collector:
 Client

Temp @ Receipt (C): 3.4	Received on	lce: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	24.7	mg/L	5	1		06/26/2024 09:22	
Method: EPA 6010D							
Boron	0.11	mg/L	0.1	1	06/19/2024 07:07	07/02/2024 10:40	
Calcium	5.95	mg/L	1	1	06/19/2024 07:07	06/25/2024 09:44	
Method: SM4500-CI-E 2011							
Chloride	43.3	mg/L	2.0	1		06/19/2024 14:56	
Method: SM4500-F-C-2011							
Fluoride	1.29	mg/L	0.1	1		06/19/2024 21:29	
ridonde	1.23	mg/L	0.1	'		00/13/2024 21.23	
Method: USGS I-1750-85							
Total Dissolved Solids	1900	mg/L	10	1		06/19/2024 10:55	





Account #: 2040 Client: Basin Electric Power Cooperative

C Resul	ts Summary						WO #:	5208	37
Sulfate				Units: mg/	L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			100	104.0		85	115		
LFB			100	92.5		85	115		
LFB			100	93.2		85	115		
LFB			100	96.0		85	115		
.FB			100	89.1		85	115		
LFB			100	98.1		85	115		
.FB			100	92.7		85	115		
LFB			100	98.8		85	115		
						85			
LFB			100	92.6			115		
LFB			100	94.4		85	115		
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
MS/MSD	52101007		500	82.2	80.1	85	115	2.2	20
MS/MSD	52104002		500	72.3	77.1	85	115	2.5	20
MS/MSD	52104004		1000	79.6	82.5	85	115	2.1	20
MS/MSD	52281002		1000	75.2	77.5	85	115	1.8	20
MS/MSD	52396002		1000	69.0	72.5	85	115	2.4	20
MS/MSD	52454005		100	97.1	96.0	85	115	1.1	20
MS/MSD	52461002		100	96.3	96.0	85	115	0.3	20
MS/MSD	52575002		500	70.7	73.4	85	115	1.8	20





Account #: 2040

Client: Basin Electric Power Cooperative

0.00				20.00						
Sulfate				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MS/MSD	52649007		100	73.1		68.5	85	115	3.5	20
Chloride				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB	N - 2020 - 1 N	66 888823	30	Recovery 95.1		% Recovery	Limit (%)	Limit (%) 110		
LFB			30	55.1			50	110		
LFB			30	96.9			90	110		
LFB			30	98.8			90	110		
LFB			30	103.0			90	110		
LFB			30	102.0			90	110		
LFB			30	97.0			90	110		
MB		<2.0								
MB		<2.0								
MB		<2.0								
MB		<2.0								
МВ		<2.0								
МВ		<2.0								
MS/MSD	51925001		30	113.4		118.6	80	120	0.8	20
MS/MSD	52104001		30	106.8		102.8	80	120	2.3	20
MS/MSD	52104004		30	110.0		110.3	80	120	0.2	20
Boron				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-OE			0.4	Recovery 102.0		% Recovery	Limit (%) 85	Limit (%) 115		
MB		<0.1								
MC/MCD	E19E9003		0.4	00.4		100.0	70	120	0.6	20
MS/MSD	51858003		0.4	98.4		100.0	70	130	0.6	20
MS/MSD	52087003		0.4	93.2		94.2	70	130	0.8	20
Calcium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MI			100	Recovery 111.0		% Recovery	Limit (%) 85	Limit (%) 115		
MB		<1								
PDS/PDSD	51856004		100	108.0		107.0	75	125	0.8	20
DUP	51858002								5.6	20
PDS/PDSD	52101002		100	114.0		113.0	75	125	0.7	20



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Account #: 2040

Client: Basin Electric Power Cooperative

6-1-1				11-11						
Calcium QC Type	Original Sample ID	Blank Result	Spike Amount	Units: Spike % Recovery	mg/L	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
PDS/PDSD	52101008		100	111.0		113.0	75	125	1.8	20
PDS/PDSD	52104004		100	104.0		104.0	75	125	0.1	20
PDS/PDSD	52104011								0.8	20
PDS/PDSD	52281002		100	92.4		92.3	75	125	0.1	20
PDS/PDSD	52429003		100	92.7		92.2	75	125	0.2	20
PDS/PDSD	52429006		100	101.0		101.0	75	125	0.3	20
PDS/PDSD	52461002		100	99.3		99.3	75	125	0.1	20
PDS/PDSD	52467001		100	96.0		95.5	75	125	0.3	20
Lithium				Units:	mg/L					
QC Type LFB-OE	Original Sample ID	Blank Result	Spike Amount 0.4	Spike % Recovery 102.0		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%) 115	RPD (%)	RPD Limit (%)
MB		<0.04					-			
MS/MSD	51858003		0.4	94.6		95.0	70	130	0.4	20
	32030003					33.0				
Antimony QC Type	Original Sample ID	Blank Result	Spike Amount	Units: Spike %	mg/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	96.6		% Recovery	Limit (%) 80	Limit (%) 120		
MB		<0.001								
MS/MSD	51858003		0.4	103.0		99.6	75	125	3.2	20
Arsenic				Units:	mg/L					
QC Type LFB-MS	Original Sample ID	Blank Result	Spike Amount 0.1	Spike % Recovery 96.2		Spike Duplicate % Recovery	Limit (%)	Upper Control Limit (%) 120	RPD (%)	RPD Limit (%)
			0.1	30.2				110		
MB		<0.002								
MS/MSD	51858003		0.4	103.0		98.0	75	125	4.7	20
Barium QC Type	Original Sample ID	Blank Result	Spike Amount	Units:	mg/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS	Signal sample ID	Junk Headit	0.1	Recovery 89.8		% Recovery	Limit (%)	Limit (%)	0 (20)	5 Ellit (70)
MB		<0.002								
MS/MSD	51858003		0.4	98.0		90.4	75	125	7.1	20
Beryllium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	6/ L	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	103.0			80	120		
MB		<0.0005								
MS/MSD	51858003		0.4	116.0		106.0	75	125	9.0	20





Account #: 2040

Client: Basin Electric Power Cooperative

Cadmium					mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	95.6			80	120		
MB		<0.0005								
WID		<0.0003								
MS/MSD	51858003		0.4	99.6		95.3	75	125	4.4	20
Chromium					mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	96.7			80	120		
MB		<0.002								
MS/MSD	51858003		0.4	96.0		93.4	75	125	2.9	20
Cobalt				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	mg/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS	-		0.1	Recovery 94.5		% Recovery	Limit (%) 80	Limit (%) 120		
			,					-30		
MB		<0.002								
NAC/NACD	51858003		0.4	02.6		92.1	75	125	1.2	20
MS/MSD	51858003		0.4	93.6		92.1	75	125	1.3	20
Lead				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 94.9		% Recovery	Limit (%) 80	Limit (%) 120		
MB		<0.0005								
MS/MSD	51858003		0.4	99.0		92.9	75	125	6.3	20
Molybdenum				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	95.7			80	120		
MB		<0.002								
		31002								
MS/MSD	51858003		0.4	93.9		91.8	75	125	2.2	20
6.1.										
Selenium QC Type	Original Sample ID	Blank Result	Spike Amount	Units: Spike %	mg/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
	Original Sample to	biatik nesuit		Recovery		% Recovery	Limit (%)	Limit (%)	KFD (70)	KFD LIIIIL (76)
LFB-MS			0.1	97.5			80	120		
MB		<0.005								
MS/MSD	51858003		0.4	105.0		100.0	75	125	4.4	20
Thallium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 95.7		% Recovery	Limit (%) 80	Limit (%) 120		
MB		<0.0005								
NAC/NACD	F40F0000		0.4	07.5		04.7	75	425		20
MS/MSD	51858003		0.4	97.6		91.7	/5	125	6.1	20





Account #: 2040

Client: Basin Electric Power Cooperative

Mercury				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.002	90.7		85	115		
LFB			0.002	100.0		85	115		
LFB			0.002	107.0		85	115		
LRB		<0.0002							
LRB		<0.0002							
МВ		<0.0002							
MS/MSD	52104001		0.002	114.0	113.0	70	130	4.4	20
MS/MSD	52104004		0.002	100.0	102.0	70	130	0.0	20
MS/MSD	52281002		0.002	90.9	92.2	70	130	0.0	20
MS/MSD	52281006		0.002	106.0	101.0	70	130	4.9	20
Fluoride				Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-F			3.06	99.7	20 INCCOVERY	83.99	111.11		
LFB-F			0.5	98.0		90	110		
LFB-F			0.5	96.0		90	110		
LFB-F			0.5	96.0		90	110		
LFB-F			0.5	98.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD	52087002		0.5	102.0	102.0	80	120	0.0	20
MS/MSD	52103003		0.5	104.0	100.0	80	120	1.9	20
MS/MSD	52104004		0.5	102.0	102.0	80	120	0.0	20
Total Dissolve	d Solids			Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	100.0		90.35	110.33		
CRM			736	101.0		90.35	110.33		
МВ		<10							
МВ		<10							
DUP	51856005							1.5	20





Account #: 2040 Client: Basin Electric Power Cooperative

Total Dissolve	ed Solids			Units: mg/	L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
DUP	52102002							0.7	20
DUP	52104004							0.0	20
DUP	52104013							0.0	20



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Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free: Company Na	Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Impany Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571 Illing Address (indicate if different from above)			W0: 52	2040 Mark Dihle	Patricipanism Annual Patricipa	/er	Chain of Custody Page of Work Order # Lab Use Only Phone # 701-745-7238 701-557-5488 Emails mdihle@bepc.com aknutson@bepc.com Ksolie@barr.com
	-				ame/Numbe AVS CCF		ells	6/18/2024 Purchase Order # 790708-01
Lab Use Only Lab	San	nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N	Analysis Required
001	MV	V 27 S	GW	6/17/2024	10			B, Ca, Cl, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MV	V 25 S	GW	6/17/2024	920	3	N	B, Ca, Cl, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
003		DUP	GW	6/17/2024	920	2	N	B, Ca, Cl, F, SO ₄ , TDS
Comments:								
T MILLENNIUI	ransferred by W EXPRESS	Date 6/18/2024	Time	Received	l by		Dat	te Time Temp ROI Therm.# ndY 1446 314°C ON TM93

Please submit the top copy with your samples. We will return the completed original with your results.

Form #80-910005-1 See above for page number Effective Date: 26 Aug 2022

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Wednesday, July 10, 2024 2:00:13 PM



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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885

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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS CCR Wells (52088) **PO:** 790708-01

Mark Dihle
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:



Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016 SD SDWA

Subcontracted Analyses

Analyzed By	Company	Address	Phone	Certification
SUBv	Energy Labs Casper	2393 Salt Creek Highway, Casper. WY 82601	307-235-0515	CERT

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Wednesday, August 7, 2024 9:27:53 AM



Radium 228

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08/07/2024 08:29

Account #: 2040 Client: Basin Electric Power Cooperative

See Attached

Analytical Results

 Lab ID:
 52088001
 Date Collected:
 06/17/2024 10:40
 Matrix:
 Groundwater

 Sample ID:
 MW 27 S
 Date Received:
 06/18/2024 14:46
 Collector:
 Client

Temp @ Receipt (C): 3.4 Received on Ice: Yes

Parameter Results Units RDL DF Prepared Analyzed Qual

Method: Contracted Result

Radium 226 See Attached 1 08/07/2024 08:29

1



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

Lab ID: Groundwater 52088002 **Date Collected:** 06/17/2024 09:20 Matrix: Sample ID: MW 25 S Date Received: 06/18/2024 14:46 Client Collector:

Temp @ Receipt (C): Received on Ice:

remp @ Receipt (C). 5.4	Received of	ilce. 165					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: Contracted Result							
Radium 226	See Attached			1		08/07/2024 08:29	
Radium 228	See Attached			1		08/07/2024 08:29	



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Account #: 2040 Client: Basin Electric Power Cooperative



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ANALYTICAL SUMMARY REPORT

August 06, 2024

Minnesota Valley Testing Laboratories 1126 N Front St

New Ulm, MN 56073-1176

Work Order: C24060860

Quote ID: C15480

Project Name: 52088

Energy Laboratories, Inc. Casper WY received the following 2 samples for Minnesota Valley Testing Laboratories on 6/24/2024

Lab ID	Client Sample ID	Collect Date Receive Date	Matrix	Test
C24060860-001	52088001, MW 27 S	06/17/24 10:40 06/24/24	Groundwater	Radium 226 + Radium 228, Total Radium 226, Total Radium 228, Total
C24060860-002	52088002, MW 25 S	06/17/24 9:20 06/24/24	Groundwater	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.



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Client: Basin Electric Power Cooperative Account #: 2040



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories Report Date: 08/06/24 52088 Collection Date: 06/17/24 10:40 Project: C24060860-001 DateReceived: 06/24/24 Lab ID: Client Sample ID: 52088001, MW 27 S Matrix: Groundwater

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 226	3.2	pCi/L				E903.0	07/22/24 14:34 / alb
Radium 226 precision (±)	1	pCi/L				E903.0	07/22/24 14:34 / alb
Radium 226 MDC	1.2	pCi/L				E903.0	07/22/24 14:34 / alb
Radium 228	2.9	pCi/L	U			RA-05	07/17/24 15:37 / trs
Radium 228 precision (±)	3.5	pCi/L				RA-05	07/17/24 15:37 / trs
Radium 228 MDC	5.4	pCi/L				RA-05	07/17/24 15:37 / trs
Radium 226 + Radium 228	5.9	pCi/L				A7500-RA	07/25/24 11:05 / dmf
Radium 226 + Radium 228 precision (±)	3.6	pCi/L				A7500-RA	07/25/24 11:05 / dmf
Radium 226 + Radium 228 MDC	5.5	pCi/L				A7500-RA	07/25/24 11:05 / dmf

Report Definitions RL - Analyte Reporting Limit QCL - Quality Control Limit

U - Not detected at Minimum Detectable Concentration

MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

Page 2 of 8



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Client: Basin Electric Power Cooperative Account #: 2040



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: Minnesota Valley Testing Laboratories Report Date: 08/06/24 52088 Collection Date: 06/17/24 09:20 Project: C24060860-002 DateReceived: 06/24/24 Lab ID: Client Sample ID: 52088002, MW 25 S Matrix: Groundwater

			MCL		
Analyses	Result Units	Qualifiers	RL QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL					
Radium 226	0.3 pCi/L	U		E903.0	07/08/24 11:22 / alb
Radium 226 precision (±)	0.2 pCi/L			E903.0	07/08/24 11:22 / alb
Radium 226 MDC	0.3 pCi/L			E903.0	07/08/24 11:22 / alb
Radium 228	1.1 pCi/L	U		RA-05	07/02/24 12:38 / trs
Radium 228 precision (±)	0.9 pCi/L			RA-05	07/02/24 12:38 / trs
Radium 228 MDC	1.3 pCi/L			RA-05	07/02/24 12:38 / trs
Radium 226 + Radium 228	0.8 pCi/L	U		A7500-RA	07/09/24 11:24 / dmf
Radium 226 + Radium 228 precision (±)	0.9 pCi/L			A7500-RA	07/09/24 11:24 / dmf
Radium 226 + Radium 228 MDC	1.3 pCi/L			A7500-RA	07/09/24 11:24 / dmf

Report Definitions RL - Analyte Reporting Limit QCL - Quality Control Limit

U - Not detected at Minimum Detectable Concentration

MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

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Account #: 2040

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QA/QC Summary Report

Prepared by Casper, WY Branch

Client:	Minnesota Valley Testing Laboratories			W	ork Order:	C2406	0860	Report Date: 07/25/24					
Analyte		Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual		
Method:	E903.0									Batch: RA2	226-11357		
Lab ID:	LCS-RA226-11357	3 L	aboratory Cor	trol Sample			Run: TENN	ELEC-3_240625I)	07/08	/24 11:22		
Radium 2	226		12	pCi/L		119	70	130					
Radium 2	226 precision (±)		2.3	pCi/L									
Radium 2	226 MDC		0.22	pCi/L									
Lab ID:	MB-RA226-11357	3 N	Method Blank				Run: TENN	ELEC-3_240625I)	07/08	/24 11:22		
Radium 2	226		0.2	pCi/L									
Radium 2	226 precision (±)		0.1	pCi/L									
Radium 2	226 MDC		0.2	pCi/L									
Lab ID:	C24060862-002AMS	3 S	Sample Matrix	Spike			Run: TENN	ELEC-3_240625)	07/08	/24 11:22		
Radium 2	226		11	pCi/L		108	70	130					
Radium 2	226 precision (±)		2.2	pCi/L									
Radium 2	226 MDC		0.20	pCi/L									
Lab ID:	C24060862-002AMSE	3 S	Sample Matrix	Spike Duplica	te		Run: TENN	ELEC-3_240625I)	07/08	/24 13:37		
Radium 2	226		11	pCi/L		105	70	130	3.2	30			
Radium 2	226 precision (±)		2.1	pCi/L									
Radium 2	226 MDC		0.19	pCi/L									
	R result is 0.12.												
Method:	CONTRACTOR CONTRACTOR CONTRACTOR									Batch: RA2			
Lab ID:	LCS-RA226-11368	3 L	aboratory Cor	Secretary and the second second				ELEC-3_240709/	A	07/22	/24 10:34		
Radium 2			11	pCi/L		109	70	130					
	226 precision (±)		2.1	pCi/L									
Radium 2	226 MDC		0.28	pCi/L									
Lab ID:	MB-RA226-11368	3 N	Method Blank				Run: TENN	ELEC-3_240709/	A	07/22	/24 10:34		
Radium 2	226		0.003	pCi/L							U		
Radium 2	226 precision (±)		0.1	pCi/L									
Radium 2	226 MDC		0.2	pCi/L									
Lab ID:	C24061049-001EDUP	3 S	Sample Duplica	ate			Run: TENN	ELEC-3_240709/	Ą	07/22	/24 10:34		
Radium 2	226		12	pCi/L					0.2	30			
Radium 2	226 precision (±)		2.2	pCi/L									
Radium 2	226 MDC		0.20	pCi/L									
- The RE	R result is 0.01.												

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected at Minimum Detectable Concentration (MDC)

Page 4 of 8



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QA/QC Summary Report

Prepared by Casper, WY Branch

Client:	Minnesota Valley Testing Laboratories	Work Order: C24060860	Report Date: 07/25/24

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: RA-05									Batch: RA	228-742
Lab ID: LCS-228-RA226-113	3 Labora	atory Conti	rol Sample			Run: TENN	NELEC-4_240625	Д	07/02/	/24 12:38
Radium 228		12	pCi/L		112	70	130			
Radium 228 precision (±)		2.3	pCi/L							
Radium 228 MDC		0.95	pCi/L							
Lab ID: MB-RA226-11357	3 Metho	d Blank				Run: TENN	NELEC-4_240625	Ą	07/02/	/24 12:38
Radium 228		0.6	pCi/L							U
Radium 228 precision (±)		0.6	pCi/L							
Radium 228 MDC		1	pCi/L							
Lab ID: C24060862-002AMS	1 3 Samp	le Matrix S	pike			Run: TENN	NELEC-4_240625	Ą	07/02/	/24 12:38
Radium 228		12	pCi/L		100	70	130			
Radium 228 precision (±)		2.3	pCi/L							
Radium 228 MDC		0.96	pCi/L							
Lab ID: C24060862-002AMS	D1 3 Samp	le Matrix S	pike Duplicate			Run: TENN	NELEC-4_240625	Ą	07/02/	/24 12:38
Radium 228		12	pCi/L		101	70	130	1.2	30	
Radium 228 precision (±)		2.3	pCi/L							
Radium 228 MDC		1.0	pCi/L							
- The RER result is 0.04.										
Method: RA-05									Batch: RA	228-7433
Lab ID: LCS-228-RA226-113	168 3 Labora		rol Sample				NELEC-4_240709	В	07/17/	/24 13:53
Radium 228		9.7	pCi/L		94	70	130			
Radium 228 precision (±)		1.9	pCi/L							
Radium 228 MDC		0.73	pCi/L							
Lab ID: MB-RA226-11368	3 Metho	d Blank				Run: TENN	NELEC-4_240709	В	07/17/	/24 13:53
Radium 228		0.9	pCi/L							
Radium 228 precision (±)		0.5	pCi/L							
Radium 228 MDC		8.0	pCi/L							
Lab ID: C24061049-001EDU	P 3 Samp	le Duplicat				Run: TENN	NELEC-4_240709			/24 13:53
Radium 228		0.66	pCi/L					150	30	UR
Radium 228 precision (±)		0.49	pCi/L							
Radium 228 MDC		0.75	pCi/L							

⁻ Duplicate RPD is outside of the acceptance range for this analysis. However, the RER is less than or equal to the limit of 3, the RER result is 3.0.

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

R - Relative Percent Difference (RPD) exceeds advisory limit

U - Not detected at Minimum Detectable Concentration (MDC)

Page 5 of 8



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LABORATORIES		Gillette, WT 307.000.7173 • Nelena, WI 400.442.071

Work Order Receipt Checklist

Minnesota Valley Testing Laboratories C240	60860
--	-------

Login completed by:	Aaron J. Smith		Date I	Received: 6/24/2024
Reviewed by:	Icadreau		Red	ceived by: LFN
Reviewed Date:	7/8/2024		Carr	ier name: UPS Ground
0		v ==		N 18
Shipping container/cooler in	good condition?	Yes 🔽	No 🗌	Not Present
Custody seals intact on all si	hipping container(s)/cooler(s)?	Yes	No 🗌	Not Present ✓
Custody seals intact on all sa	ample bottles?	Yes	No 🗌	Not Present 🗹
Chain of custody present?		Yes 🔽	No 🗌	
Chain of custody signed whe	en relinquished and received?	Yes 🗸	No 🗌	
Chain of custody agrees with	sample labels?	Yes 🗸	No 🗌	
Samples in proper container	/bottle?	Yes 🔽	No 🗌	
Sample containers intact?		Yes 🔽	No 🗌	
Sufficient sample volume for	indicated test?	Yes 🔽	No 🗌	
All samples received within h (Exclude analyses that are c such as pH, DO, Res CI, Su	onsidered field parameters	Yes 🗸	No 🗌	
Temp Blank received in all s	hipping container(s)/cooler(s)?	Yes	No ✓	Not Applicable
Container/Temp Blank tempe	erature:	26.0°C No Ice		
Containers requiring zero headspace have no headspace or bubble that is <6mm (1/4").		Yes	No 🗌	No VOA vials submitted
Water - pH acceptable upon	Yes	No 🔽	Not Applicable	

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

The temperature blank temperature in shipping container 1 was 24.8° C, shipping container 2 was 25.0° C, shipping container 3 was 26.0° C, shipping container 4 was 24.4° C, and shipping container 7 was 25.3° C. The temperature of the

Page 6 of 8



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Work Order Receipt Checklist - Continued

Minnesota Valley Testing Laboratories C24060860

sample(s) in shipping container 5 was 25.3°C and shipping container 6 was 25.1°C. AS 6/24/24

Sample 52088002, MW 25 S for Radium 226 and 228 analysis was received at pH >2. Nitric acid (15 mL) was added in the laboratory to preserve to pH <2. In accordance with the method, these samples must held for 16 hours prior to analysis. AS 6/24/24

Page 7 of 8

Wednesday, August 7, 2024 9:27:53 AM

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2040 **Chain of Custody Record** LABORATORIES, Inc. Page 1 of 2616 E Broadway Ave Bismarck, ND 58501 Phone: (701) 258-9720 Work Order # 52088 Fax: (701) 258-9724 Toll Free: (800) 279-6885 Account #: Phone #: Company Name and Address: 701-258-9720 Contact: MVTL 2616 E Broadway Claudette For faxed report check box ccarroll@mvtl.com E-mail: Bismarck, ND 58501 Name of Sampler: For e-mail report check box Billing Address (indicate if different from above): Date Submitted: **Quote Number** Client: 20-Jun-24 C15480 v5 PO Box 249 Project Name/Number: Purchase Order #: New Ulm, MN 56073 **Analysis Bottle Type** Sample Information Basin Electric Power Cooperative Gallon HNO3 Sample Date Time **Analysis Required** Sampled Sampled Lab Number | MVTL Lab Number Client Sample ID Type 2060860 Ra226 & Ra228 1040 MW 27 S GW 17-Jun-24 52088001 GW 17-Jun-24 0920 Ra226 & Ra228 MW 25 S 52088002

Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
Transferred by.	Date.			2 1.	6/24/2024 1040	
T. Olson	20-Jun-24	1700		ducos hicohu	12/2/12 1040	

Page 8 of 8





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free: Company Na	2040 Contact En Mark Dihle mc Name of Sampler Ks mls Quote Number Project Name/Number					Chain of Custody Page of Work Order # Lab Use Only none # 701-745-7238 701-557-5488 mails dishle@bepc.com aknutson@bepc.com solie@barr.com Date Submitted 6/18/2024 Purchase Order #					
					AVS CCF		ells		79	0708-01	7/3/05/4
Lab Use Only Lab	Sam	ple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N	-	Analysis Rec	quired	
001	MV	127 S	GW	6/17/2024	1040		- 80	B, Ca, CI, F, S Li, Hg, Mo, Se			
002	MW	/ 25 S	GW	6/17/2024	920	3	N	B, Ca, Cl, F, S Li, Hg, Mo, Se			
_		UP	GW	6/17/2024	920	2 N B		B, Ca, Cl, F, S	60 ₄ , TDS		
Commont											
Comments:											
	ransferred by M EXPRESS	Date 6/18/2024	Time	Received	l by	18	Dat	te Time	Temp 3,√° C	ROI (Y) N	Therm. #

 $\label{thm:please} \textbf{Please submit the top copy with your samples. We will return the completed original with your results.}$

See above for page number

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Wednesday, August 7, 2024 9:27:53 AM

Form # 80-910005-1

Basin Electric North Dakota

Site Name: AVS LANDFILL

Event Date: 6-10-24

Weather Conditions: WARM & SUNNY

Field Technician: mls

River Elevation (if applicable)

1657.68

Well ID	Time	Depth to Water*	Well Condition	Comments
MW - 14S	745	204.00	Good	
MW - 15S		218.62		
MW - 20S		219.80		
MW - 16S		235.74		
MW - 17S		238.05		
MW - 19S		148.83		
MW - 18S		198.56		
MW - 22S		209.73		
MW - 26S		190.21		
N^V - 24S		206.46		
M:W - 21S		202.30		
MW - 25S		198.23		
MW - 27S		217.80		

^{*} Depth to water as measured from the top of PVC casing.

	G	round V	Vater :	Sample	Collect		Well/Piezo II A A Cord	- 1.	55		
Client: Project No: Site Location: Weather Con	: <u>A</u>	SEPC NS	D °	Collector(s)	.nk/	- MK-	[Time: Start <u>{</u> Finish _	<u> 2808</u>	-11-24	l	
WATER LEV		neasured fro			D) (C	Well	Duma Sattina	29/2		Max ohi	= 70 ml
a. Total Wellb. Water Tab	•	218.6	1	sing Material sing Diamete		_	Pump Setting	20/2	ر الله الله	was pri	2 /0 /10
WELL PURG	a. Purge Me b. Field Tes	ethod <u>Dedicat</u> ting Equipme	nt Used:	Make YSI HACH	Model		Serial Number 5320084101 20030C0845	51			
		eting Equipme	ent Calibra	ation Docume	ntation Four	<0.5	<5		Page #/		
Time Stabilization	Volume Removed (g	al) T° (C) +/- 0.2	pH +/- 0.1	Spec. Cond (µs/cm) +/- 3%	ORP +/- 10%	DO mg/L +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft		
0941 0945 0949 0953 0957	1NITIAL 41 4.25 4.35 4.75 5.10	12.1 12.1 12.0 12.2 12.4	8.05 8.05 8.05 8.0 8.04	2991 2990 2976 2974 2986	59.10 100.1 101.5 102.0 103.0	. 43 . 42 . 40 . 59	1.48	Brown	224.69 224.95 225.20 225.35 225.41		
		L L L					¥				
		L L									
	Has requ Has requ Have pai	L nce criteria pa uired volume uired turbidity rameters stab or N/A - Expl	been remo been read bilized	ched 🗓	No	N/A					
SAMPLE CO	OLLECTION:		Method: I	Bladder Pump)						
Sampl	e ID C	ontainer Typ 1L		1	Preservation		Analysis TDS		Time		
		250ML 500ML	4	1	HNO3		METALS				

Comments

	Well/Piezo ID/	11	20	7
	//	W-	JU	J
6	2COrd			

Client: Project No: Site Location: Weather Conds:	AVS		70°	Collector(s)	A;	sk	Time: Start Finish		11-24
WATER LEVEL DA	TA: (mea	sured fro	_			Well 💆	-		
a. Total Well Length			c. Ca	sing Material	PVC		Pump Settin	£	
b. Water Table Dep	ATA	19.80		sing Diamete		24118			
		od <u>Dedicat</u> g Equipme		er Pump Make	<u>nudvos</u> l Model	eevo	Serial Numb	er	
D. Fic	au resun	y Equipmen	n Osea.	YSI	Wiodei		5320084101	Ī	
				HACH			20030C0845	551	
c. Fie	eld Testin	g Equipme	nt Calibra	ation Docume	entation Four	nd in Field <0.5	Notebook #		Page #
	olume	T0 (0)		Spec. Cond		DO	Turbidity	Calar	DTM
Time Remo	oved (gal)	T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	DTW 0.33 ft
INITI	ΑL	13.0	8.27	773	83.5	4.75	16.8	yellow	
	L							/	
	<u>_</u>							-	
	L								
	L								
	L								
	L								
	L								
	<u>_</u>							-	
	L								
	L								
Ha Ha	as require as require ave paran	e criteria pa d volume t d turbidity neters stab N/A - Expla	een rem been rea ilized	ched	No	N/A III IIII			
SAMPLE COLLEC	TION:		Method:	Bladder Pum	p				
Sample ID	Con	tainer Typ	No. of		Preservation		Analysis		Time
		1L 250ML		1			TDS ANIONS		1025
		500ML		1	HNO3		METALS		
Comments									
Signature	B	Slet	1	_		Date	6-1	1-2	4_

	Well/Piezo ID:	
	4501	1100
		- 110.X
. '		

Client: Project No: Site Location: Weather Cond		BEPC AVS	10°	Collector(s)	MLS				0935	6-12-2	t
water Levi a. Total Well I b. Water Tab	Length	measured 	c. C.	of Casing) asing Material asing Diamete		Well	Pump Setting	30/2	□ 30 c m ~501	IAN PSI ML	
WELL PURG	ING DATA a. Purge M b. Field Te	lethod <u>Ded</u> sting Equip	icated Blado oment Used:	ler Pump	Model	od in Field	Serial Numb 5320084101 20030C0845		- Page #		
Time Stabilization 1124 1129 1134 1139 1144 1149 1154	Has red Have pa	(gal) T° ((+/-0 +/-0 15. L 4. L 4. 	2 +/- 0.1 0 7.91 8 8.09 4 8.12 7 8.17 9 8.17 9 8.18 8.20 2 9.0 a pass/fail me been rem dity been rea	ached 🗍	ORP +/- 10% 4.8 22.0 26.9 32.3 41.9 48.5 53.1 51.1 245.6	<0.5 DO mg/L +/- 10% - 103 - 88 - 10 - 109	<5 Turbidity (NTU) +/- 10% 3,93 4,00 4,94 4,90 4,00 4,09 4,10 4,24 3,91	Color		6 4/12/24 E 21 When Do	
SAMPLE CO	DLLECTION		Method:	Bladder Pum	Preservation HNO3		Analysis TDS ANTONS METALS		Time 4849 0935	U12124	
Comments Signature	Myles	Sche	M			Date	112/24			- K. W.	

Well/Piezo ID:
NALL WM 170
VIW_WI/J

		_									1	
Client:		BEP	С				-5			111/24		
Project No:	2						-3	Time: Start	1228		.1	
Site Location:		<u>AVS</u>					-	Finish	(Detell C	T1010 -	6-12-24	
Weather Con-	ds:	75	Breaz	И	Collector(s)	MK	MUS				0 .00 01	
			sun									
WATER LEVI			100				Well	9	7-1		had World	
a. Total Well i	Length	-	270		sing Material	//	_ ,,	Pump Settin	g <u>611</u>		maxpsi	
b. Water Tab		-	238.09	🥭 d. Ca	sing Diamete	er				VI	ooml	
WELL I ONG	a. Purge M	etho	d Dedicat	ed Bladde	er Pump							
	b. Field Te				Make	Model		Serial Numb	er			
		•			YSI			5320084101				
					HACH			20030C0845	551	•		
	c. Field Te	sting	g Equipme	ent Calibra	ation Docume	entation Foul		Notebook #		Page #		
	Volume				Spec. Cond		DO I	Turbidity	r		ĺ	
Time	Removed (T° (C)	Hq	(µs/cm)	ORP	mg/L	(NTU)	Color	DTW		
Stabilization	,	-/	+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft		
1320	INITIAL 5	L	12.9	8,02	2700	-0.8	1.11	4.70	Brown	240.0U		
1325	5.25	L	13.2	8.03	2753	19.5	.93	4.69		246.86		
1330	5.5	L	12.9	8.01	2734	26.2	.78	4.50		247.55		
1335	U	L	12.9	7.99	2737	39.1	. 85	4.99		248.35		
1340	10.5	니	12.8	7.98	2721	17.5	1.22	4.50		249.21		
		ᆜ					-					
		L		011100	4 1	10 10	2-11					
		늰		pump	ea don	un to	251.1					
		늽				-	-		1			
		긥	132	7.91	2569	122.1	3.3	4.0	Brown	244 48	6.12-24)
		ī	17.0	<i>r.</i> 11		122.1	1	1.0	D I V VVII	277.110	41,212	
		L										
		L								247.36	6-12-24	
	e. Accepta				oved X ched	No	N/A					
				been rem	oved 📈	\forall						
			i turbidity eters stab	been read	cnea 🗀		H					
				ain below			Ш					
	11 110	011	W EXP	ani bolow								
	0 -											
SAMPLE CO	OLLECTION	ı:		Method: I	Bladder Pum	р						
Onwell	- ID I	~ t	aines Tun	No of	Containers	Preservation	1	Analysis		Time	i I	
Sample	י טו פ	Jonia	ainer Typ 1L	NO. OI	1	rieservation	-	TDS		1010	6-12-24	
			250ML		1			ANIONS		1010	61201	
			500ML		1	HNO3		METALS		-		
			OUGUIL			TITOG		41				
	4											
Comments	2		-								é	
	Mull	(dok	M			_ 10	112/24.			6	
Signature	11 11/13	1	1141	u			Date 1	112/24			•	

	Gro	ound V	Vater	Sample (Collect	tion Re	Well/Piezo l Pcord	D:	<u>7</u> S	2
Client: Project No: Site Location: Weather Cond				Collector(s)	MK- I	- MIS	Time: Start	1025	112/24	
WATER LEVE	EL DATA: (mea	sured fro	m Top o	f Casing)		Well 🔀		,		
a. Total Well I	Length		c. Ca	asing Material	_PVC	_ ′	Pump Settin	c 191	11 e ma	LX PSI
b. Water Tab WELL PURG I			ted Bladd	er Pump Make YSI HACH	Model		Serial Numb 5320084101 20030C0845		∽ llom	L
	c. Field Testin	g Equipme	ent Calibr	ation Docume	ntation Fou	<0.5	Notebook #	,	Page #_ _	i
Time	Volume Removed (gal)	T° (C)	На	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW	
Stabilization	Removed (gar)	+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%	90101	0.33 ft	
1051	INITIAL 5	10.6	8.05	3105	351	-30	7.98	elear	149.10	
1056	5.5 L	10.4	8 05	3105	780	29	3.48		149.11	
1101	V L	10.3	8.04	3107	31.4	.28	1.99		149.14	
1100	4.6 L	10.2	8.06	3103	35.7	.24	2.08	-	149.14	
	L									
	L L			ļ		-		-	-	
		2	_	l						
	L									
	Ī									
	L									
	L									
	L									
	e. Acceptance	criteria p	l ass/fail	Yes	No	N/A			U	ŀ

e. Acceptance criteria pa Has required volume been removed Has required turbidity been reached Have parameters stabilized If no or N/A - Explain below.

\square	
	DIL

SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	11010
	250ML	-		ANIONS	
	500ML	1	HNO3	METALS	

Comments	

Myla Shottle

ent: oject No:		BEPC					Time: Start	Date: 6	<u> 12:24</u>
te Location eather Con		AVS		Collector(s)		2	Finish	1319	_
VATERIEV	EL DATA	(measured	from Ton	of Casing)		Well 🗹]		
. Total Well		(IIIeasurea		Casing Material		_	Pump Settin	c 11/10	1 e ma
Water Tat		198.	56 d.	Casing Diamete	er			,	140m
ILLE FORC	a. Purge	Method Ded							
	b. Field T	esting Equip	ment Use	d: Make YSI HACH	Model		Serial Numb 5320084101 20030C0845		
			- 40 "						Dago #
	c. Field	Testing Equi	oment Cali	bration Docume	entation Foun	a in Fleia <0.5	<5		Page #
	Volun		5	Spec. Cond		DO mad	Turbidity	Color	DTW
Time Stabilization	Removed	i (gai) T° (0 +/- 0		(μs/cm) 1 +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	0.33 ft
1304	INITIAL	10 127			46.4	34	4.79	yellow	199.30
1309		71 12.5			ul.4	.31	4.48	71	199.30
1314		8 L 12.1	9.47	1 2585	100.1	.32	4.74		199.39
1319		91 12.	0 9.3	7 2008	54.2	.32	4.57	V	199.31
80 A	-	L S						-	
								-	
			_					+	
	 			1					
		L							
		L							
		L							N N
		L	a naco/fail	Van	No	N/A			
		otance criteri equired volui		Yes moved D eached D					
		equired turbi		eached 🗓					
	Have	parameters	stabilized	ф					
	lf	no or N/A - E	Explain bel	ow. I					
		-							
SAMPLE C	OLLECTIO	ON:	Metho	d: Bladder Pum	р				
Samp	le ID	Container '	Typ No.	of Containers	Preservation		Analysis		Time
		1L		_1			TDS	1)	1319
		250h		4	LINIO3		ANIONS METALS		
500ML			/IL	1	HNO3		IVIE I ALS		

	Well/Piezo ID:
Ground Water Sample Collection F	
-	

Client: Project No: Site Location: Weather Con	: <u>A</u>	VS	6	Collector(s)		Date: <u>VII3/24</u> Time: Start <u>1820</u> Finish <u>0920</u>				
WATER LEV	-		c. Ca	sing Material		Well	Pump Setting	41	170 m	
b. Water Tab		209.73	d. Ca	sing Diamete	er				U 001	1163
WELLFORG	a. Purge Me b. Field Tes		Serial Number 5320084101 20030C0845		e S					
	c. Field Tes	sting Equipme	ent Calibra	ation Docume	entation Fou	nd in Field <0.5	Notebook # _	1	Page #	-
Time Stabilization	Volume Removed (g	al) T° (C) +/- 0.2	pH +/- 0.1	Spec. Cond (µs/cm) +/- 3%	ORP +/- 10%	DO mg/L +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft	
0855 0858 0901 0904	INITIAL 4.	L 10.7	818	2438 2411 2436 2435	-0.3	47	1.14 1.20	yellow Bytwn	210.1 210.1 210.1 210.2	
0900	15	L 11.7	8.18	2427 2440 2450	-2.7 -2.7 -2.5	40	5.94 5.63 5.39	1	210.0 210.0 209.98	
		L L								
		L								
	Has requ Has requ Have pa	nce criteria pa uired volume uired turbidity rameters stak or N/A - Expl	been remo been reac bilized	ched 🛄	№	N/A				
SAMPLE CO	OLLECTION		Method: I	Bladder Pum	р					=
1		Container Typ 1L 260ML		Containers 1	Preservatio	r	Analysis TDS ANIONS			
		500ML		1	HNO3		METALS			1
Comments								6.		- Ī
Signature	Myls	Solvet	e-	_		Date	6-13-6	24		-

		Ground \	Nater S	Sample	Collect	ion Re	ecord		/		
Client: Project No: Site Location: Weather Cond		AVS Warm	10°	Collector(s)	NS	Date: 6-13-24 Time: Start 09.55 Finish 10.63					
water Levil a. Total Well I b. Water Tab	Length	(measured fr 248	_ c. Cas	Casing) sing Material sing Diamete		Well	Pump Settin	39 38	121 -1	50ml 15ml	e max PSI
WELL PURG	a. Purge	Method <u>Dedica</u> esting Equipm	ent Used:	r Pump Make YSI HACH	Model		Serial Numb 532008410 20030C084	er 1			
	c. Field	esting Equipn		tion Docume	ntation Four	nd in Field <0.5	Notebook # <5 Turbidity	<u> </u>	Page #		
Stabilization	Removed		pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color		-first	pump
1004 1013 1040 1043 1040	5.0 0.0 7	5 L 11.2 L 10.9	8.15 8.15 8.16	2007 2008 2013 2013	-35.8 -38.1 -40.7 -41.1	30 31 32 33	102 38.2 37.8 31.7 29.6	MUd	193.1 193.0 193.0 192.89		
1052	8	L (1.1	8.15	2665	41.6	.33	28.7	•	192.83	durin Sar	a apting
	Has re Has re Have	L L stance criteria pequired volume equired turbidit parameters stano or N/A - Ex	been remo y been reac abilized	ched	No	N/A					
SAMPLE CO	OLLECTIO	DN:	Method: E	Bladder Pum	0						
Sample	e ID	Container Ty		1	Preservation		Analysis TDS		Time		
		1gal		1	HNO3		METALS	1	1052		
Comments	11/		110				1 7				
Signature	Myles	Iche-	M			Date	10/13/24	/			

Well/Piezo ID:

	Gro	ound V	Vater :	Sample	Collect	ion Re	Well/Piezo II A Cord	o: AW-1	24S	
Client: Project No: Site Location: Weather Cond	AV3	5	very	Collector(s)	MEN	- กผ	[Time: Start _ Finish _	Date: _(115 122	<u>0 13 </u> 24	
WATER LEVI	EL DATA: (mea	asured fro	m Top of	Casing)		Well 📈	7			
a. Total Well I	,		-	sing Material	PVC	_ /	/ Pump Setting	110/14	-em	ax psi
b. Water Tab WELL PURG			ed Bladde	er Pump Make YSI HACH	r		Serial Numbe 5320084101 20030C0845	er	-100mL	
	c. Field Testir	ng Equipme	ent Calibra	ation Docume	ntation Fou	nd in Field <0.5	Notebook # _	1	Page #	
	Volume			Spec. Cond		DO	Turbidity			
Time	Removed (gal)		pН	(µs/cm)	ORP	√ mg/L	(NTU)	Color	DTW	
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft	
1155	INITIAL4.5	10	8.12	2994	19.	3,2	8.46	HOLLOW	208.0	
1158	5 L		8,12	2998	20.7	129	8.24	bruwn	208	
1201	5.5 L	10	8-12	2999	22.7	.35	8.58	\vdash	208.02	5
1203	U L	10.1	8.13	3000	23.8	.64	8.74		208.1	ł.
	L									
	L									
	L									
	L									
	L									
	L									
	L									
	L									
L	e. Acceptance		noc/foil	Ven	No	N/A				I
	Has require Has require Have parar	ed volume ed turbidity	been rem been rea bilized	ched 🔼			1	DUF.	7	

SAMPLE COLLECTION:

Method: Bladder Pump

Container ryp	No. of Containers	Preservation	Analysis	Tim
1L	1		TDS	120
250ML	=		_ANIONS_	
500ML	1	HNO3	METALS	
500IVIL		HNO3	WETALS	\dashv
		+		_
-	1L 250ML	1L 1	1L 1	1L 1 TDS 250ME 1 ANIONS

Comments		
	- 4	

Signature Myla Sulff

Date 0/13/24

	Gr	ound \	Nater	Sample	Collec	tion R	Well/Piezo I ecord	MW	US		
Client: Project No: Site Location Weather Con	: <u>AV</u>	PC S ON B	reey	_Collector(s)	MEI	- VILS	Time: Start	Date: <u> </u> 305 440			
WATER LEV	EL DATA: (me	asured fro	om Top of	f Casing)		Well 🔀	1				
a. Total Well Length c. Casing Material PVC Pump Setting 38/22 C Max											
	a. Total Well Length c. Casing Material PVC Pump Setting 38/12 cmax b. Water Table Depth VELL PURGING DATA a. Purge Method Dedicated Bladder Pump										
b. Field Testing Equipment Used: Make Model Serial Number YSI 5320084101 HACH 20030C084551 c. Field Testing Equipment Calibration Documentation Found in Field Notebook # Page # \ <0.5 <5											
-	Volume		227.	Spec. Cond	L.	DO	Turbidity				
Time Stabilization	Removed (gal) T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU)	Color	DTW		
1342	INITIAL 6	12.3	8.00	3 33	-890		+/- 10% 3,89	A cause	0.33 ft		
1340	525		7.99	3119	- 20.7	360	435	Brown	210.71		
1350	5.5 L	1	7.93	3121	-67.2	-31	294		210.95		
1354	(0 L	14	7.90	27109	-44.9	34	2.79		21140		
LATO	4.25	141	7.94	2764	-35.1	34	2.79		21171		
1400	45	142	7.94	2705	-24.0	.23	2.93		211.99		
1404	U 75 L	171	794	3122	-14.7	35	3.11		212.25		
1408	7.0	1-1	7.94	3107	-10.8	37	2.78		212.69		
1414	7.25		7.90	3100	35	.41	3.10		212.90		
1420	7.5	1 1 1	7.95	2108	1.9	.44	2.79		21392		
1424	8.25 L	14.1	796	3117	5.6	.44			213.14		
1428	8.5 1		7.97	3097	2.5	32	3.73		213.95		
14-31	8.75		7.98	31010	13.2	47	3114	V	214 54		
	e. Acceptance	criteria pa	ss/fail	Yes	No	N/A	2.0				
	Has require			oved 🔲							
	Has require			hed 📙							
	Have parar If no or	neters stab N/A - Expl		4							
				,							
SAMPLE CO	LLECTION:		Method: E	Bladder Pump)						

_ 1		TDS	143
50141			
		ATTIONS	
DOML 1	HNO3	METALS	
			V
_	UML 1	OML 1 HNO3	OML 1 HNO3 METALS

Comments

11358

PS1

V	Well/Piezo ID:	
	MW-25s	
_		

Client:		BEPC		68	Time: Start	Date: 6	-17-24		
Project No: Site Location:		AVS				i0	Time: Start	0920	-
Weather Con		Clardy 63	ð	Collector(s)	MIS/A	K	1 1111311	UTAU	
WATER LEV	EL DATA:	(measured fro	m Top of	Casing)		Well 🔽	0		
a. Total Well	Length	213	c. Ca	sing Materia	PVC	_ /	Pump Setting	9	
b. Water Tab	ING DATA			sing Diamete	er				
		Method <u>Dedicat</u> esting Equipme		Make YSI	Model		Serial Numb 5320084101		
				HACH			20030C0845	51	
	c. Field T	esting Equipme	ent Calibra	ation Docum	entation Four	nd in Field <0.5	Notebook #_<5	1	Page #
	Volum			Spec. Cond		DO	Turbidity	0.1	DTM
Time Stabilization	Removed	(gal) T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	0.33 ft
0909	INITIAL (8,13	2883	1412	.51	43	Brun	19918
0912		.1L 9.3	8.16	3888	3	,51	44.6	1	199,95
0915	le	·3L 9.3	8.17	2891	4	150	41,7		199,90
0918	6	15L 9,3	6,18	2889	-3	,49	34.7	V	199,91
		L L							
		L							
		L						1	
		L L			-			-	
		L							
		L							
		L						-	
	e. Accept	ance criteria pa	ass/fail	Yes	No	N/A		1	
	Has re Has re	quired volume i	been remo	oved 🖺					
		parameters stat							
	11 11	o or N/A - Expl	aiii below	•		D	uD.		
SAMPLE CO	OLLECTIO	N:	Method:	Bladder Pum	р				
Sample	e ID	Container Typ	No. of	Containers	Preservation		Analysis		Time
1L				1			TDS		0920
500ML				1	HNO3		METALS		
		Igol			111100	- 1	Radium		
		6							
Comments									
	0						1		
Signature	1			_		Date	6-17-24	1	

Well/Piezo ID:	
MW-275	

Client: Project No:	BEF						Time: Start	1010	
Site Location: Weather Conds:	Clar		,	Collector(s)	M19 /A14		Finish	1040	-
WATER LEVEL DATA	: (mea	asured fro	m Top of	f Casing)		Well 🔀			
a. Total Well Length			c. Ca	sing Material	PVC	_	Pump Setting	<u>c Nydn</u>	sleeve
b. Water Table Depth WELL PURGING DAT	Α	217.80	'	sing Diamete	er			·	
		od Dedicat g Equipme		Make	Model		Serial Numb	er	
D. I IEIG	i cau i	g Equipinic	iii oscu.	YSI	Model		5320084101	-	
				HACH			20030C0845	51	
c. Field	Testin	g Equipme	ent Calibr	ation Docume	entation Four	nd in Field <0.5	Notebook # .		Page #
Volui		-0.101		Spec. Cond		DO	Turbidity		DTM
Time Remove Stabilization	d (gal)	T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	0.33 ft
1010 INITIAL		8.5	8.03	3016	123.4	3.45	570	Black	217.80
1010	L	0.0	5.00	3611.4		J. 13		- Carolina	- 7 1 0
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	L								
Has r Has r Have	equire equire paran	e criteria pa ed volume l ed turbidity neters stab N/A - Expl	oeen rem been rea oilized	ched	No III III	N/A			
SAMPLE COLLECTI	ON:		Method:	Bladder Pum	p				
		No. of		Preservation		Analysis		Time	
1L			1			TDS		1040	
	-	500ML		1	HNO3		METALS		
	16	AL.		i	HN03	R	diam		
	1.0								
Comments	8								
Signature						Date(۵-۱٦-۵۰	1	

Calibration Log YSI									
Date	/Time	рН	ORP	Conductivity	DO	Verify			
4-15 24						V.,			
5-13-24	1010	/	V	/	V				
5-14-24	0130	V	V-		V	V			
5 21.24	6715	V							
5-22-24	6648	V	-		-				
6-11-24	0800	V	V	V		V			
0-12-24	0830		V						
0.13.24	0820	/	/	✓	/	/			
6-17-24	0815	V	~	-		~			
4-25.24	0730	V	~	~	~	レ			
8-1-24	0715	V	V	V	~	✓			
5-10-24	0120	V	-		V	<u></u>			
7-10-24	0700	V	~	V	~				
9-11-24	0700	· V	V	✓		/			
917.24	0705	V	V	V	V	V			
0-1-24	0703	V	/	_	V				
0.2.24	0701	~	~	V					
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Account #: 2040 Client: **Basin Electric Power Cooperative**

Basin Electric Power Coope **Chain of Custody** Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue WO: 51646 Page __1__ of __1__ Bismarck, ND 58501 none: (701) 258-9720 Work Order # Lab Use Only Toll Free: (800) 279-6885 Fax: (701) 258-9724 **Company Name and Address** Account # Phone # 701-745-7238 701-557-5488 2040 Basin Electric Power Coop. Emails **Leland Olds Station** Contact mdihle@bepc.com aknutson@bepc.com **Mark Dihle** 3901 Highway 200A Name of Sampler Ksolie@barr.com Stanton, ND 58571 Myles Shettler Billing Address (indicate if different from above) **Quote Number Attn: Liabilities** 6/13/2024 Project Name/Number Purchase Order # 790708-01 **AVS Landfill** Lab Use Only Bottles Sample Matrix Time Date **Analysis Required** Sampled Sample ID Sampled Lab GW 2 N B,Ca,CI,F,SO4,TDS (Y) 6/11/2024 1000 MW-15s GW 002 6/11/2024 1025 N B,Ca,CI,F,SO4,TDS MW-20s GW 2 N B,Ca,CI,F,SO4,TDS 003 6/12/2024 935 **MW-16s** GW 004 2 N B,Ca,CI,F,SO4,TDS MW-17s 6/12/2024 1010 GW 2 N B,Ca,CI,F,SO4,TDS 005 6/12/2024 1106 MW-19s GW 2 N B,Ca,CI,F,SO4,TDS 6/12/2024 1319 MW-18s 006 6/11/2024 1405 2 N B,Ca,CI,F,SO4,TDS 007 **AVS Leachate** sw 6/12/2024 745 2 N B,Ca,CI,F,SO4,TDS 008 **LOS Leachate** GW 2 N B,Ca,CI,F,SO4,TDS 6/12/2024 1106 009 **Duplicate** Comments: ROI Therm. # Received by Date Time Temp Transferred by Date Time (Y)N TOGAL 1. Y/N

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Wednesday, July 3, 2024 10:09:37 AM Report Date:

2





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Account # 2040		2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address				Basin Electric Power Coop W0: 51753				Chain of Custody Page of			
Leland Olds Station 3901 Highway 2004 Stanton, ND 58571 Name of Sampler Msoline Mark Dihle Msoline@bepc.com aknutson@bepc.	Company Name a			W.	Account #		_		Phone #				
Sample Mark Dihle Mark D					Contact	2040			Emaile	<u>701-745-7238</u>	701-557-5	488	
Stanton, ND 58571 Name of Sampler Mis Missing Address (Indicate if different from above) Quote Number Quote Number Date Submitted 6/14/2024 Project Name/Number AVS CCR Wells Purchase Order # 790708-01 Lab Use Only Lab Sample ID Sample Matrix GW - Groundwater Sampled Sa											epc.com		
Quote Number Date Submitted S/14/2024 Project Name/Number AVS CCR Wells Purchase Order # T90708-01					Name of S	Sampler		-					
Sample ID Sample Matrix GW - Groundwater Only Lab Use Only Lab Sample ID Sample Matrix GW - Groundwater Sampled Sampled Sampled Sampled Sampled Sampl	Billing Address (i	ndicate if different f	rom above)										
Project Name/Number					Quote Nu	mber							
AVS CCR Wells 790708-01					Project Na	ame/Numb	er			_			
Only Sample ID Sample Matrix GW - Groundwater GW - GW - Groundwater GW - GW - Groundwater GW - GW					,			ells					
MW 26 S GW 6/13/2024 1052 3 B, Ca, CI, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr CL, Hg, Mo, Se, TI, Ra226, Ra228, TDS MW 22 S GW 6/13/2024 913 2 N B, Ca, CI, F, SO ₄ , TDS MW 24 S GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS DUP GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS MW 21 S GW 6/13/2024 1431 2 N B, Ca, CI, F, SO ₄ , TDS	Only	Sam	nle ID		Date	Time	sottles	N.		Analysis Pa	aguirod		
MW 26 S GW 6/13/2024 1052 3 N Li, Hg, Mo, Se, TI, Ra226, Ra228, TDS MW 22 S GW 6/13/2024 913 2 N B, Ca, Cl, F, SO ₄ , TDS MW 24 S GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS DUP GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS MW 21 S GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS	Lab	Jani	pie ib		Sampleu	Sampleu	Ш	_				0 . 0 . DI	
OO3 MW 24 S GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS OO4 DUP GW 6/13/2024 1203 2 N B, Ca, CI, F, SO ₄ , TDS OO5 MW 21 S GW 6/13/2024 1431 2 N B, Ca, CI, F, SO ₄ , TDS	001	MW	26 S	GW	6/13/2024	1052	3	N					
OCH DUP GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS OCS MW 21 S GW 6/13/2024 1431 2 N B, Ca, Cl, F, SO ₄ , TDS	002	MW	1 22 S	GW	6/13/2024	913	2	N	B, Ca, CI, F,				
OCH DUP GW 6/13/2024 1203 2 N B, Ca, Cl, F, SO ₄ , TDS CC5 MW 21 S GW 6/13/2024 1431 2 N B, Ca, Cl, F, SO ₄ , TDS	003	MW	1 24 S	GW	6/13/2024	1203	2	N	B, Ca, Cl, F,	SO ₄ , TDS			
OCS MW 21 S GW 6/13/2024 1431 2 N B, Ca, Cl, F, SO ₄ , TDS	CYY			CW	0/40/0004	4000							
	OCE			GW			100						
Comments:	005	MW 21 S		GW	6/13/2024	1431	2	N	B, Ca, CI, F,	SO ₄ , TDS			
Comments:													
Comments:											Del		
Comments:													
	Comments:												
Transferred by Date Time Received by Date Time Temp ROI 1			Date	Time	^ Received	by	Г	Dat	e Time	Temp	ROI	Therm. #	
		PRESS	6/14/2024	7	WXI	~	14.	Ju	124 145			TM920	

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

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Report Date: Tuesday, July 9, 2024 12:04:00 PM

Form # 80-910005-1

Report Date: Page 8 of 9

Wednesday, July 24, 2024 1:38:04 PM

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Account #:

2040

Bismarck, ND 58501 Phone: (701) 258-9720 Work Order # 51754 C24060726 Fax: (701) 258-9724 Toll Free: (800) 279-6885 Phone #: Account #: Company Name and Address: 701-258-9720 Fax #: Contact: MVTL For faxed report check box Claudette 2616 E Broadway Bismarck, ND 58501 ccarroll@mvtl.com E-mail: Name of Sampler: For e-mail report check box Billing Address (indicate if different from above): **Date Submitted: Quote Number** Client: 17-Jun-24 C15480 v5 PO Box 249 Purchase Order #: Project Name/Number: New Ulm, MN 56073 **BL6885 Analysis Bottle Type** Sample Information Gallon HNO3 VOC Vials Basin Electric Power Cooperative Glass Jar Time Sample Date **Analysis Required** Sampled Sampled Client Sample ID Type **MVTL Lab Number** Ra226 & Ra228 1052 GW 13-Jun-24 51754001 MW 26 S Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Chain of Custody Record

LABORATORIES, Inc. 2616 E Broadway Ave

			O L O ditions	Received by:	Date:	Temp:
Transferred by:	Date:	Time:	Sample Condition:	A Received by:	1 0 0211	12
T Olson	17-Jun-24	1700		anfrit	6-19-44 10:00	

Page 6 of 6





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Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free: Company Na	Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Ompany Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571 illing Address (indicate if different from above)			W0: 52	2040 Mark Dihle	Patricipanism Annual Patricipa	/er	Chain of Custody Page of Work Order # Lab Use Only Phone # 701-745-7238 701-557-5488 Emails mdihle@bepc.com aknutson@bepc.com Ksolie@barr.com
	-				ame/Numbe AVS CCF		ells	6/18/2024 Purchase Order # 790708-01
Lab Use Only Lab	San	nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N	Analysis Required
001	MV	V 27 S	GW	6/17/2024	10			B, Ca, Cl, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MV	V 25 S	GW	6/17/2024	920	3	N	B, Ca, Cl, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
003		DUP	GW	6/17/2024	920	2	N	B, Ca, Cl, F, SO ₄ , TDS
Comments:								
T MILLENNIUI	ransferred by W EXPRESS	Date 6/18/2024	Time	Received	l by		Dat	te Time Temp ROI Therm.# ndY 1446 314°C ON TM93

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Form #80-910005-1 See above for page number Effective Date: 26 Aug 2022

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Report Date: Wednesday, July 10, 2024 2:00:13 PM





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free	Only Sample Mat				Basin Electric Power Coop W0: 52088 Page of					188		
Lab Use Only					Time	Bottles						
Lab	Sam	ple ID	Gw - Groundwater	Sampled	Sampled	Bol	€		Analy	sis Req	uired	
001	MV	1 27 S	GW	6/17/2024	1040	3	N	B, Ca, Cl, F Li, Hg, Mo				
002	MW	/ 25 S	GW	6/17/2024	920	3	N	B, Ca, Cl, I Li, Hg, Mo	, 4,	, ,	, ,	
_		UP	GW	6/17/2024	920	2	N	B, Ca, Cl, I	F, SO ₄ , TD	s		
										<i>P</i>		
					111							
						+	-					
Comments	:											
	Transferred by	Date	Time 🗸	Received	l by	_	Dat	te Tin	ne T	emp	ROI	Therm, #
	JM EXPRESS	6/18/2024	1	0000		18		n24 144		14°C	Ø N	17M920

 $\label{thm:please} \textbf{Please submit the top copy with your samples. We will return the completed original with your results.}$

See above for page number

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Report Date: Wednesday, August 7, 2024 9:27:53 AM

Form # 80-910005-1



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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS CCR Wells (66660) **PO**: 790708-01

Mark Dihle Basin Electric Power Cooperative 1717 E. Interstate Avenue Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Carrell

Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660001
 Date Collected:
 10/02/2024 11:50
 Matrix:
 Groundwater

 Sample ID:
 MW 26 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	41.0	mg/L	5	1		10/09/2024 12:00	
Method: EPA 245.1							
Mercury	<0.0002	mg/L	0.0002	1	10/08/2024 11:51	10/09/2024 08:38	
Welcury	\0.0002	mg/L	0.0002	'	10/00/2024 11:51	10/09/2024 00:30	
Method: EPA 6010D							
Boron	0.14	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:25	
Calcium	3.51	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:02	
Lithium	0.0483	mg/L	0.02	1	10/04/2024 14:50	10/10/2024 09:41	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	10/04/2024 14:50	10/10/2024 17:23	
Arsenic	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:23	
Barium	0.0514	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:23	
Beryllium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:23	
Cadmium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:23	
Chromium	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:23	
Cobalt	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:23	
Lead	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:23	
Molybdenum	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:23	
Selenium	<0.005	mg/L	0.005	5	10/04/2024 14:50	10/10/2024 17:23	
Thallium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:23	
Method: SM4500-CI-E 2011							
Chloride	29.7	mg/L	2.0	1		10/08/2024 12:40	
Method: SM4500-F-C-2011							
Fluoride	1.33	mg/L	0.1	1		10/04/2024 23:18	
Method: USGS I-1750-85							
Total Dissolved Solids	1730	mg/L	10	1		10/04/2024 14:10	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660002
 Date Collected:
 10/02/2024 10:36
 Matrix:
 Groundwater

 Sample ID:
 MW 25 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	40.2	mg/L	5	1		10/09/2024 12:09	
Method: EPA 245.1							
Mercury	<0.0002	mg/L	0.0002	1	10/08/2024 11:51	10/09/2024 08:38	
Welcury	\0.0002	mg/L	0.0002	'	10/00/2024 11:51	10/09/2024 00:50	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:25	
Calcium	4.88	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:03	
Lithium	0.0425	mg/L	0.02	1	10/04/2024 14:50	10/10/2024 09:42	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	10/04/2024 14:50	10/10/2024 17:28	
Arsenic	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:28	
Barium	0.1306	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:28	
Beryllium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:28	
Cadmium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:28	
Chromium	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:28	
Cobalt	<0.002	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:28	
Lead	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:28	
Molybdenum	0.0020	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:28	
Selenium	<0.005	mg/L	0.005	5	10/04/2024 14:50	10/10/2024 17:28	
Thallium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:28	
Method: SM4500-CI-E 2011							
Chloride	42.3	mg/L	2.0	1		10/08/2024 12:41	
Method: SM4500-F-C-2011							
Fluoride	1.30	mg/L	0.1	1		10/04/2024 23:24	
Method: USGS I-1750-85							
Total Dissolved Solids	1900	mg/L	10	1		10/04/2024 14:10	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660003
 Date Collected:
 10/02/2024 13:50
 Matrix:
 Groundwater

 Sample ID:
 MW 27 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	6.83	mg/L	5	1		10/09/2024 12:10	
Method: EPA 245.1							
Mercury	<0.001	mg/L	0.001	5	10/08/2024 11:51	10/09/2024 08:38	
Morodry	10.001	mg/L	0.001	Ü	10/00/2024 11:01	10/00/2024 00:00	
Method: EPA 6010D							
Boron	0.40	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:26	
Calcium	206	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:04	
Lithium	0.201	mg/L	0.02	1	10/04/2024 14:50	10/10/2024 09:43	
Method: EPA 6020B							
Antimony	<0.001	mg/L	0.001	5	10/04/2024 14:50	10/10/2024 17:32	
Arsenic	0.0472	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:32	
Barium	1.472	mg/L	0.016	40	10/04/2024 14:50	10/11/2024 10:35	
Beryllium	0.0082	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:32	
Cadmium	0.0036	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:32	
Chromium	0.5667	mg/L	0.004	10	10/04/2024 14:50	10/11/2024 10:39	
Cobalt	0.0932	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:32	
Lead	0.1238	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:32	
Molybdenum	0.1332	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:32	
Selenium	0.0088	mg/L	0.005	5	10/04/2024 14:50	10/10/2024 17:32	
Thallium	0.0011	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:32	
Method: SM4500-CI-E 2011							
Chloride	62.0	mg/L	2.0	1		10/08/2024 14:17	
Method: SM4500-F-C-2011							
Fluoride	1.27	mg/L	0.1	1		10/04/2024 23:30	
Method: USGS I-1750-85							
Total Dissolved Solids	2160	mg/L	10	1		10/04/2024 14:10	

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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660004
 Date Collected:
 10/02/2024 09:33
 Matrix:
 Groundwater

 Sample ID:
 DUP
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0	Received or	ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	235	mg/L	25	5		10/09/2024 11:51	
Method: EPA 6010D							
Boron	0.13	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:27	
Calcium	2.62	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:06	
Method: SM4500-CI-E 2011							
Chloride	12.1	mg/L	2.0	1		10/08/2024 14:18	
Method: SM4500-F-C-2011							
Fluoride	1.72	mg/L	0.1	1		10/04/2024 23:36	
Method: USGS I-1750-85							
Total Dissolved Solids	1610	mg/L	10	1		10/04/2024 14:10	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660005
 Date Collected:
 10/01/2024 09:46
 Matrix:
 Groundwater

 Sample ID:
 MW 15 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

remp @ Receipt (c).	ixeceived on	165					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	412	mg/L	25	5		10/09/2024 11:52	
Method: EPA 6010D							
Boron	0.12	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:27	
Calcium	3.80	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:07	
Method: SM4500-CI-E 2011							
Chloride	14.1	mg/L	2.0	1		10/08/2024 14:19	
Mathada CM4500 F. C. 2044							
Method: SM4500-F-C-2011							
Fluoride	1.30	mg/L	0.1	1		10/04/2024 23:42	
Method: USGS I-1750-85							
Total Dissolved Solids	1870	mg/L	10	1		10/04/2024 14:10	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660006
 Date Collected:
 10/01/2024 10:19
 Matrix:
 Groundwater

 Sample ID:
 MW 20 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

remp @ Receipt (C).	Received on	ice. 168					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	69.6	mg/L	5	1		10/09/2024 12:04	
Method: EPA 6010D							
Boron	0.13	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:28	
Calcium	4.49	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:09	
Method: SM4500-CI-E 2011							
	05.0		0.0	4		40/00/0004 44-00	
Chloride	25.8	mg/L	2.0	1		10/08/2024 14:20	
Method: SM4500-F-C-2011							
Fluoride	1.12	mg/L	0.1	1		10/04/2024 23:48	
Method: USGS I-1750-85							
Total Dissolved Solids	1720	mg/L	10	1		10/04/2024 14:10	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660007
 Date Collected:
 10/02/2024 08:09
 Matrix:
 Groundwater

 Sample ID:
 MW 16 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

remp @ Receipt (C).	Received on	ice. Tes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	131	mg/L	5	1		10/09/2024 12:05	
Method: EPA 6010D							
Boron	0.14	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:29	
Calcium	2.22	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:11	
Method: SM4500-CI-E 2011							
Chloride	26.0	mg/L	2.0	1		10/08/2024 14:21	
		···g·=					
Method: SM4500-F-C-2011							
Fluoride	2.16	mg/L	0.1	1		10/05/2024 01:17	
Method: USGS I-1750-85							
Total Dissolved Solids	1150	mg/L	10	1		10/04/2024 14:10	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660008
 Date Collected:
 10/02/2024 08:20
 Matrix:
 Groundwater

 Sample ID:
 MW 17 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

remp @ Receipt (c).	ixeceived on	165					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	284	mg/L	25	5		10/09/2024 11:55	
Method: EPA 6010D							
Boron	0.13	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:29	
Calcium	3.76	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:14	
Method: SM4500-CI-E 2011							
Chloride	13.6	mg/L	2.0	1		10/08/2024 14:23	
Method: SM4500-F-C-2011							
Fluoride	1.53	mg/L	0.1	1		10/05/2024 01:23	
Method: USGS I-1750-85							
Total Dissolved Solids	1720	mg/L	10	1		10/04/2024 14:10	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660009
 Date Collected:
 10/02/2024 09:33
 Matrix:
 Groundwater

 Sample ID:
 MW 22 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

Temp (@ Neceipt (C).	iveceived of	1100. 103					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	228	mg/L	25	5		10/09/2024 11:56	
Method: EPA 6010D							
Boron	0.13	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:30	
Calcium	2.59	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:18	
Method: SM4500-CI-E 2011							
Chloride	12.3	mg/L	2.0	1		10/08/2024 14:24	
Method: SM4500-F-C-2011							
Fluoride	1.59	mg/L	0.1	1		10/05/2024 01:29	*
, 1301.25		9/=	0	·		.0,00,202.020	
Method: USGS I-1750-85							
Total Dissolved Solids	1620	mg/L	10	1		10/04/2024 14:10	

Analysis Results Comments

Fluoride

Matrix spike and/or matrix spike duplicate recovery was high; the associated laboratory fortified blank recovery was acceptable.

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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660010
 Date Collected:
 10/02/2024 12:48
 Matrix:
 Groundwater

 Sample ID:
 MW 24 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

remp @ receipt (0).	1100011100 OII	100.					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	64.7	mg/L	5	1		10/09/2024 12:06	*
Method: EPA 6010D							
Boron	0.11	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:34	
Calcium	4.46	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:19	
Method: SM4500-CI-E 2011							
Wet1100. SW4500-CI-E 2011							
Chloride	50.0	mg/L	2.0	1		10/08/2024 14:25	
Method: SM4500-F-C-2011							
Wethod. SW4500-F-C-2011							
Fluoride	1.44	mg/L	0.1	1		10/05/2024 01:35	
Mathada 11000 14750 05							
Method: USGS I-1750-85							
Total Dissolved Solids	1980	mg/L	10	1		10/04/2024 14:10	

Analysis Results Comments

Sulfate

Matrix spike and/or matrix spike duplicate recovery was low; the associated laboratory control sample recovery was acceptable.

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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66660011
 Date Collected:
 10/01/2024 14:05
 Matrix:
 Groundwater

 Sample ID:
 LEACHATE POND
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

remp @ Receipt (C):	Received	on ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	965	mg/L	25	5		10/09/2024 12:16	
Method: EPA 353.2							
Nitrate + Nitrite as N	<1	mg/L	1	5		10/10/2024 11:48	
Method: EPA 6010D							
Boron	0.71	mg/L	0.1	1	10/04/2024 14:50	10/10/2024 16:34	
Calcium	212	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:20	
Iron	0.17	mg/L	0.1	1	10/04/2024 14:50	10/15/2024 12:41	
Magnesium	69.4	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:20	
Manganese	<0.05	mg/L	0.05	1	10/04/2024 14:50	10/15/2024 12:41	
Potassium	17.9	mg/L	1	1	10/04/2024 14:50	10/11/2024 13:20	
Method: EPA 6020B							
Arsenic	0.0034	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:46	
Barium	0.2382	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:46	
Cadmium	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:46	
Chromium	0.0070	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:46	
Lead	<0.0005	mg/L	0.0005	5	10/04/2024 14:50	10/10/2024 17:46	
Molybdenum	0.2374	mg/L	0.002	5	10/04/2024 14:50	10/10/2024 17:46	
Selenium	<0.005	mg/L	0.005	5	10/04/2024 14:50	10/10/2024 17:46	
Method: SM2320 B-2011							
Alkalinity, Total	100	mg/L as CaCO3	20.5	1		10/04/2024 09:35	
Method: SM4500-CI-E 2011		04000					
Chloride	42.9	mg/L	2.0	1		10/08/2024 14:30	
5560		9, ⊏	2.0	•		.0,00,2027 17.00	
Method: USGS I-1750-85							
Total Dissolved Solids	1950	mg/L	10	1		10/04/2024 14:10	
Method: USGS I-3765-85							
Total Suspended Solids	9	mg/L	2	1		10/04/2024 15:44	

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Account #: 2040 Client: Basin Electric Power Cooperative

C Result	s Summary						WO #:	6666	50
Sulfate QC Type	Original Sample ID	Blank Result	Spike Amount	Units: mg/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
.FB			100	Recovery 102.0	% Recovery	Limit (%) 85	Limit (%) 115		
.FB			100	101.0		85	115		
FB			100	94.1		85	115		
.FB			100	95.7		85	115		
.FB			100	97.0		85	115		
FB			100	97.1		85	115		
FB			100	98.0		85	115		
.FB			100	105.0		85	115		
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ив		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
/IS/MSD	65006018		500	104.0	97.6	85	115	2.1	20
AS/MSD	66487006		500	100.2	98.6	85	115	1.0	20
/IS/MSD	66487014		5000	90.7	91.1	85	115	0.2	20
MS/MSD	66505005		100	89.3	89.7	85	115	0.4	20
/IS/MSD	66660010		100	76.0	77.6	85	115	0.7	20
NS/MSD	66771004		1000	101.8	110.2	85	115	3.0	20
/IS/MSD	66884003		100	89.0	90.4	85	115	0.8	20
/IS/MSD	66956005		2000	74.0	76.8	85	115	1.3	20
Nitrate + Nitri	te as N			Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
FB			0.5	94.0		90	110		
FB			0.5	92.0		90	110		
FB			0.5	96.0		90	110		



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Account #: 2040

Client: Basin Electric Power Cooperative

QC Type LFB LFB MS/MSD MS/MSD	Original Sample ID 66884003 66948001	Blank Result	Spike Amount 0.5 0.5	Spike % Recovery 94.0	,	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB MS/MSD MS/MSD			0.5	94.0						
MS/MSD MS/MSD				94.0						
MS/MSD			1				90	110		
MS/MSD				97.0		93.0	90	110	2.6	20
	66948001		1	97.0		93.0	90	110	2.6	20
MS/MSD			5	102.0		110.0	90	110	2.4	20
	67113001		1	87.0		87.0	90	110	0.0	20
MS/MSD	67290004		1	92.0		93.0	90	110	1.1	20
Chloride				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recover	,	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			30	97.2		77 110001017	90	110		
LFB			30	97.7			90	110		
LFB			30	98.1			90	110		
LFB			30	98.2			90	110		
LFB			30	98.5			90	110		
LFB			30	103.0			90	110		
LFB			30	102.0			90	110		
LFB			30	103.0			90	110		
LFB			30	100.0			90	110		
MB		<2.0								
MB		<2.0								
МВ		<2.0								
МВ		<2.0								
MB		<2.0								
MB		<2.0								
MB		<2.0								
МВ		<2.0								
МВ		<2.0								
	66373000		2000	100.0		120.6	20	130	16	20
MS/MSD	66272008		3000	123.6		130.6	80	120	1.6	20
MS/MSD	66487006		1200	112.8		115.3	80	120	0.7	20
MS/MSD	66528001		30	103.9		101.1	80	120	0.0	20
MS/MSD	66803001		30	99.7		100.0	80	120	0.0	20



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Account #: 2040

Client: Basin Electric Power Cooperative

Profession Pro										
Hand	Boron QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	Spike Duplicate	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
Page	LFB-OE			0.4		,				
Point Poin	МВ		<0.1							
Point Poin	PDS/PDSD	65283001		2	82.4	81.8	75	125	0.2	20
NAME NO CACOLOUR SAME NO PROVIDED NO CATTURE NO CATTUR	PDS/PDSD	65673005		20	93.3	82.1	75	125	4.3	20
Calcium Calc	PDS/PDSD	66660009		0.4	94.4	94.1	75	125	0.2	20
QC Type ONIGINAL SAMPORT IN BRIGHT IN THE PARTY OF THE	MS/MSD	66660011		0.4	91.2	88.9	70	130	0.8	20
QC Type ONIGINAL SAMPORT IN BRIGHT IN THE PARTY OF THE						4.				
MB										
PSAPTOSO	QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
POS/POSO 65299002	LFB-MI			100		,				
PDS/PDSD 66075001	MB		<1							
POS/POSO 66272007	PDS/PDSD	65295002		100	105.0	106.0	75	125	0.5	20
PDS/PDSD 66281001	PDS/PDSD	66075001		100	91.4	89.2	75	125	1.1	20
PDS/PDSO 66487066	PDS/PDSD	66272007		2000	97.7	98.4	75	125	0.5	20
PDS/PDSD 66505001	PDS/PDSD	66281001		100	87.8	98.7	75	125	4.8	20
DUP 66660005	PDS/PDSD	66487006		500	96.8	92.6	75	125	1.4	20
PDS/PDSD 66660007	PDS/PDSD	66505001		100	90.4	91.8	75	125	0.6	20
PDS/PDSD 66771003	DUP	66660005							3.6	20
PDS/PDSD G6878001 FOR	PDS/PDSD	66660007		100	101.0	103.0	75	125	1.3	20
No	PDS/PDSD	66771003		100	88.7	93.4	75	125	2.9	20
QC Type Original Sample ID Blank Result Spike Amount Recovery Spike Duplicate % Recovery Lower Control Unit (%) Upper Control Unit (%) RPD (%) RPD Limit (%) LB-OE 40.1 13.0 15 15 15 MB 40.1 2 83.1 88.0 75 125 0.7 20 MS/MSD 6660011 10.0 101.0 101.0 102.0 75 125 0.4 20 PDS/PDSD 66770009 10.0 102.0 75 125 0.4 20 PDS/PDSD 66956003 10.0 102.0 75 125 0.7 20 PDS/PDSD 66956003 10.0 10.0 75 125 0.7 20 PDS/PDSD 66956003 10.0 10.0 75 125 0.7 20	PDS/PDSD	66878001		100	98.6	101.0	75	125	2.0	20
Recovery Limit (K) Limit	Iron				Units: mg	/L				
MB < 0.1 PDS/PDSD 66487019 2 83.1 88.0 75 125 0.7 20 MS/MSD 66660011 0.4 0.4 101.0 101.0 70 130 0.1 20 PDS/PDSD 66770009 0.4 102.0 102.0 75 125 0.4 20 PDS/PDSD 66956003 4 94.9 94.2 75 125 0.7 20 PDS/PDSD 6714001 2 94.1 96.3 75 125 0.8 20		Original Sample ID	Blank Result		Recovery	Spike Duplicate % Recovery	Limit (%)	Limit (%)	RPD (%)	RPD Limit (%)
PDS/PDSD 66487019 2 83.1 88.0 75 125 0.7 20 MS/MSD 66660011 0.4 101.0 101.0 70 130 0.1 20 PDS/PDSD 66770009 0.4 102.0 102.0 75 125 0.4 20 PDS/PDSD 66956003 4 94.9 94.2 75 125 0.7 20 PDS/PDSD 67114001 2 94.1 96.3 75 125 0.8 20	LFB-OE			0.4	113.0		85	115		
MS/MSD 66660011 0.4 101.0 101.0 70 130 0.1 20 PDS/PDSD 66770009 0.4 102.0 102.0 75 125 0.4 20 PDS/PDSD 66956003 4 94.9 94.2 75 125 0.7 20 PDS/PDSD 67114001 2 94.1 96.3 75 125 0.8 20	MB		<0.1							
PDS/PDSD 66770009 0.4 102.0 102.0 75 125 0.4 20 PDS/PDSD 66956003 4 94.9 94.2 75 125 0.7 20 PDS/PDSD 67114001 2 94.1 96.3 75 125 0.8 20	PDS/PDSD	66487019		2	83.1	88.0	75	125	0.7	20
POS/POSD 66956003 4 94.9 94.2 75 125 0.7 20 POS/POSD 67114001 2 94.1 96.3 75 125 0.8 20	MS/MSD	66660011		0.4	101.0	101.0	70	130	0.1	20
PDS/PDSD 67114001 2 94.1 96.3 75 125 0.8 20	PDS/PDSD	66770009		0.4	102.0	102.0	75	125	0.4	20
	PDS/PDSD	66956003		4	94.9	94.2	75	125	0.7	20
PDS/PDSD 67353002 4 71.9 78.7 75 125 1.7 20	PDS/PDSD	67114001		2	94.1	96.3	75	125	0.8	20
	PDS/PDSD	67353002		4	71.9	78.7	75	125	1.7	20





Account #: 2040

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Lithium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	ilig/L	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-OE		0.000.000.000.000	0.4	Recovery 108.0		% Recovery	Limit (%)	Limit (%)		
2002			0.4	20010			03	113		
MB		<0.04								
Magnesium	Orlean Consulation	Dii-Dit	Calles Assessed	Units:	mg/L	Callin Dunlines	Lauran Caratural	Hanna Cantoni	PDD (0/)	DDD 1 + (0/)
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MI			100	107.0			85	115		
МВ		<1								
PDS/PDSD	65295002		100	105.0		106.0	75	125	0.8	20
PDS/PDSD	66075001		100	96.0		94.6	75	125	0.9	20
PDS/PDSD	66272007		2000	94.2		94.5	75	125	0.1	20
PDS/PDSD	66281001		100	95.7		103.0	75	125	4.5	20
PDS/PDSD	66487006		500	101.0		96.9	75	125	2.8	20
PDS/PDSD	66505001		100	97.3		98.0	75	125	0.5	20
DUP	66660005								5.3	20
PDS/PDSD	66660007		100	101.0		102.0	75	125	1.2	20
PDS/PDSD	66771003		100	93.0		96.6	75	125	2.7	20
PDS/PDSD	66878001		100	99.4		101.0	75	125	1.9	20
Manganese				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	106.0			85	115		
МВ		<0.05								
PDS/PDSD	66487019		2	95.7		93.8	75	125	1.3	20
MS/MSD	66660011		0.4	93.8		94.0	70	130	0.2	20
PDS/PDSD	66770009		0.4	87.2		87.3	75	125	0.1	20
PDS/PDSD	66956003		4	92.0		90.8	75	125	1.0	20
PDS/PDSD	67114001		2	93.4		94.2	75	125	0.7	20
PDS/PDSD	67353002		4	83.9		87.6	75	125	1.9	20
Potassium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MI			100	106.0		.s.necovery	85	115		
MB		<1								
PDS/PDSD	65295002		100	104.0		104.0	75	125	0.7	20





Account #: 2040

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Potassium				Units: m	ng/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
PDS/PDSD	66075001		100	99.6	99.0	75	125	0.6	20
PDS/PDSD	66272007		2000	104.0	104.0	75	125	0.5	20
PDS/PDSD	66281001		100	100.0	105.0	75	125	4.3	20
PDS/PDSD	66487006		500	105.0	101.0	75	125	3.9	20
PDS/PDSD	66505001		100	102.0	102.0	75	125	0.3	20
DUP	66660005							4.0	20
PDS/PDSD	66660007		100	101.0	102.0	75	125	1.1	20
PDS/PDSD	66771003		100	96.2	98.2	75	125	1.9	20
PDS/PDSD	66878001		100	98.1	101.0	75	125	2.9	20
Antimony QC Type	Original Sample ID	Blank Result	Spike Amount	Units: n Spike % Recovery	ng/L Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	103.0	76 Incovery	80	120		
LFB-MS			0.1	108.0		80	120		
MB		<0.001							
MB		<0.001							
SPK	66487019		0.1	110.0		75	125		
MS/MSD	66660011		0.4	105.0	108.0	75	125	3.3	20
Arsenic				Units: m	ng/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	106.0	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	80	120		
LFB-MS			0.1	102.0		80	120		
MB		<0.002							
МВ		<0.002							
SPK	66487019		0.1	104.0		75	125		
MS/MSD	66660011		0.4	102.0	106.0	75	125	3.3	20
Barium				Units: m	ng/L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 108.0	% Recovery	Limit (%)	Limit (%)		
			0.1	105.0		80	120		
LFB-MS									
LFB-MS		<0.002							
		<0.002							



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Account #: 2040

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Danissa				Unite	/1					
Barium	Original St. 1 17	Dii-C '	Calles *	Units:	mg/L	Saile De "	IC	Haras C	BDD (61)	DDD 12 22 4045
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MS/MSD	66660011		0.4	103.0		104.0	75	125	0.5	20
Beryllium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %	O,	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS	5 E 15105 5 7		0.1	Recovery 97.5		% Recovery	Limit (%) 80	Limit (%) 120	2 %	2000
2.5 11.5			012	37.13				120		
LFB-MS			0.1	104.0			80	120		
MB		<0.0005								
MB		<0.0005								
MS/MSD	66487019		0.4	54.6		58.0	75	125	6.2	20
SPK	66487019		0.1	121.0			75	125		
MS/MSD	66660011		0.4	106.0		107.0	75	125	1.4	20
0.1.1					- /-					
Cadmium QC Type	Original Sample ID	Blank Result	Spike Amount	Units: Spike % Recovery	mg/L	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	106.0		26 Recovery	80	120		
LFB-MS			0.1	102.0			80	120		
MB		<0.0005								
MB		<0.0005								
SPK	66487019		0.1	98.9			75	125		
MS/MSD	66660011		0.4	99.4		101.0	75	125	2.0	20
Chromium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 109.0		% Recovery	Limit (%) 80	Limit (%) 120		
LFB-MS			0.1	103.0			80	120		
MB		<0.002								
00000000		2017 P. C.								
MB		<0.002								
SPK	66487019		0.1	106.0			75	125		
MS/MSD	66660011		0.4	99.5		103.0	75	125	3.2	20
Cobalt				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike %		Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB-MS			0.1	Recovery 102.0		% Recovery	Limit (%) 80	Limit (%) 120		
LFB-MS			0.1	109.0			80	120		
MB		<0.002								
MB		<0.002								





Account #: 2040

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				400 Av						
Cobalt				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
SPK	66487019		0.1	105.0			75	125		
MS/MSD	66660011		0.4	99.0		102.0	75	125	2.7	20
Lead				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	108.0			80	120		
LFB-MS			0.1	102.0			80	120		
MB		<0.0005								
MB		<0.0005								
WID		VO.0003								
SPK	66487019		0.1	96.0			75	125		
MS/MSD	66660011		0.4	99.2		100.0	75	125	1.0	20
Molybdenum				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	113.0		-a necovery	80	120		
LFB-MS			0.1	110.0			80	120		
MB		<0.002								
MB		<0.002								
MS/MSD	66487019		0.4	43.6		47.1	75	125	7.2	20
SPK	66487019		0.1	108.0			75	125		
MS/MSD	66660011		0.4	95.3		101.0	75	125	3.8	20
Selenium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	103.0		76 RECOVERY	80	120		
LFB-MS			0.1	106.0			80	120		
MB		<0.005								
0		-0.003								
MB		<0.005								
MS/MSD	66487019		0.4	49.2		47.7	75	125	3.1	20
SPK	66487019		0.1	105.0			75	125		
MS/MSD	66660011		0.4	104.0		110.0	75	125	5.9	20
1900-1900-1900	20.000(3)7/300(8)			and the section		accond(CC)	ecocot	man (CC)	secoli (
Thallium	1000 N 1000 N 1000			Units:	mg/L	1000 NO. 10			2002 3000	20000000 N MOON
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MS			0.1	102.0			80	120		
LFB-MS			0.1	109.0			80	120		





Account #: 2040

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Thallium				Units: mg/I					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
МВ		<0.0005							
МВ		<0.0005							
MS/MSD	66487019		0.4	46.2	50.1	75	125	7.8	20
SPK	66487019		0.1	95.7		75	125		
MS/MSD	66660011		0.4	95.8	97.4	75	125	1.8	20
Mercury				Units: mg/l					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			0.002	99.0		85	115		
LFB			0.002	101.0		85	115		
LFB			0.002	96.3		85	115		
LRB		<0.0002							
MB		<0.0002							
MB		<0.0002							
PDS/PDSD	66272010		0.01	113.0	114.0	70	130	0.9	
MS/MSD	66474001		0.002	88.8	93.4	70	130	5.4	20
MS/MSD	66487007		0.002	93.2	92.8	70	130	5.4	20
MS/MSD	66487017		0.002	96.8	99.0	70	130	5.1	20
MS/MSD	66505005		0.002	96.7	95.2	70	130	0.0	20
MS/MSD	66770008		0.002	94.6	95.0	70	130	0.0	20
MS/MSD	66801001		0.002	91.6	90.3	70	130	0.0	20
Alkalinity, Total QC Type CRM	Original Sample ID	Blank Result	Spike Amount	Units: mg/l Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			410	93.1		90	110		
LFB			410	93.4		90	110		
LFB			410	93.2		90	110		
LFB			410	93.8		90	110		
MB		<20.5							
MB		<20.5							
МВ		<20.5							
МВ		<20.5							



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Alkalinity, Total				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MS/MSD	66487001		410	89.7		89.6	80	120	0.2	20
MS/MSD	66487011		410	89.0		89.2	80	120	0.1	20
MS/MSD	66487015		410	91.5		90.8	80	120	0.4	20
Fluoride				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-F			3.06	101.0			83.99	111.11		
LFB-F			0.5	100.0			90	110		
LFB-F			0.5	102.0			90	110		
LFB-F			0.5	100.0			90	110		
LFB-F			0.5	100.0			90	110		
LFB-F			0.5	102.0			90	110		
MB-F		<0.1								
MB-F		<0.1								
MB-F		<0.1								
MB-F		<0.1								
MB-F		<0.1								
MS/MSD	66487010		0.5	108.0		110.0	80	120	1.8	20
MS/MSD	66487014		0.5	64.0		58.0	80	120	3.5	20
MS/MSD	66660005		0.5	118.0		92.0	80	120	7.1	20
MS/MSD	66660009		0.5	90.0		126.0	80	120	8.5	20
Total Dissolved S	olids			Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	100.0			90.35	110.33		
CRM			736	101.0			90.35	110.33		
CRM			736	101.0			90.35	110.33		
CRM			736	100.0			90.35	110.33		
MB		<10								
DUP	66660011								0.5	20





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Total Suspen	nded Solids			Units: mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			50	91.5		77.2	109.2		
MB		<2							
DUP	66662001							20.0	20





Effective Date: 26 Aug 2022

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Toll Fro	Minnesota Va 2616 East Bro Bismarck, ND Phone: (701) 258-9 ee: (800) 279-6885	es, Inc.	Basin Electric Power Coope WO: 66660						Chain of Custody Page of				
Company	Name and Address			Account # Phone #									
		ectric Power Coop.			2040					<u>-745-7238</u>	<u>701-557-</u>	5488	
		d Olds Station		Contact Emails Mark Dihle mdihle@bepc.com aknutson@b							utaan@h		
		Highway 200A ton, ND 58571		Name of S							utson@be	epc.com	\dashv
Billing Ad	dress (indicate if different			Name of Sampler mk Ksolie@barr.com									
	,	,		Quote Nu	mber				Date	Submitted	i 0/3/2024		
				Project Na	ame/Numb AVS CCF		ells		Purc	hase Orde <u>7</u> 9	r# 90708-01		
Lab Use Only Lab		nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N		A	analysis Re	equired	d	. 1
001	M	N 26 S	GW	10/2/2024				B, Ca, Cl, F Li, Hg, Mo,	Se, 1	I, Ra226, F	Ra228, TD	s	
002								B, Ca, Cl, F					ο,
009	M	N 25 S	GW	10/2/2024	1036	3	N	Li, Hg, Mo, B, Ca, Cl, F	Se, 1	I, Ra226, F	Ra228, TD	Cr. Co.Pl	
003	M	N 27 S	GW	10/2/2024	1350	3	N	Li, Hg, Mo,					,
004		DUP	GW	10/2/2024	933	72.00		B, Ca, Cl, F					
005	M	N 15 S	GW	10/1/2024	946	2	N	B, Ca, Cl, F	=, so,	, TDS		-	
006	M	W 20 S	GW	10/1/2024	1019	2	N	B, Ca, Cl, F	F, SO,	, TDS			
F00	M	GW	10/2/2024	809	2	N	B, Ca, Cl, F	F, SO	, TDS				
008	M	N 17 S	GW	10/2/2024	820	2	N	B, Ca, Cl, I	F, SO	, TDS			
000	M	GW	10/2/2024	933	2	N	B, Ca, Cl, I	F, SO	, TDS				
Commen	s:												
	Transferred by	Date	Time	Received	l by		Dat	te Tim	ne	Temp	ROI	Therm.	#
			/			0.0	10	111111111111		1 4 6 0	1/		

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Thursday, October 17, 2024 1:30:39 PM

Form # 80-910005-1



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Effective Date: 26 Aug 2022

Account #: 2040 Client: **Basin Electric Power Cooperative**

Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724					Lab Us	e C	nl	V	Pa	ge	f Cus	
Company Name	and Address			A coount #				IPhone #	ab Use On	ily		
Joinpany Name		ctric Power Coop.		Account #	2040					7238 7	01-557-5	488
		Olds Station		Contact	2010			Emails			0. 00. 0	
		lighway 200A			Mark Dihle	е			bepc.con	n aknu	tson@be	pc.com
		on, ND 58571		Name of S	ampler			Ksolie@k	parr.com			
Billing Address	(indicate if different f	rom above)	11,	mk								
				Quote Nui	mber				Date Sub		/3/2024	
				Project Na	ame/Numb AVS CCI		ells		Purchase		# 0708-01	
Lab Use Only	Sam	ple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	N/A		Analy	sis Rec	_l uired	
010	MW	124 S	GW	10/2/2024	1248	2	N	B, Ca, Cl, F,	SO4. TD	S		
011	LEACH	ATE POND	SW	10/1/2024	1405			As, Ba, B, Cd, Alkalinity, Chl	Cr, Fe, P	b, Mn, N		
Comments:												
Tran	sferred by	Date	Time	Received	l bv	_	Dat	te Time	To	emp	ROI	Therm. #
MILLENNIUM E		10/3/2024			,	T		1	<u> </u>		Y/N	
2.						1					Y/N	

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Thursday, October 17, 2024 1:30:39 PM

2.

Form # 80-910005-1



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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS (66661) **PO**: 790708-01

Mark Dihle Basin Electric Power Cooperative 1717 E. Interstate Avenue Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Carrell

Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016 SD SDWA

Subcontracted Analyses

Analyzed By	Company	Address	Phone	Certification
SUBv	Energy Labs Casper	2393 Salt Creek Highway, Casper. WY 82601	307-235-0515	CERT

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Friday, November 1, 2024 4:12:17 PM





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66661001
 Date Collected:
 10/02/2024 11:50
 Matrix:
 Groundwater

 Sample ID:
 MW 26 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: Contracted Result							
Radium 226	See Attached			1		11/01/2024 15:43	
Radium 228	See Attached			1		11/01/2024 15:43	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66661002
 Date Collected:
 10/02/2024 10:36
 Matrix:
 Groundwater

 Sample ID:
 MW 25 S
 Date Received:
 10/03/2024 15:25
 Collector:
 Client

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: Contracted Result							
Radium 226	See Attached			1		11/01/2024 15:43	
Radium 228	See Attached			1		11/01/2024 15:43	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 66661003
 Date Collected:
 10/02/2024 13:50
 Matrix:
 Groundwater

Sample ID: MW 27 S Date Received: 10/03/2024 15:25 Collector: Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

Parameter Results **RDL** DF **Prepared** Analyzed Qual **Method: Contracted Result** 11/01/2024 15:43 Radium 226 See Attached 1 Radium 228 See Attached 1 11/01/2024 15:43



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Account #: 2040 Client: Basin Electric Power Cooperative



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ANALYTICAL SUMMARY REPORT

October 31, 2024

Minnesota Valley Testing Laboratories

1126 N Front St

New Ulm, MN 56073-1176

Work Order: C24100293 Quote ID: C15480

Project Name: 66661

Energy Laboratories, Inc. Casper WY received the following 3 samples for Minnesota Valley Testing Laboratories on 10/8/2024 for analysis.

Lab ID

Client Sample ID Collect Date Receive Date Matrix Test C24100293-001 66661001, MW 26 S pH Check for Nitric Radiochem FIRST 10/02/24 11:50 10/08/24 Groundwater Radium 226 + Radium 228, Total Radium 226, Total Radium 228, Total

Same As Above

C24100293-002 66661002, MW 25 S 10/02/24 10:36 10/08/24 Groundwater C24100293-003 66661003, MW 27 S 10/02/24 13:50 10/08/24 Groundwater

Radium 226 + Radium 228, Total Radium 226, Total Radium 228, Total

The analyses presented in this report were performed by Energy Laboratories, Inc., 2393 Salt Creek Hwy, Casper, WY 82601-9601, unless otherwise noted. Any exceptions or problems with the analyses are noted in the report package. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

Energy Laboratories, Inc. verifies the reported results for the analysis has been technically reviewed and approved for release.

If you have any questions regarding these test results, please contact your Project Manager.



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

 Client:
 Minnesota Valley Testing Laboratories
 Report Date:
 10/31/24

 Project:
 66661
 Collection Date:
 10/02/24 11:50

 Lab ID:
 C24100293-001
 DateReceived:
 10/08/24

 Client Sample ID:
 6661001, MW 26 S
 Matrix:
 Groundwater

				MCL/	
Analyses	Result Units	Qualifiers	RL	QCL Method	Analysis Date / By
RADIONUCLIDES, TOTAL					
Radium 226	0.1 pCi/L	U		E903.0	10/28/24 15:04 / apt
Radium 226 precision (±)	0.1 pCi/L			E903.0	10/28/24 15:04 / apt
Radium 226 MDC	0.2 pCi/L			E903.0	10/28/24 15:04 / apt
Radium 228	1.6 pCi/L			RA-05	10/21/24 12:01 / trs
Radium 228 precision (±)	0.9 pCi/L			RA-05	10/21/24 12:01 / trs
Radium 228 MDC	1.2 pCi/L			RA-05	10/21/24 12:01 / trs
Radium 226 + Radium 228	1.6 pCi/L			A7500-RA	10/29/24 12:14 / dmf
Radium 226 + Radium 228 precision (±)	0.9 pCi/L			A7500-RA	10/29/24 12:14 / dmf
Radium 226 + Radium 228 MDC	1.3 pCi/L			A7500-RA	10/29/24 12:14 / dmf

Report RL - Analyte Reporting Limit

Definitions: QCL - Quality Control Limit

QCL - Quality Control Limit

U - Not detected

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Page 2 of 10



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Client: Basin Electric Power Cooperative Account #: 2040



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: **Report Date: 10/31/24** Minnesota Valley Testing Laboratories Project: 66661 Collection Date: 10/02/24 10:36 Lab ID: C24100293-002 DateReceived: 10/08/24 Client Sample ID: 66661002, MW 25 S Matrix: Groundwater

					MCL/		
Analyses	Result l	Units	Qualifiers	RL	QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL							
Radium 226	0.08	pCi/L	U			E903.0	10/28/24 15:04 / apt
Radium 226 precision (±)	0.1	pCi/L				E903.0	10/28/24 15:04 / apt
Radium 226 MDC	0.2	pCi/L				E903.0	10/28/24 15:04 / apt
Radium 228	0.2	pCi/L	U			RA-05	10/21/24 12:01 / trs
Radium 228 precision (±)	0.8	pCi/L				RA-05	10/21/24 12:01 / trs
Radium 228 MDC	1.3	pCi/L				RA-05	10/21/24 12:01 / trs
Radium 226 + Radium 228	0.8	pCi/L	U			A7500-RA	10/29/24 12:14 / dmf
Radium 226 + Radium 228 precision (±)	0.8	pCi/L				A7500-RA	10/29/24 12:14 / dmf
Radium 226 + Radium 228 MDC	1.3	pCi/L				A7500-RA	10/29/24 12:14 / dmf

Report Definitions: RL - Analyte Reporting Limit

QCL - Quality Control Limit

U - Not detected

MCL - Maximum Contaminant Level

ND - Not detected at the Reporting Limit (RL)

Page 3 of 10



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Client: Basin Electric Power Cooperative Account #: 2040



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LABORATORY ANALYTICAL REPORT

Prepared by Casper, WY Branch

Client: **Report Date: 10/31/24** Minnesota Valley Testing Laboratories Project: 66661 Collection Date: 10/02/24 13:50 Lab ID: C24100293-003 DateReceived: 10/08/24 **Client Sample ID:** 66661003, MW 27 S Matrix: Groundwater

			MCL	ı	
Analyses	Result Uni	s Qualifiers	RL QCL	Method	Analysis Date / By
RADIONUCLIDES, TOTAL					
Radium 226	5.7 pCi	L		E903.0	10/28/24 15:04 / apt
Radium 226 precision (±)	5.3 pCi/	L		E903.0	10/28/24 15:04 / apt
Radium 226 MDC	4.3 pCi	L		E903.0	10/28/24 15:04 / apt
Radium 228	12.3 pCi	L		RA-05	10/29/24 13:02 / trs
Radium 228 precision (±)	5.7 pCi	L		RA-05	10/29/24 13:02 / trs
Radium 228 MDC	7.9 pCi	L		RA-05	10/29/24 13:02 / trs
Radium 226 + Radium 228	18.0 pCi	L		A7500-RA	10/30/24 15:13 / dmf
Radium 226 + Radium 228 precision (±)	7.8 pCi	L		A7500-RA	10/30/24 15:13 / dmf
Radium 226 + Radium 228 MDC	9.0 pCi	L		A7500-RA	10/30/24 15:13 / dmf

Report Definitions: RL - Analyte Reporting Limit MCL - Maximum Contaminant Level ND - Not detected at the Reporting Limit (RL)

QCL - Quality Control Limit



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Account #: 2040

Client: Basin Electric Power Cooperative



Work Order: C24100293

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Report Date: 10/30/24

QA/QC Summary Report

Prepared by Casper, WY Branch

Analyte	Count Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: E903.0								Batch: RA2	26-11477
Lab ID: LCS-RA226-114	77 3 Laboratory Co.	ntrol Sample			Run: TENN	ELEC-3_24101	5C	10/28/	24 12:55
Radium 226	9.7	pCi/L		97	70	130			
Radium 226 precision (±)	1.9	pCi/L							
Radium 226 MDC	0.17	pCi/L							
Lab ID: MB-RA226-1147	7 3 Method Blank				Run: TENN	ELEC-3_24101	5C	10/28/	24 12:55
Radium 226	0.09	pCi/L							U
Radium 226 precision (±)	0.1	pCi/L							
Radium 226 MDC	0.2	pCi/L							
Lab ID: C24091007-003	GDUP 3 Sample Duplic	ate			Run: TENN	ELEC-3_24101	5C	10/28/	24 12:55
Radium 226	0.059	pCi/L					110	30	UR
Radium 226 precision (±)	0.16	pCi/L							
Radium 226 MDC	0.26	pCi/L							
- Duplicate RPD is outside of the	ne acceptance range for this ana	llysis. However, t	he RER is less	than or e	qual to the limi	it of 3, the RER re	sult is 0.52		
Lab ID: C24100239-001	ADUP 3 Sample Duplic	ate			Run: TENN	ELEC-3_24101	5C	10/28/	24 12:55
Radium 226	0.17	pCi/L					36	30	R
Radium 226 precision (±)	0.11	pCi/L							
Radium 226 MDC	0.15	pCi/L							
- Duplicate RPD is outside of the	ne acceptance range for this ana	llysis. However, t	the RER is less	than or e	qual to the limi	it of 3, the RER re	sult is 0.34		

Qualifiers:

RL - Analyte Reporting Limit
R - Relative Percent Difference (RPD) exceeds advisory limit

ND - Not detected at the Reporting Limit (RL)

U - Not detected

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Account #: 2040

Client: Basin Electric Power Cooperative



Work Order: C24100293

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Report Date: 10/30/24

QA/QC Summary Report

Prepared by Casper, WY Branch

Analyte		Count	t Result	Units	RL	%REC	Low Limi	t High Limit	RPD	RPDLimit	Qual
Method:	RA-05									Batch: RA	228-750
Lab ID:	LCS-228-RA226-1147	7 3	Laboratory Cor	ntrol Sample			Run: TEN	NELEC-4_241015	iC .	10/21	/24 12:01
Radium 228	3		11	pCi/L		106	70	130			
Radium 228	3 precision (±)		2.2	pCi/L							
Radium 228	3 MDC		1.2	pCi/L							
_ab ID: I	MB-RA226-11477	3	Method Blank				Run: TEN	NELEC-4_241015	iC .	10/21	/24 12:01
Radium 228	3		2	pCi/L							
Radium 228	3 precision (±)		0.8	pCi/L							
Radium 228	3 MDC		1	pCi/L							
Lab ID:	C24091007-003GDUP	3	Sample Duplica	ate			Run: TEN	NELEC-4_241015	iC	10/21	/24 13:35
Radium 228	3		2.0	pCi/L					12	30	
Radium 228	3 precision (±)		1.1	pCi/L							
Radium 228	MDC		1.6	pCi/L							
- The RER r	esult is 0.14.										
ab ID:	C24100239-001ADUP	3	Sample Duplica	ate			Run: TEN	NELEC-4_241015	iC .	10/21	/24 12:01
Radium 228	3		1.9	pCi/L					26	30	
Radium 228	3 precision (±)		0.83	pCi/L							
Radium 228	B MDC		1.1	pCi/L							
- The RER r	esult is 0.38.										
Method:	RA-05									Batch: RA	228-751
_ab ID: I	LCS-228-RA226-1148	8 3	Laboratory Cor				Run: TEN	NELEC-4_241023	BA	10/29	/24 11:32
Radium 228	3		8.4	pCi/L		84	70	130			
Radium 228	3 precision (±)		1.8	pCi/L							
Radium 228	3 MDC		1.0	pCi/L							
.ab ID: I	MB-RA226-11488	3	Method Blank				Run: TEN	NELEC-4_241023	BA	10/29	/24 11:32
Radium 228	3		1	pCi/L							
Radium 228	3 precision (±)		0.8	pCi/L							
Radium 228	3 MDC		1	pCi/L							
Lab ID:	C24100293-003ADUP	3	Sample Duplica	ate			Run: TEN	NELEC-4_241023	BA	10/29	/24 13:02
Radium 228	3		15	pCi/L					18	30	
Radium 228	3 precision (±)		6.1	pCi/L							
Radium 228	B MDC esult is 0.28.		7.9	pCi/L							

Qualifiers:

RL - Analyte Reporting Limit

ND - Not detected at the Reporting Limit (RL)

Page 6 of 10



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C24100293



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Work Order Receipt Checklist

Minnesota Valley Testing Laboratories

ogin completed by:	Aaron J. Smith	Date Received: 10/8/2024
Reviewed by:	Icadreau	Received by: CCS
Reviewed Date:	10/14/2024	Carrier name: UPS Grou

Reviewed by.	Icadieau		110	cerved by. CCS
Reviewed Date:	10/14/2024		Car	rier name: UPS Ground
Shipping container/cooler in	good condition?	Yes 🗸	No 🗌	Not Present
Custody seals intact on all s	hipping container(s)/cooler(s)?	Yes	No 🗌	Not Present ✓
Custody seals intact on all s	ample bottles?	Yes	No 🗌	Not Present ✓
Chain of custody present?		Yes 🗸	No 🗌	
Chain of custody signed who	en relinquished and received?	Yes 🗸	No 🗌	
Chain of custody agrees with	h sample labels?	Yes 🗸	No 🗌	
Samples in proper container	/bottle?	Yes 🗸	No 🗌	
Sample containers intact?		Yes 🔽	No 🗌	
Sufficient sample volume for	r indicated test?	Yes 🔽	No 🗌	
All samples received within I (Exclude analyses that are of such as pH, DO, Res CI, Su	considered field parameters	Yes ✓	No 🗌	
Temp Blank received in all s	hipping container(s)/cooler(s)?	Yes	No 🔽	Not Applicable
Container/Temp Blank temp	erature:	16.7°C No Ice		
Containers requiring zero he bubble that is <6mm (1/4").	eadspace have no headspace or	Yes	No 🗌	No VOA vials submitted
Water - pH acceptable upon		Yes	No 🗹	Not Applicable

Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as –dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

The reference date for Radon analysis is the sample collection date. The reference date for all other Radiochemical analyses is the analysis date. Radiochemical precision results represent a 2-sigma Total Measurement Uncertainty.

For methods that require zero headspace or require preservation check at the time of analysis due to potential interference, the pH is verified at analysis. Nonconforming sample pH is documented as part of the analysis and included in the sample analysis comments.

Trip Blanks and/or Blind Duplicate samples are assigned the earliest collection time for the associated requested analysis in order to evaluate the holding time unless specifically indicated.

Contact and Corrective Action Comments:

The samples MW 26 S and MW 25 S for radionuclides analysis were received at pH >2. Nitric acid (15 mL) was added to preserve to pH <2. In accordance with the method, these samples must held for 16 hours prior to analysis. AJS

Page 7 of 10

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Report Date: Friday, November 1, 2024 4:12:17 PM





Account #: 2040 Client: Basin Electric Power Cooperative



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Work Order Receipt Checklist - Continued

Minnesota Valley Testing Laboratories C24100293

10/08/24

Page 8 of 10



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Account #: 2040

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Laboratory Certifications and Accreditations

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	Agency	Number
	Alaska	17-023
	California	3087
	Colorado	MT00005
	Department of Defense (DoD)/ISO17025	ADE-2588
Billings, MT	Florida (Primary NELAP)	E87668
	Idaho	MT00005
d	Louisiana	05079
ANAB	Montana	CERT0044
ANSI National Accreditation Roard A C C R E D T E D	Nebraska	NE-OS-13-04
TESTING LABORATORY	Nevada	NV-C24-00250
NCCRP.	North Dakota	R-007
A CONTRACTOR OF THE PARTY OF TH	National Radon Proficiency	109383-RMP
TNI	Oregon	4184
BORATON	South Dakota	ARSD 74:04:07
	Texas	TX-C24-00302
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00170
	Washington	C1039
	Alaska	20-006
	California	3021
	Colorado	WY00002
	Florida (Primary NELAP)	E87641
	Idaho	WY00002
Common 14/1/	Louisiana	05083
Casper, WY	Montana	CERT0002
AND ACCREONA	Nebraska	NE-OS-08-04
TNI	Nevada	NV-C24-00245
MEGRATOR	North Dakota	R-125
	Oregon	WY200001
	South Dakota	WY00002
	Texas	T104704181-23-21
	US EPA Region VIII	WY00002
	USNRC License	49-26846-01
	Washington	C1012
Gillette, WY	US EPA Region VIII	WY00006
	Colorado	MT00945
Helena, MT	Montana	CERT0079
	Nevada	NV-C24-00119
	US EPA Region VIII	Reciprocal
	USDA Soil Permit	P330-20-00090

Page 9 of 10

Friday, November 1, 2024 4:12:17 PM

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Account #:

2040

MINNESOTA VALLEY TESTING LABORATORIES, INC.

1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.MVTL.com

Client: Basin Electric Power Cooperative

Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	Temp:
Grace Ziegler	4-Oct-24	1700		Constan South Com has	1018/24 10:30	

LABORATORIES, Inc.

Chain of Custody Record

	2616 E	Broadway Ave										Page 1 of 1 .
	Bismar	ck, ND 58501										
		258-9720 Fax: (701) 258-9724			W	ork	Oı	rder	#	6	66	61
Company Nam	e and Address:			Account #							Ph	ione #:
												701-258-9720
		IVTL		Contact:							Fa	
		Broadway k, ND 58501		Name of C		dette	•				-	For faxed report check box
Rilling Address	s (indicate if different											
Dilling Address	maicate ii ainereiii	nom above).		Quote Nun	nber					_	Da	
	PO E	3ox 249		C15480 v5						-	4-Oct-24	
		Project Na	me/Numbe	er:					Pu			
												BL6947
		Sample Information					В	ottle	Ty	ре		Analysis
Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	Gallon HNO3	VOC Vials Umpreserved	Glass Jar	Other		Analysis Required
24/60293	66661001	MW 26 S	GW	2-Oct-24	1150		1					Ra226 & Ra228
	66661002	MW 25 S	GW	2-Oct-24	1036		1					Ra226 & Ra228
	66661003	MW 27 S	GW	2-Oct-24	1350					1		Ra226 & Ra228
												<i>I</i>
	_											
4.												

Page 10 of 10





ROI Therm.#

Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free:	Minnesota Valley Testing Laboratories 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 (800) 279-6885 Fax: (701) 258-9724	Basin Electric Power Coope W0: 66661 Work Order # Lab Use Only							
Company Na	nme and Address Basin Electric Power Coop.		Accou # Phone # 701-745-7238 701-557-5488						
	Leland Olds Station	Contact Emails							
	3901 Highway 200A			Mark Dihle				@bepc.com aknutson@bepc.com	
Billing Addr	Stanton, ND 58571 ess (indicate if different from above)		Name of Sampler Ksolie@barr.com						
Dining Addi	ass (mulcate ii umerent nom above)		Quote Nur	nber				Date Submitted 10/3/2024	
		9	Project Na	me/Numbe		ells		Purchase Order # <u>790708-01</u>	
Lab Use			· 1		_				
Only		Sample Matrix GW - Groundwater	Date	Time	Bottles	Y/N			
Lab	Sample ID		Sampled	Sampled	ă		D Co CL F	Analysis Required F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb,	
001	MW 26 S	GW	10/2/2024	1150	3	N	Li, Hg, Mo,	Se, TI, Ra226, Ra228, TDS	
002								F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb,	
,	MW 25 S	GW	10/2/2024	1036	3	N	Li, Hg, Mo, B. Ca. Cl. F	, Se, TI <mark>, Ra226, Ra228,</mark> TDS F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb,	
003	MW 27 S	GW	10/2/2024	1350	3			, Se, TI, Ra226, Ra228, TDS	
	DUP	GW	10/2/2024	933	2	N	B, Ca, CI, F	F, SO ₄ , TDS	
	MW 15 S	GW	10/1/2024	946	2	N	B, Ca, Cl, I	F, SO ₄ , TDS	
	MW 20 S	GW	10/1/2024	1019	2	N	B, Ca, CI, I	F, SO ₄ , TDS	
	MW 16 S	GW	10/2/2024	809	2	N	B, Ca, Cl, I	F, SO ₄ , TDS	
	MW 17 S	GW	10/2/2024	820	2	N	B, Ca, Cl, I	F, SO ₄ , TDS	
Community	MW 22 S	GW	10/2/2024	933	2	N	B, Ca, Cl, I	F, SO ₄ , TDS	

Please submit the top copy with your samples. We will return the completed original with your results.

Form # 80-910005-1

See above for page number

Effective Date: 26 Aug 2022

Time

Received by

Grace Mugle

Date

300HZ4

Time

Temp

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Friday, November 1, 2024 4:12:17 PM

Transferred by

MILLENNIUM EXPRESS

Date

10/3/2024





ROI Therm. #

Y/N

Y/N

Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free:	Minnesota Valley Testing Laboratori 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 (800) 279-6885 Fax: (701) 258-9724	ies, Inc.	Ĭ.	eh Use	0			Chain of Custody Page of Work Order #		
Company Na	ime and Address		Account #				Phone			
	Basin Electric Power Coop.		2 1 1	2040			Emails	701-745-7238 701-557-5488		
ć.	<u>Leland Olds Station</u> 3901 Highway 200A		Contact	Mark Dihle				@bepc.com aknutson@bepc.com		
	Stanton, ND 58571		Name of S					@barr.com		
Billing Addr	ess (indicate if different from above)		mk	**************************************						
	2		Quote Nur	nber				Date Submitted <u>10/3/2024</u>		
	Я		Project Name/Number AVS CCR Wells					Purchase Order # <u>790708-01</u>		
								- The state of the		
Lab Use Only		Sample Matrix	Date	Time	Bottles	7				
Lab	Sample ID	GW - Gloundwater	Sampled	Sampled	å	Ϋ́		Analysis Required		
	MW 24 S	GW	10/2/2024	1248	2	N	B, Ca, Cl, F	F, SO ₄ , TDS Cd, Cr, Fe, Pb, Mn, Mo, Sé, TSS, TDS, Total		
	LEACHATE POND	sw	10/1/2024	1405	2	N	As, Ba, B, C	chi cr, Fe, Pb, Mn, Mo, Se, 188, 188, 188, 188, Phloride, Nitrate, Nitrite, Sulfate, Ca, Mg, K,		
	LEAGHATE FOND		10/1/2024	1400	Ī		, . ,	, , , , , , , , , , , , , , , , , , ,		
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	A CONTRACTOR OF THE CONTRACTOR									
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Comments					1_	L	L			

Please submit the top copy with your samples. We will return the completed original with your results.

Received by

Date

Time

Temp

Time

Date

10/3/2024

Form # 80-910005-1 See above for page number Effective Date: 26 Aug 2022

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Friday, November 1, 2024 4:12:17 PM

Transferred by MILLENNIUM EXPRESS

2.

Well/Piezo ID:	
/veii/Piezo ib.	
MW-105	
Record	

Client:		BEP	С				Date: <u>10</u>						
Project No:							Time: 0817						
Site Location:		AVS					Finish 🔟	008					
Veather Con	ds:	40.	calm		Collector(s)	MK							
WATER LEV	EL DATA:	(mea	sured fro	m Top of	Casing)		Well 🗾	,					
a. Total Well		_			sing Material			Pump Setting	34/200	max Ps			
. Water Tab		5	218.96	d. Ca	sing Diamete	r			,				
VELL PURG	a. Purge N		d Dedicat	ed Bladde	er Pump								
	b. Field Te				Make	Model		Serial Numbe	r				
					YSI			5320084101		i i			
					HACH			20030C08455	01				
	c. Field Te	esting	g Equipme	ent Calibra	ation Docume	ntation Four	nd in Field	Notebook #	Page #	1			
	Volume	e T		DO	Spec. Cond			Turbidity	T				
Time	Removed	(gal)	T° (C)	mg/L	(µs/cm)	pH	ORP	✓ (NTU)	Color	DTW			
Stabilization	INITIAL A	21	+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%	RICHIANO	0.33 ft			
0933	INITIAL 4	$\overline{}$	10.3	.41	2776	8.07	96.5	1.73	Brown	224.50			
0937	4.20		10.4	. 42	2775	8.07	98.9	2.04		725.00			
0945	4.70		10.4	.43	2780	8.07	100.5	2.20		225.1			
110140	4.0	^ 급	10.1	.0.9	2180	0.07	100115						
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		L											
	e. Accept				Yes	No	N/A						
				been remo been reac	ched	H	H						
			eters stat		oved T	ī	i i						
	If n	o or N	V/A - Expl	ain below		_							
SAMPLE CO	OLLECTIO	N:		Method: I	Bladder Pump)							
Sample	e ID	Cont	ainer Typ	No. of	Containers	Preservation		Analysis		Time			
			1L		1			TDS/Anior	ns	0944			
		5	00mL		1	HNO3		Metals					
										V			
							L						
omments													

Ground Water Sample Collection Record

Client:		BEF	PC				Date: 10			
Project No:				1.0			Time:			
Site Location:		AVS	1000	dfill	6 !!	7000	Finish 🗼	0.70		
Weather Con-	ds:	40	Siann	um	Collector(s)	MK				
WATER LEVI	EL DATA:	ímea		A STATE OF THE PARTY OF THE PAR	f Casing)		Well			
a. Total Well I					sing Material			Pump Settings		
b. Water Tab			220.11	d. Ca	sing Diamete	r	21			
WELL PURG	ING DATA	/loth/	od Dadioot	od Bladd	erPump Hi	idvacien	12,			
	b. Field Te	estina	r Fauinme	nt Used	Make	Model		Serial Number	r	
	D. 1 10.0 1 0		9 _ qa.po	0004.	YSI			5320084101		
					HACH			20030C08455	1	-
	c. Field Te	estin	g Equipme	ent Calibr	ation Docume	ntation Four		Notebook # <5	Page #	1
	Volume	,		DO	Spec. Cond		i i	Turbidity	Î	Τ
Time	Removed		T° (C)	mg/L	(µs/cm)	pН	ORP	(NTU)	Color	DTW
Stabilization			+/- 0.2	+/- 10%		+/- 0.1	+/- 10%	+/- 10%		0.33 ft
	INITIAL		9.1	3.15	2650	8.04	136.5	18.6	yellow	220.11
		L							11	
		L								
		L								
		L								
		<u>L</u>								
		ᆫ						1		
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		L								
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		L								
	e. Accept	L	oritorio no	oo /foil	Yes	No	N/A			L
	Has red Has red Have p	quire quire aran	d volume l d turbidity neters stab N/A - Expl	been rem been rea bilized	oved ched					
SAMPLE CO	OLLECTIO	—— N:		Method:	Bladder Pump)				
Sample	e ID	Con	tainer Typ	No. of		Preservation		Analysis		Time
			1L		1	HNO2		TDS/Anior Metals	15	1019
			500mL		1	HNO3		ivietais		
Comments										7
Signature	na		and the second s		===3		Date	0-1-24		

Grour	nd Wa	iter Sam	ple Co	Į	Well/Piezo ID Record	MNIUS	
PC	ndfill			Date: _ <u>\</u>			
BYLL	hny	Collector(s)					
asured fro	-	f Casing) sing Material	PVC	Well 🔲	Pump Settings	39/21 0	max PSI
od <u>Dedicat</u> g Equipme	ted Bladdent Used:	Make YSI HACH	Model	nd in Field	Serial Number 5320084101 20030C08455 Notebook # <5		<u>. </u>
T° (C)	DO mg/L	Spec. Cond (µs/cm)	рН	ORP	Turbidity (NTU)	Color	DTW
+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
14.9	1.47	2142	8.15	101.0	4.37	Brown	23955
14.7	1.15	2122	8.14	77.7	10.631		239.75
14.9	1.08	2104	8.13	88.0	4.95		240.00
14.8	1.00	2090	8-14	98.53	4.83		240.20
14.8	0.94	2051	8.13	104.9	4.83		240.40
14.8	0.92	2000	8.15	110.6	4.99		240,50
14.8	0.89	1937	8.10	114.6	5.41		240.89
pun	rea a	own to	245ft	-			
150	4 .	1000	8,2	120	4 0		747 12
120	4.1	1820	0,6	120	4.8	24000	243.13
						270.10	War all

VATER LEVEL DATA: (measured from Top of a. Total Well Length c. Case a. Water Table Depth d. Case vell PURGING DATA a. Purge Method Dedicated Bladder b. Field Testing Equipment Used: c. Field Testing Equipment Calibrates	sing Material sing Diamete er Pump Make YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.142 2.104 2.090	PVC Model PH +/- 0.1 8-14 8-14 8-14	Well	Pump Settings Serial Number 5320084101 20030C08455	39/21 C	
VATER LEVEL DATA: (measured from Top of Junnia) VATER LEVEL DATA: (measured from Top of Junnia) Total Well Length	Casing) sing Material sing Diamete Prump Make YSI HACH stion Docume Spec. Cond (µs/cm) +/- 3% 7.142 2.124 2.104	PVC Model PH +/- 0.1 8-14 8-14 8-14	well ond in Field ORP +/- 10% ULO 77.7	Pump Settings Serial Number 5320084101 20030C08455 Notebook #<5 Turbidity (NTU) +/- 10%	39 2 C	bTW
ATER LEVEL DATA: (measured from Top of Total Well Length c. Cast Water Table Depth d. Cast Vellar Testing Equipment Used: c. Field Testing Equipment Calibration co.5 Time Removed (gal) T° (C) mg/L	Casing) sing Material sing Diamete Prump Make YSI HACH stion Docume Spec. Cond (µs/cm) +/- 3% 7.142 2.124 2.104	PVC Model PH +/- 0.1 8-14 8-14 8-14	ORP +/- 10%	Serial Number 5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	bTW
Total Well Length c. Car Water Table Depth 236.96 d. Car Field Testing Equipment Calibra c. Field Testing Equipment Used: c. Field Testing Equipment Calibra co.5 Time Removed (gal) T° (C) mg/L Itabilization +/- 0.2 +/- 10% INITIAL 2L 4.9 1.41 INITIAL 2L 4.9 1.08 INITIAL 2	sing Material sing Diamete er Pump Make YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.142 2.104 2.090	Model PH +/- 0.1 8 .16 8 .14 8 .13	ORP +/- 10%	Serial Number 5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	bTW
Total Well Length Water Table Depth /ELL PURGING DATA a. Purge Method Dedicated Bladde b. Field Testing Equipment Used: c. Field Testing Equipment Calibra <0.5 Time Removed (gal) T° (C) mg/L Stabilization 1/0.2 +/- 10% INITIAL ZL 14.9 1.41 INITIAL ZL 14.9 1.08 INITIAL ZL 14.	sing Material sing Diamete er Pump Make YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.142 2.104 2.090	Model PH +/- 0.1 8 .16 8 .14 8 .13	ORP +/- 10%	Serial Number 5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	bTW
Water Table Depth /ELL PURGING DATA a. Purge Method Dedicated Bladde b. Field Testing Equipment Used: c. Field Testing Equipment Calibra <0.5 Volume Removed (gal) T° (C) mg/L Stabilization INITIAL ZL 14.9 1.41 IFG 21L 14.7 1.16 IFG 2.9 L 14.8 1.00 IFG 3.2 L 14.8 0.99 IFG 3.2 L 14.8 0.99 IFG 4.1 L e. Acceptance criteria pass/fail Has required volume been remothas required turbidity been reach Have parameters stabilized If no or N/A - Explain below.	sing Diamete Pr Pump Make YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.142 2.124 2.104 2.090	Model PH +/- 0.1 8 .16 8 .14 8 .13	ORP +/- 10%	Serial Number 5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	bTW
a. Purge Method Dedicated Bladde b. Field Testing Equipment Used: c. Field Testing Equipment Calibra <0.5 Volume Removed (gal) T° (C) mg/L Stabilization +/- 0.2 +/- 10% INITIAL 2L 14.9 1.47 IL 14.9 1.47 IL 14.9 1.49 IL 14.8 0.91 IL 14.8 0.91 IL 14.8 0.91 IL 14.8 0.89 L VIII I I I I I I I I I I I I I I I I I	Pr Pump Make YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.142 2124 2104 2090	Model pH +/- 0.1 8 .16 8 .14 8 .13 8 .14	ORP +/- 10%	5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	DTW
a. Purge Method Dedicated Bladde b. Field Testing Equipment Used: c. Field Testing Equipment Calibra <0.5 Volume Removed (gal) T° (C) mg/L Stabilization +/- 0.2 +/- 10% INITIAL ZL 14.9 1.47 IMP 2 L 14.7 1.16 IMP 2 L 14.8 0.94 IMP 2 L 14.8 0.94 IMP 3 L 14.8 0.94 IMP 3 L 14.8 0.99 L DWMP 4 D L 15.0 4.1 L C C C C C C C C C C C C C C C C C C	Make YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.147 2.122 2.104 2.090	pH +/- 0.1 8.16 8.14 8.13 8-14	ORP +/- 10%	5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	DTW
c. Field Testing Equipment Calibra <0.5 Volume DO mg/L Stabilization +/- 0.2 +/- 10% IMITIAL 7L 14.9 1.47 IMITIAL 7L 14.9 1.08 IMITIAL 7L 14.8 1.00 IMITIAL 7L 14.9 1.08 I	YSI HACH ation Docume Spec. Cond (µs/cm) +/- 3% 7.147 2.122 2.104 2.090	pH +/- 0.1 8.16 8.14 8.13 8-14	ORP +/- 10%	5320084101 20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	1 Page #	DTW
c. Field Testing Equipment Calibra <0.5 Volume Removed (gal) T° (C) mg/L Stabilization +/- 0.2 +/- 10% IMITIAL 7L IA-9 I.47 IMITIAL 7L IA-9 I.08 IMITI	HACH Spec. Cond (µs/cm) +/- 3% 7.142 2124 2104 2090	pH +/- 0.1 8-16 8-14 8-13 8-14	ORP +/- 10%	20030C08455 Notebook # <5 Turbidity (NTU) +/- 10%	Page #	DTW
c. Field Testing Equipment Calibra <0.5 Volume Removed (gal) T° (C) mg/L Stabilization +/- 0.2 +/- 10% IMITIAL 7L IA-9 I.47 IMITIAL 7L IA-9 I.08 IMITI	Spec. Cond (µs/cm) +/- 3% 7.147 2.122 2.104 2.090	pH +/- 0.1 8-16 8-14 8-13 8-14	ORP +/- 10%	Notebook # <5 Turbidity (NTU) +/- 10%	Page #	DTW
Time Removed (gal) T° (C) mg/L Stabilization +/- 0.2 +/- 10% 145 INITIAL ZL 14.9 1.47 149 2.1L 14.7 1.16 152 2.4L 14.9 1.08 150 2.8 L 14.8 0.00 1200 2.8 L 14.8 0.92 1204 3.2 L 14.8 0.92 1208 3.2 L 14.8 0.89 L	Spec. Cond (µs/cm) +/- 3% 2142 2122 2104 2090	pH +/- 0.1 8-16 8-14 8-13 8-14	ORP +/- 10% UL.0	<5 Turbidity (NTU) +/- 10%	Color	DTW
Time Removed (gal) T° (C) mg/L Stabilization +/- 0.2 +/- 10% 145 INITIAL ZL 14.9 1.41 1.49 1.08 1.52 2.4 L 14.9 1.08 1.50 1.200 2.8 L 14.8 0.90 1.204 3.2 L 14.8 0.91 1.208 3.2 L 14.8 0.99 L 14.8	(µs/cm) +/- 3% 2142 2122 2104 2090	pH +/- 0.1 8.16 8.14 8.13 8.14	+/- 10% ULO 77.7	(NTU) +/- 10%		
Stabilization +/- 0.2 +/- 10% IMP INITIAL 2L 4.9 1.47 IMP 2	+/- 3% 2142 2122 2104 2090	+/- 0.1 8.16 8.14 8.13 8-14	+/- 10% ULO 77.7	+/- 10%		
INITIAL 2L 4.9 1.47 1.16	2142 2122 2104 2090	8.16 8.14 8.13 8.14	77.7	4.37	Brown	
2 2 L A T 1.15 152 2 L A S 1.00 1200 2 8 L A S 0.4 U 1204 3 L A S 0.92 1208 3 2 L A S 0.89 L Pumped d L L L e. Acceptance criteria pass/fail Has required volume been remote Has required turbidity been reach Have parameters stabilized If no or N/A - Explain below.	2122 2104 2090	8.14 8.13 8.14	77.7			239.55
e. Acceptance criteria pass/fail Has required volume been remore Have parameters stabilized If no or N/A - Explain below.	2090	8-14	88.4	100		239.75
2.8 L 14.8 0.94 1204 3 L 14.8 0.97 1208 3.2 L 14.8 0.89 L pumped d L 0809 L 15.0 4.1 L L e. Acceptance criteria pass/fail Has required volume been remore Has required turbidity been reach Have parameters stabilized If no or N/A - Explain below.				4.95		240.00
e. Acceptance criteria pass/fail Has required volume been remore Have parameters stabilized If no or N/A - Explain below.			98.5	4.83		240.20
e. Acceptance criteria pass/fail Has required volume been remo Has required turbidity been reach Have parameters stabilized If no or N/A - Explain below.	2051	8.13	110.6	4.83		240.40
e. Acceptance criteria pass/fail Has required volume been remo Have parameters stabilized If no or N/A - Explain below.	1937	8.10	114.6	5.41		240.50
e. Acceptance criteria pass/fail Has required volume been remo Has required turbidity been reac Have parameters stabilized If no or N/A - Explain below.	iwn to	245ft	1111.0	17.	V	210.01
e. Acceptance criteria pass/fail Has required volume been remo Has required turbidity been reac Have parameters stabilized If no or N/A - Explain below.						
e. Acceptance criteria pass/fail Has required volume been remo Has required turbidity been reac Have parameters stabilized If no or N/A - Explain below.	1820	8,2	120	4.8		243.13
e. Acceptance criteria pass/fail Has required volume been remo Has required turbidity been read Have parameters stabilized If no or N/A - Explain below.					246.9 V	inen done
e. Acceptance criteria pass/fail Has required volume been remo Has required turbidity been read Have parameters stabilized If no or N/A - Explain below.			-			
Has required volume been remonstrated turbidity been reached turbidity been reached turbidity been reached that a parameters stabilized If no or N/A - Explain below.			1			<u> </u>
Has required turbidity been read Have parameters stabilized If no or N/A - Explain below.	Yes	No	N/A			***************************************
Have parameters stabilized If no or N/A - Explain below.			님			
If no or N/A - Explain below.	hed					
SAMPLE COLLECTION: Method: E		ليكوا				
SAMPLE COLLECTION: Method: [
SAMPLE COLLECTION: Method: [
	Bladder Pump	р				
Sample ID Container Typ No. of 0	Containers	Preservatio	n	Analysis		Time
1L	1			TDS/Anion	S	0809 10
500mL		HNO3		Metals		
	1					
	1		1			L
comments	1					
	1					
ignature M an	1					

		Groui	nd Wa	ter Sam	ple Col	Į	Well/Piezo ID	MW. IT	S	
Client: Project No: Site Location: Weather Con	AV	PC S Land		Collector(s)	MK	Date: 10 Time: 12 Finish	500	124		:0 *
WATER LEVI a. Total Well I b. Water Tab WELL PURG	Length		c. Ca d. Ca ted Bladd	sing Material			Pump Settings Serial Number 5320084101 20030C08455		max PSI	
	c. Field Testi	ng Equipm	ent Calibra	ation Docume	entation Four		Notebook # <5	Page #		
Time Stabilization	Volume Removed (ga	T° (C)	DO mg/L +/- 10%	Spec. Cond (µs/cm) +/- 3%	pH +/- 0.1	ORP +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft	
	INITIAL 5L 551 10 (0.01	11.1	1.74	2570 2544 2542 2541	8.02 8.02 8.02	6.4 22.2 31.1 56.5	5.51 U.00 4.95 4.84	BYOWN	245.70 244.41 247.80 249.03	
0820		li.5	ea au 340	Wn to 2574	250ft 1.97	188.0	4.41	Brown	244.31	
	1							241.	ess when D	ru
	Has requir Have para	- e criteria p ed volume ed turbidity meters stal · N/A - Exp	been rem been rea pilized	ched 🔲	No D D DTW	N/A				

2	٨	B.	10	16	E	^	^				\sim			N	١.	
3	А	ıv	16	'Ł		u	u	ᆫ	ᆫ	⊏'	•	ŀІ	ıv	IN		

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0820 1
	500mL	1	HNO3	Metals	

Comments

Signature 1

Date 10-2-24

		Grour	nd Wa	ter Sam	ple Col	Į	Well/Piezo II M Recore	W-225	
Client: Project No: Site Location: Weather Con	6	BEPC AVS LANd!	711 001	Collector(s)	_MK_A	Date: 10 Time: 05 Finish 0	859		
water Lev a. Total Well b. Water Tab well PURG	Length le Depth	(measured fro	c. Ca	Casing) sing Material sing Diamete		Well	Pump Setting	1841/17 e n	<u>aax</u> PSI
WELL FORG	a. Purge N b. Field Te	Method <u>Dedica</u> esting Equipme esting Equipme	ent Used:	Make YSI HACH	Model		Serial Number 532008410 ² 20030C0845	51	1
Time Stabilization 0925 0928 0131	Volume Removed INITIAL 5	(gal) T° (C) +/- 0.2	<0.5 DO mg/L +/- 10% 0.40 0.30 ass/fail	Spec. Cond (µs/cm) +/- 3% 2448 2448 2444			-(5) Turbidity (NTU) +/- 10% ら.39 ら.28 ら.36	Color	DTW 0.33 ft 210.55 210.56 210.40
SAMPLE CO	Has red Have p If n	quired turbidity arameters stat o or N/A - Expl	been read bilized ain below	ched 🗓	 р				
Sampl	e ID	Container Typ 1L 500mL	No. of	Containers 1 1	Preservation HNO3		Analysis TDS/Anio Metals		Time 0933
Comments Signature	Na			<u>T</u>	<u> </u>	Date	0.2.24		

Pi Si	lient: roject No: ite Location: /eather Con	- : <u>7</u>		iand ny co		Collector(s)	MEMI	Date: 10. Time: 64 Finish 10	150		
а. b.	ATER LEVI Total Well Water Tab	ole Depth	<u> 111</u>	48:02	c. Ca	Casing) sing Material sing Diamete	PVC	Well Z	Pump Setting	48/12	ax psi
•		a. Purge Mo b. Field Tes			nt Used:	er Pump Make YSI HACH	Model		Serial Numbe 5320084101 20030C08455		
		c. Field Te	sting	Equipme	ent Calibra	ation Docume	entation Four		Notebook#_	Page #_	_1_
	Time Stabilization	Volume Removed (gal)	T° (C) +/- 0.2	DO mg/L +/- 10%	Spec. Cond (µs/cm) +/- 3%	pH +/- 0.1	ORP +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ff
	1023 1026 1029 1032		レ j L L jL	10.9	0.50 0.53 0.27 0.28	2869 2921 2909 2923	8.23 8.21 8.21 8.2	-31.0 -34.2 -32.2 -30.8	13.9 14.2 14.8 13.7	Brown	7.00.9 200.9 200.9 200.9
	1035	8	L L L	10.6	0.27	2918	8-19	- 34	14.3		200.
			L L L								
		Has requ	uired uired rame	volume turbidity	been remo	ched 🗓	No	N/A			
•	SAMPLE CO	- OLLECTION	:		Method:	Bladder Pum	0				
_	Sample	e ID C		iner Typ 1L 0mL	No. of	Containers 1	Preservation HNO3		Analysis TDS/Anior Metals	ns	Time
				al			HN03		Fadu	yn	

_	epc s land	Ful			_Date: \ Time:(Finish	155		
s: <u>V</u>	lindy,c	001	Collector(s)	MKMI	\$			
_ DATA: (m	easured fro	om Top of	Casing)		Well 🗹			
ength		c. Ca	sing Material	PVC	_ ´	Pump Settings	4/190	e max ps
Depth	190.41	•	sing Diamete	r				
. Purge M et . Field Testi		ent Used:	Make YSI	Model		Serial Numbe 5320084101		
. Field Test	ng Equipm	2.5	HACH ation Docume	ntation Fou	nd in Field	20030C08455 Notebook # <5	Page #	
Volume	i) T° (C)	DO	Spec. Cond	рН	ORP	Turbidity (NTU)	Color	DTW
Removed (ga	+/- 0.2	mg/L +/- 10%	(µs/cm) +/- 3%	+/- 0.1	+/- 10%	+/- 10%	20101	0.33 ft
VITIAL 55	10.9	0.31	2093	8.17	-259	20.5	Brown	192.90
	11.0	0.29	2692	8.19	-30.5	20.5		193.1
6.5		0.29	21076	8.17	-31.9	20.4		192.91
-	11.2	0.28	2018	8.17	-32.3	19.7		192.81
	Ц							
								-
	-							
Has requir	ce criteria p ed volume ed turbidity meters stal	been remo		No	N/A			

If no	or N/A - Explain below.
2	
SAMPLE COLLECTION	: Method: Bladder Pump

Client:

Project No: Site Location:

Weather Conds:

a. Total Well Length

b. Water Table Depth

Time

Stabilization

140

1143

1146

1149

WELL PURGING DATA

WATER LEVEL DATA: (measured from Top of Casing)

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1150
	500mL	1	HNO3	Metals	1
	laal		HN03	Radium	

Comments	
Signature Man	Date 10-2-24

Well/Piezo JD:	
MW.ZAS	
n Record	

Ground Water Sample Collection Record

Client: Project No:	_	BEPC									
Site Location: Weather Con	-	AVS	-3	Collector(s)							
vveatner Cond	us:	sindy x (/00\	Collector(s)							
WATER LEVI	EL DATA: (ı	neasured fro	om Top of	f Casing)							
a. Total Well I	Length		c. Ca	sing Material	PVC	_	Pump Setting	= 14 14e r	nax psi		
b. Water Tab		206.10	d. Ca	sing Diamete	r						
WELL I OKO	a. Purge M	ethod <u>Dedica</u>									
	b. Field Tes	sting Equipme	ent Used:	Make YSI	Model						
			E.	HACH		Serial Number 5320084101 20030C084551					
	c. Field Testing Equipment Calibration Documentation Found in Field Notebook # Page # <0.5										
	Volume		DO	Spec. Cond							
Time	Removed (moved (gal) T° (C) mg/L (µs/cm) pH ORP (NTU) Color									
Stabilization 1238	INITIAL 6	+/- 0.2	+/- 10%	+/- 3% 3019	+/- 0.1 8-13			WATOMI			
1241		DL 9.6	.25	3019	8.12						
1244	7.0	5L 9.6	.26	3007	8.14	19.9			208.10		
1247	8,4	5L 97	.23	2999	8.14	20.2	8.06	V	208.18		
		L									
		L									
		L									
		L									
		L									
		L									
		L									
	Has required Has required Have pa	nce criteria p uired volume uired turbidity rameters sta or N/A - Exp	been rem been rea bilized	ched	№ 0	N/A					
SAMPLE CO	 DLLECTION	:	Method:	Bladder Pum)						
Sample	e ID	Container Typ	No. of	Containers	Preservation						
		1L 500mL		1	HNO3			าร	1298		
		JUJUIL			111100		Motals				
Comments	-										
Signature	ma	~				Date	10-2-24				

Well/Piezo ID	•
AAGII/LIGZO ID	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	NAME TO THE
	IVIV VIG

Ground Water Sample Collection Record

Client: Project No:		BEF	PC				Date: 10					
Site Location:		AVS	3				Finish 1					
Weather Cond			nny B	ileru	Collector(s)	MKN						
WATER LEVI	EL DATA:	(mea	sured fro	-			Well	•				
a. Total Well I	_ength			c. Ca	sing Material	PVC	-8	Pump Setting	·			
b. Water Tab WELL PURG	NG DATA	/letho	209.81	ed Bladde	er Pump		we	Serial Numbe	r			
	D. Fleid Te	ວ ດແ ເຊ	y Equipine	in Osea.	YSI	Model		5320084101				
					HACH			20030C08455	51			
	c. Field Testing Equipment Calibration Documentation Found in Field Notebook # Page # <0.5											
	Volume DO Spec. Cond Turbidity											
Time Stabilization	Removed	(gal)	T° (C) +/- 0.2	mg/L +/- 10%	(µs/cm) +/- 3%	pH +/- 0.1	ORP +/- 10%	(NTU) +/- 10%	Color	DTW 0.33 ft		
Stabilization	INITIAL	_	11.5	1.72	3043	8-08	-116.9		BLACK	209.81		
		L	11.07	110	7000	0,00	119.	TOO HIGH	VIII			
		L										
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		L										
		늽										
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		L										
		<u>_</u>								V.		
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		L										
		L		16-:1	Vaa	NIo	NI/A					
	Has red Have p	quire quire aram	d volume l d turbidity neters stat N/A - Expl	been rem been rea oilized	ched 🗌	No □ □	N/A III III III					
SAMPLE CO	OLLECTIO	—— N:		Method:	Bladder Pum	0						
Sample	e ID	Con	tainer Typ	No. of	Containers	Preservation		Analysis		Time		
			1L		1	LINIO2		TDS/Anior Metals	ns	1350		
		_	500mL		1	HNO3		Podim	M			
		1	1			111403		7 0101001	i i i i i i i i i i i i i i i i i i i			
Comments												
Signature	m	C		/			Date	10.2-24				

		Calibra	tion Log YSI			Hach
Date	/Time	рН	ORP	Conductivity	DO	Verify
4-15 24						V.,
5-13-24	1010	/	V	/	V	
5-14-24	0130	V	V-		V	V
5 21.24	6715	V				
5-22-24	6648	V	-		-	-
6-11-24	0800	V	V	V		V
0-12-24	0830		V			
0.13.24	0820	/	/	✓	/	/
6-17-24	0815	V	~	-		~
4-25.24	0730	V	~	~	~	レ
8-1-24	0715	V	V	V	~	✓
5-10-24	0120	V	-	~	V	<u></u>
7-10-24	0700	V	~	V	~	
9-11-24	0700	· V	V	✓		/
917.24	0705	V	V	V	V	V
0-1-24	0703	V	/	_	V	
0.2.24	0701	~	~	V		
	e .					
S.						
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			1			
			-			





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Toll Fro	Minnesota Va 2616 East Bro Bismarck, ND Phone: (701) 258-9 ee: (800) 279-6885	es, Inc.		n Electri 66660	P	ow	er Coope	Woi	Page	of_			
Company	Name and Address			Account #		-	-	Phone	#				
		ectric Power Coop.			2040					<u>-745-7238</u>	<u>701-557-</u>	5488	
		d Olds Station		Contact	Mark Dihle			Emails			utaan@h		
		Highway 200A ton, ND 58571		Name of S				Ksolie@		c.com akn	utson@be	epc.com	\dashv
Billing Ad	dress (indicate if different			mk	amplei			KSOIIE	yvaii.	COIII			
	,	,		Quote Nu	mber				Date	Submitted	i 0/3/2024		
				Project Na	ame/Numb AVS CCF		ells		Purc	hase Orde <u>7</u> 9	r# 90708-01		
Lab Use Only Lab		nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N		A	analysis Re	equired	d	. 1
001	M	N 26 S	GW	10/2/2024				B, Ca, Cl, F Li, Hg, Mo,	Se, 1	I, Ra226, F	Ra228, TD	s	
002								B, Ca, Cl, F					ο,
009	M	N 25 S	GW	10/2/2024	1036	3	N	Li, Hg, Mo, B, Ca, Cl, F	Se, 1	I, Ra226, F	Ra228, TD	Cr. Co.Pl	
003	M	N 27 S	GW	10/2/2024	1350	3	N	Li, Hg, Mo,					,
004		DUP	GW	10/2/2024	933	72.00		B, Ca, Cl, F					
005	M	N 15 S	GW	10/1/2024	946	2	N	B, Ca, Cl, F	=, so,	, TDS		-	
006	M	W 20 S	GW	10/1/2024	1019	2	N	B, Ca, Cl, F	F, SO,	, TDS			
F00	M	N 16 S	GW	10/2/2024	809	2	N	B, Ca, Cl, F	F, SO	, TDS			
008	M	N 17 S	GW	10/2/2024	820	2	N	B, Ca, Cl, I	F, SO	, TDS			
000		N 22 S	GW	10/2/2024	933	2	N	B, Ca, Cl, I	F, SO	, TDS			
Commen	s:												
	Transferred by	Date	Time	Received	l by		Dat	te Tim	ne	Temp	ROI	Therm.	#
			/			0.0	10	11111111111		1 4 6 0	1/		

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

MVTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTL to guarantee that a test result obtained on a particular sample will be the same on any other sample unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, the public and ourselves, all reports are submitted as the confidential property of clients, and authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.

Report Date: Thursday, October 17, 2024 1:30:39 PM

Form # 80-910005-1



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Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Toll Free: (80	Minnesota Vai 2616 East Bro Bismarck, ND Phone: (701) 258-97 00) 279-6885	es, Inc.	,	Lab Us	e C	nt	N	Chain of Custody Page of				
Company Name	and Address			Account #				Phone #	ab Use Or	ily		
Sompany Name		ctric Power Coop.		Account #	2040					7238 7	01-557-5	488
		d Olds Station		Contact	2010			Emails		1200 1	0. 00. 0	
		Highway 200A			Mark Dihle	е		mdihle@	bepc.cor	n aknı	itson@be	pc.com
		on, ND 58571		Name of S	Sampler			Ksolie@b	parr.com			
Billing Address	(indicate if different f	rom above)	1,	mk								
				Quote Nui	mber				Date Sub		/3/2024	
				Project Na	ame/Numb AVS CCI		ells		Purchase		# 0708-01	
Lab Use Only	Sam	ple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	N/A		Analy	sis Red	quired	
010	MW	I 24 S	GW	10/2/2024	1248	2	N	B, Ca, Cl, F,	SO4. TD	S		
011	LEACHA	ATE POND	SW	10/1/2024	1405			As, Ba, B, Cd Alkalinity, Chl	Cr, Fe, F	b, Mn, N		
Comments:												
Tran	sferred by	Date	Time	Received	l by	Т	Dat	te Time	Т	emp	ROI	Therm. #
MILLENNIUM E		10/3/2024			-						Y/N	
2.						\top					Y/N	

Please submit the top copy with your samples. We will return the completed original with your results.

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Report Date: Thursday, October 17, 2024 1:30:39 PM

2.

Form # 80-910005-1



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Account #: 2040 Client: Basin Electric Power Cooperative

Workorder: AVS CRR Wells (67251) **PO**: 790708-01

Mark Dihle
Basin Electric Power Cooperative
1717 E. Interstate Avenue
Bismarck, ND 58503

Certificate of Analysis

Approval

All data reported has been reviewed and approved by:

C. Courted

Claudette Carroll, Lab Manager Bismarck, ND

Analyses performed under Minnesota Department of Health Accreditation conforms to the current TNI standards.

NEW ULM LAB CERTIFICATIONS: MN LAB # 027-015-125 ND WW/DW # R-040

BISMARCK LAB CERTIFICATIONS: MN LAB # 038-999-267 ND W/DW # ND-016

Workorder Comments

All analytes with dilution factors greater than 1 (displayed in DF column) required dilution due to matrix or high concentration of target analyte unless otherwise noted and reporting limits (RDL column) have been adjusted accordingly.

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Report Date: Friday, October 18, 2024 4:06:01 PM



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 67251001
 Date Collected:
 10/08/2024 08:58
 Matrix:
 Groundwater

 Sample ID:
 MW-19s
 Date Received:
 10/09/2024 14:37
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

remp @ Receipt (C):	Received on	ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	763	mg/L	25	5		10/16/2024 11:17	
Method: EPA 6010D							
Boron	0.14	mg/L	0.1	1	10/09/2024 16:19	10/10/2024 16:41	
Calcium	4.39	mg/L	1	1	10/09/2024 16:19	10/17/2024 09:38	
Method: SM4500-CI-E 2011							
Chloride	19.4	mg/L	2.0	1		10/15/2024 09:38	
Method: SM4500-F-C-2011							
Fluoride	0.67	mg/L	0.1	1		10/09/2024 15:50	
Mathad: 11000 1 4750 05							
Method: USGS I-1750-85							
Total Dissolved Solids	2180	mg/L	10	1		10/11/2024 14:20	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 67251002
 Date Collected:
 10/08/2024 10:27
 Matrix:
 Groundwater

 Sample ID:
 MW-18s
 Date Received:
 10/09/2024 14:37
 Collector:
 Client

Temp @ Receipt (C): 10 Received on Ice: Yes

Temp @ Receipt (C): 1.0	Received or	n Ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	536	mg/L	25	5		10/16/2024 11:27	
Method: EPA 6010D							
Boron	0.10	mg/L	0.1	1	10/09/2024 16:19	10/10/2024 16:42	
Calcium	7.14	mg/L	1	1	10/09/2024 16:19	10/17/2024 09:40	
Method: SM4500-CI-E 2011							
Chloride	8.9	mg/L	2.0	1		10/15/2024 09:39	
Method: SM4500-F-C-2011							
Fluoride	1.23	mg/L	0.1	1		10/09/2024 15:58	
Mothod: 11909 4750 95							
Method: USGS I-1750-85 Total Dissolved Solids	1770	mg/L	10	1		10/11/2024 14:20	





Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 67251003
 Date Collected:
 10/08/2024 11:47
 Matrix:
 Groundwater

 Sample ID:
 MW-21s
 Date Received:
 10/09/2024 14:37
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

remp @ Receipt (C).	Received on	ice. 168					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	458	mg/L	25	5		10/16/2024 11:28	
Method: EPA 6010D							
Boron	0.13	mg/L	0.1	1	10/09/2024 16:19	10/10/2024 16:43	
Calcium	4.78	mg/L	1	1	10/09/2024 16:19	10/17/2024 09:41	
Method: SM4500-CI-E 2011							
Chloride	19.2	mg/L	2.0	1		10/15/2024 09:40	
Method: SM4500-F-C-2011							
Fluoride	1.51	mg/L	0.1	1		10/09/2024 16:04	
Method: USGS I-1750-85							
Total Dissolved Solids	1980	mg/L	10	1		10/11/2024 14:20	



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Account #: 2040 Client: Basin Electric Power Cooperative

Analytical Results

 Lab ID:
 67251004
 Date Collected:
 10/08/2024 08:58
 Matrix:
 Groundwater

 Sample ID:
 DUPLICATE
 Date Received:
 10/09/2024 14:37
 Collector:
 Client

Temp @ Receipt (C): 1.0 Received on Ice: Yes

remp @ Receipt (C):	Received on	ice: Yes					
Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
Method: ASTM D516-16							
Sulfate	762	mg/L	25	5		10/16/2024 11:29	
Method: EPA 6010D							
Boron	0.14	mg/L	0.1	1	10/09/2024 16:19	10/10/2024 16:43	
Calcium	4.35	mg/L	1	1	10/09/2024 16:19	10/17/2024 09:42	
Method: SM4500-CI-E 2011							
Chloride	19.6	mg/L	2.0	1		10/15/2024 09:42	
Method: SM4500-F-C-2011							
Fluoride	0.64	mg/L	0.1	1		10/09/2024 16:10	
Math ad. 11000 1 4750 05							
Method: USGS I-1750-85							
Total Dissolved Solids	2100	mg/L	10	1		10/11/2024 14:20	



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.MVTL.com



Account #: 2040 Client: Basin Electric Power Cooperative

C Result	ts Summary						WO #:	6725	1
Sulfate				Units: mg/	L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
.FB			100	97.9		85	115		
LFB			100	100.0		85	115		
.FB			100	101.0		85	115		
.FB			100	97.9		85	115		
FB			100	98.6		85	115		
.FB			100	95.3		85	115		
FB			100	96.0		85	115		
.FB			100	104.0		85	115		
ИВ		<5							
ИВ		<5							
ив									
		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
ИВ		<5							
/IS/MSD	67244001		1000	84.5	83.9	85	115	0.0	20
AS/MSD	67289003		500	105.9	109.6	85	115	1.5	20
/IS/MSD	67312002		500	83.7	82.3	85	115	0.9	20
AS/MSD	67447003		500	80.9	81.1	85	115	0.2	20
/IS/MSD	67467011		10000	88.1	92.1	85	115	2.0	20
us/msd	67472001		1000	101.7	91.1	85	115	3.8	20
Chloride	Opininal Secretaria	Disale Const	Cailea A	Units: mg/		I muse Section 2	Hanna C	DDD (W.)	DDD 1::- /o::
QC Type .FB	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery 97.8	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
FB			30	97.3		90	110		
FB			30	97.6		90	110		
FB			30	98.0		90	110		
.FB			30	97.9		90	110		

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Chloride QC Type	Original Sample ID	Blank Result	Spike Amount	Units: mg/	Spike Duplicate	Lower Control	Upper Control	RPD (%)	RPD Limit (%)
LFB			30	97.9	% Recovery	Limit (%)	Limit (%) 110		
LFB			30	97.9		90	110		
LFB			30	98.2		90	110		
LFB			30	97.5		90	110		
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
MB		<2.0							
MB		<2.0							
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
МВ		<2.0							
MS/MSD	66884003		30	106.7	91.1	80	120	9.1	20
MS/MSD	67150001		30	104.8	100.6	80	120	0.8	20
MS/MSD	67289003		30	95.3	93.2	80	120	1.7	20
MS/MSD	67447003		30	102.6	93.5	80	120	7.2	20
MS/MSD	67467011		30	95.4	90.7	80	120	2.1	20
Boron				Units: mg/	'L				
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-OE			0.4	101.0		85	115		
МВ		<0.1							
PDS/PDSD	65283001		2	82.4	81.8	75	125	0.2	20
PDS/PDSD	65673005		20	93.3	82.1	75	125	4.3	20
PDS/PDSD	66660009		0.4	94.4	94.1	75	125	0.2	20
MS/MSD	67251004		0.4	122.0	124.0	70	130	1.0	20
Calcium	Odeles I C	Disable D. "	Callea	Units: mg/		Investor 1	Name of the Land	DDD (00)	DDD Lie 's feet
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB-MI			100	108.0		85	115		
MB		<1							
PDS/PDSD	65433006		100	96.1	96.0	75	125	0.0	20

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Account #: 2040

Client: Basin Electric Power Cooperative

Calcium				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
PDS/PDSD	65702016		100	91.8		92.8	75	125	0.6	20
PDS/PDSD	65827002		100	101.0		101.0	75	125	0.0	20
DUP	67251001								0.9	20
PDS/PDSD	67289003		100	96.9		100.0	75	125	1.1	20
PDS/PDSD	67441001		100	102.0		104.0	75	125	1.7	20
PDS/PDSD	67441009		500	103.0		95.4	75	125	3.5	20
PDS/PDSD	67447003		100	101.0		102.0	75	125	0.4	20
PDS/PDSD	67467010		100	99.6		100.0	75	125	0.5	20
PDS/PDSD	67601001		100	98.3		101.0	75	125	1.7	20
Fluoride				Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-F			3.06	101.0		,	83.99	111.11		
LFB-F			0.5	100.0			90	110		
LFB-F			0.5	100.0			90	110		
MB-F		<0.1								
MB-F		<0.1								
MS/MSD	67105001		0.5	102.0		104.0	80	120	1.9	20
Total Dissolved	Solids			Units:	mg/L					
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery		Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM			736	99.0		,	90.35	110.33		
CRM			736	98.0			90.35	110.33		
MB		<10								
		<10								
MB		<10								
MB	67251001	<10							9.6	20





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address					in Electri 67251	c F	'owe		Page of Work Order #			
Company Nai		ctric Power Coop.		Account #	2040			Phone #	e # 701-745-7238 701-557-5488			
	Lelano 3901	d Olds Station Highway 200A			Mark Dihle	•			@bepc.com aknutson@bepc.com			
Billing Addre	<u>Stant</u> ss (indicate if different l	on, ND 58571 from above)		Name of S	ampler			Ksolie@	barr.cor	<u>n</u>		
J	(,		Quote Number					Date Su	bmitted	0/9/2024	
			Project Name/Number AVS CCR Wells					Purcha	se Orde			
Lab Use Only Lab	San	nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	N/A		Ana	lysis Re	quired	
001	MW	- 19 S	GW	10/8/2024	858	2	3		B, Ca, CI, F, SO ₄ , TDS			
002	MW	- 18 S	GW	10/8/2024	1027	2	N		B, Ca	CI, F, S	O ₄ , TDS	
503	MW	- 21 S	GW	10/8/2024	1147	2	N		B, Ca, Cl, F, SO ₄ , TDS			
304	DUP	LICATE	GW	10/8/2024	858	2	N		B, Ca, Cl, F, SO ₄ , TDS			
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Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

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Report Date: Friday, October 18, 2024 4:06:01 PM

Form # 80-910005-1

Vell/Piezo ID: MW - 195
//W/195
Record

		Grou	iiu vva	ter Sam	pie coi		Record	.	
Client: Project No: Site Location: Weather Cond	s: 46°	AVS COO CA	M	Collector(s)	M	Date: 10- Time: 0 Finish 0	8,24 810 1120		
WATER LEVE	L DATA:	(measured fro	om Top of	Casing)		Well 📐		- /	. 4
a. Total Well Le	ength		_ c. Ca	sing Material			Pump Setting	= 20/10	O Max P.
o. Water Table WELL PURGIN	NG DATA		•	sing Diamete	r			,	/
		Method <u>Dedica</u> esting Equipmo		Make YSI HACH	Model		Serial Numbe 5320084101 20030C08455		_
(: Field T	esting Equipm	ent Calibra		entation Four				- #
·			<0.5				<5		
Time F	Volum Removed		DO mg/L +/- 10%	Spec. Cond (µs/cm) +/- 3%	pH +/- 0.1	ORP +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft
0840 1	NITIAL 5.		,43 ,42 ,40	3127 3136 3141	8.04 8.04 8.04	53.9 51.7 50.4	1.48	clear	149. 69
0850	7.5	5 L 9,0 L	,41	3154	8.04	48.1 46.0	1.38		149, 66
		L L							
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		L							
é	Has red Has red Have p	ance criteria p quired volume quired turbidity arameters sta o or N/A - Exp	been remonder been read bilized	ched 🔽	No	N/A			Dup.
SAMPLE CO	LLECTIO	N:	Method:	Bladder Pum	0				
Sample	ID	Container Typ	No. of		Preservation		Analysis		Time
		1L 500mL		1	HNO3		TDS/Anior Metals	ns	08.5 %
Comments									
Signature/	yles_	Sheffl	2			Date	10-8-6	24	

		Grour	nd Wa	ter Sam	ple Col	lectio	Well/Piezo ID:	11W-1	85
ds:	AVS		506	Collector(s)	ak	Date: 10 Time: 0	930		
EL DATA: (Length le Depth NG DATA		199.0	c. Ca 9 d. Ca	sing Material	_ <u>PVC</u> er	Well	Pump Settings	43/17 0	MA PSI
a. Purge N b. Field Te				er Pump Make YSI HACH	Model		Serial Number 5320084101 20030C08455		
		g Equipme	<0.5			nd in Field	Notebook #	Page # __	
Volume Removed		T° (C) +/- 0.2	DO mg/L +/- 10%	Spec. Cond (µs/cm) +/- 3%	pH +/- 0.1	ORP +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft
e. Accepta	L L L L L L			2680 2687 2687 2684 2684 2684	9,33 9,33 9,33 9,33 9,33	74. 8 73. 4 73. 5 68. 8	4,55 4,21 4,18 3,16 3,68	yenu)	199,65
Has red Have p If n	quire aram o or I	d volume d turbidity aeters stab N/A - Expl	been read bilized ain below	ched 2					
LLECTIO		tainer Tu-		Bladder Pum Containers	Preservation		Analysis		Time
e ID		tainer Typ 1L 500mL	INO. OF	1 1	HNO3		TDS/Anion:	S	1021
		JOINE		•					

SAMPLE COLLECTION:

WATER LEVEL DATA: (measured from Top of Casing)

ent: Project No: Site Location:

Weather Conds:

a. Total Well Length

Time

Stabilization

1010

b. Water Table Depth **WELL PURGING DATA**

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1027
	500mL	1	HNO3	Metals	7001
			-		

Comm	ents
------	------

Well/Piezo ID:	1 01	
ML	1-21	
1014		

Ground Water Sample Collection Record

ent: Project No: Site Location: Weather Con	: 	BEPC AVS	alm	Collector(s)	1	Date: 10 Time: 12 Finish 11	255 59		
water Levi a. Total Well b. Water Tab well Purg	Length ble Depth ING DATA a. Purge M		c. Ca \mathcal{D} d. Ca $ ext{ted Bladde}$	sing Material			Pump Settings Serial Number		Max pgi
				YSI HACH	entation Foul	nd in Field	5320084101 20030C08455 Notebook # <5	1 Page #	5 F
Time Stabilization	Volume Removed (gal) T° (C) +/- 0.2	DO mg/L +/- 10%	Spec. Cond (µs/cm) +/- 3% 3098 3121	pH +/- 0.1 7.12- 7.93	ORP +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft 213, 95
1133	7.5 8 8.5 9	L 12.3 L 12.4 L 12.3 L 12.4	.38	3109 31127 3104 3108 3103	7.92	35.6 39.9 46.1 51 53.6	1.72 1.65 1.56 1.94 1.74	V	214,60 215,01 215,31 215,44 215,74
		L L L							
	Has req Has req Have pa	L ince criteria p uired volume uired turbidity arameters sta o or N/A - Exp	been remote been read bilized	ched 🔽	No 🗆	N/A			
SAMPLE CO	OLLECTION	l :	Method:	Bladder Pum	р				
Sampl	e ID	Container Typ 1L 500mL	No. of	Containers 1 1	Preservation HNO3		Analysis TDS/Anior Metals	ns	Time 1147
Comments	Males	ChiAn				Date //	0-8-24		





Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address					in Electri 67251	c F	'owe		Page of Work Order #			
Company Nai		ctric Power Coop.		Account #	2040			Phone #	e # 701-745-7238 701-557-5488			
	Lelano 3901	d Olds Station Highway 200A			Mark Dihle	•			@bepc.com aknutson@bepc.com			
Billing Addre	<u>Stant</u> ss (indicate if different l	on, ND 58571 from above)		Name of S	ampler			Ksolie@	barr.cor	<u>n</u>		
J	(,		Quote Number					Date Su	bmitted	0/9/2024	
			Project Name/Number AVS CCR Wells					Purcha	se Orde			
Lab Use Only Lab	San	nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	N/A		Ana	lysis Re	quired	
001	MW	- 19 S	GW	10/8/2024	858	2	3		B, Ca, CI, F, SO ₄ , TDS			
002	MW	- 18 S	GW	10/8/2024	1027	2	N		B, Ca	CI, F, S	O ₄ , TDS	
503	MW	- 21 S	GW	10/8/2024	1147	2	N		B, Ca, Cl, F, SO ₄ , TDS			
304	DUP	LICATE	GW	10/8/2024	858	2	N		B, Ca, Cl, F, SO ₄ , TDS			
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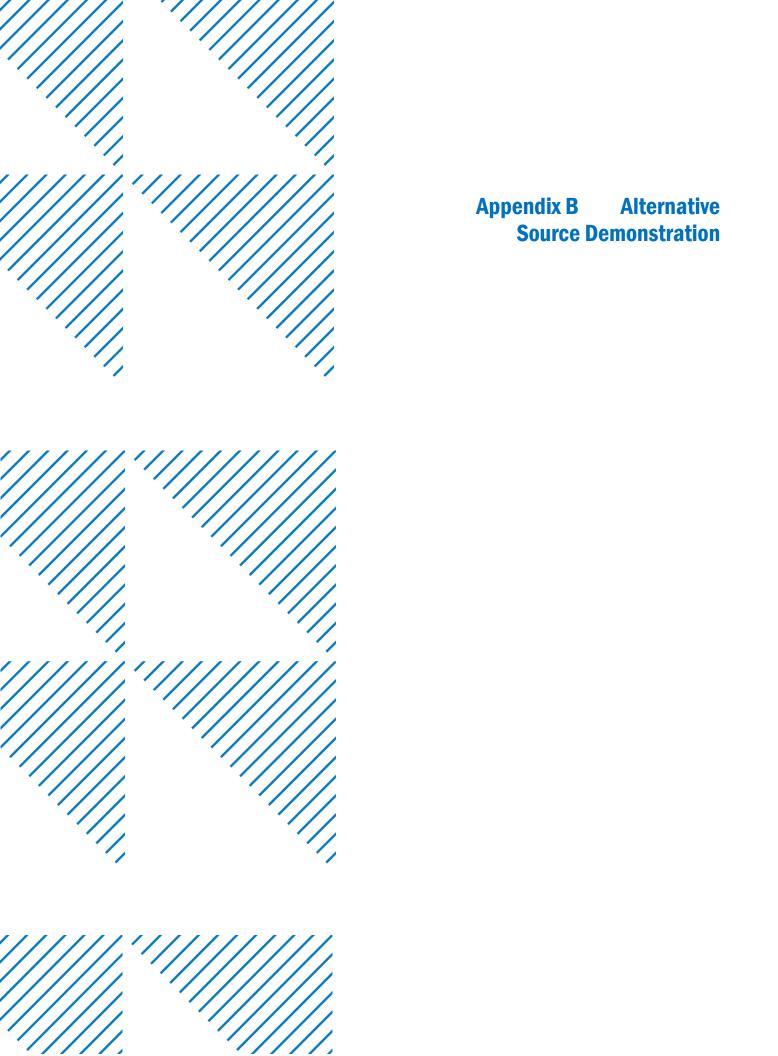
Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

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Report Date: Friday, October 18, 2024 4:06:01 PM

Form # 80-910005-1





April 30, 2024

Diana Trussell, Manager Solid Waste Program-Division of Waste Management North Dakota Department of Environmental Quality 4201 Normandy Street Bismarck, ND 58503-1324

Dear Ms. Trussell:

Basin Electric Power Cooperative (BEPC) is providing you information from our consultant (AECOM) in accordance with the Coal Combustion Residuals (CCR) regulation's requirements for an Alternative Source Demonstration (ASD). An ASD was conducted for the Antelope Valley Station CCR Landfill because chloride in one well, MW-24(S) located at the far end of the Section 7 CCR landfill, is present at concentrations that are statistically different from the upgradient groundwater. The difference was identified as a statistically significant increase (SSI) in the Annual Groundwater Monitoring and Corrective Action Report dated January 31, 2024.

After publishing the Annual report, AECOM re-evaluated the site-wide data and recommended that an ASD should be conducted prior to May 1, 2024 (within 90 days of SSI determination per CCR Rule) to determine whether to initiate Assessment Monitoring. Analysis of the available data indicates that the chloride concentrations detected at MW-24(S) are due to natural variability in the ambient groundwater at that location. Consequently, Assessment Monitoring will not be initiated and the site will remain in Detection Monitoring.

Future data sets will be used to further evaluate the natural variability of groundwater on site. Such data will include monitoring results from three additional wells that were drilled late in 2023 into 2024 and are expected to be sampled this spring during the next semiannual monitoring event at the landfill.

Enclosed is a copy of the ASD authored by AECOM. If you have any questions, please contact me at 701.557.5488 or email me at mdihle@bepc.com.

Sincerely,

Mark Dihle

Senior Environmental Compliance Administrator

Enclosure



Alternative Source Demonstration Coal Combustion Residuals (CCR) Detection Monitoring Antelope Valley Station CCR Landfill, MW-24(S)

April 30, 2024

AECOM Quality information

Prepared by		Verified by	•	Аррг	Approved by			
Moder	N	A		/	T. M.			
Rai Bosch		Dennis Cor	nnair	Jerer	my Hurshman			
Revision His	tory Revision date	Details	Authorized	Name	Position			
Revision	Revision date	Details	Authorized	Name	Position			
Distribution L	_ist							
# Hard Copies	PDF Required	Association	/ Company Name					

AECOM

Prepared for:

Basin Electric Power Cooperative Bismarck, North Dakota

Prepared by:

AECOM Technical Services, Inc. 1601 Prospect Parkway Suite 120 Fort Collins, Colorado 80525 aecom.com

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Table of Contents

1	Introduction	
2	Summary of Statistically Significant Increases (SSIs)	2
3	Alternative Source Demonstration (ASD) under the CCR Rule	2
4	ASD Lines of Evidence	
	4.1 Groundwater Flow Rate	3
	4.2 Groundwater Chemistry	4
5	Conclusion	
6	Reference	6

Figures

Figure 1 AVS CCR Monitoring Well Network as of December 2023

Figure 2 Potentiometric Surface Map – Fall 2023

Figure 3 Antelope Valley Station CCR Landfill 2021–2023 Chloride-Sulfate

Appendices

Appendix A Summary of Water Levels – Fall 2023

Appendix B MW-24(S) Boring Log

Appendix C Summary of Appendix III Analytical Results – 2021–2023

Appendix D Summary of Analytical Results: AVS Leachate Pond and Old Surface Landfill Sump -

1985-2023

AECOM ii

List of Acronyms and Abbreviations

AECOM Technical Services, Inc.

amsl above mean sea level

ASD Alternative Source Demonstration

AVS Antelope Valley Station

Basin Electric Power Cooperative

CCR coal combustion residual

CFR Code of Federal Regulations

cm/s centimeters per second

ft feet

mg/L milligrams per Liter

SSI statistically significant increase

USEPA United States Environmental Protection Agency

Alternate Source Demonstration Certification

Basin Electric Power Cooperative Antelope Valley Station, CCR Landfill

Kobert Fress

AECOM ("Consultant") has been retained by Basin Electric Power Cooperative to certify whether the selected groundwater remedy presented herein for the Antelope Valley Station coal combustion residuals (CCR) Landfill meets the requirements of Chapter 40 of the Code of Federal Regulations (CFR) § 257.94.

LIMITATIONS

The signature of Consultant's authorized representative on this document represents that to the best of Consultant's knowledge, information, and belief in the exercise of its professional judgment, it is Consultant's professional opinion that the aforementioned information is accurate as of the date of such signature. Any opinion or decisions by Consultant are made on the basis of Consultant's experience, qualifications, and professional judgment and are not to be construed as warranties or guaranties. In addition, opinions relating to environmental, geologic, and geotechnical conditions or other estimates are based on available data, and actual conditions may vary from those encountered at the times and locations where data are obtained, despite the use of due care.

CERTIFICATION

I, Robert Friesen, being a Registered Professional Engineer in the State of North Dakota, certify to the best of my knowledge, information, and belief, that the remedy selected by Basin Electric for the CCR unit that is the subject of this certification meets the requirements of 40 CFR § 257.94, and that this certification is true and correct and has been prepared in accordance with generally accepted good engineering practices.

ROBERT

SIGNATURE:

DATE: April 30, 2024

1 Introduction

At the request of Basin Electric Power Cooperative (Basin), AECOM Technical Services, Inc. (AECOM) has prepared this Detection-mode Alternative Source Demonstration (ASD) for the detection of elevated concentration of chloride in groundwater sampled from monitoring well MW-24(S) at the Antelope Valley Station (AVS) Coal Combustion Residuals (CCR) Landfill, located north of the city of Beulah, North Dakota (Site). Monitoring well MW-24(S), located approximately 1,750 feet (ft) northeast of the existing AVS CCR Landfill footprint, was installed as a potential compliance point for a planned expansion of the landfill footprint (**Figure 1**). CCR was historically only placed further south within the historical permit boundary until the expansion (including the leachate pond) was constructed and first approved for waste acceptance in 2023 beginning with placement in Cell 5.

This ASD was prepared as allowed by 40 Code of Federal Regulations (CFR) § 257.94(e)(2) of the United States Environmental Protection Agency (USEPA) CCR Rule to evaluate whether the detection of indicator parameters at concentrations that represent statistically significant increases (SSIs) above background levels are the result of an alternative source. This demonstration report presents the statistical test results originally published in AVS's Annual Groundwater Monitoring and Corrective Action report dated January 31, 2024, and presents the alternative source demonstration that a source other than the CCR unit caused the SSI. This ASD provides two separate Site-specific lines of evidence: MW-24(S) is sufficiently distant from the monitored CCR unit that groundwater has not had time to travel from the regulated unit to the affected well, **and** the groundwater chemistry observed in the well is representative of background conditions at this time. Specifically, MW-24(S) groundwater chemistry is both chemically distinct from the other monitoring wells (background and downgradient) at the CCR Landfill and chemically distinct from the character of the CCR Landfill.

2 Summary of Statistically Significant Increases (SSIs)

Under Detection monitoring, the monitoring wells for the AVS CCR Landfill were sampled for Appendix III constituents in July and September to October 2023. These were the first Detection monitoring events for monitoring wells MW-21(S), MW-22(S), and MW-24(S) following eight rounds of baseline sampling after their installation for the monitoring of the Landfill Expansion. Chloride was detected at an SSI above background in monitoring well MW-24(S). As noted above, the SSI determination was declared in the 2023 Annual Groundwater Monitoring and Corrective Action Report (AECOM, 2024) dated January 31, 2024. Statistical analysis results are presented in Attachment B of that report.

3 Alternative Source Demonstration (ASD) under the CCR Rule

Part 257.94(e)(2) of the CCR Rule allows the Owner or Operator 90 days from the date of the initial SSI determination (for Appendix III parameters) to demonstrate that:

- A source other than the CCR unit caused the SSI; or
- The apparent SSI resulted from errors in sampling, analysis, statistical evaluation, or natural variation in groundwater quality.

Accordingly, the potential for alternative sources of this sort to have affected the monitoring results was evaluated.

4 ASD Lines of Evidence

The reported SSI results from a persistently elevated chloride concentration in monitoring well MW-24(S). There is no evidence that the SSI resulted from a sampling, laboratory, or statistical error, and there are no known anthropogenic sources of elevated chloride in the vicinity. Instead, the evidence indicates that there is a natural variability in water quality that these data reflect. The lines of evidence are two-fold: groundwater flow rate and groundwater chemistry.

4.1 Groundwater Flow Rate

As noted above, monitoring well MW-24(S) was installed on the east side of the proposed Landfill Expansion footprint as a presumed downgradient compliance monitoring well. This presumption was based on the west to east gradient evidenced by the monitoring system across the existing CCR Landfill footprint. MW-24(S) is not the closest well to current ash placement in the landfill network. The well was installed as part of the network to monitor groundwater as the landfill expands northward.

The elevation of the groundwater level in MW-24(S) is approximately 1864 ft above mean sea level (amsl) (see **Appendix A** for Fall 2023 groundwater elevations), which is lower than both of the upgradient monitoring wells and all of the other downgradient monitoring wells. This suggested that MW-24(S) may also be downgradient of the expansion footprint and potentially even the current CCR Landfill footprint (see **Appendix B** for boring log for MW-24(S)).

The rate of water movement through the subsurface affects the time frame in which groundwater may be potentially impacted by operation of the CCR unit. Water movement can be subdivided into two components, vertical through the unsaturated (vadose zone) and horizontal through the saturated zone.

The vertical component is controlled by the amount of available recharge (rainfall, snowmelt), the rate of infiltration into the subsurface, and the rate of flow through the vadose zone. The National Weather Service reports that the average annual precipitation for the nearby town of Beulah, North Dakota is 16.64 inches, most of which is received from April through October. There are no identified data quantifying the rate of infiltration or vertical flow, but the vadose zone is dominated by 115 to 200 ft of clay-rich mine spoils overlying the clay-rich Lower Sentinel Butte Formation, suggesting that amount of infiltration will be low and the rate of flow through the vadose zone will be slow. Consequently, the rate of vertical transport of a hypothetical leachate release through the vadose zone would be similarly slow.

Upon reaching the saturated zone, horizontal migration of a hypothetical release from the unit to MW-24(S) would also be relatively slow as it would be controlled by the hydraulic gradient and transmissivity of the aquifer. The aquifer on-site is identified as the Spaer Bed lignite. The Spaer Bed is on the order of 6 to 9 ft thick, with a hydraulic conductivity of about 8.26 x 10⁻⁵ centimeters per second (cm/s) (0.234 feet per day [ft/day]) (AECOM, 2018)

The shortest possible travel time for leachate from the Landfill to MW-24(S), is calculated according to Darcy's equation:

$$v = \left(\frac{K}{n_e}\right) \left(\frac{dH}{dL}\right)$$

where K is the average hydraulic conductivity in cm/sec (8.26 x 10^{-5}), n_e is the effective porosity (0.185 [AECOM, 2018]), and $\frac{dH}{dL}$ is the hydraulic gradient. The hydraulic gradient was obtained by measuring the straight-line ground distance from the northeastern corner of the Landfill to MW-24(S). The head difference, dH, is therefore 1884 ft – 1864.31 ft = 19.69 ft. The ground distance, dL, was measured as 1750 ft, and thus the hydraulic gradient was 0.0113. This suggests a groundwater travel velocity of 5.02×10^{-6} cm/s, or 0.0142 ft/day.

The leachate would need to travel a minimum of the 1750 horizontal feet from the northeastern corner of the Landfill to MW-24(S) as well as the vertical distance from the land surface at that corner (about 2100 ft amsl) to the groundwater elevation in MW-24(S) of about 1864 ft amsl, or 2100 ft - 1864 ft = 236 vertical feet. Calculating the vertical component of migration time is complicated, but because the rate of fluid movement through the vadose zone has not been measured, the analysis is focused on the horizontal component, knowing that it will be a conservative estimate of total migration time without inclusion of the vertical component. Traveling at a rate of 0.0142 ft/day, it would take about 123,239 days to cover 1750 ft, or over 337 years for a hypothetical leachate release to migrate from the northern boundary of the Landfill to MW-24(S). Antelope Valley Station began commercial operations in 1984, and the Landfill was constructed under North Dakota Department of Health permit SP-160, issued in 1995 (AECOM, 2018). It can also be noted that the location of MW-24(S) is not located directly downgradient of the historical permit boundary of the landfill. The well is located slightly cross gradient from the original permitted boundary as water is observed to flow in a west to east direction across the southern portion of the historical permit boundary as shown on Figure 2. Groundwater flow direction trends slightly to the north in the landfill expansion area. As the locations of MW-24(S) is not directly downgradient from the historical permitted boundary of the landfill, where ash has historically been placed, the estimate of 337 years is even more conservative.

4.2 Groundwater Chemistry

The second line of evidence involves comparisons of different chemistries within the groundwater and comparisons of the groundwater chemistries with that of waters in contact with the Landfill waste.

As previously noted, MW-24(S) has an elevated chloride level relative not only to the upgradient background wells, but also to the other downgradient wells. The key differences are that MW-24(S) has a relatively low sulfate concentration at the same time as having a relatively high chloride concentration. This is illustrated in **Figure 3**, where the relative chloride and sulfate concentrations from 75 groundwater samples are plotted. The plotted data include groundwater samples collected during each of six semi-annual Detection monitoring sampling events for the CCR Landfill (May 2021, October 2021, July 2022, October 2022, July 2023, and September to October 2023), as well as the eight baseline sampling events for MW-21(S), MW-22(S), and MW-24(S) (May 2021; July 2021; September 2021; March 2022; June 2022; July 2022; August 2022; and September 2022) (see **Appendix C** for a summary table of these results). **Figure 1** shows the locations of the collected samples.

The illustrated results indicate that sulfate concentrations in groundwater range from under 100 milligrams per Liter (mg/L) to almost 900 mg/L, while the chloride concentrations range from under 5 mg/L to over 50 mg/L. The only apparent trend in the data is a slight direct correlation between increasing sulfate and increasing chloride in six of the monitoring wells (MW-15(S), -17(S), -18(S), -19(S), -21(S), -22(S)) seen

along the bottom of **Figure 3**. These wells are representative of both upgradient and downgradient positions.

The remaining three wells (MW-16(S), -20(S), and -24(S)) do not show a direct correlation between sulfate and chloride. They all have similarly low sulfate values (less than 100 mg/L) while their chloride values range between 15 mg/L and over 50 mg/L. MW-24(S) is further distinguished from the other two wells by having chloride concentrations that are significantly higher (40 to 50+ mg/L vs. 15 to 27 mg/L). This suggests that MW-24(S) represents a groundwater quality that is distinct from all eight of the other monitoring positions around the CCR Landfill.

Additionally, to evaluate whether the presence of chloride might be representative of the CCR Landfill, chloride and sulfate data from a former contact water pond sampled at location SW-6C, and the expansion leachate collection pond are compared with chloride and sulfate values for MW-24(S). In the contact water samples, chloride concentrations are generally between 1 and 4 percent of sulfate concentrations. In contrast, chloride concentrations in groundwater at MW-24(S) are approximately equivalent to the sulfate concentrations (about 92 to 115 percent). Because chloride and sulfate are both highly soluble and not prone to changing their relative abundance as they migrate through various environmental media, these relationships indicate that groundwater at MW-24(S) is not affected by the CCR Landfill.

5 Conclusion

The lines of evidence presented herein indicate that monitoring well MW-24(S), which has been identified as having a chloride concentration that represents an SSI relative to background, is:

- Separated from surface water recharge (and landfill leachate) by over 200 ft vertically and 1,750 ft horizontally of clay-rich mine spoil over the clay-rich Lower Sentinel Butte Formation, which together represent a significant aquitard,
- Chemically distinct from the other monitoring wells (background and downgradient) at the CCR Landfill, and
- Chemically distinct from the character of the CCR Landfill.

Based on the above lines of evidence, SSIs for chloride concentrations reported in samples collected from MW-24(S) are not the result of impact from the CCR Landfill and are likely to represent a naturally occurring variation in groundwater chemistry. The groundwater monitoring program will not require a transition to Assessment monitoring and will continue as a Detection monitoring program. Future reviews of statistical evaluations based on semi-annual groundwater sampling events will consider this ASD when evaluating data.

NOTE: Prior to development of the ASD, AECOM supported the decision by BEPC in late 2023 to install three additional groundwater monitoring wells in the area of MW-24(S) to enhance the groundwater monitoring network. It is anticipated that beginning in 2024, data from the additional wells should further improve the understanding of groundwater direction and movement adjacent to the MW-24(S) well. The new wells should also provide additional data on geochemistry in the localized area to further augment knowledge of the groundwater for the CCR landfill.

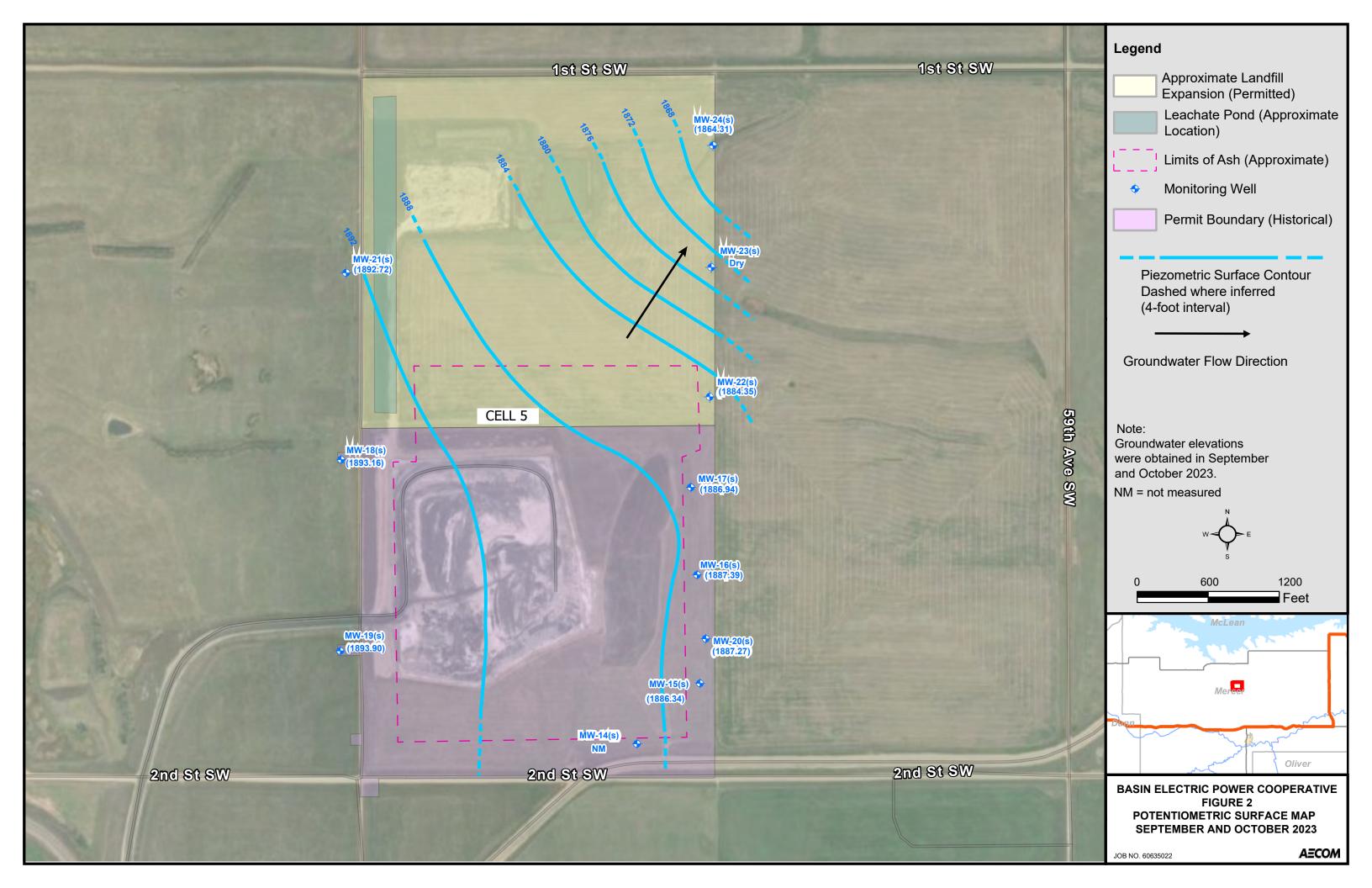
6 Reference

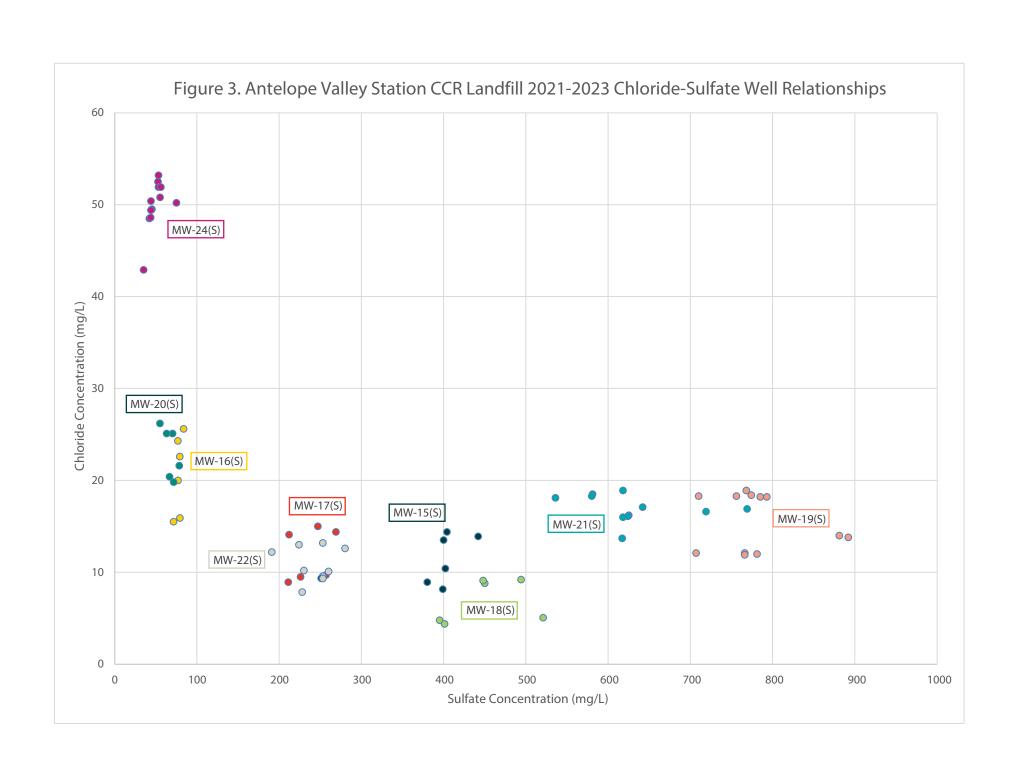
AECOM Technical Services, Inc. (AECOM). 2018. First Annual Groundwater Monitoring and Corrective Action Report 2016-2017, CCR Landfill, Antelope Valley Station, Mercer County, North Dakota. Basin Electric Power Cooperative. January 24, 2018.

AECOM. 2024. 2023 Annual Groundwater Monitoring and Corrective Action Report AVS CCR Landfill, Antelope Valley Station, Beulah, North Dakota, January 31, 2024.

Figures







Appendix A

Summary of Water Levels – Fall 2023

Appendix A
September/October 2023 Groundwater Monitoring Water Levels and Elevations
CCR Landfill Detection Program Groundwater Monitoring
Antelope Valley Station - Beulah, North Dakota

Active Landfill					
		Reference Elevation		Groundwater	
		Top of Casing	Depth to Water	Elevation	
Well ID	Date	(ft amsl)	(ft btoiwc)	(ft amsl)	
MW-14(s)		2093.41	Not measured	Not measured	
MW-15(s)	9/25/2023	2104.77	218.43	1886.34	
MW-16(s)	9/25/2023	2123.59	236.20	1887.39	
MW-17(s)	9/25/2023	2124.89	237.95	1886.94	
MW-18(s)	9/26/2023	2091.60	198.44	1893.16	
MW-19(s)	9/26/2023	2042.56	148.66	1893.90	
MW-20(s)	9/26/2023	2107.47	220.20	1887.27	
MW-21(s)	10/10/2023	2094.72	202.00	1892.72	
MW-22(s)	10/10/2023	2093.90	209.55	1884.35	
MW-23(s)	10/10/2023	2080.16	Dry	Dry	
MW-24(s)	10/10/2023	2070.74	206.43	1864.31	

ft btoiwc = feet below top of inner well casing

ft amsl = feet above mean sea level (Vertical Datum NGVD29)

Appendix B

Monitoring Well MW-24(S) Boring Log

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 BARR Telephone: 701-255-5460 SHEET 1 OF 7 BARR TEMPLATE.GDT Top of Casing Elev.: 2071.0 ft Project: BEPC AVS Landfill Expansion Surface Elevation: 2068.2 ft Project No.: 34291096 Drilling Method: Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P:BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 1&II WORK PLANIMONITORING WELL BORINGS AND INSTALLATIONIBEPC WELL LOGS, GP. J BARRLIBRARY.GLB ENVIRO LOG feet Sample Type a WELL OR PIEZOMETER MAJOR UNIT Graphic Log feet Sample No. USCS CONSTRUCTION Elevation, Depth, LITHOLOGIC DESCRIPTION **DETAIL** TOPSOIL: black to dark brown; moist to wet; few roots. CLAYEY TO SILTY SAND (SC-SM): fine to medium grained; yellowish brown 10YR 5/4; moist; SC-SM trace gravel, few orange oxidized staining PRO. CASING LEAN TO FAT CLAY (CL-CH): dark gray to gray 10YR 4/1 - 6/1; moist; hard to firm; trace Diameter: 6" 2065 lignite inclusions; medium to high plasticity. Type: Steel Interval: 5' to surface + 3' 5 RISER CASING iameter: 2" Type: SCH 80 PVC 205' to surface Interval: 2060 + 2.5 CL-**GROUT** 10 Type: Neat Cement Interval: 0-197' bgs **SEAL** 2055 Type: Bentonite Interval: 197-202' bgs SANDPACK Type: 35-45 10WS LEAN TO FAT CLAY (CL-CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard to firm; trace lignite inclusions, few fine gravel; medium to high plasticity. Interval: 202-217' bgs 2050· **SCREEN** iameter: 2" (#10) SCH 80 PVC Type: Interval: 205-215' bas 2045 CL-2040 30 Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220 Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' Logged By: MLJ2 **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log Drill Rig: Rotosonic

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 BARR Telephone: 701-255-5460 SHEET 2 OF 7 BARR TEMPLATE GDT BEPC AVS Landfill Expansion Top of Casing Elev.: 2071.0 ft Project: Surface Elevation: 2068.2 ft Project No.: 34291096 Drilling Method: Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P. BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 18/II WORK PLAN/MONITORING WELL BORINGS AND INSTALLATIONBEPC WELL LOGS. GP. J. BARRLIBRARY. GLB ENVIRO LOG feet Sample Type a MAJOR UNIT Graphic Log feet Sample No. WELL OR PIEZOMETER USCS Elevation, Depth, LITHOLOGIC DESCRIPTION CONSTRUCTION **DETAIL** LEAN TO FAT CLAY (CL-CH): dark gray to brown 10YR 4/1 - 4/3; moist; hard to firm; trace 2035 lignite inclusions, few fine gravel; medium to high plasticity. (continued) PRO. CASING 35 Diameter: 6" Type: Steel Interval: 5' to surface + 3' 2030 RISER CASING Type: SCH 80 PVC Interval: 205' to surface + 2.5' **GROUT** Type: Neat Cement 2025 Interval: 0-197' bgs **SEAL** Type: Bentonite Interval: 197-202' bgs SANDPACK 2020⁻ Type: **35-45 10WS** Interval: 202-217' bgs 50 **SCREEN** iameter: 2" (#10) Type: SCH 80 PVC 52.5 - 54.5' - bands of fine sand/silt thoughout. Interval: 205-215' bgs 2015 55 2010⁻ 2" siltstone band, fractured, light gray. 60 2005 Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220 Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' Logged By: MLJ2 **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log. Drill Rig: Rotosonic

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 BARR Telephone: 701-255-5460 SHEET 3 OF 7 BARR TEMPLATE GDT Top of Casing Elev.: 2071.0 ft Project: BEPC AVS Landfill Expansion Surface Elevation: 2068.2 ft Project No.: 34291096 Drilling Method: Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P. BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 18/II WORK PLAN/MONITORING WELL BORINGS AND INSTALLATIONBEPC WELL LOGS. GP. J. BARRLIBRARY. GLB ENVIRO LOG feet Sample Type a MAJOR UNIT Graphic Log feet Sample No. WELL OR PIEZOMETER USCS Elevation, Depth, LITHOLOGIC DESCRIPTION CONSTRUCTION **DETAIL** SANDY LEAN CLAY TO CLAYEY SAND (CL-SC): fine grained; dark gray 10YR 4/1; moist; low plasticity; 50% sand, 50% fines. PRO. CASING FAT CLAY (CH): dark gray and brown 10YR 4/1 - 4/3; moist; firm; little fine gravel, trace orange oxidized staining; high plasticity; 15% gravel, 85% fines. Diameter: 6" 2000-Type: Steel Interval: 5' to surface + 3' 70 RISER CASING Diameter: 2" Type: SCH 80 PVC 205' to surface Interval: 1995 + 2.5' **GROUT** 75 Type: Neat Cement Interval: 0-197' bgs **SEAL** 1990· Type: Bentonite Interval: 197-202' bgs СН 80 SANDPACK Type: 35-45 10WS Interval: 202-217' bgs 1985-**SCREEN** iameter: 2" (#10) SCH 80 PVC Type: Interval: 205-215' bas 1980⁻ 1975 FAT CLAY (CH): dark gray 10YR 4/1; moist; firm to hard; few fine gravel; 10% gravel, 90% CH Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220 Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' Logged By: MLJ2 **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log. Drill Rig: Rotosonic

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 BARR Telephone: 701-255-5460 SHEET 4 OF 7 BARR TEMPLATE.GDT Top of Casing Elev.: 2071.0 ft Project: Surface Elevation: 2068.2 ft BEPC AVS Landfill Expansion Project No.: 34291096 Drilling Method: Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P. BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 1&II WORK PLANIMONITORING WELL BORINGS AND INSTALLATIONIBEPC WELL LOGS, GP. J. BARRLIBRARY, GLB. ENVIRO LOG feet Type MAJOR UNIT feet Sample No. Graphic Loc Recovery WELL OR PIEZOMETER USCS Elevation, Depth, LITHOLOGIC DESCRIPTION CONSTRUCTION Sample . **DETAIL** FAT CLAY (CH): dark gray 10YR 4/1; moist; firm to hard; few fine gravel; 10% gravel, 90% 1970 fines. (continued) PRO. CASING 100 Diameter: 6" Type: Steel Interval: 5' to surface + 3' 1965 RISER CASING 12 CH Type: SCH 80 PVC 105 205' to surface Interval: + 2.5' **GROUT** Type: Neat Cement 1960 Interval: 0-197' bgs Mine Spoils 110 **SEAL** Type: Bentonite LIGNITE: black; wet to saturated; soft; weathered. Interval: 197-202' bgs LEAN TO FAT CLAY WITH LIGNITE (CL-CH): gray to black; moist; firm; 30% lignite, CLweathered. **SANDPACK** 1955- Type: 35-45 10WS FAT CLAY (CH): gray and brown; moist; firm to hard; few fine gravel; 10% gravel, 90% fines. Interval: 202-217' bgs 115-**SCREEN** iameter: 2" (#10) Type: SCH 80 PVC CH Interval: 205-215' bas 1950 120 END OF MINE SPOILS - LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; dry to moist; hard; fractured; medium to high plasticity; 1" lignite band at 127'. 1945⁻ Native Sentinel Butte Formation 125 1940 LEAN TO FAT CLAY (CL-CH): dark greenish gray GLEY1 4/1; dry to moist; hard; fractured with black organic staining on fracture planes; medium to high plasticity Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220 Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' Logged By: MLJ2 **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log Drill Rig: Rotosonic

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 SHEET 5 OF 7 Telephone: 701-255-5460 BARR TEMPLATE.GDT Project: Surface Elevation: 2068.2 ft Top of Casing Elev.: 2071.0 ft BEPC AVS Landfill Expansion Project No.: 34291096 **Drilling Method:** Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P:BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 1&II WORK PLANIMONITORING WELL BORINGS AND INSTALLATIONIBEPC WELL LOGS, GP. J BARRLIBRARY.GLB ENVIRO LOG feet Type Graphic Log MAJOR UNIT Sample Type Recovery Sample No. feet WELL OR PIEZOMETER USCS Elevation, Depth, LITHOLOGIC DESCRIPTION CONSTRUCTION **DETAIL** LEAN TO FAT CLAY (CL-CH): dark greenish gray GLEY1 4/1; dry to moist; hard; fractured with black organic staining on fracture planes; medium to high plasticity. (continued) PRO. CASING CL CH Diameter: 6" 1935 Type: Steel Interval: 5' to surface + 3' 135-LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; dry to moist; hard; fractured with black organic staining on fracture planes; medium to high plasticity. RISER CASING Type: SCH 80 PVC 17 205' to surface Interval: 1930 + 2.5 **GROUT** 140-Type: Neat Cement Interval: 0-197' bgs **SEAL** 1925 Type: Bentonite Native Sentinel Butte Formation Interval: 197-202' bgs 145 **SANDPACK** Type: 35-45 10WS Interval: 202-217' bgs LEAN CLAY TO SILT WITH FINE SAND (CL-ML): greenish gray GLEY1 5/1; moist; hard; low 1920· **SCREEN** plasticity; 15% sand, 85% fines. iameter: 2" (#10) Type: SCH 80 PVC 150-Interval: 205-215' bas CL-1915 MUDSTONE: light gray 10YR 7/1; fractured. 155 LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; thin fine sand lenses throughout; medium to high plasticity. CL CH 1910 160⁻ MUDSTONE: light gray 10YR 7/1; fractured. LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; medium to high plasticity; 1" lignite band at 162.9' Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220' Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' MLJ2 Logged By: **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log Drill Rig: Rotosonic

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 BARR Telephone: 701-255-5460 SHEET 6 OF 7 BARR TEMPLATE.GDT BEPC AVS Landfill Expansion Top of Casing Elev.: 2071.0 ft Project: Surface Elevation: 2068.2 ft Project No.: 34291096 Drilling Method: Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P:BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 1&II WORK PLANIMONITORING WELL BORINGS AND INSTALLATIONIBEPC WELL LOGS, GP. J BARRLIBRARY.GLB ENVIRO LOG feet MAJOR UNIT Type Graphic Log feet Sample No. Sample Type Recovery WELL OR PIEZOMETER USCS Elevation, Depth, LITHOLOGIC DESCRIPTION CONSTRUCTION **DETAIL** 1905 LEAN TO FAT CLAY (CL-CH): greenish gray GLEY1 6/1; moist; hard; medium to high PRO. CASING 165 LEAN TO FAT CLAY (CL-CH): very dark gray 10YR 3/1; moist; hard; medium to high plasticity; Diameter: 6" 1" lignite band at 166' and 168'. Type: Steel Interval: 5' to surface + 3' СН 1900 RISER CASING iameter: 2" Type: SCH 80 PVC 170-LEAN TO FAT CLAY (CL-CH): dark gray to greenish gray; moist; hard; medium to high 205' to surface Interval: + 2.5' **GROUT** Type: Neat Cement 1895 Interval: 0-197' bgs **SEAL** Type: Bentonite Native Sentinel Butte Formation Interval: 197-202' bgs SANDPACK 1890⁻ Type: **35-45 10WS** Interval: 202-217' bgs 180-**SCREEN** iameter: 2" (#10) CH 182-193' - lenses of fine to medium sand throughout. Type: SCH 80 PVC Interval: 205-215' bas 1885 185-1880-190 CLAYEY TO SILTY SAND (SC-SM): fine grained; dark gray; moist; hard; fractured; 65% sand, 35% fines. 1875 Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220 Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' Logged By: MLJ2 **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log Drill Rig: Rotosonic

LOG OF WELL MW-24(S) Barr Engineering Company 234 West Century Avenue Bismarck, ND 58503 SHEET 7 OF 7 Telephone: 701-255-5460 BARR TEMPLATE GDT Top of Casing Elev.: 2071.0 ft Project: BEPC AVS Landfill Expansion Surface Elevation: 2068.2 ft Project No.: 34291096 Drilling Method: Rotosonic Location: Antelope Valley Station, Beulah, ND Sampling Method: Rotosonic Core Coordinates: N 634,449.4 ft E 1,675,151.4 ft Datum: ND State Plane, South Zone, 1927 NAD Completion Depth: 220.0 ft P. BISMARCK/34 ND/29/34291096 BASINELECTRIC-LATERAL LANDFILLWORKFILES/PHASE 18/II WORK PLAN/MONITORING WELL BORINGS AND INSTALLATIONBEPC WELL LOGS. GP. J. BARRLIBRARY. GLB ENVIRO LOG Elevation, feet Sample Type a MAJOR UNIT Graphic Log feet Sample No. WELL OR PIEZOMETER USCS Depth, LITHOLOGIC DESCRIPTION CONSTRUCTION **DETAIL** CLAYEY TO SILTY SAND (SC-SM): fine grained; dark gray; moist; hard; fractured; 65% sand, 35% fines. (continued) PRO. CASING Native Sentinel Butte Formation Diameter: 6" 1870 Type: Steel Interval: 5' to surface + 3' 200-SM RISER CASING ameter: 2" Type: SCH 80 PVC 205' to surface Interval: 1865⁻ + 2.5' **GROUT** 205 Neat Cement LIGNITE: Spaer Bed; black to very dark brown 10YR 2/1 - 2/2; dry; fractured, crumbly. Interval: 0-197' bgs **SEAL** 1860 Type: Bentonite Spaer Bed Lignite Interval: 197-202' bgs 210-25 SANDPACK Type: 35-45 10WS Interval: 202-217' bgs 1855· **SCREEN** 2" (#10) SILTY SAND (SM): fine grained; greenish gray GLEY1 5/1; moist; hard; 70% sand, 30% fines. iameter: SCH 80 PVC Type: Interval: 205-215' bas Native Sentinel Butte Formation 26 SM 1850· 220 End of well 220.0 feet 1845 225 Remarks: Mine Spoils: 0-122' Date Boring Started: 9/15/20 2:30 pm Native Sentinel Butte Formation: 122-220 Date Boring Completed: 9/17/20 11:40 am Spaer Bed Lignite: 206-214' Logged By: MLJ2 **Drilling Contractor:** Cascade Additional data may have been collected in the field which is not included on this log Drill Rig: Rotosonic

Appendix C

Summary of Appendix III Analytical Results – 2021 to 2023

Anterope valley c	Station - Beulah, Nor	TII Dakota				Appendix III Paramete	ire		
		Analytical Method	Field Measure	SM2540C	SW6010C	SW6010C	SW9056A	SW9056A	SW9056A
		Chemical Name		TDS	Boron	Calcium	Chloride	Fluoride	Sulfate
		Cas Number		TDS	7440-42-8	7440-70-2	16887-00-6	7782-41-4	14808-79-8
		Uni		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Event	Well ID	Sample Fraction Sample Date Sample Type		T	T	Т	Т	T	Т
2021 05 May	MW-15(S)	Sample Date Sample Type 5/25/2021 N	7.77	1860	0.155	5.32	8.93	1.47	380
2021 10 Oct	MW-15(S)	10/12/2021 N	8.17	1810	0.144	4.04	8.16	1.62	399
2022 07 July	MW-15(S)	7/13/2022 N	8.29	1820	0.147	5.37	10.4	4.44	402
2022 10 Oct	MW-15(S)	10/26/2022 N	8.05	1880	0.10	4.27	14.4	1.41	404
2023_07_July	MW-15(S)	7/18/2023 N	8.00	1860	< 0.1	4.14	13.9	1.39	442
2023_26_Sep	MW-15(S)	9/26/2023 N	7.94	1880	0.12	3.70	13.5	1.43	400
2021_05_May	MW-16(S)	5/25/2021 N	8.72	1120	0.172	3.96	15.9	1.84	79.3
2021_10_Oct	MW-16(S)	10/12/2021 N	8.96	1050	0.176	3.51	15.5	1.93	71.6
2022_07_July 2022_10_Oct	MW-16(S) MW-16(S)	7/13/2022 N 10/26/2022 N	8.14 8.11	816 1180	0.188 0.12	2.21 3.26	20.0 22.6	1.72 1.83	77.0 79.0
2023 07 July	MW-16(S)	7/18/2023 N	8.83	973	0.12	2.11	25.6	2.42	83.7
2023 26 Sep	MW-16(S)	9/26/2023 N	8.31	1120	0.017	2.02	24.3	2.06	76.7
2021_05_May	MW-17(S)	5/25/2021 N	7.87	1740	0.156	4.74	9.51	1.49	226
2021_10_Oct	MW-17(S)	10/12/2021 N	8.2	1700	0.155	4.22	8.92	1.56	211
2022_07_July	MW-17(S)	7/13/2022 N	7.92	1660	0.147	3.88	9.71	4.24	257
2022_10_Oct	MW-17(S)	10/26/2022 N	8.01	1740	< 0.1	3.59	15.0	1.38	247
2023_07_July	MW-17(S)	7/18/2023 N	7.97 7.86	1700 1330	0.10 0.13	3.95 3.60	14.4 14.1	1.48	269 212
2023_26_Sep 2021_05_May	MW-17(S) MW-18(S)	9/26/2023 N 5/26/2021 N	9.09	1670	0.13	4.36	4.78	1.52 1.35	395
2021_05_May 2021_10_Oct	MW-18(S)	10/12/2021 N	9.46	1650	0.121	9.58	4.78	1.39	401
2022_07_July	MW-18(S)	7/13/2022 N	9.02	1680	0.123	4.92	5.06	3.93	521
2022_10_Oct	MW-18(S)	10/26/2023 N	9.07	1730	< 0.1	3.60	8.8	1.17	450
2023_07_July	MW-18(S)	7/18/2023 N	9.16	1730	< 0.1	4.90	9.2	1.24	494
2023_26_Sep	MW-18(S)	9/26/2023 N	9.19	1780	0.10	4.32	9.1	1.26	448
2021_05_May	MW-19(S)	5/26/2021 FD		2110	0.164	4.39	12.1	0.903	766
2021_05_May	MW-19(S)	5/26/2021 N	7.87	2120	0.166	4.43	12.1	0.909	707
2021_10_Oct 2021_10_Oct	MW-19(S)	10/12/2021 FD 10/12/2021 N	7.99	2080	0.16	4.13	11.9	0.925	766
2022 07 July	MW-19(S) MW-19(S)	7/13/2022 N	8.08	2090 2070	0.159 0.157	4.11 3.99	12.0 13.8	0.878 4.15	781 892
2022 07 July	MW-19(S)	7/13/2022 FD		45500	0.151	3.98	14.0	4.15	881
2022 10 Oct	MW-19(S)	10/26/2022 N	8.03	2190	0.10	3.97	18.2	0.64	785
2022_10_Oct	MW-19(S)	10/26/2022 FD	8.03	2190	0.10	3.93	18.2	0.64	793
2023_07_July	MW-19(S)	7/18/2023 N	8.07	2100	0.10	4.29	18.9	0.66	768
2023_07_July	MW-19(S)	7/18/2023 FD	8.07	2110	0.10	4.26	18.4	0.69	774
2023 26 Sep 2023 26 Sep	MW-19(S) MW-19(S)	9/26/2023 N 9/26/2023 FD	7.96 7.96	2160 2180	0.13 0.13	3.94 3.97	18.3 18.3	0.69 0.72	756 710
2021_05_May	MW-20(S)	5/25/2021 N	7.84	1840	0.151	6.73	19.8	1.31	71.7
2021_10_Oct	MW-20(S)	10/12/2021 N	7.89	1810	0.154	6.12	20.4	1.41	66.6
2022_07_July	MW-20(S)	7/13/2022 N	7.96	1790	0.14	5.25	21.6	4.52	78.5
2022_10_Oct	MW-20(S)	10/26/2022 N	8.00	1800	0.10	4.20	26.2	1.14	55.0
2023_07_July	MW-20(S)	7/18/2023 N	7.96	1800	0.10	4.68	25.1	1.21	70.4
2023_26_Sep	MW-20(S)	9/26/2023 N	7.93	1860	0.13	4.44	25.1	1.25	63.1
2021_05_May	MW-21(S)	5/26/2021 N	7.83	2240	0.155	8.62	13.7	1.54	617
2021_07_July 2021_09_Sep	MW-21(S) MW-21(S)	7/21/2021 N 9/29/2021 FD	7.9 7.9	2270 2690	0.141 0.154	6.6 2.67	16.0 16.9	1.20 1.32	618 769
2021 09 Sep	MW-21(S)	9/29/2021 N	7.9	2160	0.154	6.27	16.6	1.34	719
2022 03 Mar	MW-21(S)	3/31/2022 N	8.13	2160	0.156	6.18	17.1	1.2	642
2022_05_May	MW-21(S)	5/26/2022 N	7.63	-	0.14	5.25	-	-	-
2022 06 June	MW-21(S)	6/23/2022 N		2130	-		16.2	5.72	625
2022_07_July	MW-21(S)	7/19/2022 N	8.08	2170	0.136	4.71	16.1	4.97	624
2022_08_Aug	MW-21(S)	08/24/2022 N 09/28/2022 N	8.03 8.00	2220 2200	0.14 0.14	5.43 5.12	18.9 18.5	1.49 1.41	618 581
2022_09_Sep 2023_07_July	MW-21(S) MW-21(S)	7/25/2023 N	7.93	2600	0.14	5.59	18.3	1.41	580
2023_07_5tily 2023_11_Oct	MW-21(S)	10/11/2023 N	7.93	2140	0.13	4.77	18.1	1.35	536
2021 05 May	MW-22(S)	5/24/2021 N	7.99	1640 H	0.147	2.9	7.84	1.69	228
2021_07_July	MW-22(S)	7/21/2021 N	8.11	1660	0.149	2.74	9.58	1.50	253
2021_09_Sep	MW-22(S)	9/29/2021 N	7.97	1610	0.152	6.47	10.1	1.61	260
2022_03_Mar	MW-22(S)	3/31/2022 N	8.27	1630	0.159	4.03	10.2	1.51	230
2022_05_May	MW-22(S)	5/26/2022 N 6/23/2022 N	7.81 7.87	1600	0.143	2.43	9.34	4.25	251
2022_06_June 2022_07_July	MW-22(S) MW-22(S)	7/19/2022 N	7.87 8.25	1580	0.141	2.59	9.34	4.25	253
2022_07_3diy 2022_08_Aug	MW-22(S)	08/24/2022 N	8.22	1660	0.141	2.72	13.2	1.78	253
2022 09 Sep	MW-22(S)	09/28/2022 N	8.20	1630	0.14	2.66	13.0	1.69	224
2023_07_July	MW-22(S)	7/26/2023 N	8.17	1650	0.12	2.76	12.6	1.60	280
2023_11_Oct	MW-22(S)	10/11/2023 N	8.10	1640	0.14	2.75	12.2	1.62	191
2021 05 May	MW-24(S)	5/25/2021 N	7.8	2040	0.129	6.08	42.9	1.59	35.2
2021_07_July	MW-24(S)	7/21/2021 N	8.14	2040	0.12	5.62	48.5	1.22	42.1
2021_09_Sep 2022_03_Mar	MW-24(S) MW-24(S)	9/29/2021 N 3/31/2022 N	8.03 8.23	1610 1840	0.134 0.135	5.08 5.42	49.5 50.4	1.33 1.23	45.3 44
2022_03_Mar 2022_05_May	MW-24(S)	5/26/2022 N	7.79	1840	0.135	5.42	50.4	1.23	
2022 05 May 2022 06 June	MW-24(S)	6/23/2022 N	7.85	1930			48.6	6.04	43.7
2022_07_July	MW-24(S)	7/19/2022 N	8.15	1960	0.123	4.71	49.4	4.9	44
2022_08_Aug	MW-24(S)	08/24/2022 N	8.15	2020	0.16	5.11	50.2	1.47	75.1
2022 09 Sep	MW-24(S)	09/28/2022 N	8.14	1980	0.12	5.44	52.5	1.41	52.6
2022_09_Sep	MW-24(S)	09/28/2022 FD	8.14	1990	0.12	5.40	51.9	1.40	53.3
2023_07_July	MW-24(S) MW-24(S)	7/25/2023 N	8.09	1970	0.10	4.64	53.2	1.38	53.3
2023 11 Oct		10/11/2023 N 10/11/2023 FD	8.05 8.05	1960 2010	0.11	4.34 4.42	51.9 50.8	1.44 1.31	56.1 55.1
2023_11_Oct	MW-24(S)	10/11/2023 FD	0.00	2010	U.11	4.42	ე ეე.გ	1.31	ປວ. I

Notes:
CCR = coal combustion residual
FD = field duplicate
mg/L = milligrams per liter
N = parent sample
SU = standard unit
T = total

Appendix D

Summary of Analytical Results: AVS Leachate Pond and Old Surface Landfill Sump – 1985 to 2023

Appendix D 1985-2023 AVS Leachate Pond and Old Surface Landfill Sump Antelope Valley Station - Beulah, North Dakota

AVS Leachate Pond, 8/8/2023					
Chloride (mg/L)	8.10				
Sulfate (mg/L)	368				
Chloride to Sulfate Ratio	0.0220				
SW-6C, 1985-201	8				
Minimum chloride (mg/L)	3				
Second smallest chloride (mg/L)	8				
Average chloride (mg/L)	312				
Second largest chloride (mg/L)	1080				
Maximum chloride (mg/L)	1090				
Minimum sulfate (mg/L)	733				
Second smallest sulfate (mg/L)	1025				
Average sulfate (mg/L)	9666				
Second largest sulfate (mg/L)	32600				
Maximum sulfate (mg/L)	37352				
Minimum chloride to sulfate ratio	0.00293				
Second smallest chloride to sulfate ratio	0.00796				
Average chloride to sulfate ratio	0.0279				
Second largest chloride to sulfate ratio	0.0405				
Maximum chloride to sulfate ratio	0.0402				

Technical Memorandum

To: Mark Dihle, Basin Electric Power Cooperative

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025 **Project:** 34291134.00

1 Introduction

Basin Electric Power Cooperative (Basin Electric) owns and operates Antelope Valley Station (AVS), comprised of a coal-fired generating station consisting of two power generating units, located in Beulah, North Dakota (Figure 1). Unit 1 coal-based operations began in 1984, and Unit 2 operations began in 1986. The landfill (Site or CCR Landfill) was permitted by the North Dakota Department of Environmental Quality (NDDEQ) in 1995 under Permit SP-160 (now designated 0160) and began accepting coal combustion residuals (CCR) in 1996. The most recent Permit 0160 was issued by NDDEQ in early 2022, and the most recent cell including a composite liner system and leachate collection system was constructed the same year. Basin Electric utilizes a consulting firm, Barr Engineering Co. (Barr) to assist in groundwater reporting and analysis. Barr is familiar with the site and installed and certified the most recent wells (MW-25S, MW-26S, and MW-27S) added to the network. Barr has reviewed the historical groundwater data and CCR information for the site and is knowledgeable about facility design and operation.

The CCRs including fly ash, bottom ash, and flue gas desulfurization (FGD) waste are managed at the Site along with other minor wastes accepted as per the NDDEQ permit. The CCR unit is required to comply with the provisions of the US Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261, Disposal of Coal Combustion Residuals from Electric Utilities) and the NDDEQ CCR Rule (NDAC Title 33.1, Article 20, Chapter 8).

Basin Electric has implemented a Detection Monitoring Program in accordance with the U.S. Environmental Protection Agency (EPA) CCR Rule (40 CFR Parts 257 and 261) for the Site. As part of the Detection Monitoring Program, statistically significant increases (SSIs) in monitored groundwater quality parameters over background were identified at the Site for the following monitoring wells during semi-annual detection monitoring completed in the spring of 2024 on June 11-13 and 17, 2024:

- MW-16S Chloride
- MW-20S Chloride
- MW-24S Chloride
- MW-25S Chloride (initial sampling event)
- MW-26S Chloride (initial sampling event)
- MW-27S Boron, calcium, chloride, and total dissolved solids (TDS) (initial sampling event)

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 2

The CCR Rule (US EPA, 2015) § 257.94(e)(2) allows for an alternative source demonstration (ASD) in the event of an identified SSI in a water quality parameter in a downgradient monitoring well over background levels:

The owner or operator may demonstrate that a source other than the CCR unit caused the statistically significant increase over background levels for a constituent or that the statistically significant increase resulted from error in sampling, analysis, statistical evaluation, or natural variation in groundwater quality. The owner or operator must complete the written demonstration within 90 days of detecting a statistically significant increase over background levels to include obtaining a certification from a qualified professional engineer verifying the accuracy of the information in the report.

The purpose of this work is to evaluate the data collected as part of the June 2024 monitoring event, along with historical data, to demonstrate if the SSIs are the results of a "source other than the CCR unit" or due to natural variation in groundwater quality or an error in sampling, analysis, or statistical evaluation. Nothing in the foregoing citation of the rule requires that the owner/operator disprove any and all potential counterarguments that EPA or others may offer to refute this demonstration. Such arguments if valid, would need to follow requirements of the rule to show a basis in fact that includes rule requirements that are based on site-specific information, and must be certified by a North Dakota licensed professional engineer. This memorandum provides a science-based reason for the data results that indicate a source other than the CCR unit.

This memorandum provides written documentation of an Alternative Source Demonstration (ASD) and certification of accuracy as described in the CCR Rule (§ 257.94(e)(2)).

1.1 Background Information

Figure 1 shows the site location and Figure 2 provides well locations. A piezometric surface map showing groundwater elevations in the lignite, which represent the uppermost aquifer in the vicinity of the CCR landfill, is presented on Figure 3, using measurements from June 2024. Groundwater generally flows from southwest to northeast.

In late 2023, three new landfill expansion wells, MW-25S, MW-26S, and MW-27S, were installed at the Site. Baseline sampling was initiated in June 2024, and these wells were first evaluated in the detection monitoring program in June 2024. Since the June 2024 sampling event was the first time samples were collected at MW-25S, MW-26S, and MW-27S, the Appendix III parameters cannot be compared to historical data at those locations.

A comparison of the detection monitoring groundwater results with the prediction limits calculated using the 2016-2023 background assessment data from upgradient wells MW-18S, MW-19S, and MW-21S are included in Table 1. Concentrations for Appendix III parameters observed in June 2024 are shown on time series graphs in Attachment A. Chloride concentrations at MW-16S, MW-20S, and MW-24S are consistent with those observed during baseline monitoring events

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 3

Table 1 SSIs Compared to Prediction Limits

Event	Well	Parameter (units)	Measured	Interwell Prediction Limit
	MW-16S	Chloride (mg/L)	32.7	18.7
	MW-20S	Chloride (mg/L)	25.9	18.7
	MW-24S	Chloride (mg/L)	48.8	18.7
Detection	MW-25S	Chloride (mg/L)	43.8	18.7
Monitoring - 2024 #1	MW-26S	Chloride (mg/L)	29.7	18.7
(Spring)	MW-27S	Boron (mg/L)	0.19	0.17
	MW-27S	Calcium (mg/L)	28.3	13.0
	MW-27S	Chloride (mg/L)	80.8	18.7
	MW-27S	Total Dissolved Solids (mg/L)	2290	2230

1.2 Rule Requirements

The requirements for written documentation and certification of accuracy for an ASD are included in §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... 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.

In accordance with the above requirement, this memorandum is being issued within 90 days of the SSI determination (October 8, 2024) following the review and analysis of the results provided in the final laboratory report which was received on July 10, 2024.

2 Potential Alternative Sources Review

The CCR Rule provides five potential alternative source categories:

1. A source other than the CCR unit

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 4

- 2. Sampling (or sampling equipment) methods
- 3. Laboratory methods
- 4. Statistical methods
- 5. Natural variation in groundwater quality

Site data were evaluated to identify potential causes for chloride concentrations in monitoring wells MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S; and boron, calcium, chloride, and totals dissolved solids concentrations in MW-27S exceeding interwell prediction limits. Chloride is naturally occurring and may not necessarily be the result of a release from a CCR unit; therefore, a source other than the CCR unit, natural variation in groundwater quality, and statistical methods were further investigated as part of the ASD. Sampling methods were further investigated for the boron, calcium, chloride, and totals dissolved solids (TDS) SSIs at MW-27S.

2.1 Travel Time from Source of Release

Monitoring locations MW-24S, MW-25S, MW-26S, and MW-27S were added to the monitoring network in anticipation of waste placement in the landfill expansion area (Figure 3). Waste was first placed in lined Cell 5 in the landfill expansion area in May 2023. Groundwater travel time was considered both vertically as groundwater moves through the unsaturated zone and horizontally as groundwater moves in the saturated zone.

2.1.1 Migration through the liner

Vertical migration of leachate would be controlled by the presence of a driving head the on landfill liner and then migration through the unsaturated zone.

There is no evidence of leachate accumulation on the liner. However, landfill leachate thickness is limited to 1 foot on the liner by rule in North Dakota. Even if the 60-mil thick synthetic liner were breached (again there is no evidence that this has ever occurred,), the underlying 2-foot-thick clay liner was tested and verified to exhibit a vertical permeability of 1 x 10⁻⁷ cm/s (2.8 x 10⁻⁴ feet/day) or less. Assuming a 1-foot driving head over a 2-foot-thick liner yields a vertical hydraulic gradient of 0.5 ft/ft.

The vertical advective velocity (average linear velocity or seepage velocity) of vertical saturated groundwater flow is calculated using the following equation:

$$v = \left(\frac{Kv}{n_o}\right) \left(\frac{dHv}{dLv}\right)$$

Or, stated in a more compact form:

$$v = \frac{Ki}{n_e}$$
, where K = hydraulic conductivity, i = gradient, and n_e = effective porosity.

Using an effective porosity for clay of 0.40, the above equation yields an advective velocity 3.5 x 10⁻⁴ ft/day. Dividing the distance by the velocity yields a travel time of 15.7 years to transit the liner.

2.1.2 Migration through the unsaturated zone

Assuming that the leachate fully breached the liner, the release would then need to transit through the entire unsaturated zone to reach the water table below the facility. Although unsaturated flow can be

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 5

complex, its calculation can be greatly simplified by making a conservative assumption that the flow is saturated. This is a conservative assumption because unsaturated flow would be characterized by a wetting front (and possible drying cycles) that would result in much lower velocities (longer travel time) than are estimated by assuming saturated flow.

The geologic cross sections and well logs suggest that the mine spoils and Sentinel Butte Formation are thinnest in the vicinity of MW-23S. Assuming that the base of the landfill is at 2050 feet (MSL), the mine spoils are about 90 feet thick at MW-23S, and the Sentinel Butte is about 80 feet thick above the Spaer Bed.

Geotechnical testing of materials at the site has shown mine spoils exhibit relatively low vertical hydraulic conductivities. The four undisturbed vertical hydraulic conductivity values for the mine spoils were 1.3×10^{-7} cm/sec, 4.0×10^{-8} cm/sec, 2.8×10^{-6} cm/sec, and 5.3×10^{-7} cm/sec (Terracon, 2020), which have a geometric mean of 3.0×10^{-7} cm/sec.

The maximum gradient possible would be for a constant head of 1-foot above the liner during the entire travel time through the spoils, or (1 ft / 90 ft = 0.011 ft/ft). This is a conservative estimate because it is likely that the gradient would be much lower and that there would be intervals of unsaturated transport beneath the clay liner, which is slower than saturated transport.

Using the moisture contents of the samples in the falling head hydraulic conductivity measurements and a particle specific gravity of 2.72 (Terracon, 2020), the four undisturbed porosities were 0.39, 0.45, 0.43, and 0.43. Lower effective porosity results in higher flow velocity so assuming n_e = 0.39 leads to a conservative result. Using the values described above, groundwater flow velocity (v) = 3.0 x 10^{-7} cm/sec * 0.011 ft/ft / 0.39 = 8.54 x 10^{-9} cm/sec or 0.00088 ft/year. Assuming a thickness of 90 feet, travel time through the mine spoils under the clay liner is 90 ft / 0.0088 ft/year = 10,177 years.

Like the mine spoils, the sediments of the Sentinel Butte Formation are predominately clay; however, they are native sediments and are expected to have lower K_v values. Five undisturbed vertical hydraulic conductivity values for the Sentinel Butte Formation at the WISCO Landfill (Barr, 2013) were 7.0 x 10^{-9} cm/sec, 1.1×10^{-8} cm/sec, 3.5×10^{-9} cm/sec, 2.5×10^{-9} cm/sec, and 6.7×10^{-9} cm/sec. Six undisturbed vertical hydraulic conductivity values for the Sentinel Butte Formation at the Minnkota Coal Combustion Residuals Unit (Barr, 2012) were 3.6×10^{-8} cm/sec, 5.0×10^{-9} cm/sec, 8.8×10^{-8} cm/sec, 1.2×10^{-8} cm/sec, 1.0×10^{-9} cm/sec, and 1.0×10^{-9} cm/sec. Together, these eleven values have a geometric mean of 8.0×10^{-9} cm/sec.

The gradient is assumed to be a constant head of 1-foot above the liner during the entire travel time through the Sentinel Butte Formation, or (1 ft / 80 ft = 0.0125 ft/ft). This is a conservative estimate because it excludes the layer of spoils above, which, if factored in, would reduce the gradient and therefore the resulting flow velocity. Using the values described above (K= 8.0 x 10^{-9} cm/sec, i = 0.0125 ft/ft and n_e = 0.39), the vertical flow velocity (v) through the Sentinel Butte Formation is estimated as v = 8.0 x 10^{-9} cm/sec * 0.0125 / 0.39 = 2.564 x 10^{-8} cm/sec or 0.00265 ft/year. Given the thickness of the Sentinel Butte Formation overlying the Spaer Bed is approximately 80 feet, travel time is 80 ft / 0.00265 ft/year = 301,552 years.

Assuming a breach in the geomembrane liner and 1 foot of head, the estimated minimum travel time for CCR leachate to travel through the unsaturated zone and reach the Spaer Bed is 311,744 years (15

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 6

years for the clay liner, 10,177 years for the mine spoils, and 301,552 years for the Sentinel Butte Formation).

2.1.3 Horizontal Migration in Groundwater

Once a hypothetical release has migrated through the liner and unsaturated zone, it could then reach the water table in the Spaer Lignite seam and eventually reach the detection monitoring well. The velocity of horizontal groundwater flow is calculated using the following equation:

$$v = \left(\frac{K}{n_e}\right) \left(\frac{dH}{dL}\right)$$

The hydraulic gradient $\binom{dH}{dL}$ between MW-25S and MW-24S is 0.015 ft/ft based on the June 2024 piezometric surface map. Groundwater velocity for the wells in the expansion area is 7.0 ft/year. The greatest seepage velocity calculated for the Site (using wells farther south in the existing landfill area) in the 2023 Annual Groundwater Monitoring and Corrective Action Report (AGMCAR; AECOM, 2024) was 4.09 ft/year.

Since the waste was placed in the lined landfill expansion cell only a year prior to the spring 2024 detection monitoring event, it is not plausible for any leachate to reach the monitoring wells.

Using a groundwater velocity of 7.0 ft/year, it would take approximately 167 years for a release to reach MW-24S, MW-25S, MW-26S, or MW-27S. CCR placement in the Landfill began in 1996. Therefore, the elevated chloride at MW-24S, MW-25S, MW-26S, and MW-27S and elevated boron, calcium, and TDS at MW-27S cannot be from the CCR unit.

Since the waste was placed in the lined landfill area started in 1996 or about 28 years ago, it is not plausible for any leachate to reach the monitoring wells given these conservative assumptions. The distances used to calculate travel time are measured from the existing waste limit. MW-25S is located closest to the existing landfill boundary and is approximately 1170 feet downgradient along the shortest flow path. MW-27S is farthest from the CCR waste (approximately 2800 feet).

Assuming that some unidentified preferential flow pathway were to exist, it would have to result in an over four order of magnitude (10,000x) increase in flow rate (or some combination of rate, gradient, or porosity) to allow for a release to reach the boundary. Even in this extreme case, it would still take hundreds of years to reach the downgradient boundary. Such flow rates are not reasonably likely given the construction quality control on the liner, the thickness of the spoils, and the fine-grained nature of the geology and spoils

The long time of travel supports the hypothesis that the CCR unit is not the source of the chloride observed at MW-24S, MW-25S, and MW-26S; and boron, chloride, calcium, and TDS at MW-27S.

2.2 Natural Variability in Groundwater

Site specific chloride values are variable at the site and range from 7.84 to 16.0 mg/L at downgradient wells other than those with chloride SSIs in spring 2024 (MW-15S, MW-17S, and MW-22S) from 2016 to 2024. Chloride at upgradient wells (MW-18S, MW-19S, and MW-21S) ranged from 4.38 to 18.9 mg/L as shown on time series graphs in Attachment A.

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 7

Further evaluation of sulfate concentrations, which are a principal indicator of a CCR unit release to groundwater, demonstrate that MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S are not impacted by a release from the CCR landfill. Sulfate concentrations during the June 2024 sampling event at these locations ranged from 24.6 mg/L to 69.9 mg/L. The sulfate concentrations at the upgradient Landfill monitoring locations (MW-18S, MW-19S, and MW-21S) ranged from 263 to 892 mg/L, and at downgradient wells other than those with SSIs (MW-15S, MW-17S, and MW-22S), sulfate ranged from 183 to 442 mg/L from 2016 to 2024. Sulfate at MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S is much lower than both upgradient and downgradient monitoring locations.

Although MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S have elevated chloride concentrations compared to upgradient wells, sulfate concentrations are lower compared to the rest of the monitoring locations. The low sulfate at MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S suggest that the chloride is unlikely to come from a CCR unit release because groundwater impacted by a release should have elevated concentrations of multiple Appendix III parameters. **Therefore, because other indicators of the CCR unit are absent, we reject the hypothesis that the CCR unit is the source of the chloride observed at MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S.**

2.4 Statistical Methods

Interwell prediction limits are currently used to evaluate for SSIs. Interwell prediction limits are valid for the site if the stationarity of the mean and variance are assumed to be constant between upgradient monitoring wells MW-18S, MW-19S, and MW-21S and the downgradient wells (USEPA, 2009). The upgradient monitoring wells are not directly downgradient of a CCR unit (Figure 3). According to the EPA Unified Guidance (USEPA, 2009; page 6-31), interwell tests alone may not be suitable for sites with non-stationarity of distribution mean and variance. Non-stationarity may be expected due to historical mining activities and due to heterogeneity within the lignite documented at the Site.

Therefore, intrawell limits are also valid per the guidance. As shown in Table 2 below, using intrawell prediction limit methods indicates there is no SSI for chloride at MW-20S and MW-24S (Attachment B). Using a combination of interwell and intrawell methods at the site would account for site specific heterogeneity and historical conditions and would eliminate the SSI determination at MW-20S and MW-24S.

Event	Well	Parameter (units)	Measured	Intrawell Prediction Limit
Detection	MW-16S	Chloride (mg/L)	32.7	29.7
Monitoring – 2024 #1	MW-20S	Chloride (mg/L)	25.9	31
(Spring)	MW-24S	Chloride (mg/L)	48.8	59.4

Intrawell methods cannot be used at MW-25S, MW-26S, and MW-27S until at least 8 baseline samples have been collected.

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 8

2.5 Trend Testing

If a release from the landfill were occurring, it is likely that the increase in mass to the flow system would cause a change in the chemical equilibrium of the flow system that would reflect changes in concentration overtime. Therefore, if the concentrations of chloride at MW-16S, MW-20S, and MW-24S were due to a release from the landfill there should be evidence of a statistically significant increasing trend.

As shown in Attachment B, each of the data sets were tested for trends using the Mann-Kendall method and no significant trend for chloride was observed for either MW-16S, MW-20S, or MW-24S.

This leads to the conclusion that there is no release related to the observed concentrations of chloride at MW-16S, MW-20S, and MW-24S.

2.6 Well Sampling and Development at MW-27S

Monitoring well MW-27S was installed in November 2023, and well development was attempted in April 2024. Approximately one well volume (~4 gallons) was purged during development before the well went dry. It is unlikely that the well was completely developed after this first attempt. The well will need to recharge and be purged multiple times in order to achieve full development.

Based on field notes, low-flow sampling methods were not used during sample collection at MW-27S during the June 2024 detection monitoring event. Specifically, the well was not purged and allowed to stabilize prior to sample collection, instead a hydrasleeve was used to collect the sample due to slow groundwater recharge times.

The preamble to the CCR Rule (VI(K)(3)) notes that "Groundwater sampling should be conducted utilizing EPA protocol low stress (low-flow) purging and sampling methodology, including measurement and stabilization of key indicator parameters prior to sampling." Well stabilization is conducted prior to groundwater sampling in order to obtain a sample representative of aquifer conditions. Properly constructed and developed groundwater monitoring wells allow for the collection of representative samples with low turbidity (U.S. EPA, 1986, 1992). However, even correctly installed wells can produce turbid samples in certain geologic materials. Thus, purging and stabilization are necessary to yield reproducible sampling results. Due to limited recharge, monitoring well MW-27S was not sufficiently purged and did not stabilize during the spring 2024 sampling. Field notes from well development are included in Attachment C.

Monitoring well MW-27S has been documented as being slow to recharge (Barr, 2024). Obtaining sufficient groundwater volume for analysis at MW-27S has proven challenging. As a result, the sample sent for laboratory chemical analysis in spring 2024 consisted of the initial draw of water from the well without stabilization. Turbidity readings were 570 NTU and the sample color was described as black, yielding a sample with a high concentration of suspended solids, which is not representative of typical aquifer conditions. Therefore, the SSI is attributed to error in sampling.

The CCR Rule requires measurement of "total recoverable metals" because suspended and colloidal particles can also be a means of transport for contaminants. However, the suspended solids responsible for the boron, calcium, chloride, and TDS SSI at monitoring well MW-27S are believed to be natural aquifer material and not mobilized CCR contaminants.

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 9

Therefore, due to slow recharge times preventing full development and the well to be purged before sampling, the sample collected from MW-27S is not representative of aquifer conditions and is not a representative sample.

3 Conclusion

An alternative source demonstration for chloride at this site is supported by the following lines of evidence:

- Based on groundwater flow velocities and timing of CCR placement, the elevated chloride (and boron, calcium, chloride, and TDS at MW-27S) concentrations could not have come from the CCR unit.
- Chloride in groundwater is variable across the site. While there are somewhat elevated concentrations of chloride in many downgradient wells, there are low sulfate concentrations. Only this single detection monitoring parameter indicated an SSI in several monitoring wells. There is a relative absence of sulfate, a primary indicator of a release, in the groundwater as compared to the presence of sulfate in the water within the upgradient monitoring wells and the downgradient wells with lower chloride. Groundwater chemistry in the expansion area wells is both chemically distinct from the other monitoring wells (background and downgradient) at the CCR unit and chemically distinct from the character of the CCR unit.
- Intrawell statistical methods did not result in an SSI for chloride at MW-20S and MW-24S. There
 are not enough baseline samples at MW-25S, MW-26S, and MW-27S for intrawell analyses.
- Well sampling and development limitations due to slow groundwater recharge resulted in high turbidity and the SSIs for boron, calcium, chloride, and TDS at MW-27S.

As this report demonstrates, the SSI analysis presented in Table 1 for monitoring wells MW-16S, MW-20S, MW-24S, MW-25S, and MW-26S is attributed to a source other than the CCR Unit for chloride in the groundwater. The SSI analysis for boron, calcium, chloride, and TDS at MW-27S is attributed to sampling techniques due to non-representative aquifer conditions from slow groundwater recharge rates.

Future monitoring data will add to our understanding of the site and the results are expected to augment this ASD and conclusions.

To: Mark Dihle, Basin Electric Power Cooperative

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 10

4 References

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- Terracon, 2020. Tests of Soils Permeability, AVS Landfill Expansion, October 12, 2020.
- United States Environmental Protection Agency (USEPA), 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities Unified Guidance. March 2009.

To: Mark Dihle, Basin Electric Power Cooperative

From: Barr Engineering Co.

Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2024)

Date: January 3, 2025

Page: 11

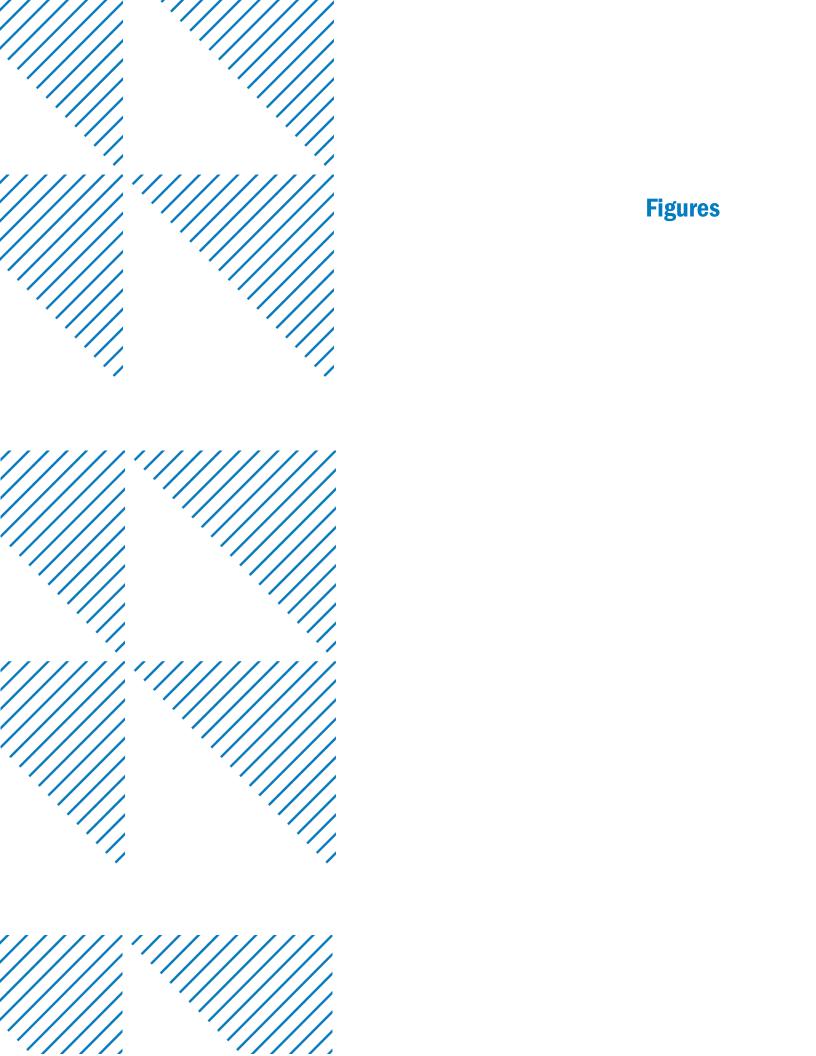
5 Certification

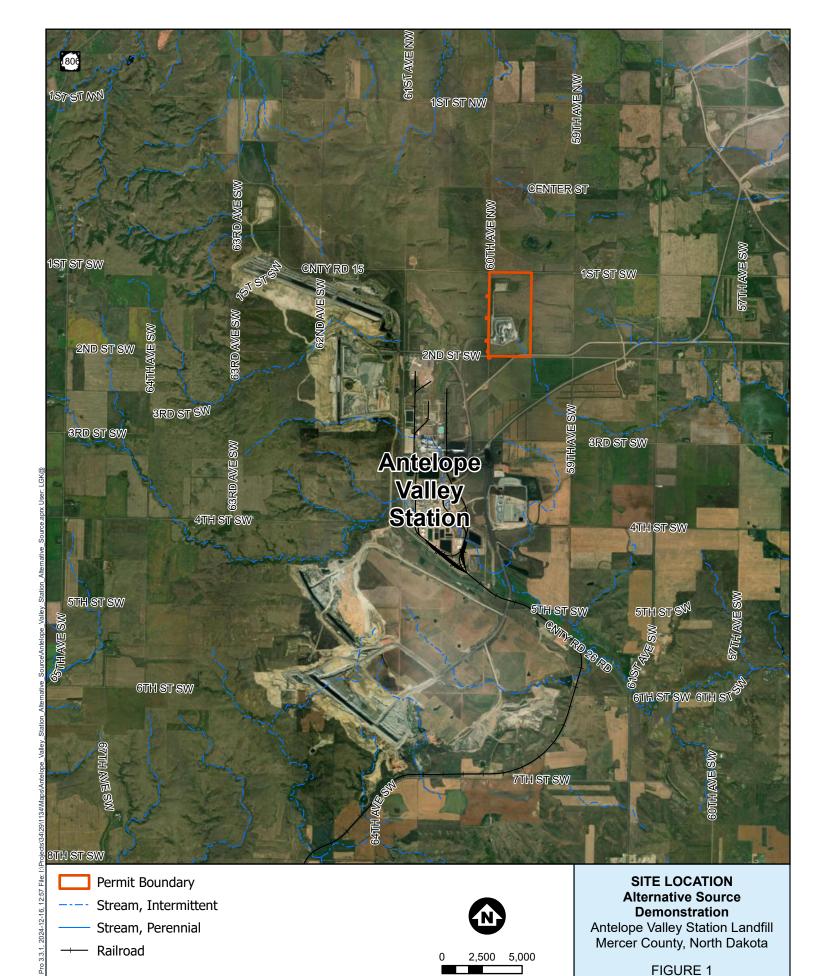
I certify that the written demonstration provided (above) for chloride in monitoring wells MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S is supported by the data, accurate, and consistent with our review of the groundwater data collected to date and as required under the CCR Rule ((§ 257.94(e)(2)). I further certify that this report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of North Dakota.



Kevin Solie, P.E. ND P.E. License No. 9488 Barr Engineering Company

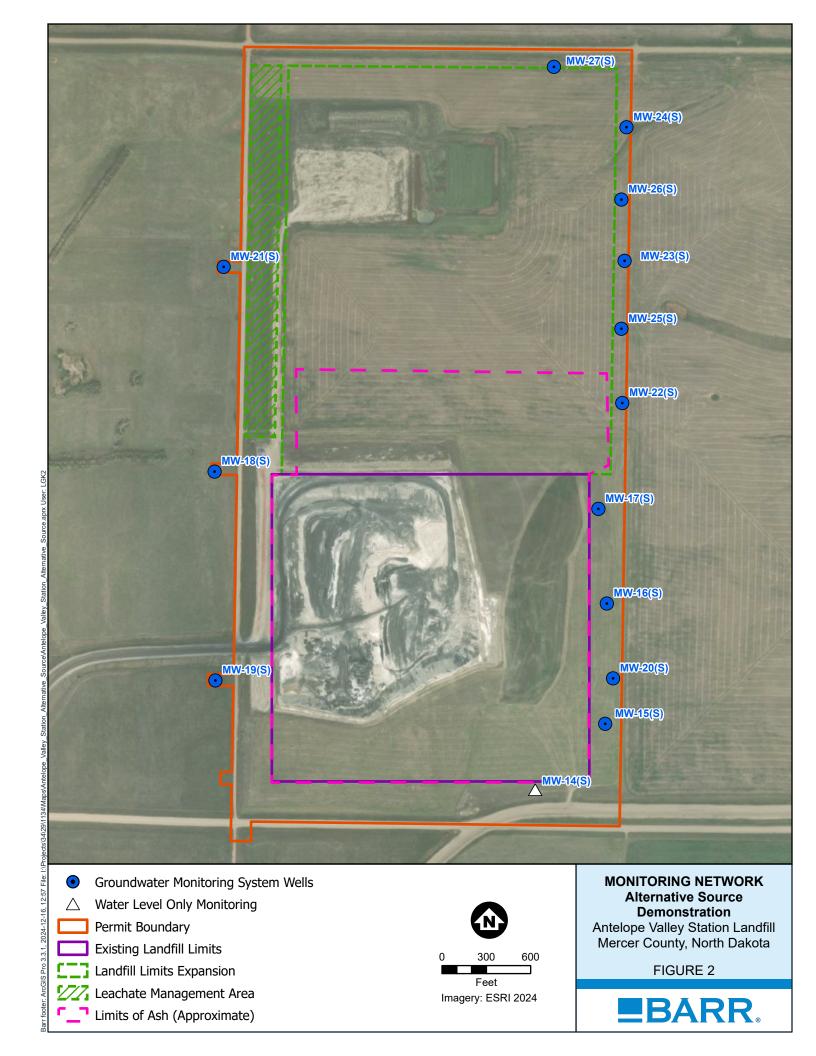
Dated this 3rd day of January 2025

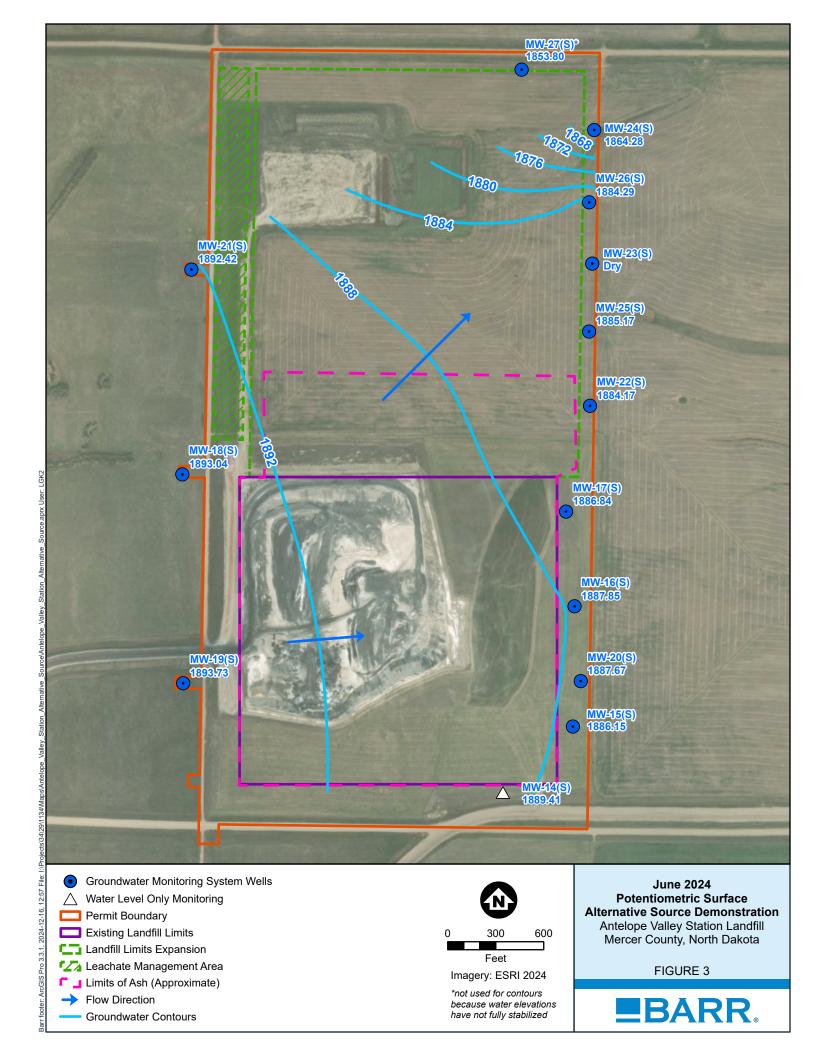




Imagery: ESRI 2024

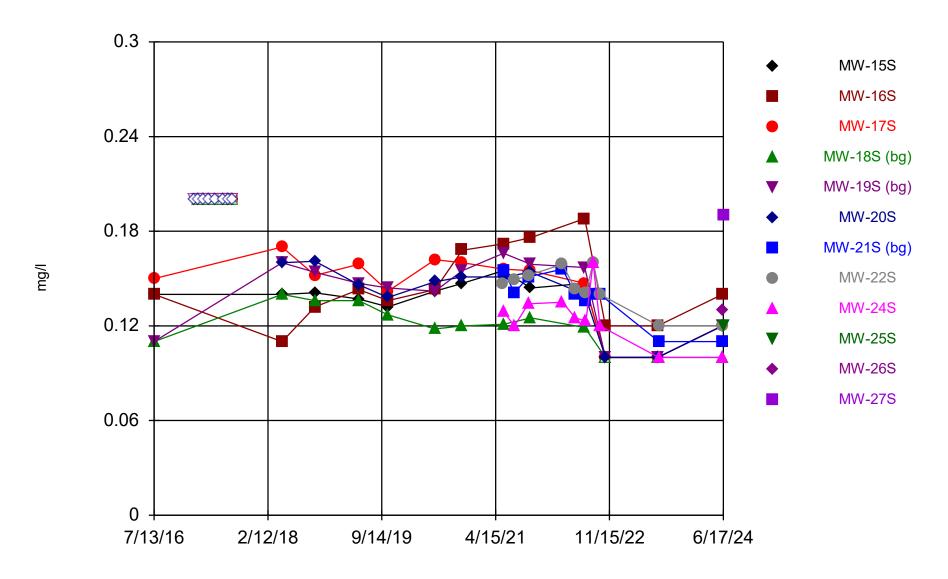
BARR.



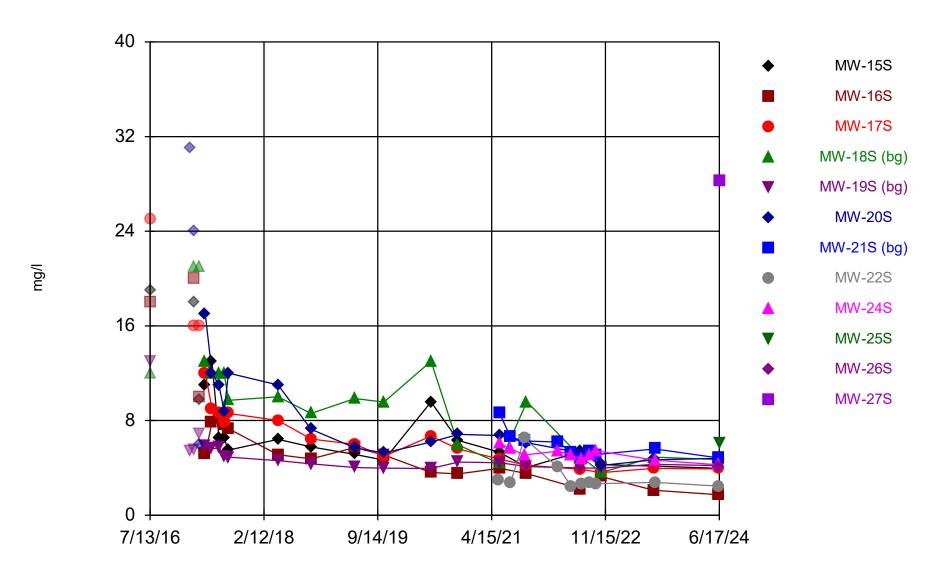




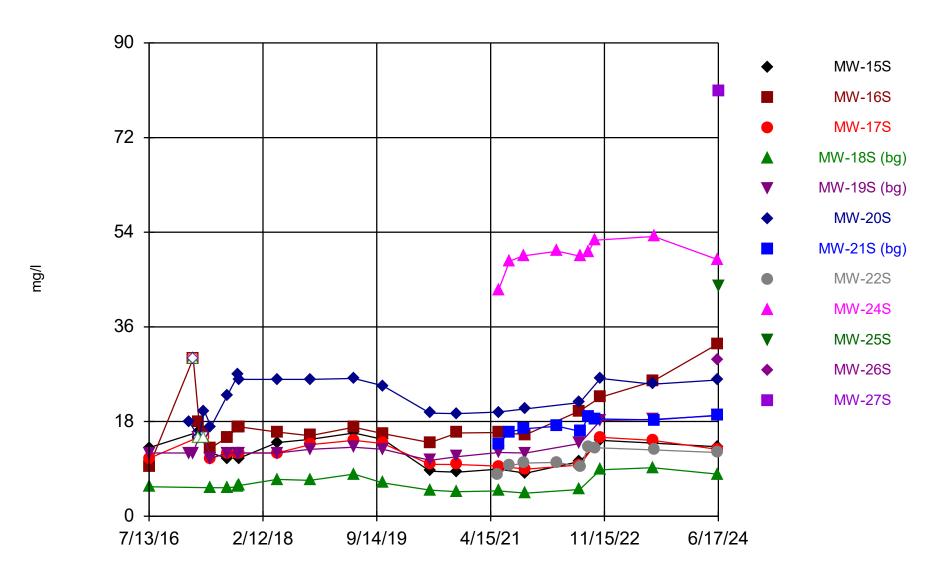
Boron, total



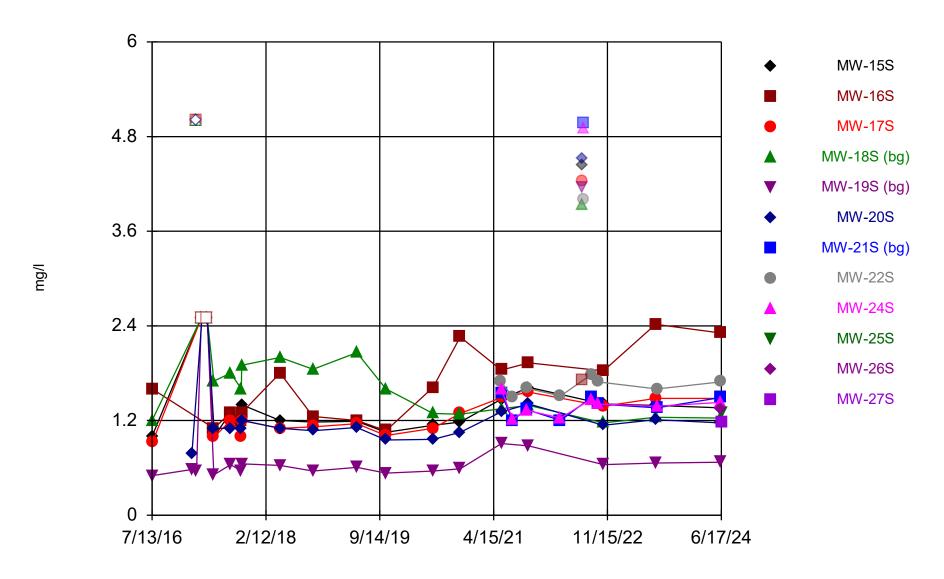
Calcium, total



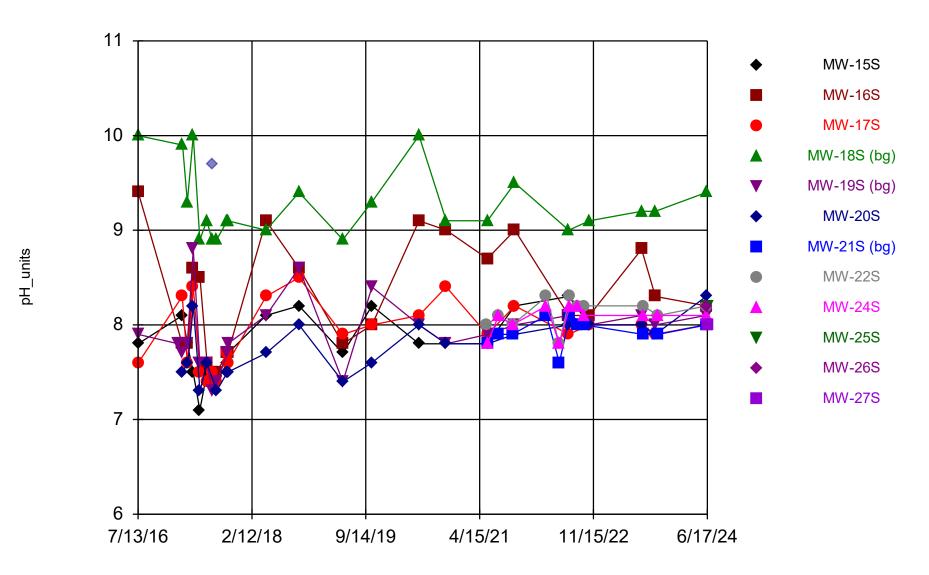
Chloride



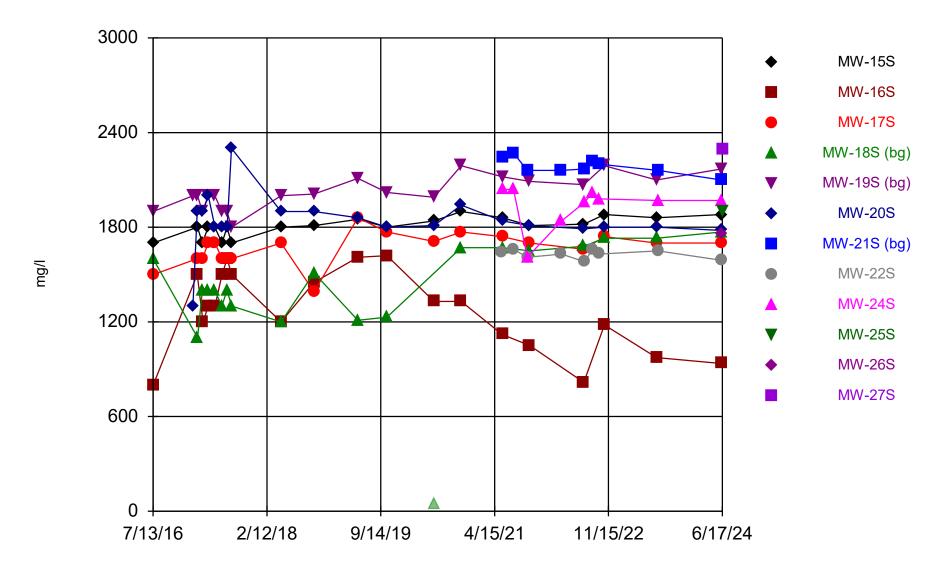
Fluoride



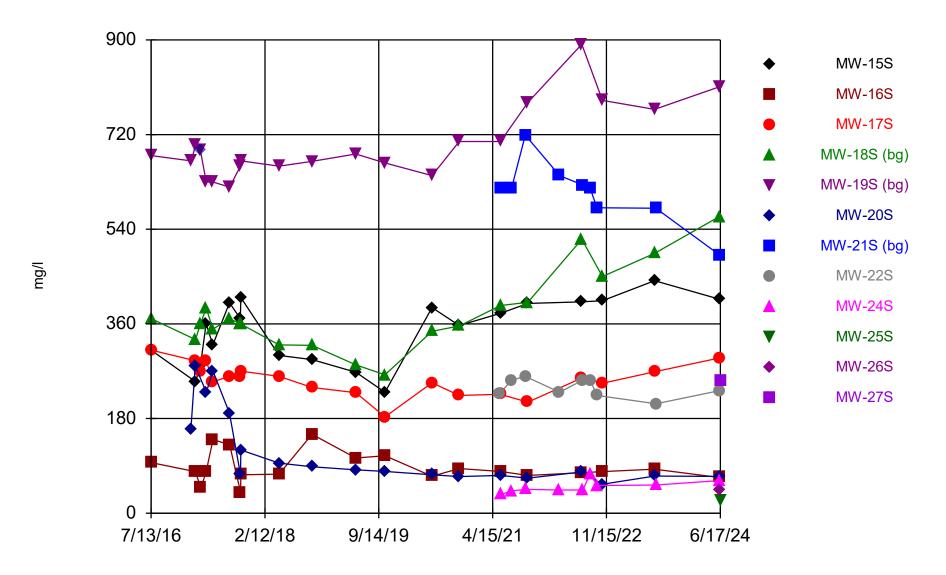
pH, field



Solids, total dissolved



Sulfate, as SO4

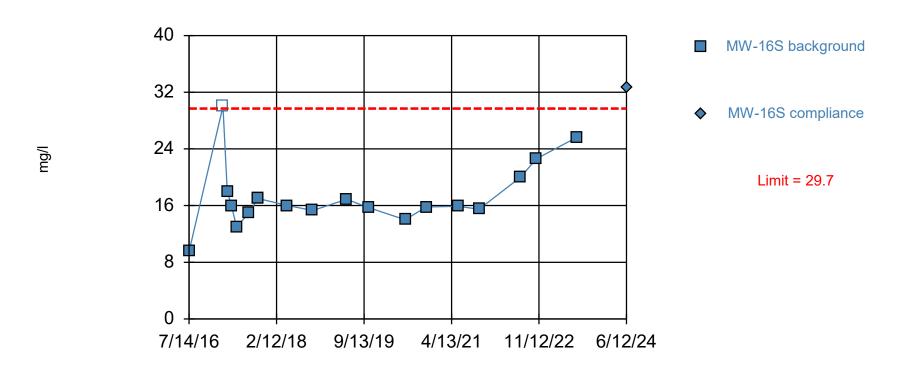




Exceeds Limit

Chloride

Intrawell Parametric



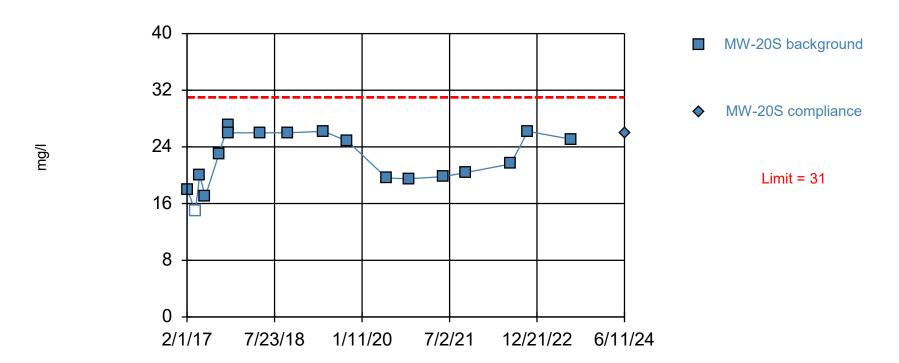
Background Data Summary (based on natural log transformation): Mean=2.821, Std. Dev.=0.2478, n=19, 5.263% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9118, critical = 0.901. Kappa = 2.301 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523.

Prediction Limit Analysis Run 12/19/2024 4:53 PM View: AIII

Antelope Valley Station Client: Basin Electric Data: BEPC AVS CCR

Within Limit Chloride

Intrawell Parametric



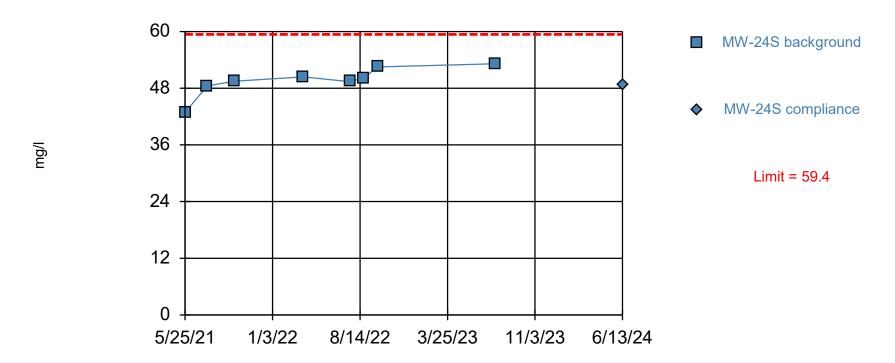
Background Data Summary: Mean=22.29, Std. Dev.=3.748, n=18, 5.556% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.904, critical = 0.897. Kappa = 2.33 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523.

Prediction Limit Analysis Run 12/19/2024 4:53 PM View: AIII

Antelope Valley Station Client: Basin Electric Data: BEPC AVS CCR

Within Limit Chloride

Intrawell Parametric



Background Data Summary: Mean=49.58, Std. Dev.=3.129, n=8. Insufficient data to test for seasonality: data were not deseasonalized. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.8682, critical = 0.818. Kappa = 3.133 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523.

Prediction Limit Analysis Run 12/19/2024 4:53 PM View: AIII

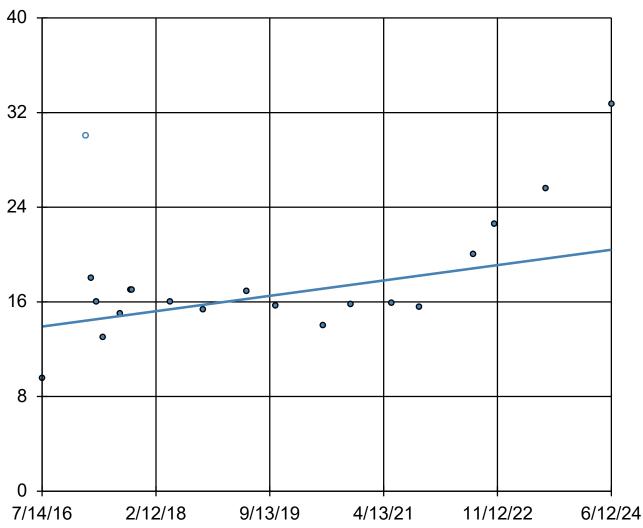
Antelope Valley Station Client: Basin Electric Data: BEPC AVS CCR

Prediction Limit

			Antelope Valley Station		Client: Basin Electric Data: BEP0				a: BEPC_AVS_CCR Printed 12/19/2024, 4:57 PM			
Constituent	<u>Well</u>	Upper Lim.	Lower Lim.	<u>Date</u>	Observ.	Sig.	Bg N	<u>%NDs</u>	ND Adj.	<u>Transform</u>	<u>Alpha</u>	Method
Chloride (mg/l)	MW-16S	29.7	n/a	6/12/2024	32.7	Yes	19	5.263	None	ln(x)	0.0007523	Param Intra 1 of 2
Chloride (mg/l)	MW-20S	31	n/a	6/11/2024	25.9	No	18	5.556	None	No	0.0007523	Param Intra 1 of 2
Chloride (mg/l)	MW-24S	59.4	n/a	6/13/2024	48.8	No	8	0	None	No	0.0007523	Param Intra 1 of 2







n = 20

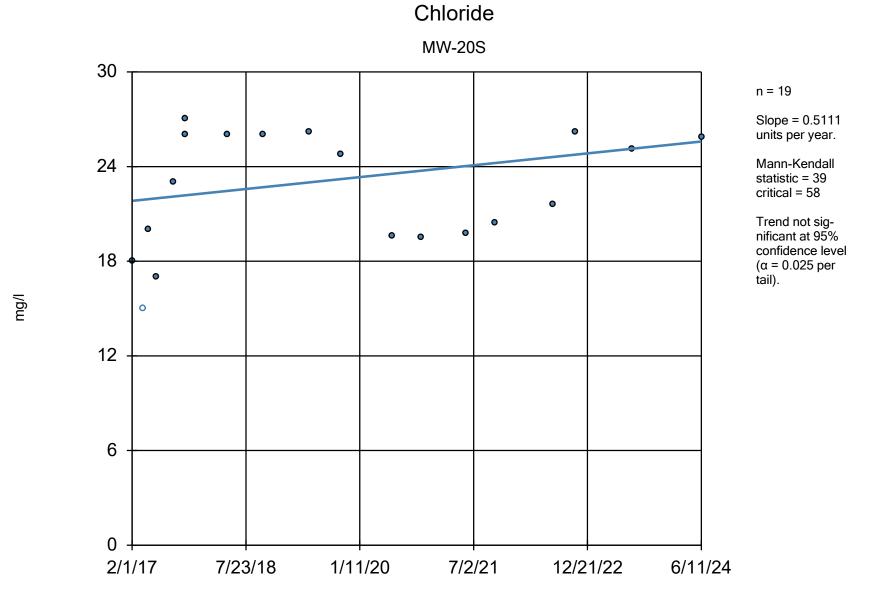
Slope = 0.8189 units per year.

Mann-Kendall statistic = 46 critical = 62

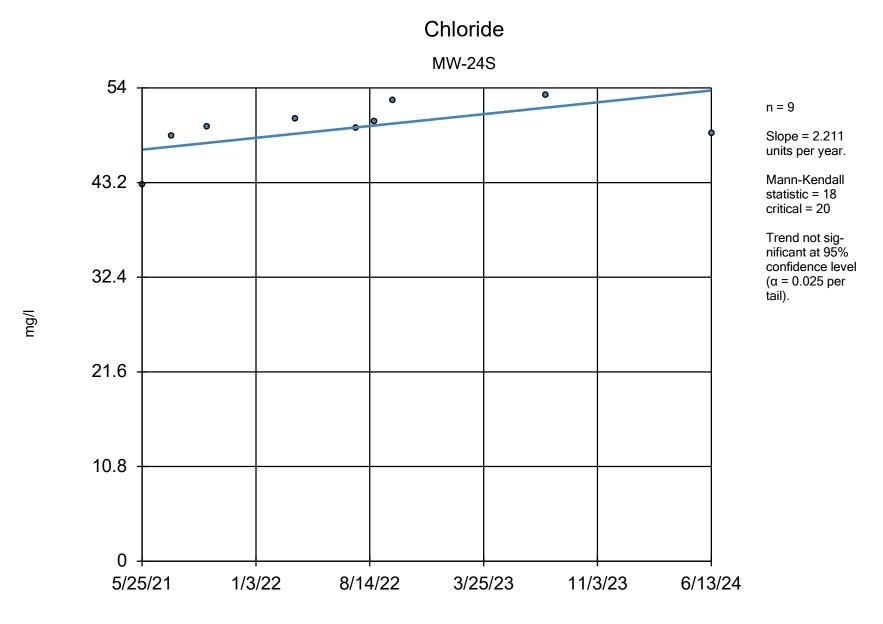
Trend not significant at 95% confidence level ($\alpha = 0.025$ per tail).

Sen's Slope and 95% Confidence Band Analysis Run 12/19/2024 4:57 PM View: AllI Antelope Valley Station Client: Basin Electric Data: BEPC_AVS_CCR

mg/l



Sen's Slope and 95% Confidence Band Analysis Run 12/19/2024 4:57 PM View: AllI Antelope Valley Station Client: Basin Electric Data: BEPC_AVS_CCR



Sen's Slope and 95% Confidence Band Analysis Run 12/19/2024 4:57 PM View: AllI Antelope Valley Station Client: Basin Electric Data: BEPC_AVS_CCR

Trend	Test
-------	------

Constituent

Chloride (mg/l) Chloride (mg/l) Chloride (mg/l)

Antelope Valley Station	Client: Basin Ele	ctric Data:	Data: BEPC_AVS_CCR Printed 12/19/2024, 4:58 PM							
<u>Well</u>	<u>Slope</u>	Calc.	Critical	Sig.	<u>N</u>	%NDs	Normality	<u>Xform</u>	<u>Alpha</u>	Method
MW-16S	0.8189	46	62	No	20	5	n/a	n/a	0.05	NP
MW-20S	0.5111	39	58	No	19	5.263	n/a	n/a	0.05	NP
MW-24S	2.211	18	20	No	9	0	n/a	n/a	0.05	NP





Barr Engineering Company Field Log Data Sheet

Client: Basin &	lectric	٥	Мо	Monitoring Point: MW - 27								
Location: AVS		R Well	5 Dat	e: 4-20	5-20							
Project #: 3429	1126		Sar	nple Time:								
GENERAL	DATA		•	STABILIZATION TEST								
Barr lock:	Basin			MS/cm			Mg/L	NTU				
Casing diameter:	3,,	Time/ Volume	Temp. °C	Cond. @ 25	рН	ORP	D.O.	Turbidity Appearance				
Total well depth:*	-229.40	1425 3.59d	13.5	2572	8.25	-96.3	0.83	Black	8			
Static water level:*	205.83											
Water depth:*	23.57							0				
Well volume: (gal)	3.84		8			ð						
Purge method:	Bailer	•		0								
Sample method:	Bailer											
Start time:			Nove									
Stop time:		Purge Appe	arance:	Sark E	3000	1 B	lack					
Duration: (minutes)	<i>A</i>	Sample App	pearance:									
Rate, gpm:	/ \	Comments:	Purg	ed In	4			6				
Volume, purged:	~ 3.8 gal	:	\ u	rell Vo	Tune	-	•	w. St.				
Duplicate collected?	NA	. //5	Sedimen	ty".								
Sample collection by:		CO2-		າ2-	Fe(T)-	Fe2-					
Others present:		Well	Condition:	New			*					
MW: groundwater monitori	ing well WS: water	supply well	SW: sur	face water	SE: sedim	nent oth	ner:					
VOC- semi-volatile- general- nutrient- cyanide- DRO- Sulfide-												
oil,grease- bacteria- total metal- filtered metal- methane- filter-												
Others:				•								

^{*}Measurements are referenced from top of riser pipe, unless otherwise indicated.



Basin Electric North Dakota

Site Name: AVS LANDFILL

Event Date: 6-10-24

Weather Conditions: WARM & SUNNY

Field Technician: mls

River Elevation (if applicable)

1657.68

Well ID	Time	Depth to Water*	Well Condition	Comments
MW - 14S	745	204.00	Good	
MW - 15S		218.62		
MW - 20S		219.80		
MW - 16S		235.74		
MW - 17S		238.05		
MW - 19S		148.83		
MW - 18S		198.56		
MW - 22S		209.73		
MW - 26S		190.21		
N^V - 24S		206.46		
M:W - 21S		202.30		
MW - 25S		198.23		
MW - 27S		217.80		

^{*} Depth to water as measured from the top of PVC casing.

	G	round V	Vater :	Sample	Collect		Well/Piezo II A A Cord	- 1.	55		
Client: Project No: Site Location: Weather Con	: <u>A</u>	SEPC NS	∞°	Collector(s)	.nk/	- MK-	[Time: Start <u>{</u> Finish _	<u> 2808</u>	-11-24	l	
WATER LEV		neasured fro			D) (C	Well	Duma Sattina	29/2		Max ohi	= 70 ml
a. Total Wellb. Water Tab	•	218.6		sing Material sing Diamete		_	Pump Setting	20/2	ر الله الله	was pri	2 /0 /10
WELL PURG	a. Purge Me b. Field Tes	ethod <u>Dedicat</u> ting Equipme	nt Used:	Make YSI HACH	Model		Serial Number 5320084101 20030C0845	51			
		eting Equipme	ent Calibra	ation Docume	ntation Four	<0.5	<5		Page #/		
Time Stabilization	Volume Removed (g	al) T° (C) +/- 0.2	pH +/- 0.1	Spec. Cond (µs/cm) +/- 3%	ORP +/- 10%	DO mg/L +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft		
0941 0945 0949 0953 0957	1NITIAL 41 4.25 4.35 4.75 5.10	12.1 12.1 12.0 12.2 12.4	8.05 8.05 8.05 8.0 8.04	2991 2990 2976 2974 2986	59.10 100.1 101.5 102.0 103.0	. 43 . 42 . 40 . 59	1.48	Brown	224.69 224.95 225.20 225.35 225.41		
		L L L					¥				
		L L									
	Has requ Has requ Have pai	L nce criteria pa uired volume uired turbidity rameters stab or N/A - Expl	been remo been read bilized	ched 🗓	No	N/A					
SAMPLE CO	OLLECTION:		Method: I	Bladder Pump)						
Sampl	e ID C	ontainer Typ 1L		1	Preservation		Analysis TDS		Time		
		250ML 500ML	4	1	HNO3		METALS				

Comments

	Well/Piezo ID/	11	20	7
	//	W-	JU	J
6	2COrd			

Ground Water Sample Collection Record

Client: Project No: Site Location: Weather Conds:	AVS		70°	Collector(s)	A;	sk	Time: Start Finish		11-24
WATER LEVEL DA	TA: (mea	sured fro	_			Well 💆	-		
a. Total Well Length			c. Ca	sing Material	PVC		Pump Settin	£	
b. Water Table Dep	ATA	19.80		sing Diamete		24118			
		od <u>Dedicat</u> g Equipme		er Pump Make	<u>nudvos</u> l Model	eevo	Serial Numb	er	
D. Fic	au resun	g Equipine	n Osea.	YSI	Wiodei		5320084101	Ī	
				HACH			20030C0845	551	
c. Fie	eld Testin	g Equipme	nt Calibra	ation Docume	entation Four	nd in Field <0.5	Notebook #		Page #
	olume	T0 (0)		Spec. Cond		DO	Turbidity	Calar	DTM
Time Remo	oved (gal)	T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	DTW 0.33 ft
INITI	ΑL	13.0	8.27	773	83.5	4.75	16.8	yellow	
	L							/	
	<u>_</u>							-	
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Ha Ha	as require as require ave paran	e criteria pa d volume t d turbidity neters stab N/A - Expla	een rem been rea ilized	ched	No	N/A III IIII			
SAMPLE COLLEC	TION:		Method:	Bladder Pum	p				
Sample ID	Con	tainer Typ	No. of		Preservation		Analysis		Time
		1L 250ML		1			TDS ANIONS		1025
		500ML		1	HNO3		METALS		
Comments									
Signature	B	Slet	1	_		Date	6-1	1-2	4_

	Well/Piezo ID:	
	4501	1100
		- 110.X
. '		

Ground Water Sample Collection Record

Client: Project No: Site Location: Weather Cond		BEPC AVS	10°	Collector(s)				0935	6-12-2	t	
water Levi a. Total Well I b. Water Tab	Length	measured 	c. C.	of Casing) asing Material asing Diamete		Well	Pump Setting	30/2	□ 30 c m ~501	IAN PSI ML	
WELL PURG	ING DATA a. Purge M b. Field Te	lethod <u>Ded</u> sting Equip	icated Blado oment Used:	ler Pump	od in Field	Serial Numb 5320084101 20030C0845		- Page #			
Time Stabilization 1124 1129 1134 1139 1144 1149 1154	Has red Have pa	(gal) T° ((+/-0 +/-0 15. L 4. L 4. 	2 +/- 0.1 0 7.91 8 8.09 4 8.12 7 8.17 9 8.17 9 8.18 8.20 2 9.0 a pass/fail me been rem dity been rea	ached 🗍	ORP +/- 10% 4.8 22.0 26.9 32.3 41.9 48.5 53.1 51.1 245.6	<0.5 DO mg/L +/- 10% - 103 - 88 - 10 - 109	<5 Turbidity (NTU) +/- 10% 3,93 4,00 4,94 4,90 4,00 4,09 4,10 4,24 3,91	Color		6 4/12/24 E 21 When Do	
SAMPLE CO	DLLECTION		Method:	Bladder Pum	Preservation HNO3		Analysis TDS ANTONS METALS		Time 4849 0935	U12124	
Comments Signature	Myles	Sche	M			Date	112/24			- K K	

Well/Piezo ID:
NALL WM 170
VIW_WI/J

Ground Water Sample Collection Record

		_									1	
Client:		BEP	С				-5			111/24		
Project No:	2						-3	Time: Start	1228		.1	
Site Location:		<u>AVS</u>					-	Finish	(Detell C	T1010 -	6-12-24	
Weather Con-	ds:	75	Breaz	И	Collector(s)	MK	MUS				0 .00 01	
			sun									
WATER LEVI			100				Well	9	7-1		had World	
a. Total Well i	Length	-	270		sing Material	1,500	_ ,,	Pump Settin	g <u>611</u>		maxpsi	
b. Water Tab		-	238.09	🥭 d. Ca	sing Diamete	er				VI	ooml	
WELL I ONG	a. Purge M	etho	d Dedicat	ed Bladde	er Pump							
	b. Field Te				Make	Model		Serial Numb	er			
		•			YSI			5320084101				
					HACH			20030C0845	551			
	c. Field Te	sting	g Equipme	ent Calibra	ation Docume	entation Foul		Notebook #		Page #		
	Volume				Spec. Cond		DO I	Turbidity	r		ĺ	
Time	Removed (T° (C)	Hq	(µs/cm)	ORP	mg/L	(NTU)	Color	DTW		
Stabilization	,	-/	+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft		
1320	INITIAL 5	L	12.9	8,02	2700	-0.8	1.11	4.70	Brown	240.0U		
1325	5.25	L	13.2	8.03	2753	19.5	.93	4.69		246.86		
1330	5.5	L	12.9	8.01	2734	26.2	.78	4.50		247.55		
1335	U	L	12.9	7.99	2737	39.1	. 85	4.99		248.35		
1340	10.5	니	12.8	7.98	2721	17.5	1.22	4.50		249.21		
		ᆜ					-					
		L		011100	4 1	10 10	2-11					
		늰		pump	ea don	un to	251.1					
		늽				-	-		1			
		긥	132	7.91	2569	122.1	3.3	4.0	Brown	244 48	6.12-24)
		ī	17.0	<i>r.</i> 11		122.1	1	1.0	D I V VVII	277.110	41,212	
		L										
		L								247.36	6-12-24	
	e. Accepta				oved X ched	No	N/A					
				been rem	oved 📈	\forall						
			i turbidity eters stab	been read	cnea 🗀		H					
				ain below			Ш					
	11 110	011	W EXP	ani bolow								
	0 -											
SAMPLE CO	OLLECTION	ı:		Method: I	Bladder Pum	р						
Onwell	- ID I	~ t	aines Tun	No of	Containers	Preservation	1	Analysis		Time	i I	
Sample	י טו פ	Jonia	ainer Typ 1L	NO. OI	1	rieservation	-	TDS		1010	6-12-24	
			250ML		1		-	ANIONS		1010	61201	
			500ML		1	HNO3		METALS		-		
			OUGUIL			TITOG		41				
	4											
Comments	2		-								é	
	Mull	(dok	M			_ 10	112/24.			6	
Signature	11 11/13	1	1141	u			Date 1	112/24			•	

	Gro	ound V	Vater	Sample (Collect	ion Re	Well/Piezo J Pcord	D:_ 4	<u>7</u> S	2
Client: Project No: Site Location: Weather Cond				Collector(s)	MK- I	- MIS	Time: Start	1025	112/24	
WATER LEV	EL DATA: (mea	sured fro	m Top o	f Casing)		Well 🔀		,		
a. Total Well I	Length		c. Ca	asing Material	_PVC	_ ′	Pump Setting	19/	11 e ma	LX PSI
b. Water Tab WELL PURG			ed Bladd	er Pump Make YSI HACH	Model		Serial Numb 5320084101 20030C0845		∽ llom	L
	c. Field Testin	g Equipme	ent Calibr	ation Docume	ntation Fou	<0.5	Notebook # .	,	Page #	i
Time	Volume Removed (gal)	T° (C)	На	Spec. Cond (µs/cm)	ORP	DO mg/L	Turbidity (NTU)	Color	DTW	
Stabilization	Removed (gar)	+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%	00.0.	0.33 ft	
1051	INITIAL 5	10.6	8.05	3105	351	-30	2,98	olear	149.10	
1056	5.5 L	10.4	8.05	3105	780	29	3 48		149.11	
1101	V L	10.3	8.04	3107	31.4	.28	1.99		149.14	
1100	4.6 L	10.2	8.06	3103	35.7	.24	2.08	-	149.14	
	L									
	L L			ļ				-	-	
				1						
	L									
	Ī									
	L									
	L									
	L							-		
	e. Acceptance	criteria p	l ass/fail	Yes	No	N/A			U	ŀ

e. Acceptance criteria pa Has required volume been removed Has required turbidity been reached Have parameters stabilized If no or N/A - Explain below.

\square	
	DIL

SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS	11010
	250ML	-		ANIONS	
	500ML	1	HNO3	METALS	

Comments	

Myla Shottle

lient: BEPC roject No:							Time: Start	Date: 6	12-24
ite Location: AVS Veather Conds: Collector(s)						2	Finish	1319	-
VATERIEV	EL DATA	(measured fro	m Top of	Casing)		Well 🗹]		
. Total Well		(measured in		sing Material		_	Pump Settin	s 11/10	1 e ma
Water Tat		198.5	d. Ca	sing Diamete	r			,	140m
ILLE FORC	a. Purge	Method Dedica							
	b. Field T	esting Equipme	ent Used:	Make YSI HACH	Model		Serial Numb 5320084101 20030C0845		
									Dago #
	c. Field	Testing Equipm	ent Calibra	ation Docume	entation Foun	a in Fleia <0.5	<5		Page #
	Volun			Spec. Cond		DO mad	Turbidity	Color	DTW
Time Stabilization	Removed	i (gai) T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	0.33 ft
1304	INITIAL	10 123	9.52	2568	46.4	34	4.79	yellow	199.30
1309		7 4 12.2	9.47	2519	ul.4	.31	4.48	17	199.30
1314		8 L 12.2	9.42	2585	100.1	.32	4.74		199.39
1319		91 12.0	9.37	2008	54.2	.32	4.57	V	199.31
80 A	-								
		L							
	 								
		Ī.							
		L							
		L							
		L							.4
		L	ooo/foil	Van	No	N/A			
		otance criteria p equired volume		Yes oved (1) ched (1)	110				
		equired turbidity		ched 🗓					
	Have	parameters sta	oilized	ф					
	lf	no or N/A - Exp	lain below	. /					
		-							
SAMPLE C	OLLECTIO	ON:	Method:	Bladder Pum	р				
Samp	le ID	Container Typ	No. of	Containers	Preservation		Analysis		Time
		1L		1			TDS		1319
		250ML		1	HNO		ANIONS METALS		
		500ML		1	HNO3		IVILIALO		

	Well/Piezo ID:
Ground Water Sample Collection R	
-	

Client: Project No: Site Location: Weather Con	: <u>A</u>	vs vn 65	6	Collector(s)			Time: Start_		13124- 0	
WATER LEV	•		c. Ca	sing Material		Well	Pump Setting	41	170 m	
b. Water Tab		209.73	d. Ca	sing Diamete	er				U 001	1163
WELLFORG	a. Purge Me	thod <u>Dedicat</u> ting Equipme	nt Used:	er Pump Make YSI HACH	Model		Serial Number 5320084101 20030C0845		e S	
	c. Field Tes	sting Equipme	ent Calibra	ation Docume	entation Fou	nd in Field <0.5	Notebook # _	1	Page #	-
Time Stabilization	Volume Removed (g	al) T° (C) +/- 0.2	pH +/- 0.1	Spec. Cond (µs/cm) +/- 3%	ORP +/- 10%	DO mg/L +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW 0.33 ft	
0855 0858 0901 0904	INITIAL 4.5	L 10.7	8.18	2438 2411 2436 2435	-0.3	47	1.14 1.20	yellow Bytwn	210.1 210.1 210.1 210.2	
0901	7.5	L 11.7	8.18	2427 2440 2450	-2.7 -2.7 -2.5	42	6.94 6.63 6.39	1	210.0 210.0 209.98	
		L L								
		L L								
	Has requ Has requ Have pa	nce criteria pa uired volume l uired turbidity rameters stab or N/A - Expl	been remo been reac bilized	ched 🛄	№	N/A				
SAMPLE CO	OLLECTION		Method: I	Bladder Pum	р					=
Sampl	le ID C	Ontainer Typ 1L 250ML		Containers 1	Preservatio	r	Analysis TDS ANIONS		Time 0913	
		500ML		1	HNO3		METALS			1
Comments	-									ī
Signature	Myls	Solvet	e-			Date(6-13-6	24		-

		Groun	d Water	Sample	Collect	ion Re	ecord		/			
Client: BEPC Project No: Site Location: AVS Weather Conds: AVS Collector(s)							Date: 6-13-24 Time: Start 09.55 Finish 10.63					
water Levil a. Total Well I b. Water Tab	Length	(measure 24)	<u> c.</u> c. c	of Casing) asing Material asing Diamete		Well	Pump Settin	39	121 -1	50ml 15ml	e max PSI	
WELL PURG	a. Purge	Method De	dicated Bladdipment Used	der Pump Make YSI HACH	Model		Serial Numb 532008410 20030C084	oer 1				
	c. Field		ipment Calib	ration Docume		nd in Field <0.5	Notebook # <5 Turbidity	<u> </u>	Page #			
Stabilization	Removed			(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color		-first	pump	
1004 1013 1040 1043 1040	5.0 0.0 7	う L 11 L 10	.4 8.15 .2 8.15 .9 8.16	2668	-35.8 -38.1 -40.7 -41.1	30 31 32 33	102 38.2 37.8 31.7 29.6	MUd	193.1 193.0 193.0 192.89			
1052	8	L []		2445	-41.6	.33	28.7	•	192.83	durin San	a apting	
	Has re Has re Have	equired vol equired turb parameters	ria pass/fail ume been rer pidity been re s stabilized Explain belo	ached 🗍	No	N/A						
SAMPLE CO	OLLECTIO	ON:	Method	Bladder Pum	р							
Sample	e ID	Containe 1L	BAL .	f Containers 1	Preservation	•	Analysis TDS		Time			
		1 Jan	OML	1	HNO3		METALS	n	1052			
Comments	11		1111				. 1 . 1					
Signature _	myles	Ich	146			Date	10/13/24	/				

Well/Piezo ID:

	Gro	ound V	Vater :	Sample	Collect	ion Re	Well/Piezo II A	o: AW-1	24S	
Client: Project No: Site Location: Weather Cond	AV3	5	very	Collector(s)	MEN	-	[Time: Start _ Finish _	Date: _(115 122	<u>0 13 </u> 24	-
WATER LEVE	EL DATA: (mea	asured fro	m Top of	Casing)		Well 📈	7			
a. Total Well L	,		-	sing Material	PVC	_ /	/ Pump Setting	110/14	-em	ax psi
b. Water Tab WELL PURG I			ed Bladde	er Pump Make YSI HACH	r		Serial Numbe 5320084101 20030C0845	er	-100mL	
	c. Field Testir	ng Equipme	ent Calibra	ation Docume	ntation Fou	nd in Field <0.5	Notebook # _	1	Page #	
	Volume			Spec. Cond		DO	Turbidity			
Time	Removed (gal)		pН	(µs/cm)	ORP	√ mg/L	(NTU)	Color	DTW	
Stabilization		+/- 0.2	+/- 0.1	+/- 3%	+/- 10%	+/- 10%	+/- 10%		0.33 ft	
1155	INITIAL4.5	10	8.12	2994	19.	3,2	8.46	HOLLOW	208.0	
1158	5 L		8,12	2998	20.7	129	8.24	bruwn	208	
1201	5.5 L	10	8-12	2999	22.7	.35	8.58	\vdash	208.02	-
1203	U L	10.1	8.13	3000	23.8	.64	8.74		208.1	
	L									
	L									
	L									
	L									
	L									
	L									
	L									
	L									
	e. Acceptance		noc/foil	Ven	No	N/A				
	Has require Has require Have parar	ed volume ed turbidity	been rem been rea bilized	ched 🔼			1	DUF.	7	

SAMPLE COLLECTION:

Method: Bladder Pump

Comments		
	- 4	

Signature Myla Sulff

Date 0/13/24

	Gr	ound \	Nater	Sample	Collec	tion R	Well/Piezo I	MW	US
Client: Project No: Site Location Weather Con	: <u>Av</u>		reey	_Collector(s)	MEI	- VV(S	Time: Start	Date: <u> </u> 305 440	
WATER LEVEL DATA: (measured from Top of Casing) Well									
a. Total Well			_		PVC		Pump Settin	c 28/	12.C.m
b. Water Table Depth WELL PURGING DATA Description WELL PURGING DATA Description JOURNAL JOURNAL									
	a. Purge Methb. Field Testinc. Field Testin	g Equipme	ent Used:	Make YSI HACH	Model	nd in Field	Serial Numb 5320084101 20030C0845	51	- - Page # \
		rg Equipin	ent Calibra	ation Docume	sintation Foul	<0.5	<5		Page #
Time Stabilization	Volume Removed (gal	T° (C) +/- 0.2	pH +/- 0.1	Spec. Cond (µs/cm) +/- 3%	ORP +/- 10%	DO mg/L +/- 10%	Turbidity (NTU) +/- 10%	Color	DTW
1342	INITIAL 6	12.3	8.00	3 33	-890	310	3,89	Prown	0.33 ft
1340	5.25	12.5	799	3109	-80.7	33	435	710001	210.71
1350	5.5 L	13.2	7.93	3121	-47.2	-31	2.94		210.95
1354	4.25	14.1	7.90	2769	-44.9	34	2.79		21/40
1400	11.5 L		794	2764	-35.1	23	2.79		21199
1404	6 75 L	14	794	3122	14.7	35	311		212-25
1408	7.0 L	14	7.94	3107	-10.8	37	278		212.69
1412	7.25 L	14	7.90	3100	35	41	310		212.90
1414	7.5	14	7.95	2108	1.9	.44	3.13		21342
1424	8 L	14	7.90	3113	5.6	.44	279		213.74
1428	8.5 L	14.1	7.96	3117	12.5	32	4.76		213 95
14-31	8.75L	142	7.98	3106	13.2	47	3114	V	214.25
	e. Acceptance			Yes	No	N/A	2.12		11111
	Has require								
	Has require Have paran			ned H					
		N/A - Expl		4					
	_								
SAMPLE CO	LLECTION:		Method: E	Bladder Pump)				

1L 250ML	1		TDS	142
2 Cetal				140
- SOUNIL	4		-AHIOMS-	111
500ML	1	HNO3	METALS	
				V
	500ML	500ML 1	500ML 1 HNO3	500ML 1 HNO3 METALS

Comments

11358

PS1

V	Well/Piezo ID:	
	MW-25s	
_		

Ground Water Sample Collection Record

Client:		BEPC				68	Time: Start	Date: 6	-17-24
Project No: Site Location:		AVS				i0	Time: Start	0920	-
Weather Con		Clardy 63	ð	Collector(s)	MIS/A	K	1 1111311	UTAU	
WATER LEV	EL DATA:	(measured fro	m Top of	Casing)		Well 🔽	0		
a. Total Well	Length	213	c. Ca	sing Materia	PVC	_ /	Pump Setting	9	
b. Water Tab	ING DATA			sing Diamete	er				
	a. Purge Method <u>Dedicated Bladder Pump</u> b. Field Testing Equipment Used: Make Model Serial Number YSI 5320084101								
				HACH			20030C0845	51	
	c. Field T	esting Equipme	ent Calibra	ation Docum	entation Four	nd in Field <0.5	Notebook #_<5	1	Page #
	Volum			Spec. Cond		DO	Turbidity	0.1	DTM
Time Stabilization	Removed	(gal) T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	0.33 ft
0909	INITIAL (8,13	2883	1412	.51	43	Brun	19918
0912		.1L 9.3	8.16	3888	3	,51	44.6	1	199,95
0915	le	·3L 9.3	8.17	2891	4	150	41,7		199,90
0918	6	15L 9,3	6,18	2889	-3	,49	34.7	V	199,91
		L L							
		L							
		L						1	
		L L			-			-	
		L							
		L							
		L						-	
	e. Accept	ance criteria pa	ass/fail	Yes	No	N/A		1	
	Has re Has re	quired volume i	been remo	oved 🖺					
		parameters stat							
	11 11	o or N/A - Expl	aiii below	•		D	uD.		
SAMPLE CO	OLLECTIO	N:	Method:	Bladder Pum	р				
Sample	e ID	Container Typ	No. of	Containers	Preservation		Analysis		Time
		1L		1		TDS			0920
		500ML		1	HNO3	METALS			
		Igol			111100	-			
		6							
Comments									
	0						1		
Signature	1			_		Date	6-17-24	1	

Well/Piezo ID:	
MW-275	

Ground Water Sample Collection Record

Client: Project No:	BEF						Time: Start	1010	
Site Location: Weather Conds:	Clar		,	Collector(s)	M19 /A14		Finish	1040	-
WATER LEVEL DATA	: (mea	asured fro	m Top of	f Casing)		Well 🔀			
a. Total Well Length			c. Ca	sing Material	PVC	_	Pump Setting	<u>c Nydn</u>	sleeve
b. Water Table Depth WELL PURGING DAT	Α	217.80	'	sing Diamete	er			·	
		od Dedicat g Equipme		Make	Model		Serial Numb	er	
D. I IEIG	i cau i	g Equipinic	iii oscu.	YSI	Model		5320084101	-	
	HACH							51	
c. Field	Testin	g Equipme	ent Calibr	ation Docume	entation Four	nd in Field <0.5	Notebook # .		Page #
Volui		-0.101		Spec. Cond		DO	Turbidity		DTM
Time Remove Stabilization	d (gal)	T° (C) +/- 0.2	pH +/- 0.1	(µs/cm) +/- 3%	ORP +/- 10%	mg/L +/- 10%	(NTU) +/- 10%	Color	0.33 ft
1010 INITIAL		8.5	8.03	3016	123.4	3.45	570	Black	217.80
1010	L	0.0	5.00	3611.4		J. 13		- Carolina	- 7 1 0
	L								
	<u>L</u>								
	<u>L</u>							-	
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	ī								
	L								
	L								
	<u> </u>							-	
	L							-	
	L								
Has r Has r Have	equire equire paran	e criteria pa ed volume l ed turbidity neters stab N/A - Expl	oeen rem been rea oilized	ched	No III III	N/A			
SAMPLE COLLECTI	ON:		Method:	Bladder Pum	p				
Sample ID	Con	tainer Typ	No. of		Preservation				Time
	-	1L 250ML		1		TDS			1040
	500ML 1 HNO3 METALS								
IGAL I HNO3				R	diam				
	1.0								
Comments	8								
Signature						Date(۵-۱٦-۵۰	1	

		Calibra	tion Log YSI			Hach
Date	/Time	рН	ORP	Conductivity	DO	Verify
4-15 24						V.
5-13-24	1010	/	V	/	/	/
5-14-24	0130		V		~	V
5-21-24	6715	V	V			
5-22-24	0648	V	-	-	-	
6-11 24	0800	~	V	~	/	~
10-12-24	0830	V	V	-		
0.13.7A	0820	/		/		/
6-17-24	0815	V	~			~
4-25-24	0730	V	~	~	/	L
8-1-24	0715	V	V	V	~	~
5-10-24	0720	V	_	~	V	<u></u>
7-10-24	0700	~	~	V	~	
9-11-24	0700	· v	V	V	V	
7.17.24	0700	V	V	V	V	/
0-1-24	0703	~	/	_	V	/
0.2.24	0701	~	~	~	-	
W HE HE	X IX					
	e					
9						
	-					
					1479	



1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.MVTL.com



Account #: 2040 Client: **Basin Electric Power Cooperative**

Basin Electric Power Coope **Chain of Custody** Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue WO: 51646 Page __1__ of __1__ Bismarck, ND 58501 none: (701) 258-9720 Work Order # Lab Use Only Toll Free: (800) 279-6885 Fax: (701) 258-9724 **Company Name and Address** Account # Phone # 701-745-7238 701-557-5488 2040 Basin Electric Power Coop. Emails **Leland Olds Station** Contact mdihle@bepc.com aknutson@bepc.com **Mark Dihle** 3901 Highway 200A Name of Sampler Ksolie@barr.com Stanton, ND 58571 Myles Shettler Billing Address (indicate if different from above) **Quote Number Attn: Liabilities** 6/13/2024 Project Name/Number Purchase Order # 790708-01 **AVS Landfill** Lab Use Only Bottles Sample Matrix Time Date **Analysis Required** Sampled Sample ID Sampled Lab GW 2 N B,Ca,CI,F,SO4,TDS (Y) 6/11/2024 1000 MW-15s GW 002 6/11/2024 1025 N B,Ca,CI,F,SO4,TDS MW-20s GW 2 N B,Ca,CI,F,SO4,TDS 003 6/12/2024 935 **MW-16s** GW 004 2 N B,Ca,CI,F,SO4,TDS MW-17s 6/12/2024 1010 GW 2 N B,Ca,CI,F,SO4,TDS 005 6/12/2024 1106 MW-19s GW 2 N B,Ca,CI,F,SO4,TDS 6/12/2024 1319 MW-18s 006 6/11/2024 1405 2 N B,Ca,CI,F,SO4,TDS 007 **AVS Leachate** sw 6/12/2024 745 2 N B,Ca,CI,F,SO4,TDS 008 **LOS Leachate** GW 2 N B,Ca,CI,F,SO4,TDS 6/12/2024 1106 009 **Duplicate** Comments: ROI Therm. # Received by Date Time Temp Transferred by Date Time (Y)N TOGAL 1. Y/N

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Wednesday, July 3, 2024 10:09:37 AM Report Date:

2



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Effective Date: 26 Aug 2022

Account #: 2040 Client: Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724				Basin WO: 5	Electric F 1753	ow	er	w	Chain of Custody Page of Work Order # Lab Use Only			
Company Name			W	Account #				Phone #				
		ctric Power Coop.		2040					01-745-7238	701-557-5	488	
		<u>d Olds Station</u> Highway 200A		Contact	Mark Dihle			Emails				
		on, ND 58571		Name of S		9	-	Ksolie@ba	epc.com akn	utson@be	epc.com	
Billing Address	(indicate if different		(r	mls	ampier			Ksolie@ba	III.COM			
_		,		Quote Nu	nber	-		Da	te Submitted			
										14/2024		
				Project Na			- 11		rchase Orde			
					AVS CCI	₹ VV	ells		79	0708-01		
Lab Use Only Lab	San	nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N		Analysis Re	quired		
001	MV	V 26 S	GW	6/13/2024	1052			B, Ca, CI, F, S Li, Hg, Mo, Se				
002	MV	V 22 S	GW	6/13/2024	913			B, Ca, Cl, F, S				
003	MV	V 24 S	GW	6/13/2024	1203	2	N	B, Ca, Cl, F, S	O ₄ , TDS			
004	- [DUP	GW	6/13/2024	1203	2	N	N B, Ca, CI, F, SO ₄ , TDS			-	
005	MV	V 21 S	GW	6/13/2024	1431	2	N	B, Ca, CI, F, S	O ₄ , TDS			
		, , , , , , , , , , , , , , , , , , ,										
Comments:												
	sferred by	Date	Time	^Received	by		Dat	e Time	Temp	ROI	Therm. #	
MILLENNIUM E.	XPRESS	6/14/2024	7	WXI		14.	Ju	124 1451	4,5'C	YN	TM920	
2.										Y/N		

Please submit the top copy with your samples. We will return the completed original with your results.

See above for page number

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Report Date: Tuesday, July 9, 2024 12:04:00 PM

Form # 80-910005-1

Report Date: Page 8 of 9

Wednesday, July 24, 2024 1:38:04 PM

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MINNESOTA VALLEY TESTING LABORATORIES, INC.

1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 www.MVTL.com

Account #:

2040

Bismarck, ND 58501 Phone: (701) 258-9720 Work Order # 51754 C24060726 Fax: (701) 258-9724 Toll Free: (800) 279-6885 Phone #: Account #: Company Name and Address: 701-258-9720 Fax #: Contact: MVTL For faxed report check box Claudette 2616 E Broadway Bismarck, ND 58501 ccarroll@mvtl.com E-mail: Name of Sampler: For e-mail report check box Billing Address (indicate if different from above): **Date Submitted: Quote Number** Client: 17-Jun-24 C15480 v5 PO Box 249 Purchase Order #: Project Name/Number: New Ulm, MN 56073 **BL6885 Analysis Bottle Type** Sample Information Gallon HNO3 VOC Vials Basin Electric Power Cooperative Glass Jar Time Sample Date **Analysis Required** Sampled Sampled Client Sample ID Type **MVTL Lab Number** Ra226 & Ra228 1052 GW 13-Jun-24 51754001 MW 26 S Comments: Individual results as well as combined Ra226 & Ra228 must be reported for all samples.

Chain of Custody Record

LABORATORIES, Inc. 2616 E Broadway Ave

			O L O ditions	Received by:	Date:	Temp:
Transferred by:	Date:	Time:	Sample Condition:	A Received by:	1 0 0211	12
T Olson	17-Jun-24	1700		anfrit	6-19-44 10:00	

Page 6 of 6





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Account #: 2040 Client: Basin Electric Power Cooperative

Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571 Billing Address (indicate if different from above)					Electric F 2087 2040 Mark Dihle ampler	Patricipanism Annual Patricipa	/er	Chain of Custody Page of Work Order # Lab Use Only Phone # 701-745-7238 701-557-5488 Emails mdihle@bepc.com aknutson@bepc.com Ksolie@barr.com
	-				ame/Numbe AVS CCF		ells	6/18/2024 Purchase Order # 790708-01
Lab Use Only Lab	San	nple ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	Bottles	A/N	Analysis Required
001	MV	V 27 S	GW	6/17/2024	10			B, Ca, Cl, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
002	MV	V 25 S	GW	6/17/2024	920	3	N	B, Ca, Cl, F, SO ₄ , Sb, As, Ba, Be, Cd, Cr, Co,Pb, Li, Hg, Mo, Se, Tl, Ra226, Ra228, TDS
003		DUP	GW	6/17/2024	920	2	N	B, Ca, Cl, F, SO ₄ , TDS
Comments:								
T MILLENNIUI	ransferred by W EXPRESS	Date 6/18/2024	Time	Received	l by		Dat	te Time Temp ROI Therm.# ndY 1446 314°C ON TM93

Please submit the top copy with your samples. We will return the completed original with your results.

Form #80-910005-1 See above for page number Effective Date: 26 Aug 2022

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Effective Date: 26 Aug 2022

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Minnesota Valley Testing Laboratories, Inc. 2616 East Broadway Avenue Bismarck, ND 58501 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571 Billing Address (indicate if different from above)				Lai			Work O Lab Use On # 701-745- @bepc.com	701-745-7238 701-557-5488 2bepc.com aknutson@bepc.com				
Lab Use Only			Sample Matrix	Date	Time	Bottles						
Lab	Sam	ple ID	Gw - Groundwater	Sampled	Sampled	Bol	€		Analy	sis Req	uired	
001	MV	1 27 S	GW	6/17/2024	1040	3	N	B, Ca, Cl, F Li, Hg, Mo				
002	MW	/ 25 S	GW	6/17/2024	920	3	N	B, Ca, Cl, I Li, Hg, Mo	, 4,	, ,	, ,	
_		UP	GW	6/17/2024	920	2	N	B, Ca, Cl, I	F, SO ₄ , TD	s		
										<i>P</i>		
					111							
						+	-					
Comments	:											
	Transferred by	Date	Time 🗸	Received	l by	_	Dat	te Tin	ne T	emp	ROI	Therm, #
	JM EXPRESS	6/18/2024	1	0000		18		n24 144		14°C	Ø N	17M920

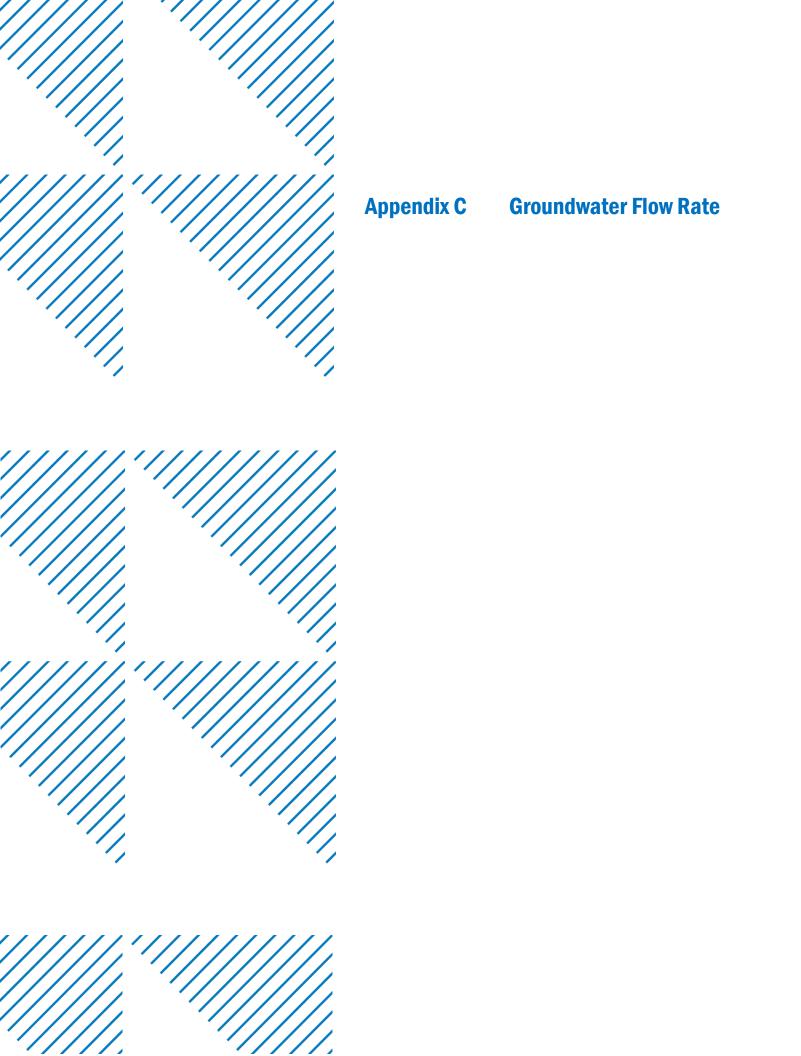
 $\label{thm:please} \textbf{Please submit the top copy with your samples. We will return the completed original with your results.}$

See above for page number

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Report Date: Wednesday, August 7, 2024 9:27:53 AM

Form # 80-910005-1



AVS Groundwater Velocity Calculation

Date	6/10/2024	
	UG: MW-19S	UG: MW-18S

Flow Direction	E-NE	NE
V (ft/yr)	1.15	2.04
V (ft/d)	3.142E-03	5.580E-03
gradient, i (ft/ft)	0.002	0.004
porosity, n	0.185	0.185
Kh (ft/d)	0.234	0.234

CCR Groundwater Monitoring System Report (AECOM, 2017)
CCR Groundwater Monitoring System Report (AECOM, 2017)

	Top of Casing		Water Level
	Elevation	Depth to Water	Elevation
	ft amsl	ft below TOC	ft amsl
MW-15S	2104.77	218.62	1886.15
MW-16S	2123.59	235.74	1887.85
MW-17S	2124.89	238.05	1886.84
MW-18S	2091.60	198.56	1893.04
MW-19S	2042.56	148.83	1893.73
MW-20S	2107.47	219.80	1887.67
MW-21S	2094.72	202.30	1892.42
MW-22S	2093.90	209.73	1884.17
MW-24S	2070.74	206.46	1864.28
MW-25S	2083.40	198.23	1885.17
MW-26S	2074.50	190.21	1884.29
MW-27S	2071.60	217.80	1853.80

Not used for flow or gradient calculations

AVS Landfill horizontal distance, ft

	MW-19S	MW-18S
MW-15S	2640	
MW-16S	2746	
MW-17S	2904	
MW-20S	2746	
MW-22S	3379	
MW-24S		3643
MW-25S		2904
MW-26S		3326
MW-27S		3590

*Used UG well
MW-19S for MW15S, 16S, 17S,
20S, and 22S flow
calculations

*Used UG well
MW-18S for MW24S, 25S, and
26S flow
calculations

AVS difference in WL elevation, ft

	MW-19S	MW-18S
MW-15S	7.58	
MW-16S	5.88	
MW-17S	6.89	
MW-20S	6.06	
MW-22S	9.56	
MW-24S		28.76
MW-25S		7.87
MW-26S		8.75

AVS horizontal gradient, ft/ft

	MW-19S	MW-18S
MW-15S	0.00)3
MW-16S	0.00)2
MW-17S	0.00)2
MW-20S	0.00)2
MW-22S	0.00)3
MW-24S		0.008
MW-25S		0.003
MW-26S		0.003
Average	0.00	0.004

AVS Groundwater Velocity Calculation

Date 10/1/2024 UG: MW-18S

gradient, i (ft/ft)	0.002	0.005	
porosity, n	0.185	0.185	CCR Groundwater Monitoring System Report (AECOM, 2017)
Kh (ft/d)	0.234	0.234	CCR Groundwater Monitoring System Report (AECOM, 2017)

 V (ft/yr)
 1.09
 2.45

 Flow Direction
 E-NE
 NE

	Top of Casing	Depth to	Water Level
	Elevation	Water	Elevation
	ft amsl	ft below TOC	ft amsl
MW-15S	2104.77	218.96	1885.81
MW-16S	2123.59	235.95	1887.64
MW-17S	2124.89	238.31	1886.58
MW-18S	2091.60	199.09	1892.51
MW-19S	2042.56	149.44	1893.12
MW-20S	2107.47	220.11	1887.36
MW-21S	2094.72	202.70	1892.02
MW-22S	2093.90	209.71	1884.19
MW-24S	2070.74	206.19	1864.55
MW-25S	2083.40	198.02	1885.38
MW-26S	2074.50	190.41	1884.09
MW-27S	2071.60	209.81	1861.79

AVS Landfill horizontal distance, ft

	MW-19S	MW-18S
MW-15S	264	0
MW-16S	274	6
MW-17S	290	4
MW-20S	274	6
MW-22S	337	9
MW-24S		3643
MW-25S		2904
MW-26S		3326
MW-27S		3590

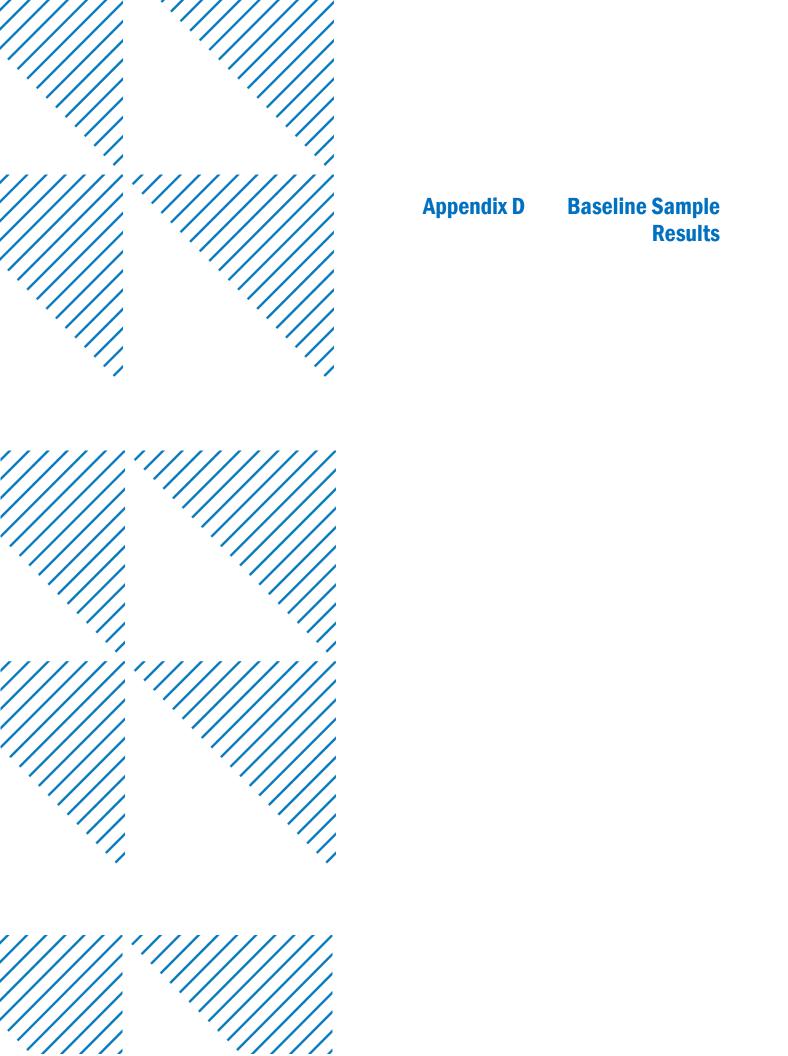
*Used UG well *Used UG well MW-19S for MW- MW-18S for 15S, 16S, 17S, MW-24S, 25S, 20S, and 22S flow and 26S flow

AVS difference in WL elevation, ft

	MW-19S	MW-18S
MW-15S	7.31	
MW-16S	5.48	
MW-17S	6.54	
MW-20S	5.76	
MW-22S	8.93	
MW-24S		27.96
MW-25S		7.13
MW-26S		8.42
MW-27S		30.72

AVS horizontal gradient, ft/ft

	MW-19S	MW-18S
MW-15S	0.00	03
MW-16S	0.00	02
MW-17S	0.00	02
MW-20S	0.00	02
MW-22S	0.00	03
MW-24S		0.008
MW-25S		0.002
MW-26S		0.003
MW-27S		0.009
Average	0.00	0.005



AVS Baseline Sampling 2024 Analytical Results

		Location	MW-	-25S	MW-25S	MW-26S	MW-26S	MW-27S	MW-27S
		Date	6/17/	2024	10/02/2024	6/13/2024	10/02/2024	6/17/2024	10/02/2024
	Sa	mple Type	N	FD	N	N	N	N	N
Parameter	Analysis Location	Units							
General Parameters									
Chloride	Lab	mg/l	43.8	43.3	42.3	29.7	29.7	80.8	62.0
Fluoride	Lab	mg/l	1.29	1.29	1.30	1.34	1.33	1.17	1.27
Solids, total dissolved	Lab	mg/l	1900	1900	1900	1760	1730	2290	2160
Sulfate, as SO4	Lab	mg/l	24.6	24.7	40.2	45.1	41.0	252	6.83
Dissolved oxygen	Field	mg/l	0.49		0.27	0.35	0.28	3.45	1.72
рН	Field	pH units	8.18		8.19	8.15	8.17	8.03	8.08
Redox (oxidation potential)	Field	mV	-3		-34	-43.2	-32.3	123.4	-116.9
Specific conductance @ 25 deg C	Field	umhos/cm	2889		2918	2665	2678	3016	3063
Temperature	Field	deg C	9.3		10.6	10.9	11.2	8.5	11.5
Turbidity	Field	NTU	37.7		14.3	27.9	19.7	570	
Total Metals									
Antimony	Lab	mg/l	< 0.001 U		< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Arsenic	Lab	mg/l	< 0.002 U		< 0.002 U	< 0.002 U	< 0.002 U	0.0116	0.0472
Barium	Lab	mg/l	0.0994		0.1306	0.0486	0.0514	0.3396	1.472
Beryllium	Lab	mg/l	< 0.0005 U		< 0.0005 U	< 0.0005 U	< 0.0005 U	0.0015	0.0082
Boron	Lab	mg/l	0.12	0.11	0.12	0.13	0.14	0.19	0.40
Cadmium	Lab	mg/l	< 0.0005 U		< 0.0005 U	< 0.0005 U	< 0.0005 U	0.0007	0.0036
Calcium	Lab	mg/l	6.12	5.95	4.88	4.10	3.51	28.3	206
Chromium	Lab	mg/l	0.0025		< 0.002 U	< 0.002 U	< 0.002 U	0.0863	0.5667
Cobalt	Lab	mg/l	< 0.002 U		< 0.002 U	< 0.002 U	< 0.002 U	0.0141	0.0932
Lead	Lab	mg/l	0.0006		< 0.0005 U	< 0.0005 U	< 0.0005 U	0.0206	0.1238
Lithium	Lab	mg/l	0.0430		0.0425	0.0490	0.0483	0.0755	0.201
Mercury	Lab	mg/l	< 0.0002 U		< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.0002 U	< 0.001 U
Molybdenum	Lab	mg/l	0.0033		0.0020	0.0052	< 0.002 U	0.1457	0.1332
Selenium	Lab	mg/l	< 0.005 U		< 0.005 U	< 0.005 U	< 0.005 U	< 0.005 U	0.0088
Thallium	Lab	mg/l	< 0.0005 U		< 0.0005 U	< 0.0005 U	< 0.0005 U	< 0.0005 U	0.0011
Radiochemical Parameters*									
Radium 226	Lab	pCi/l	0.3 +/- 0.2 ND		0.08 +/- 0.1 ND	0.08 +/- 0.2 ND	0.1 +/- 0.1 ND	3.2 +/- 1	5.7 +/- 5.3
Radium 228	Lab	pCi/l	1.1 +/- 0.9 ND		0.2 +/- 0.8 ND	0.5 +/- 0.8 ND	1.6 +/- 0.9	2.9 +/- 3.5 ND	12.3 +/- 5.7
Radium, combined (226+228)	Barr Calculation	pCi/l	1.4 +/- 0.9 q		0.3 +/- 0.8 ND	0.58 +/- 0.8 ND	1.7 +/- 0.9 q	6.1 +/- 3.7 q	18.0 +/- 7.8

Data Footnotes and Qualifiers

Barr Standard Footnotes and Qualifiers

	Not analyzed/Not available.
*	Values displayed in order: results, uncertainty, and MRL
N	Sample Type: Normal
FD	Sample Type: Field Duplicate
ND	Not detected.
q	The combined radium result includes both detected and not detected values.
U	The analyte was analyzed for, but was not detected.