



# 2025 Annual Groundwater Monitoring and Corrective Action Report

*AVS CCR Landfill*

*Antelope Valley Station, Beulah, North Dakota*



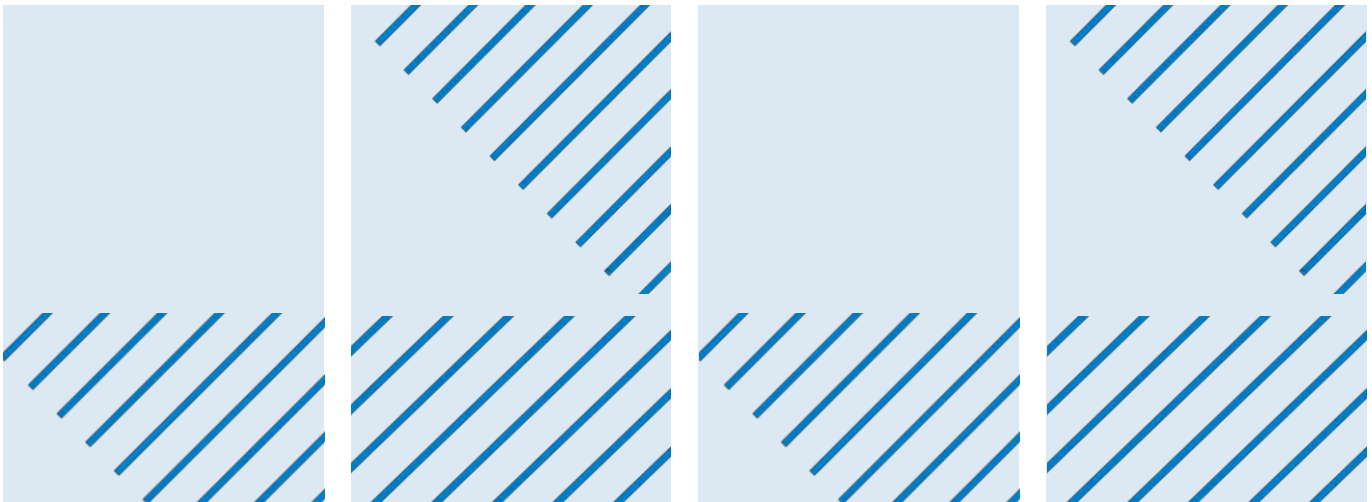
Prepared for  
Basin Electric Power Cooperative

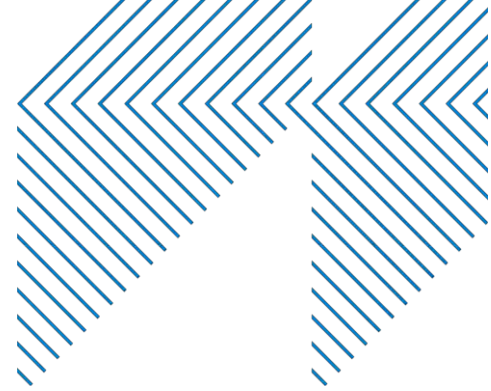
Prepared by  
Barr Engineering Co.

January 2026

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# 2025 Annual Groundwater Monitoring and Corrective Action Report

January 2026

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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 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

# 1 Executive Summary

This 2025 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. The content of this report is to satisfy the 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 2025, the CCR Unit was operating under a detection monitoring program with semi-annual detection monitoring events conducted in the spring 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. A successful ASD was completed in 2025 for verified SSIs at the end of the 2024 reporting period. 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 2025: 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 2025: chloride at MW-16(S), MW-20(S), MW-24(S), and MW-25(S); calcium and chloride at MW-26(S); and boron, calcium, chloride, and TDS at MW-27(S)

Subsequent determinations and actions (if any) will be addressed in the 2026 Annual Report. Successful alternative source demonstrations (ASDs) were completed for the SSIs determined during the October 2024 and June 2025 sampling events. The ASD documentation for SSIs determined for both the fall 2024 and spring 2025 monitoring events are included in this report under Figure 2. An ASD for the October 2025 detection monitoring results is in progress, and results of the ASD are anticipated in 2026. 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.

## 2 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 Annual Report describes the monitoring program and results for the CCR landfill. No corrective actions were required or conducted in 2025.

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](#).

### 2.1 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  $1.65 \times 10^{-4}$  centimeters per second (cm/sec) in MW-19(S) to  $2.48 \times 10^{-9}$  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, October 2017).

## 2.2 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.

## 2.3 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)	<b>Monitoring System Figure:</b> 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 3.2
§ 257.90(e)(2)	§ 33.1-20-08-06-01(e)(2)	<b>Monitoring System Adjustments:</b> 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 3.1.1 Changes to Groundwater Monitoring System
§ 257.90(e)(3)	§ 33.1-20-08-06-01(e)(3)	<b>Data and Collection Summary:</b> 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 3.3 Data and Collection Summary; monitoring data included in Attached Table 1, Attached Table 2, Attached Table 3, Appendix A, and Appendix C

EPA CCR Rule Reference (40 CFR)	NDDEQ CCR Rule Reference (NDAC)	Content Required in Report	Location
§ 257.90(e)(4)	§ 33.1-20-08-06-01(e)(4)	<b>Monitoring Program:</b> 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)	<b>Other Information:</b> 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 3.2 Actions Completed/Problems Encountered; Appendix B
§ 257.90(e)(6)	N/A	<b>Executive Summary:</b> 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

### 3 Groundwater Monitoring Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR unit in 2025. A description of the groundwater monitoring system is included in Section 3.1, key actions completed and problems encountered are described in Section 3.2, the monitoring and analytical results are described in Section 3.3, and key activities planned for 2025 are described in Section 0.

#### 3.1 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.

**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 and prior to 2025 were performed in general accordance with procedures established in the site-specific Sampling and Analysis Plan (SAP) (AECOM, January 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.

### 3.1.1 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 3.1 and shown on Figure 2 are described in the Groundwater Monitoring System Certification (Barr Engineering Co. (Barr), June 2024).

## 3.2 Actions Completed/Problems Encountered

The following actions were completed in 2025:

- **Baseline Sampling:** Baseline Groundwater samples were collected at MW-25(S), MW-26(S), and MW-27(S) in June and October 2025 (Appendix D).
- **Detection Monitoring Sampling:** Groundwater samples were collected from each well in the groundwater monitoring system on June 10-11 and 17-18, 2025 and August 26, October 7-8, 2025. 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) (Attached Table 1).
- **SSI Evaluation:** SSI evaluations were conducted in accordance with the Groundwater Statistical Method Selection Certification (AECOM, 2017) for the June 2025 and October 2025 detection monitoring events. Both detection monitoring events resulted in verified SSIs (Attached Table 2).
- **Alternative Source Demonstration (ASD):** ASDs were conducted on the verified SSIs for the October 2024 and June 2025 detection monitoring events. The October 2024 SSIs were identified in the 2024 Annual Report (Barr Engineering Co. (Barr), January 2025). 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 2025 detection monitoring event is in progress and will be completed within 90 days of the SSI determination. More details are provided in Section 3.3. Subsequent determinations and actions (if any) will be addressed in the 2026 Annual Report.

Problems encountered in 2025:

- 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.

## 3.3 Data and Collection Summary

### 3.3.1 June 2025 Detection Monitoring Event

Groundwater samples were collected from the twelve groundwater monitoring network wells at the Site on June 10-11 and 17-18, 2025. 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 Attached Table 3. 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 2025 Event Report is included in Appendix B.

### **3.3.2 October 2025 Detection Monitoring Event**

Groundwater samples were collected from the twelve groundwater monitoring network wells at the Site on August 26 and October 7-8, 2025. Ten SSIs (chloride at MW-16(S), MW-20(S), MW-24(S), MW-25(S); calcium and chloride at MW-26(S); and boron, calcium, chloride, and TDS at MW-27(S)) were identified. No verification resampling was performed. A summary of results is included in Attached Table 3. 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 beginning of 2026. If the ASD is not successful, appropriate actions will be initiated per the CCR Rule as applicable.

## **3.4 Activities for Upcoming Year**

The following key activities for analytical results and statistical evaluations are planned for 2026:

- Complete the ASD or assessment monitoring determination for the October 2025 detection monitoring event in accordance with the Statistical Certification (AECOM, October 2017).
- Evaluate analytical results from 2026 semi-annual detection monitoring events for SSIs according to the Statistical Certification (AECOM, October 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.

## 4 References

- AECOM. (January 2018). *Sampling and Analysis Plan, CCR Monitoring Program, Antelope Valley Station. Prepared for Basin Electric Power Cooperative.* .
- AECOM. (October 2017). *CCR Groundwater Monitoring System Report, Antelope Valley Station. Prepared for Basin Electric Power Cooperative.* .
- Barr Engineering Co. (Barr). (January 2025). *2024 Annual Groundwater Monitoring and Corrective Action Report: AVS CCR Landfill.*
- Barr Engineering Co. (Barr). (June 2024). *Groundwater Monitoring System Certification, Antelope Valley Station Landfill. Prepared for Basin Electric Power Cooperative.* .



## **Attached Tables**

**Attached Table 1  
Sampling Summary  
2025 Annual Monitoring Report  
AVS CCR Groundwater Compliance**

<b>Event Classification and Number</b>	<b>Monitoring Well</b>	<b>Up or Down Gradient</b>	<b>Event date</b>	<b>No. Samples</b>
Detection Monitoring Event #1	MW-15S	Down	6/10/2025	1
Detection Monitoring Event #1	MW-16S	Down	6/11/2025	1
Detection Monitoring Event #1	MW-17S	Down	6/18/2025	1
Detection Monitoring Event #1	MW-18S	Up	6/17/2025	1
Detection Monitoring Event #1	MW-19S	Up	6/19/2025	2
Detection Monitoring Event #1	MW-20S	Down	6/10/2025	1
Detection Monitoring Event #1	MW-21S	Up	6/18/2025	1
Detection Monitoring Event #1	MW-22S	Down	6/11/2025	2
Detection Monitoring Event #1	MW-24S	Down	6/17/2025	1
Detection Monitoring Event #1	MW-25S	Down	6/11/2025	1
Detection Monitoring Event #1	MW-26S	Down	6/11/2025	1
Detection Monitoring Event #1	MW-27S	Down	6/17/2025	1
Detection Monitoring Event #2	MW-15S	Down	10/7/2025	1
Detection Monitoring Event #2	MW-16S	Down	10/8/2025	1
Detection Monitoring Event #2	MW-17S	Down	10/8/2025	1
Detection Monitoring Event #2	MW-18S	Up	8/26/2025	1
Detection Monitoring Event #2	MW-19S	Up	8/26/2025	2
Detection Monitoring Event #2	MW-20S	Down	10/7/2025	1
Detection Monitoring Event #2	MW-21S	Up	8/26/2025	1
Detection Monitoring Event #2	MW-22S	Down	10/8/2025	2
Detection Monitoring Event #2	MW-24S	Down	10/8/2025	1
Detection Monitoring Event #2	MW-25S	Down	10/8/2025	1
Detection Monitoring Event #2	MW-26S	Down	10/8/2025	1
Detection Monitoring Event #2	MW-27S	Down	10/8/2025	1

Attached Table 2  
 Statistical Evaluation Summary  
 2025 Annual Monitoring Report  
 AVS CCR Groundwater Compliance

**Spring 2025**

Appendix III Constituents							
Well	Boron (T)	Calcium (T)	Chloride	Fluoride	pH	Sulfate	TDS
MW-15(S)	0.12	3.79	13.2	1.32	8.0	356	1,910
MW-16(S)	0.14	5.41	26.2	2.04	8.1	107	1,200
MW-17(S)	0.12	4.05	13	1.63	7.9	293	1,740
MW-20(S)	0.12	4.65	24.6	1.16	8.0	56.1	1,760
MW-22(S)	0.12	2.49	11.1	1.75	8.1	193	1,650
MW-24(S)	0.11	4.35	49.6	1.56	8.1	62.4	1,950
MW-25(S)	0.12	4.01	39.6	1.26	8.2	29.8	1,910
MW-26(S)	0.13	11	30.6	1.28	8.1	75.9	1,820
MW-27(S)	0.68	419	64.9	1.41	8.1	230	2,500

**Fall 2025**

Appendix III Constituents							
Well	Boron (T)	Calcium (T)	Chloride	Fluoride	pH	Sulfate	TDS
MW-15(S)	0.11	3.93	13.1	1.4	8.1	486	1,930
MW-16(S)	0.15	3.71	32.6	2.37	8.2	125	1,150
MW-17(S)	0.12	3.72	13.6	1.48	8.0	300	1,740
MW-20(S)	0.13	6.19	25.6	1.2	8.0	74.8	1,800
MW-22(S)	0.12	2.56	11.4	1.84	8.2	234	1,610
MW-24(S)	0.1	4.54	49.7	1.61	8.1	52.6	2,040
MW-25(S)	0.14	4.56	40.4	1.42	8.2	36	1,940
MW-26(S)	0.12	17.3	31.5	1.36	8.1	120	1,870
MW-27(S)	0.21	58.1	65.0	1.48	8.0	141	2,370

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

Attached Table 3  
Water Quality Analytical Data Summary  
2025 Annual Monitoring Report  
AVS CCR Groundwater Compliance

Location			MW-15S	MW-15S	MW-16S	MW-16S	MW-17S	MW-17S	MW-18S	MW-18S	MW-19S		MW-19S		MW-20S	MW-20S	MW-21S	MW-21S	MW-22S		
Date			6/10/2025	10/07/2025	6/11/2025	10/08/2025	6/18/2025	10/08/2025	6/17/2025	8/26/2025	6/18/2025		8/26/2025		6/10/2025	10/07/2025	6/18/2025	8/26/2025	6/11/2025		
Sample Type			N	N	N	N	N	N	N	N	N	FD	N	FD	N	N	N	N	N	FD	
Parameter	Analysis Location	Units																			
Appendix III																					
Boron, total	Lab	mg/l	0.12	0.11	0.14	0.15	0.12	0.12	0.10	< 0.1 U	0.13	0.13	0.12	0.12	0.12	0.13	0.12	0.11	0.12	0.12	0.12
Calcium, total	Lab	mg/l	3.79	3.93	5.41	3.71	4.05	3.72	4.43	4.29	4.30	4.30	4.17	4.14	4.65	6.19	4.54	4.16	2.49	2.38	2.38
Chloride	Lab	mg/l	13.2	13.1	26.2	32.6	13.0	13.6	8.5	8.7	18.5	18.7	18.8	18.9	24.6	25.6	18.0	18.0	11.1	11.1	11.1
Fluoride	Lab	mg/l	1.32	1.40	2.04	2.37	1.63	1.48	1.32	1.23	0.77	0.73	0.66	0.68	1.16	1.20	1.65	1.53	1.75	1.65	1.65
pH	Field	pH units	8.01	8.06	8.08	8.21	7.91	8.02	9.36	9.30	8.01	--	8.01	--	8.02	7.97	7.88	7.89	8.14	--	--
Solids, total dissolved	Lab	mg/l	1910	1930	1200	1150	1740	1740	1780	1860	2180	2190	2170	2170	1760	1800	2030	1990	1650	1670	1670
Sulfate, as SO4	Lab	mg/l	356	486	107	125	293	300	555	596	696	738	765	749	56.1	74.8	401	403	193	171	171



-- Not analyzed/Not available.  
N Sample Type: Normal  
FD: Sample Type: Field Duplicate  
U: The analyte was analyzed for, but was not detected.



## Figures

Barr Footer: ArcGISPro 3.3.1, 2025-03-26 11:07 File: I:\Projects\341291134\Maps\Antelope Valley Station - Alternative Source\Antelope Valley Station - Alternative Source.aprx Layout: Figure 1 Site Location Map User: LGGKZ



-  Permit Boundary
-  Railroad



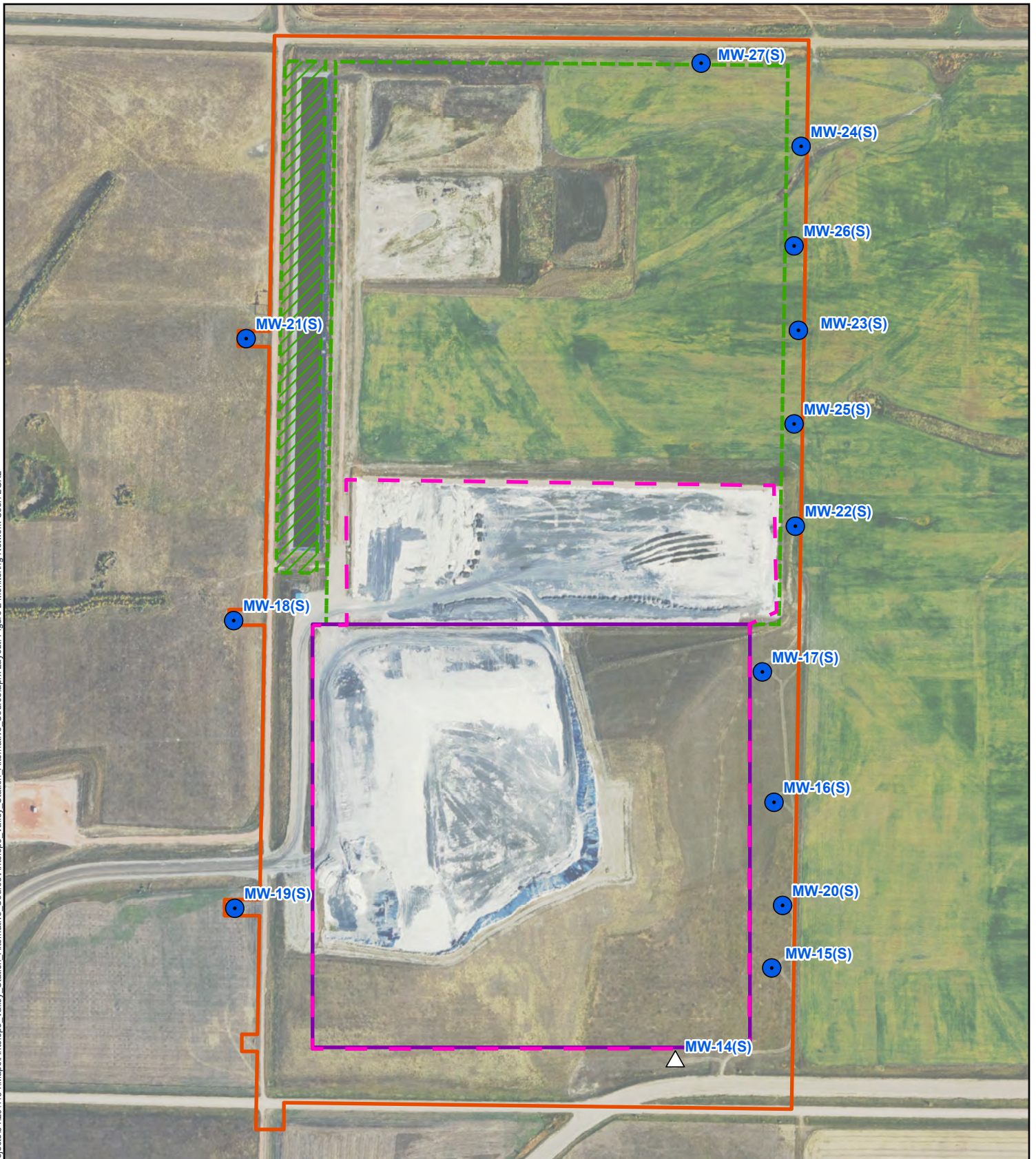
0 2,500 5,000  
 Feet

Imagery: USDA-NAIP, 2024

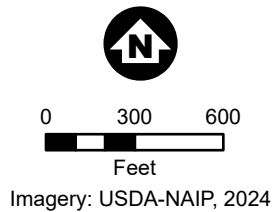
**Site Location**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 1





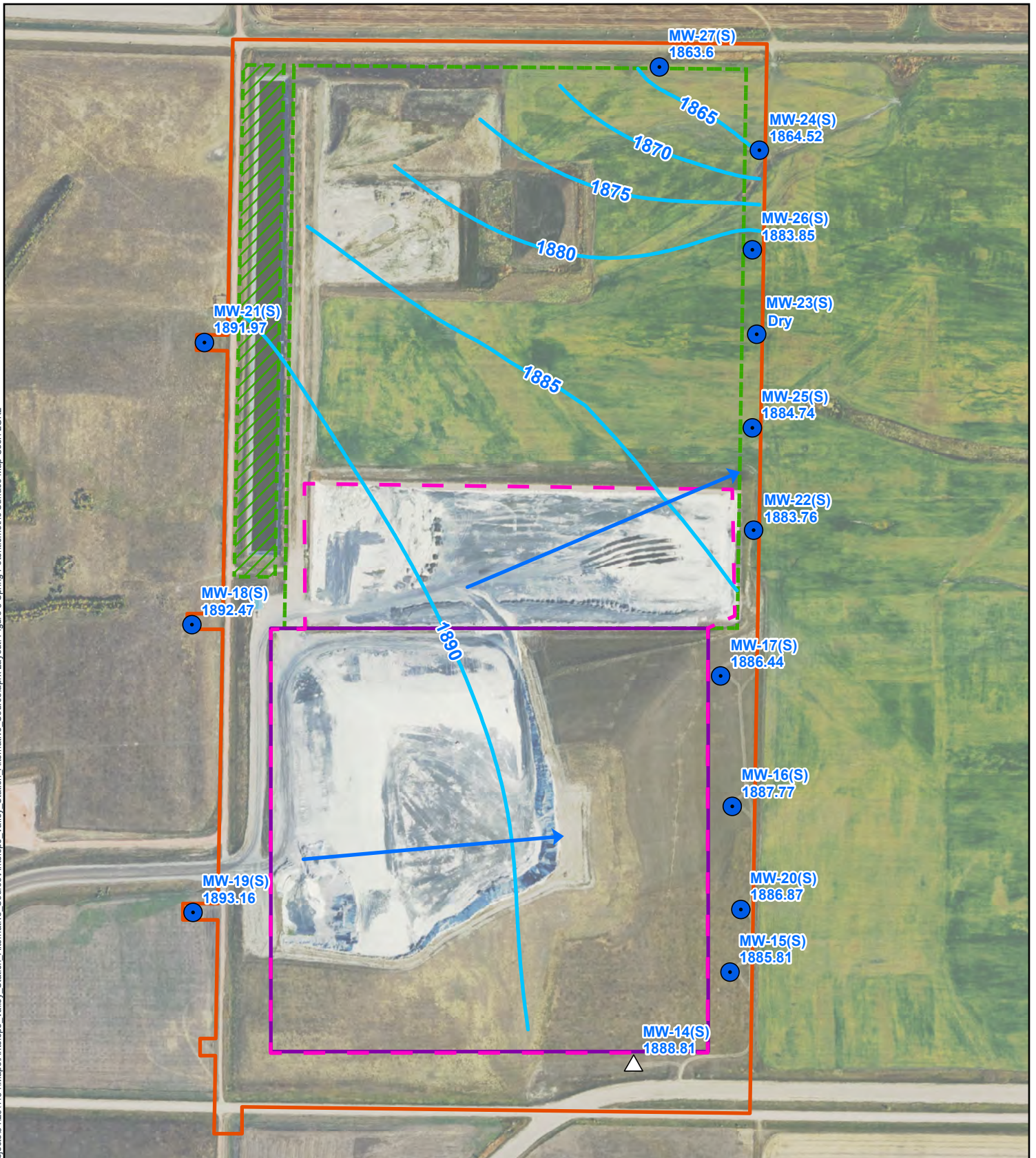
- Groundwater Monitoring System Wells
- Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)



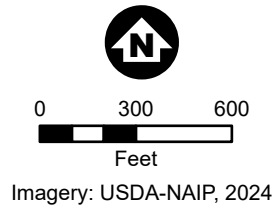
**Monitoring Network**  
**Antelope Valley Station**  
Basin Electric Power Cooperative  
Beulah, North Dakota

FIGURE 2





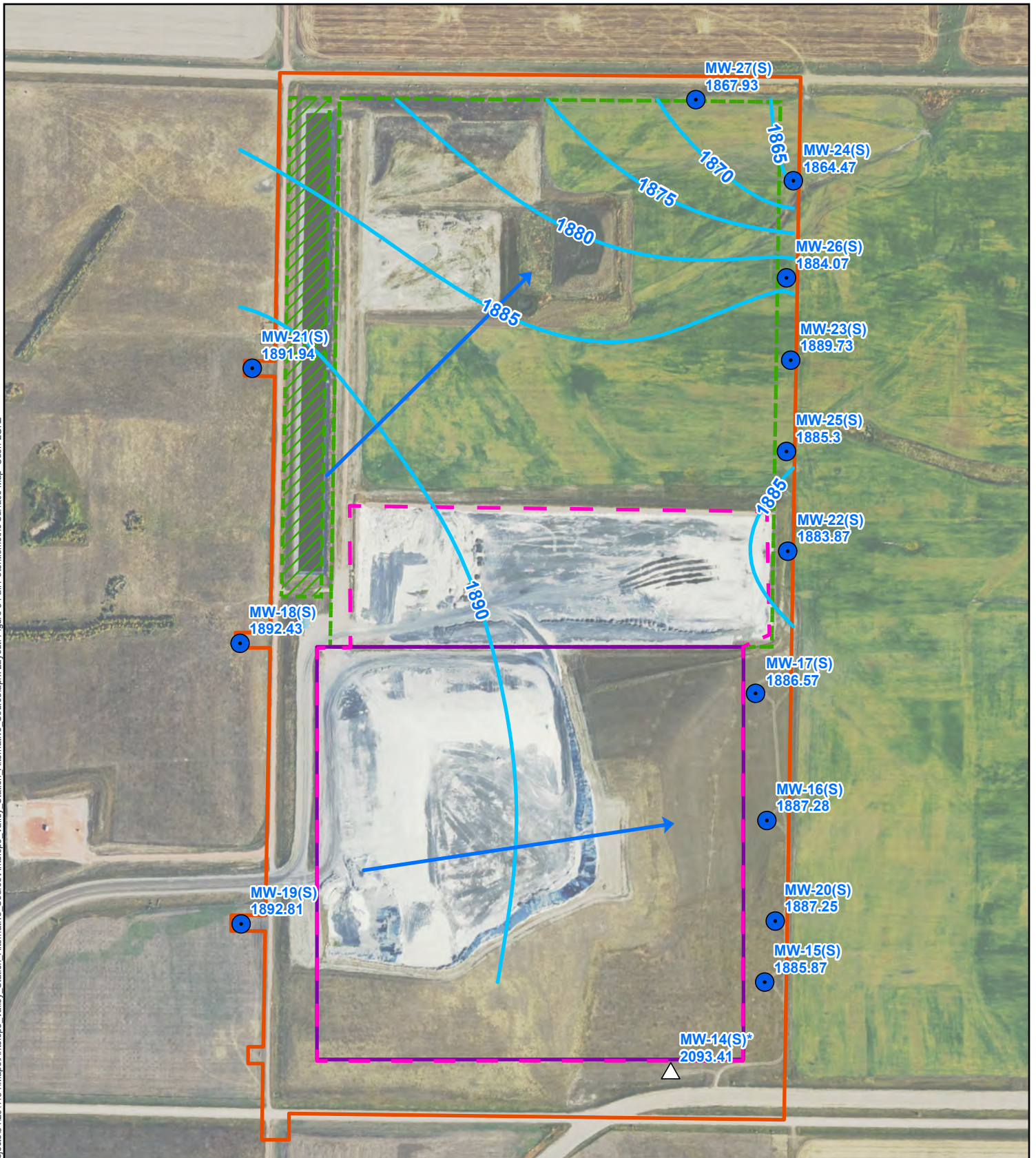
- Groundwater Monitoring System Wells
- △ Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)
- Groundwater Contours
- Flow Direction



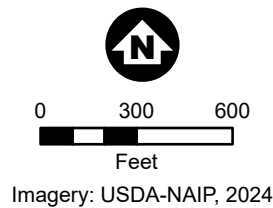
**Spring 2025 Potentiometric Surface**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 3





- Groundwater Monitoring System Wells
- Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)
- Flow Direction
- Groundwater Contour



**Fall 2025 Potentiometric Surface  
Antelope Valley Station  
2025 Annual Monitoring Report  
Basin Electric Power Cooperative  
Beulah, North Dakota**

FIGURE 4





## Appendices



**Appendix A**  
**Lab and Field Reports**

# Basin Electric North Dakota

**Site Name:** AVS Landfill  
**Event Date:** 6-9-25  
**Weather Conditions:** Nice  
**Field Technician:** MK

<b>River Elevation (if applicable)</b>
1658.2

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-14S	1110	204.6	DRY	ALL IS WELL
MW-15S		218.96		
MW-20S		220.6		
MW-16S		235.82		
MW-17S		238.45		
MW-22S		210.14		
MW-25S		198.66		
MW-23S			DRY	
MW-26S		190.65		
MW-24S		206.22		
MW-27S		208		
MW-19S		149.4		
MW-18S		199.13		
MW-21S		202.75		

\* Depth to water as measured from the top of PVC casing.

## Ground Water Sample Collection Record

Client: BEPC Date: 10-10-25  
 Project No: \_\_\_\_\_ Time: 0803  
 Site Location: AVS landfill Finish: 1009  
 Weather Conds: 103; cloudy Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 34/200 max PSI  
 b. Water Table Depth 218.95 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
0929	INITIAL 3L	12.7	0.77	2904	8.01	89.9	1.85	Brown	223.55
0933	3.25L	12.8	0.80	2900	8.01	97.4	2.18	↓	223.57
0936	3.5 L	12.6	0.83	2912	8.01	102.5	4.28	↓	223.75
0940	3.75 L	12.6	0.82	2894	8.01	105.1	2.76	↓	223.80
0944	4 L	12.7	0.81	2899	8.01	104.5	2.46	↓	223.90
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0945
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature ManDate 10-10-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-10-25  
 Project No: \_\_\_\_\_ Time: 1015  
 Site Location: AVS Landfill Finish: 1034  
 Weather Conds: 103' breezy Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_b. Water Table Depth 220.00 d. Casing Diameter \_\_\_\_\_

## WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump Hydrosleeve

b. Field Testing Equipment Used: Make Model Serial Number  
 YSI 5320084101  
 HACH 20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1029</u>	<u>INITIAL 6005</u>	<u>10.6</u>	<u>2.98</u>	<u>2789</u>	<u>8.02</u>	<u>-314.0</u>	<u>27.5</u>	<u>BROWN</u>	<u>220.60</u>
	L								
	L								
	L								
	L								
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	L								
	L								

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

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1029</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature MKDate 10-10-25

# Ground Water Sample Collection Record

Client:	BEPC	Date:	10-10-25
Project No:		Time:	1041
Site Location:	AVS Landfill	Finish:	0940 10/11/25
Weather Conds:	Sunny Breezy	Collector(s):	1 MK

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 21/39 e max PSI  
~ 25ml

b. Water Table Depth 235.82 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1325	INITIAL 1.75	19.9	4.55	2018	8.16	34.3	11.2	Brown	238.55
1329	1.9 L	20.8	3.60	2064	8.13	87.1	9.64		238.75
1333	1.92 L	21.5	3.15	2084	8.11	113.9	8.82		238.90
1337	2 L	21.8	2.98	2117	8.09	125.9	9.82		239
1341	2.1 L	21.8	2.8	2142	8.08	132.2	9.73		239.11
1344	2.14 L	21.4	2.69	2165	8.06	137.8	8.87		239.2
1348	2.17 L	22.3	2.22	2144	8.06	142.4	8.33		239.4
1352	2.2 L	21.4	2.19	2145	8.05	144.4	8.29		239.56
	L	pumped down to			245ft.				
	L								
0830	L	13.7	4.76	1955	8.08	-365.6	8.92		
	L								
	L								
	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below. DTW

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0830
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature] Date 10-11-25

## Ground Water Sample Collection Record

Client: BEPC Date: 6-11-25  
 Project No: \_\_\_\_\_ Time: 0945  
 Site Location: AVS Landfill Finish: 1133  
 Weather Conds: cloudy, smoky, cool Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 40/20 @ max psi  
 b. Water Table Depth 210.14 d. Casing Diameter \_\_\_\_\_ ~100mm

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1047</u>	<u>INITIAL 5.5</u>	<u>11.0</u>	<u>.50</u>	<u>2518</u>	<u>8.15</u>	<u>-352.6</u>	<u>5.81</u>	<u>yellow/</u>	<u>210.40</u>
<u>1051</u>	<u>6 L</u>	<u>11.1</u>	<u>.52</u>	<u>2513</u>	<u>8.14</u>	<u>-351.8</u>	<u>6.15</u>	<u>Brown</u>	<u>210.40</u>
<u>1054</u>	<u>6.5 L</u>	<u>11.3</u>	<u>.49</u>	<u>2513</u>	<u>8.14</u>	<u>-350.5</u>	<u>6.75</u>		<u>210.46</u>
<u>1057</u>	<u>7 L</u>	<u>11.2</u>	<u>.50</u>	<u>2518</u>	<u>8.13</u>	<u>-349.9</u>	<u>6.90</u>		<u>210.49</u>
<u>1101</u>	<u>7.5 L</u>	<u>11.2</u>	<u>.50</u>	<u>2520</u>	<u>8.14</u>	<u>-350.1</u>	<u>6.22</u>		<u>210.50</u>
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								

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

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1102</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments DUPSignature [Signature]Date 6-11-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-11-25  
 Project No: \_\_\_\_\_ Time: 1140  
 Site Location: AVS Landfill Finish: 1300  
 Weather Conds: cloudy, smoky, cool Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 44/110 e max PSI  
 b. Water Table Depth 198.100 d. Casing Diameter \_\_\_\_\_ ~100ml

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
Stabilization									
1240	INITIAL 4.5	9.8	.47	2997	8.16	-3108.0	16.9	Brown	201.40
1244	5 L	9.9	.42	2986	8.15	-3108.4	17.0		201.37
1248	5.5 L	10.0	.46	2992	8.15	-3108.0	16.2		201.30
1251	10 L	10.0	.49	3004	8.15	-3108.7	16.3		201.30

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1252
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature MKDate 10-11-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-11-25  
 Project No: \_\_\_\_\_ Time: 1315  
 Site Location: AVS Landfill Finish: \_\_\_\_\_  
 Weather Conds: smoky cool Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 34/26 e max PSI  
 b. Water Table Depth 190.65 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1403	INITIAL 4L	10.4	.77	2816	8.11	-370.7	21.0	brown	<del>192.50</del> 192.50
1407	4.5 L	10.5	.65	2807	8.10	-370.6	21.0		192.50
1411	5 L	10.5	.59	2803	8.10	-370.8	18.7		192.50
1415	5.5 L	10.6	.60	2812	8.09	-370.8	18.7		192.50
1419	6 L	10.5	.49	2808	8.09	-371.4	14.0		192.55
1422	6.5 L	10.6	.47	2798	8.09	-371.5	15.1		192.58
1426	7 L	10.5	.46	2801	8.09	-371.8	14.3		192.60
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1427
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature ManDate 10-11-25



**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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



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 Electric Power Cooperative**

WO: 89554

Chain of Custody



Page 1 of 4

Order #

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3991 Highway 209A Stanton, ND 58571 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) Attn: Liabilities		Contact Mark Dihle Name of Sampler Marlah Knutson	Emails mdihle@becp.com mknutson@becp.com
		Quote Number	Date Submitted 6/12/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
	001	MW-16S	GW	6/10/2025	945	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	002	MW-20S	GW	6/10/2025	1029	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	003	MW-16S	GW	6/11/2025	830	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	004	MW-22S	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	005	DUP	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	006	MW-26S	GW	6/11/2025	1252	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	007	MW-26S	GW	6/11/2025	1427	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	-	AVS LEACHATE POND	SW	6/10/2025	1435	2	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity
			GW					

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/12/2025	NOON	<i>[Signature]</i>	6/12/2025	14:34	4.8°C	(Y/N)	TM959
2.							Y/N	

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

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 1, 2025 2:32:47 PM

## Ground Water Sample Collection Record

Client: BEPC Date: 08/17/10-17-25  
 Project No: \_\_\_\_\_ Time: 0817  
 Site Location: AVS Landfill Finish: 1055 0-18-25  
 Weather Conds: Sunny Humid Warm Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 23/37 e max PSI  
 b. Water Table Depth 238.45 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
0941	INITIAL 4L	12.9	12.9	21049	7.96	-20.2	4.75	Brown	245.25
0945	4.5 L	12.7	1.74	21054	7.97	10.3	5.04		245.90
0949	5 L	13.1	1.64	21048	7.97	30.0	5.05		246.10
0953	5.5 L	12.8	1.49	21002	7.97	55.4	5.22		246.75
0957	10 L	13.1	1.37	21003	7.97	88.3	5.76		247.1
1001	10.9 L	13.1	1.34	21049	7.96	106.6	6.59		247.55
0948	L	19.9	4.25	2760	7.91	-212.6	10.05	↓	243.49
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

DTW

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0949
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature]Date 10-18-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-17-25  
 Project No: \_\_\_\_\_ Time: 1033  
 Site Location: AVS Landfill Finish: 1142  
 Weather Conds: Sunny Hot humid Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 13/17 e max PSI  
 b. Water Table Depth 2010.22 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1126</u>	<u>INITIAL 4.25</u>	<u>12.5</u>	<u>0.45</u>	<u>3083</u>	<u>8.08</u>	<u>-341.8</u>	<u>7.43</u>	<u>brown</u>	<u>207.10</u>
<u>1130</u>	<u>4.75 L</u>	<u>12.4</u>	<u>0.43</u>	<u>3081</u>	<u>8.08</u>	<u>-342.1</u>	<u>7.08</u>	<u>↓</u>	<u>207.11</u>
<u>1134</u>	<u>9.25 L</u>	<u>12.5</u>	<u>0.43</u>	<u>3077</u>	<u>8.08</u>	<u>-341.9</u>	<u>7.08</u>	<u>↓</u>	<u>207.10</u>
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1135</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature ManDate 10-17-25

## Ground Water Sample Collection Record

Client: BEPC Date: 4-17-25  
 Project No: \_\_\_\_\_ Time: 1150  
 Site Location: AVS Landfill Finish: 1220  
 Weather Conds: sunny warm Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_  
 b. Water Table Depth 208.0 d. Casing Diameter \_\_\_\_\_

## WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydro-sleeve

b. Field Testing Equipment Used: Make Model Serial Number  
 YSI 5320084101  
 HACH 20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
	INITIAL	<u>12.7</u>	<u>.28</u>	<u>3191</u>	<u>8.10</u>	<u>442</u>	<u>TOO HIGH</u>	<u>BLACK MUCK</u>	<u>208.0</u>
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e. Acceptance criteria pass/fail Yes No N/A  
 Has required volume been removed     
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1219</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature ManDate 4-17-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-17-25  
 Project No: \_\_\_\_\_ Time: 1250  
 Site Location: AVS Landfill Finish: 1424  
 Weather Conds: Sunny warm Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 39/21 c max PSI  
 b. Water Table Depth 199.13 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	✓ Turbidity (NTU)	Color	DTW	
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft	
<u>1355</u>	<u>INITIAL</u>	<u>7</u>	<u>13.8</u>	<u>.72</u>	<u>21002</u>	<u>9.48</u>	<u>-173.9</u>	<u>4.69</u>	<u>yellow</u>	<u>119.55</u>
<u>1359</u>	<u>7.5 L</u>	<u>14.0</u>	<u>.70</u>	<u>2147</u>	<u>9.47</u>	<u>-183.0</u>	<u>4.77</u>		<u>119.54</u>	
<u>1402</u>	<u>8 L</u>	<u>13.9</u>	<u>.59</u>	<u>2170</u>	<u>9.44</u>	<u>-164.7</u>	<u>4.70</u>		<u>119.56</u>	
<u>1406</u>	<u>8.5 L</u>	<u>13.9</u>	<u>.55</u>	<u>2179</u>	<u>9.41</u>	<u>-157.3</u>	<u>4.51</u>		<u>119.50</u>	
<u>1410</u>	<u>9 L</u>	<u>13.9</u>	<u>.53</u>	<u>2088</u>	<u>9.38</u>	<u>-152.9</u>	<u>4.98</u>		<u>119.50</u>	
<u>1414</u>	<u>9.5 L</u>	<u>13.8</u>	<u>.53</u>	<u>2122</u>	<u>9.36</u>	<u>-143.2</u>	<u>4.40</u>		<u>119.49</u>	
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1415</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature MKDate 10-17-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-18-25  
 Project No: \_\_\_\_\_ Time: 811  
 Site Location: AVS Landfill Finish: 0929  
 Weather Conds: cool, sunny Collector(s): MLC

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 15/15 e max PSI  
 b. Water Table Depth 149.40 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO ✓ mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity ✓ (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>0857</u>	<u>INITIAL 5L</u>	<u>10.0</u>	<u>.33</u>	<u>3194</u>	<u>8.01</u>	<u>-383.4</u>	<u>2.06</u>	<u>clear</u>	<u>149.60</u>
<u>0901</u>	<u>5.5 L</u>	<u>10.0</u>	<u>.33</u>	<u>3199</u>	<u>8.01</u>	<u>-383.8</u>	<u>1.95</u>		<u>149.59</u>
<u>0905</u>	<u>6 L</u>	<u>10.1</u>	<u>.34</u>	<u>3208</u>	<u>8.02</u>	<u>-383.7</u>	<u>1.10</u>		<u>149.55</u>
<u>0909</u>	<u>6.5 L</u>	<u>10.2</u>	<u>.43</u>	<u>3211</u>	<u>8.01</u>	<u>-383.6</u>	<u>1.06</u>		<u>149.59</u>
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached  Yes  No  N/A  
 Have parameters stabilized  Yes  No  N/A  
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>0910</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	

Comments DUPSignature MLCDate 10-18-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-18-25  
 Project No: \_\_\_\_\_ Time: 1115  
 Site Location: AVS Landfill Finish: 1257  
 Weather Conds: HOT, Sunny Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 28/32 @ max PSIb. Water Table Depth 202.75 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1229</u>	<u>INITIAL 7L</u>	<u>13.0</u>	<u>.05</u>	<u>3111</u>	<u>7.87</u>	<u>64.5</u>	<u>2.71</u>	<u>yellow/</u>	<u>212.0</u>
<u>1233</u>	<u>7.5 L</u>	<u>13.3</u>	<u>.01</u>	<u>3103</u>	<u>7.89</u>	<u>78.5</u>	<u>1.80</u>	<u>Brown</u>	<u>212.50</u>
<u>1237</u>	<u>8 L</u>	<u>13.9</u>	<u>.57</u>	<u>3090</u>	<u>7.87</u>	<u>85.6</u>	<u>1.94</u>	↓	<u>212.90</u>
<u>1241</u>	<u>8.5 L</u>	<u>14.0</u>	<u>.02</u>	<u>3097</u>	<u>7.88</u>	<u>91.5</u>	<u>1.90</u>		<u>213.11</u>
<u>1245</u>	<u>9 L</u>	<u>14.0</u>	<u>.02</u>	<u>3104</u>	<u>7.88</u>	<u>92.9</u>	<u>1.84</u>		<u>213.22</u>
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1247</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	↓

Comments \_\_\_\_\_

Signature ManDate 10-18-25



**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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



**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 Electric Power Cooperative  
WO: 90275  
Chain of Custody  
Page 1 of 1



Order #

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) Attn: Liabilities		Contact Mark Dihle	Emails mdihle@bepec.com aknutson@bepec.com
		Name of Sampler Mariah Knutson	Quote Number
		Date Submitted 6/19/2025	
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-17S	GW	6/18/2025	949	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	MW-24S	GW	6/17/2025	1135	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-27S	GW	6/17/2025	1219	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-18S	GW	6/17/2025	1415	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	MW-19S	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
006	DUP	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
007	MW-21S	GW	6/18/2025	1247	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/19/2025	NOON	C. W. W.	6/19/25	1435	3.9°C	Y/N	TM959
2.							Y/N	

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

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 1, 2025 2:41:34 PM

Well/Piezo ID: MW-195

# Ground Water Sample Collection Record

Client:	BEPC	Date:	8-26-25
Project No:		Time:	0801
Site Location:	AVS Landfill	Finish:	0920
Weather Conds:	cool, sunny	Collector(s):	ME

**WATER LEVEL DATA: (measured from Top of Casing)**

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC

b. Water Table Depth 149.41 d. Casing Diameter \_\_\_\_\_

Well

Pump Settings: 15/15 @ max PSI

**WELL PURGING DATA**

a. Purge Method Dedicated Bladder Pump

b. Field Testing Equipment Used: Make Model Serial Number

<u>YSI</u>		<u>5320084101</u>
<u>HACH</u>		<u>20030C084551</u>

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (us/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>0850</u>	<u>INITIAL 5L</u>	<u>10.2</u>	<u>0.48</u>	<u>3286</u>	<u>8.00</u>	<u>-316.2</u>	<u>1.05</u>	<u>clear</u>	<u>149.55</u>
<u>0854</u>	<u>5.5 L</u>	<u>10.3</u>	<u>0.48</u>	<u>3285</u>	<u>8.01</u>	<u>-318.1</u>	<u>1.00</u>	<u>↓</u>	<u>149.55</u>
<u>0858</u>	<u>6 L</u>	<u>10.3</u>	<u>0.49</u>	<u>3289</u>	<u>8.01</u>	<u>-325.3</u>	<u>0.92</u>	<u>↓</u>	<u>149.56</u>
<u>0902</u>	<u>6.5 L</u>	<u>10.4</u>	<u>0.49</u>	<u>3299</u>	<u>8.01</u>	<u>-327.7</u>	<u>0.86</u>	<u>↓</u>	<u>149.56</u>
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e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

\_\_\_\_\_

\_\_\_\_\_

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>0903</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]

Date 8-26-25

## Ground Water Sample Collection Record

Client:	BEPC	Date:	8.20.25
Project No:		Time:	0933
Site Location:	AVS <u>Landfill</u>	Finish:	1150
Weather Conds:	<u>Sunny, cool</u> <u>↳ warm</u>	Collector(s):	<u>MK</u>

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length _____	c. Casing Material <u>PVC</u>	Pump Settings: <u>20/34e max PSI</u>
b. Water Table Depth <u>199.20</u>	d. Casing Diameter _____	

**WELL PURGING DATA**

a. Purge Method <u>Dedicated Bladder Pump</u>									
b. Field Testing Equipment Used:									
<table style="width: 100%;"> <tr> <td style="width: 30%;">Make</td> <td style="width: 30%;">Model</td> <td style="width: 40%;">Serial Number</td> </tr> <tr> <td>YSI</td> <td></td> <td>5320084101</td> </tr> <tr> <td>HACH</td> <td></td> <td>20030C084551</td> </tr> </table>	Make	Model	Serial Number	YSI		5320084101	HACH		20030C084551
Make	Model	Serial Number							
YSI		5320084101							
HACH		20030C084551							

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1125</u>	<u>INITIAL 7L</u>	<u>15.1</u>	<u>1.29</u>	<u>2886</u>	<u>9.35</u>	<u>111.1</u>	<u>2.22</u>	<u>yellow</u>	<u>199.40</u>
<u>1129</u>	<u>7.5 L</u>	<u>15.2</u>	<u>1.27</u>	<u>2889</u>	<u>9.34</u>	<u>110.4</u>	<u>2.32</u>	<u>↓</u>	<u>199.41</u>
<u>1132</u>	<u>8 L</u>	<u>15.3</u>	<u>1.28</u>	<u>2903</u>	<u>9.32</u>	<u>108.4</u>	<u>3.73</u>	<u>↓</u>	<u>199.44</u>
<u>1136</u>	<u>8.5 L</u>	<u>15.1</u>	<u>1.27</u>	<u>2921</u>	<u>9.30</u>	<u>99.37</u>	<u>3.19</u>	<u>↓</u>	<u>199.45</u>
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e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

---

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1137</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature  Date 8.20.25

# Ground Water Sample Collection Record

Client: BEPC Date: 8-26-25  
 Project No: \_\_\_\_\_ Time: 1200  
 Site Location: AVS Landfill Finish: 1420  
 Weather Conds: Sunny, warm Collector(s): MK

**WATER LEVEL DATA: (measured from Top of Casing)**

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Well  Pump Settings: 20/40 @ max PSI  
 b. Water Table Depth 202.82 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (us/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1351</u>	<u>INITIAL 4.5L</u>	<u>17.8</u>	<u>1.44</u>	<u>3192</u>	<u>7.90</u>	<u>148.7</u>	<u>2.03</u>	<u>yellow</u>	<u>208.52</u>
<u>1355</u>	<u>5 L</u>	<u>17.7</u>	<u>1.37</u>	<u>3199</u>	<u>7.90</u>	<u>150.4</u>	<u>1.99</u>	<u>Brown</u>	<u>208.53</u>
<u>1359</u>	<u>55 L</u>	<u>17.7</u>	<u>1.37</u>	<u>3199</u>	<u>7.90</u>	<u>152.4</u>	<u>2.09</u>	<u>↓</u>	<u>208.61</u>
<u>1402</u>	<u>6 L</u>	<u>17.9</u>	<u>1.39</u>	<u>3187</u>	<u>7.89</u>	<u>153.8</u>	<u>1.87</u>	<u>↓</u>	<u>208.75</u>
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached  Yes  No  N/A  
 Have parameters stabilized  Yes  No  N/A  
 If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1403</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature] Date 8-26-25

# Basin Electric North Dakota

Site Name: AVS Landfill  
 Event Date: 8/25/2025  
 Weather Conditions:  
 Field Technician: MK

River Elevation (if applicable)

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-19s	800	149.41		
MW-18s		199.2		
MW-21S		202.82		
MW 15s		218.92		
MW 20s		220.28		
MW 16s		236.4		
MW 17s		238.35		
MW22s		210.12		
Mw25s		198.16		
MW23s		dry		
MW26s		190.52		
MW24s		206.3		
MW27s		203.71		

\* Depth to water as measured from the top of PVC casing.



**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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTTL.com



**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 Electric Power Cooperative**  
WO: 97784

**Chain of Custody**

Page 1 of 1

**Work Order #**  
Lab Use Only

<b>Company Name and Address</b> Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		<b>Account #</b> 2040	<b>Phone #</b> 701-745-7238 701-557-5488
<b>Billing Address (indicate if different from above)</b> Attn: Liabilities		<b>Contact</b> Mark Dihle	<b>Emails</b> mdihle@bepec.com aknutson@bepec.com
		<b>Name of Sampler</b> Mariah Knutson	
		<b>Quote Number</b>	<b>Date Submitted</b> 8/27/2025
		<b>Project Name/Number</b> AVS Landfill CCR	<b>Purchase Order #</b> 790708-01

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-19S	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	DUP	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-18S	GW	8/26/2025	1137	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-21S	GW	8/26/2025	1403	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	AVS LEACHATE POND	SW	8/26/2025	1435	1	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	8/27/2025	NOON	<i>[Signature]</i>	8/27/2025	1444	1.40C	Y/N	JMS05
2.							Y/N	

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

MVTTL guarantees the accuracy of the analysis done on the sample submitted for testing. It is not possible for MVTTL 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 MVTTL. 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.

# Ground Water Sample Collection Record

Client:	BEPC	Date:	10-7-25
Project No:		Time:	0817
Site Location:	AVS Landfill	Finish:	1042
Weather Conds:	cool, sunny	Collector(s):	MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 30/45 e max PSI  
 b. Water Table Depth 218.90 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
Stabilization									
0950	INITIAL 3L	10.7	0.90	2947	8.06	-311.4	2.35	yellow	222.80
0954	3.25L	10.7	0.93	2959	8.06	-313.9	2.57	brown	222.92
0958	3.5 L	10.8	0.92	2949	8.06	-314.5	1.79	↓	223.09
1002	3.75 L	10.8	0.91	2951	8.06	-315.0	2.07	↓	223.15
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	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Have parameters stabilized	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1004
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature Mann Date 10-7-25

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10-7-25
Project No:		Time:	1048
Site Location:	AVS Landfill	Finish:	1108
Weather Conds:	Sunny, cool Collector(s) MK		

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_

b. Water Table Depth 220.22 d. Casing Diameter \_\_\_\_\_

**WELL PURGING DATA**

a. Purge Method ~~Dedicated Bladder Pump~~ Hydro-sieve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		5320084101
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1052</u>	INITIAL	<u>8.3</u>	<u>3.93</u>	<u>2869</u>	<u>7.97</u>	<u>-354</u>	<u>0.54</u>	<u>Brown</u>	<u>220.22</u>
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e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	<u>1052</u>
	500mL	1	HNO3	Metals	<u>↓</u>

Comments \_\_\_\_\_

Signature Man Date 10-7-25

Well/Piezo ID: MW-165

# Ground Water Sample Collection Record

Client: BEPC Date: 10-7-25  
 Project No: \_\_\_\_\_ Time: 1110  
 Site Location: AVS Landfill Finish: 0924 10-8-25  
 Weather Conds: Sunny, cool Collector(s) \_\_\_\_\_

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 40/1050 max PSI  
 b. Water Table Depth 230.31 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1303	INITIAL 1.75L	16.5	4.00	2174	8.21	124.9	55.2	Brown	238.99
1307	1.8 L	16.2	3.69	2139	8.21	124.8	57.8	↓	239.13
1311	1.9 L	16.1	3.13	2093	8.20	124.1	55.5	↓	239.25
1315	2 L	16.8	2.54	2085	8.19	124.2	56.2	↓	239.40
1319	2.1 L	17.0	2.40	2059	8.18	124.4	58.1	↓	239.56
0816									

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

DTW

SAMPLE COLLECTION: Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0816
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature man

Date 10-8-25

# Ground Water Sample Collection Record

Client: BEPC Date: 10-7-25  
 Project No: \_\_\_\_\_ Time: 1418  
 Site Location: AVS Landfill Finish: 1002  
 Weather Conds: Sunny, nice Collector(s): MK

**WATER LEVEL DATA: (measured from Top of Casing)** Well   
 a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 25/80 @ max PSI  
 b. Water Table Depth 238.32 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1450</u>	<u>INITIAL 3L</u>	<u>12.8</u>	<u>4.39</u>	<u>2751</u>	<u>8.00</u>	<u>-288.4</u>	<u>9.88</u>	<u>Brown</u>	<u>243.8</u>
<u>1454</u>	<u>3.2 L</u>	<u>12.6</u>	<u>3.57</u>	<u>2733</u>	<u>8.00</u>	<u>-289.0</u>	<u>9.77</u>	↓	<u>243.75</u>
<u>1458</u>	<u>3.4 L</u>	<u>12.4</u>	<u>3.23</u>	<u>2742</u>	<u>8.01</u>	<u>-288.6</u>	<u>9.22</u>	↓	<u>244.10</u>
<u>1502</u>	<u>3.6 L</u>	<u>12.6</u>	<u>3.03</u>	<u>2759</u>	<u>8.01</u>	<u>-291.7</u>	<u>9.37</u>	↓	<u>244.74</u>
<u>1506</u>	<u>3.8 L</u>	<u>12.7</u>	<u>1.45</u>	<u>2415</u>	<u>8.00</u>	<u>-294.5</u>	<u>9.69</u>	↓	<u>245.20</u>
	L								
	L	<u>pumped down to 250ft</u>							
	L								
<u>0934</u>	L	<u>11.3</u>	<u>4.83</u>	<u>2712</u>	<u>8.02</u>	<u>-314.8</u>	<u>7.04</u>	<u>Brown</u>	<u>244.51</u>
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e. Acceptance criteria pass/fail Yes No N/A  
 Has required volume been removed     
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

DTW

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>0934</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	↓

Comments \_\_\_\_\_

Signature [Handwritten Signature]

Date 10-8-25

Well/Piezo ID: MW-22S

## Ground Water Sample Collection Record

Client: BEPC Date: 10.8.25  
 Project No: \_\_\_\_\_ Time: 1009  
 Site Location: AVS Landfill Finish: 1130  
 Weather Conds: cold, sunny Collector(s) MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 22/38 @ max PSI  
 b. Water Table Depth 210.03 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1100</u>	<u>INITIAL 5.25</u>	<u>10.7</u>	<u>1.09</u>	<u>2530</u>	<u>8.17</u>	<u>-326.2</u>	<u>5.11</u>	<u>BROWN</u>	<u>210.49</u>
<u>1104</u>	<u>5.75 L</u>	<u>10.8</u>	<u>0.70</u>	<u>2529</u>	<u>8.17</u>	<u>-327.3</u>	<u>5.12</u>	↓	<u>210.45</u>
<u>1108</u>	<u>4.25 L</u>	<u>10.8</u>	<u>0.61</u>	<u>2535</u>	<u>8.16</u>	<u>-328.7</u>	<u>5.57</u>	↓	<u>210.30</u>
<u>1112</u>	<u>6.75 L</u>	<u>10.9</u>	<u>0.57</u>	<u>2529</u>	<u>8.16</u>	<u>-329.3</u>	<u>5.65</u>	↓	<u>210.30</u>
<u>1116</u>	<u>7.25 L</u>	<u>10.9</u>	<u>0.56</u>	<u>2532</u>	<u>8.17</u>	<u>-330.4</u>	<u>5.27</u>	↓	<u>210.29</u>
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e. Acceptance criteria pass/fail Yes No N/A  
 Has required volume been removed     
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1116</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	↓

Comments DUP

Signature [Signature] Date 10.8.25

Well/Piezo ID: MW-255

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10.8.25
Project No:		Time:	1130
Site Location:	AVS <u>Landfill</u>	Finish:	1225
Weather Conds:	<u>Sunny, Breezy</u> Collector(s) <u>MK</u>		

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 28/32 @ max PSI  
 b. Water Table Depth 198.43 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
Stabilization									
<u>1206</u>	<u>INITIAL 4.75</u>	<u>9.8</u>	<u>.46</u>	<u>3015</u>	<u>8.18</u>	<u>-314.0</u>	<u>9.0</u>	<u>yellow</u>	<u>202.20</u>
<u>1210</u>	<u>5.25 L</u>	<u>9.8</u>	<u>.39</u>	<u>3021</u>	<u>8.19</u>	<u>-313.4</u>	<u>9.29</u>	<u>brown</u>	<u>202.15</u>
<u>1214</u>	<u>5.75 L</u>	<u>9.7</u>	<u>.35</u>	<u>3010</u>	<u>8.19</u>	<u>-313.5</u>	<u>9.17</u>		<u>202.25</u>
<u>1218</u>	<u>6.25 L</u>	<u>9.8</u>	<u>.31</u>	<u>3011</u>	<u>8.18</u>	<u>-313.8</u>	<u>9.08</u>		<u>202.19</u>
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:**

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1218</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]

Date 10.8.25

Well/Piezo ID: MW-265

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10.8.25
Project No:		Time:	1229
Site Location:	AVS Landfill	Finish:	1350
Weather Conds:	Sunny, Breezy Collector(s) MK		

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 20/45 @ max PSI  
 b. Water Table Depth 190.43 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1322	INITIAL 3.75	13.3	2.91	2880	8.10	-343.3	20.6	Brown	191.46
1326	4.25 L	12.0	2.42	2886	8.10	-344.0	20.7		191.5
1330	4.75 L	12.1	2.00	2894	8.09	-345.7	17.0		191.61
1334	5.25 L	11.9	1.70	2904	8.09	-347.3	12.2		191.61
1338	5.75 L	12.0	1.47	2885	8.08	-348.4	12.4		191.62
1342	6.25 L	12.1	1.46	2895	8.09	-348.5	11.6		191.63
1346	6.75 L	12.2	1.44	2884	8.08	-348.6	11.2		191.65
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:**

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1347
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature]

Date 10.8.25

Well/Piezo ID: MW-245

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10.8.25
Project No:		Time:	1401
Site Location:	AVS Landfill	Finish:	1452
Weather Conds:	Sunny Breezy Collector(s) MK		

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 20/37e max PSI

b. Water Table Depth 206.27 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1433	INITIAL 5.75	10.0	.57	3146	8.09	-300.3	8.32	BROWN	207.8
1437	0.25 L	10.1	.49	3142	8.11	-303.9	8.12	↓	207.81
1441	6.75 L	10.1	.45	3148	8.12	-307.6	8.12	↓	207.78
1445	7.25 L	10.1	.42	3145	8.12	-299.5	8.81		207.77
	L								
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	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1445
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature] Date 10.8.25

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10-8-25
Project No:		Time:	1457
Site Location:	AVS Landfill	Finish:	1315
Weather Conds:	Sunny Breezy	Collector(s):	MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_

b. Water Table Depth 203.67 d. Casing Diameter \_\_\_\_\_

**WELL PURGING DATA**

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrasleeve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		5320084101
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1309</u>	INITIAL	<u>12.0</u>	<u>.25</u>	<u>3254</u>	<u>7.96</u>	<u>-292.9</u>	<u>TOO High</u>	<u>Black mud</u>	<u>203.67</u>
	L								
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	L								
	L								
	L								
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	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:**

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	<u>1309</u>
	500mL	1	HNO3	Metals	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]

Date 10-8-25

# Basin Electric North Dakota

**Site Name:** AVS Landfill  
**Event Date:** 10/6/2025  
**Weather Conditions:**  
**Field Technician:** MK

<b>River Elevation (if applicable)</b>

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-19s	800	149.75		
MW-18s		199.17		
MW-21S		202.78		
MW 15s		218.9		
MW 20s		220.22		
MW 16s		236.31		
MW 17s		238.32		
MW22s		210.03		
Mw25s		198.1		
MW23s		190.43		
MW26s		190.43		
MW24s		206.27		
MW27s		203.67		

\* Depth to water as measured from the top of PVC casing.



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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

Basin Electric Power Cooperative  
 WO: 103535



### Chain of Custody

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (Indicate if different from above) Attn: Liabilities		Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 10/9/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-15S	GW	10/7/2025	1004	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	MW-20S	GW	10/7/2025	1052	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-16S	GW	10/8/2025	816	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-17S	GW	10/8/2025	934	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	MW-22S	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
006	DUP	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
007	MW-25S	GW	10/8/2025	1218	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
008	MW-26S	GW	10/8/2025	1347	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
009	MW-24S	GW	10/8/2025	1445	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
010	MW-27S	GW	10/8/2025	1309	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	10/9/2025	NOON	<i>[Signature]</i>	10/9/2025	1443	5.0°C	Y/N	711959
2.							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: Friday, October 24, 2025 8:33:11 AM



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**Account #:** 2040                                      **Client:** Basin Electric Power Cooperative  
**Workorder:** AVS Landfill CCR Wells (89554)                                      **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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**Account #:** 2040**Client:** Basin Electric Power Cooperative**Analytical Results**

**Lab ID:** 89554001      **Date Collected:** 06/10/2025 09:45      **Matrix:** Groundwater  
**Sample ID:** MW-15S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	356	mg/L	25	5		06/18/2025 11:56	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:57	
Calcium	3.79	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Magnesium	2.55	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Potassium	3.82	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Sodium	733	mg/L	5	5	06/12/2025 16:25	06/16/2025 14:49	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1042	mg/L as CaCO3	20.5	1		06/13/2025 13:58	
Bicarbonate	1042	mg/L as CaCO3	20.5	1		06/13/2025 13:58	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 13:58	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/13/2025 13:58	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	13.2	mg/L	2.0	1		06/17/2025 10:41	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.32	mg/L	0.1	1		06/13/2025 13:58	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1910	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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Report Date: Tuesday, July 1, 2025 2:32:47 PM

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

**Lab ID:** 89554002      **Date Collected:** 06/10/2025 10:29      **Matrix:** Groundwater  
**Sample ID:** MW-20S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	56.1	mg/L	5	1		06/18/2025 12:03	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:57	
Calcium	4.65	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Magnesium	2.90	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Potassium	4.03	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Sodium	698	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1372	mg/L as CaCO3	20.5	1		06/13/2025 14:09	
Bicarbonate	1372	mg/L as CaCO3	20.5	1		06/13/2025 14:09	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 14:09	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.1	units	0.1	1		06/13/2025 14:09	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	24.6	mg/L	2.0	1		06/17/2025 10:43	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.16	mg/L	0.1	1		06/13/2025 14:09	*
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1760	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****Fluoride**

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

**pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554003      **Date Collected:** 06/11/2025 08:30      **Matrix:** Groundwater  
**Sample ID:** MW-16S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	107	mg/L	5	1		06/18/2025 12:04	
<b>Method: EPA 6010D</b>							
Boron	0.14	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:58	
Calcium	5.41	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
Magnesium	2.30	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
Potassium	3.32	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
Sodium	473	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	778	mg/L as CaCO3	20.5	1		06/13/2025 14:21	
Bicarbonate	778	mg/L as CaCO3	20.5	1		06/13/2025 14:21	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 14:21	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/13/2025 14:21	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	26.2	mg/L	2.0	1		06/17/2025 10:51	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	2.04	mg/L	0.1	1		06/13/2025 14:21	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1200	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554004      **Date Collected:** 06/11/2025 11:02      **Matrix:** Groundwater  
**Sample ID:** MW-22S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	193	mg/L	25	5		06/18/2025 11:59	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:59	
Calcium	2.49	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:50	
Magnesium	1.99	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:50	
Potassium	3.53	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:50	
Sodium	662	mg/L	5	5	06/12/2025 16:25	06/16/2025 14:51	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:37	
Bicarbonate	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:37	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 16:37	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/13/2025 16:37	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	11.1	mg/L	2.0	1		06/17/2025 10:52	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.75	mg/L	0.1	1		06/13/2025 16:37	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1650	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554005      **Date Collected:** 06/11/2025 11:02      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	171	mg/L	5	1		06/18/2025 12:23	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:59	
Calcium	2.38	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:52	
Magnesium	1.94	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:52	
Potassium	3.24	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:52	
Sodium	648	mg/L	5	5	06/12/2025 16:25	06/16/2025 14:53	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:48	
Bicarbonate	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:48	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 16:48	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/13/2025 16:48	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	11.1	mg/L	2.0	1		06/17/2025 10:53	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.65	mg/L	0.1	1		06/13/2025 16:48	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1670	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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 www.MVTL.com

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

**Lab ID:** 89554006      **Date Collected:** 06/11/2025 12:52      **Matrix:** Groundwater  
**Sample ID:** MW-25S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	29.8	mg/L	5	1		06/18/2025 12:24	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/13/2025 16:10	06/26/2025 11:04	
Calcium	4.01	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:54	
Magnesium	3.11	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:54	
Potassium	4.04	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:54	
Sodium	826	mg/L	5	5	06/13/2025 16:10	06/16/2025 14:55	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1489	mg/L as CaCO3	20.5	1		06/13/2025 17:00	
Bicarbonate	1489	mg/L as CaCO3	20.5	1		06/13/2025 17:00	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 17:00	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/13/2025 17:00	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	39.6	mg/L	2.0	1		06/17/2025 10:54	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.26	mg/L	0.1	1		06/13/2025 17:00	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1910	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554007      **Date Collected:** 06/11/2025 14:27      **Matrix:** Groundwater  
**Sample ID:** MW-26S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	75.9	mg/L	5	1		06/18/2025 12:25	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	06/13/2025 16:10	06/26/2025 11:05	
Calcium	11.0	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:56	
Magnesium	2.90	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:56	
Potassium	4.72	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:56	
Sodium	746	mg/L	5	5	06/13/2025 16:10	06/16/2025 14:57	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1335	mg/L as CaCO3	20.5	1		06/13/2025 17:12	
Bicarbonate	1335	mg/L as CaCO3	20.5	1		06/13/2025 17:12	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 17:12	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/13/2025 17:12	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	30.6	mg/L	2.0	1		06/17/2025 10:56	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.28	mg/L	0.1	1		06/13/2025 17:12	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1820	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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Account #: 2040

Client: Basin Electric Power Cooperative

QC Results Summary							WO #: 89554			
Sulfate										
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)	Units: mg/L
LFB			100	101.0		85	115			
LFB			100	97.9		85	115			
LFB			100	95.8		85	115			
LFB			100	91.1		85	115			
LFB			100	89.6		85	115			
LFB			100	85.6		85	115			
UPL			100	97.8		85	115			
LFB			100	97.5		85	115			
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MS/MSD	89364013		500	94.8	94.6	85	115	0.0	20	
MS/MSD	89364024		100	94.5	94.7	85	115	0.1	20	
MS/MSD	89416003		100	85.3	85.6	85	115	0.4	20	
MS/MSD	89554004		500	88.8	88.8	80	115	0.0	20	
MS/MSD	89584006		100	80.1	80.7	85	115	0.5	20	
MS/MSD	89758001		1000	95.8	96.0	85	115	0.0	20	
MS/MSD	89769002		100	97.2	97.2	85	115	0.0	20	

Chloride										
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)	Units: mg/L
LFB			30	96.4		90	110			
LFB			30	94.8		90	110			
LFB			30	95.8		90	110			
LFB			30	95.4		90	110			

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**Account #:** 2040

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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	95.2		90	110		
LFB			30	95.6		90	110		
LFB			30	94.9		90	110		
LFB			30	95.0		90	110		
LFB			30	94.3		90	110		
LFB			30	94.4		90	110		
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	89364007		30	98.1	98.1	90	120	0.0	20
MS/MSD	89364028		30	98.0	97.3	90	120	0.5	20
MS/MSD	89554007		30	96.5	96.7	90	120	0.0	20
MS/MSD	89631003		30	95.7	94.7	90	120	0.6	20
MS/MSD	89761001		30	94.4	94.4	90	120	0.0	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-DE			0.4	101.0		85	115		
LFB-DE			0.4	102.0		85	115		
MB		<0.1							
MB		<0.1							
MS/MSD	89554005		0.4	94.3	83.3	70	130	0.6	20
POS/PDSO	89556001		1	107.0	108.0	75	125	0.8	20
POS/PDSO	90443002		1	83.3	83.0	75	125	0.6	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 (%)
UFB-MI			100	104.0		85	115		
UFB-MI			100	106.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	89196001		100	107.0	102.0	75	125	0.2	20
PDS/PDSO	89364006		100	99.5	101.0	75	125	0.7	20
PDS/PDSO	89364012		100	95.0	95.7	75	125	0.3	20
PDS/PDSO	89416005		100	103.0	102.0	75	125	0.2	20
PDS/PDSO	89416008		100	100.0	101.0	75	125	0.4	20
DUP	89423002							2.5	20
PDS/PDSO	89584004		100	103.0	102.0	75	125	0.2	20
PDS/PDSO	89584009		100	103.0	105.0	75	125	1.1	20
PDS/PDSO	89584010		100	101.0	102.0	75	125	0.5	20

Magnesium		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 (%)
UFB-MI			100	106.0		85	115		
UFB-MI			100	108.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	89196001		100	103.0	102.0	75	125	0.3	20
PDS/PDSO	89364006		100	102.0	103.0	75	125	0.8	20
PDS/PDSO	89364012		100	101.0	101.0	75	125	0.4	20
PDS/PDSO	89416005		100	105.0	105.0	75	125	0.4	20
PDS/PDSO	89416008		100	108.0	104.0	75	125	0.6	20
DUP	89423002							0.6	20
PDS/PDSO	89584004		100	105.0	105.0	75	125	0.2	20
PDS/PDSO	89584009		100	105.0	107.0	75	125	1.2	20
PDS/PDSO	89584010		100	105.0	106.0	75	125	0.9	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 (%)
UFB-MI			100	105.0		85	115		

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Client: Basin Electric Power Cooperative

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	108.0		85	115		
MB		<1							
MS		<1							
PDS/PDSO	89186003		100	108.0	108.0	75	125	0.4	20
PDS/PDSO	89364006		100	105.0	107.0	75	125	1.8	20
PDS/PDSO	89364012		100	104.0	103.0	75	125	0.5	20
PDS/PDSO	89416005		100	107.0	104.0	75	125	1.4	20
PDS/PDSO	89416008		100	102.0	105.0	75	125	2.4	20
DUP	89423002							1.3	20
PDS/PDSO	89584004		100	104.0	104.0	75	125	0.1	20
PDS/PDSO	89584009		100	103.0	106.0	75	125	2.8	20
PDS/PDSO	89584010		100	102.0	106.0	75	125	3.1	20

Sodium			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	103.0		85	115		
LFB-MI			100	108.0		85	115		
MB		<1							
MS		<1							
PDS/PDSO	89186003		100	109.0	104.0	75	125	1.3	20
PDS/PDSO	89364006		100	105.0	105.0	75	125	0.1	20
PDS/PDSO	89364012		100	102.0	105.0	75	125	2.9	20
PDS/PDSO	89416005		100	106.0	107.0	75	125	3.1	20
PDS/PDSO	89416008		100	107.0	104.0	75	125	2.2	20
DUP	89423002							2.4	20
PDS/PDSO	89584004		100	104.0	106.0	75	125	1.8	20
PDS/PDSO	89584009		100	105.0	105.0	75	125	0.5	20
PDS/PDSO	89584010		100	106.0	105.0	75	125	0.7	20

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 (%)
CRM			501	89.7		80	120		
LFB			410	93.5		80	110		

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**Account #:** 2040

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Alkalinity, Total									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			410	93.8		90	110		
LFB			410	92.5		90	110		
LFB			410	92.4		90	110		
MB		<20.5							
MB		<20.5							
MB		<20.5							
MB		<20.5							
MS/MSD	89554001		410	83.3	86.9	90	120	0.0	20
MS/MSD	89584002		410	87.9	87.5	90	120	0.4	20
MS/MSD	89584007		410	87.1	87.0	90	120	0.2	20

pH									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-PH			6	100.7					
CRM-PH			6	100.2					
CRM-PH			6	100.0					
CRM-PH			6	100.0					
DUP	89584001							0.7	20
DUP	89584009							0.1	20

Fluoride									
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			0.6	101.0		88.99	111.11		
LFB-F			0.5	92.0		90	110		
LFB-F			0.5	93.0		90	110		
LFB-F			0.5	98.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD-F	89554002		0.5	107.0	122.0	90	120	5.8	20
MS/MSD-F	89554006		0.5	100.0	86.0	90	120	4.1	20

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

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	96.0		90.35	110.33		
MB		<10							
MB	89564001							0.0	10.0

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Account #: 2040

Client: Basin Electric Power Cooperative



Minnesota Valley Testing Laboratories, Inc.  
2616 East Broadway Avenue  
Bismarck, ND 58501  
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Toll Free: (800) 279-6885 Fax: (701) 258-9724

**Basin Electric Power Cooperative**

WO: 89554

Chain of Custody



Page 1 of 4

Order #

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3991 Highway 209A Stanton, ND 58571 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) Attn: Liabilities		Contact Mark Dihle Name of Sampler Marlah Knutson	Emails mdihle@becp.com mknutson@becp.com
		Quote Number	Date Submitted 6/12/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
	001	MW-16S	GW	6/10/2025	945	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	002	MW-20S	GW	6/10/2025	1029	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	003	MW-16S	GW	6/11/2025	830	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	004	MW-22S	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	005	DUP	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	006	MW-26S	GW	6/11/2025	1252	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	007	MW-26S	GW	6/11/2025	1427	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	-	AVS LEACHATE POND	SW	6/10/2025	1435	2	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity
			GW					

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/12/2025	NOON	<i>[Signature]</i>	6/12/2025	14:34	4.8°C	(Y/N)	TM959
2.							Y/N	

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

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative



**Sample Condition Checklist**

Date: 12 Jun 25 Time: 1517 Analyst: PW  
Work Order #: 89554

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Number of Bottles	Container Size (mL)		Container Type		Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	F-(500) = Filtered	Other	CG = Clear Glass, P = Plastic, AG = Amber Glass	Other						
7	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
7	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease		(CG) (P) (AG)	Other	HCl	n/a				
	TOC Vials		(G) (AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials		(G) (AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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

**Lab ID:** 90275001      **Date Collected:** 06/18/2025 09:49      **Matrix:** Groundwater  
**Sample ID:** MW-17S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	293	mg/L	25	5		06/25/2025 09:17	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:30	
Calcium	4.05	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
Magnesium	2.28	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
Potassium	3.52	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
Sodium	684	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1097	mg/L as CaCO3	20.5	1		06/24/2025 13:17	
Bicarbonate	1087	mg/L as CaCO3	20.5	1		06/24/2025 13:17	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 13:17	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		06/24/2025 13:17	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	13.0	mg/L	2.0	1		06/24/2025 10:34	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.63	mg/L	0.1	1		06/23/2025 15:51	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1740	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275002      **Date Collected:** 06/17/2025 11:35      **Matrix:** Groundwater  
**Sample ID:** MW-24S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	62.4	mg/L	5	1		06/25/2025 09:30	
<b>Method: EPA 6010D</b>							
Boron	0.11	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:30	
Calcium	4.35	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:27	
Magnesium	3.46	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:27	
Potassium	4.48	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:27	
Sodium	881	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:13	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1592	mg/L as CaCO3	20.5	1		06/24/2025 13:28	
Bicarbonate	1589	mg/L as CaCO3	20.5	1		06/24/2025 13:28	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 13:28	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/24/2025 13:28	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	49.6	mg/L	2.0	1		06/24/2025 10:35	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.56	mg/L	0.1	1		06/23/2025 16:05	*
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1950	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****Fluoride**

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

**pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275003      **Date Collected:** 06/17/2025 12:19      **Matrix:** Groundwater  
**Sample ID:** MW-27S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	230	mg/L	25	5		06/25/2025 09:19	
<b>Method: EPA 6010D</b>							
Boron	0.68	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:31	
Calcium	419	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:28	
Magnesium	152	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:28	
Potassium	27.4	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:28	
Sodium	1040	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:14	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1659	mg/L as CaCO3	20.5	1		06/24/2025 13:39	
Bicarbonate	1659	mg/L as CaCO3	20.5	1		06/24/2025 13:39	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 13:39	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/24/2025 13:39	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	64.9	mg/L	10.0	5		06/24/2025 10:36	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.41	mg/L	0.1	1		06/23/2025 18:17	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2500	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275004      **Date Collected:** 06/17/2025 14:15      **Matrix:** Groundwater  
**Sample ID:** MW-18S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	555	mg/L	25	5		06/25/2025 09:20	
<b>Method: EPA 6010D</b>							
Boron	0.10	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:32	
Calcium	4.43	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
Magnesium	1.66	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
Potassium	3.92	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
Sodium	697	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	820	mg/L as CaCO3	20.5	1		06/24/2025 13:48	
Bicarbonate	638	mg/L as CaCO3	20.5	1		06/24/2025 13:48	
Carbonate	182	mg/L as CaCO3	20.5	1		06/24/2025 13:48	
<b>Method: SM4500 H+ B-2021</b>							
pH	9.2	units	0.1	1		06/24/2025 13:48	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	8.5	mg/L	2.0	1		06/24/2025 10:37	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.32	mg/L	0.1	1		06/23/2025 18:31	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1780	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275005      **Date Collected:** 06/18/2025 09:10      **Matrix:** Groundwater  
**Sample ID:** MW-19S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	696	mg/L	25	5		06/25/2025 09:21	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:32	
Calcium	4.30	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:30	
Magnesium	3.34	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:30	
Potassium	4.26	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:30	
Sodium	844	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:15	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	845	mg/L as CaCO3	20.5	1		06/24/2025 14:00	
Bicarbonate	845	mg/L as CaCO3	20.5	1		06/24/2025 14:00	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 14:00	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/24/2025 14:00	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.5	mg/L	2.0	1		06/24/2025 10:38	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.77	mg/L	0.1	1		06/23/2025 18:45	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2180	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275006      **Date Collected:** 06/18/2025 09:10      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	738	mg/L	25	5		06/25/2025 09:22	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:35	
Calcium	4.30	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:32	
Magnesium	3.37	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:32	
Potassium	4.30	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:32	
Sodium	840	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:16	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	825	mg/L as CaCO3	20.5	1		06/24/2025 14:08	
Bicarbonate	825	mg/L as CaCO3	20.5	1		06/24/2025 14:08	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 14:08	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/24/2025 14:08	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.7	mg/L	2.0	1		06/24/2025 10:40	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.73	mg/L	0.1	1		06/23/2025 18:58	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2190	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275007      **Date Collected:** 06/18/2025 12:47      **Matrix:** Groundwater  
**Sample ID:** MW-21S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	401	mg/L	25	5		06/25/2025 09:23	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:37	
Calcium	4.54	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:33	
Magnesium	3.12	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:33	
Potassium	4.19	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:33	
Sodium	827	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:17	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1187	mg/L as CaCO3	20.5	1		06/24/2025 14:17	
Bicarbonate	1187	mg/L as CaCO3	20.5	1		06/24/2025 14:17	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 14:17	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/24/2025 14:17	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.0	mg/L	2.0	1		06/24/2025 10:41	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.65	mg/L	0.1	1		06/23/2025 19:12	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2030	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

QC Results Summary				WO #: 90275					
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	102.0		85	115		
LFB			100	102.0		85	115		
LFB			100	102.0		85	115		
LFB			100	100.0		85	115		
LFB			100	100.0		85	115		
LFB			100	109.0		85	115		
LFB			100	100.0		85	115		
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MS/MSD	90134001		1000	80.6	89.2	85	115	1.2	20
MS/MSD	90167004		100	98.1	99.5	85	115	1.4	20
MS/MSD	90304002		100000	86.5	89.8	85	115	2.7	20
MS/MSD	90443002		10000	81.1	84.2	85	115	1.5	20
MS/MSD	90446002		500	81.0	85.8	85	115	2.6	20
MS/MSD	90448004		100	98.8	98.8	85	115	0.0	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	97.1		90	110		
LFB			30	97.4		90	110		
LFB			30	97.3		90	110		
LFB			30	96.8		90	110		
LFB			30	96.6		90	110		
LFB			30	96.2		90	110		
LFB			30	96.0		90	110		

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

Chloride									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	98926001		30	100.2	100.1	90	120	0.0	20
MS/MSD	90166003		30	109.1	103.1	90	120	0.8	20
MS/MSD	90304007		30	101.4	101.5	90	120	0.2	20

Boron									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LF8-OE			0.4	104.0		85	115		
MB		<0.1							
PDS/PDS0	89566001		2	107.0	108.0	75	125	0.6	20
MS/MSD	90273006		0.4	95.1	98.0	70	130	0.7	20
PDS/PDS0	90443002		2	82.3	83.0	75	125	0.6	20

Calcium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LF8-MI			100	95.8		85	115		
MB		<1							
PDS/PDS0	89096001		100	103.0	103.0	95	125	0.1	20
PDS/PDS0	89766001		100	99.5	98.1	75	125	0.6	20
PDS/PDS0	89938001		100	102.0	101.0	75	125	0.5	20
PDS/PDS0	90167005		100	101.0	102.0	75	125	0.1	20
PDS/PDS0	90304006		100	95.9	95.9	75	125	0.0	20

Magnesium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LF8-MI			100	99.0		85	115		
MB		<1							
PDS/PDS0	89096001		100	105.0	105.0	75	125	0.1	20

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Magnesium		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/PDS0	89760001		100	102.0	101.0	75	125	0.8	20
PDS/PDS0	89938001		100	104.0	103.0	75	125	0.8	20
PDS/PDS0	90167005		100	102.5	101.0	75	125	0.1	20
PDS/PDS0	90304006		100	97.2	97.8	75	125	0.4	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-MH			100	101.8		85	135		
MB		<1							
PDS/PDS0	89096001		100	103.0	103.0	75	125	0.3	20
PDS/PDS0	89760001		100	103.0	102.0	75	125	0.8	20
PDS/PDS0	89938001		100	105.0	104.0	75	125	0.8	20
PDS/PDS0	90167005		100	106.0	106.0	75	125	0.3	20
PDS/PDS0	90304006		100	102.0	105.0	75	125	2.6	20

Sodium		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-MH			100	98.9		85	135		
MB		<1							
PDS/PDS0	89096001		100	73.6	72.8	75	125	0.2	20
PDS/PDS0	89760001		100	104.0	105.0	75	125	0.6	20
PDS/PDS0	89938001		100	107.0	101.0	75	125	4.0	20
PDS/PDS0	90167005		100	108.0	108.0	75	125	0.1	20
PDS/PDS0	90304006		100	86.8	86.7	75	125	0.8	20

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 (%)
CRM			50	93.1		80	120		
LFB			410	96.9		90	110		
LFB			410	96.6		90	110		
LFB			410	95.7		90	110		
LFB			410	96.5		90	110		
LFB			410	96.1		90	110		
MB		<10.5							

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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 (%)
MB		<20.5							
MB		<20.5							
MB		<20.5							
MB		<20.5							
MS/MSD	90275006		410	90.5	88.3	80	120	0.6	20
MS/MSD	90304006		410	92.2	97.0	80	120	3.2	20
MS/MSD	90442002		410	91.2	91.4	80	120	0.1	20
MS/MSD	90446001		410	91.7	91.7	80	120	0.0	20

pH		Units: units							
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-PH			6	100.5					
CRM-PH			5	100.6					
CRM-PH			6	100.5					
CRM-PH			6	100.3					
CRM-PH			6	100.6					
DUP	90275002							0.7	20
DUP	90391001							0.1	20
DUP	90446001							0.4	20
DUP	90446002							0.9	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			0.6	99.2		83.99	111.11		
1FB-F			0.5	94.0		90	110		
1FB-F			0.5	98.0		90	110		
1FB-F			0.5	100.0		90	110		
1FB-F			0.5	104.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD-F	90275002		0.5	92.0	70.0	80	120	5.6	20

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**Account #:** 2040

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Fluoride									
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-F	90295007		0.5	122.0	106.0	80	120	5.2	20
MS/MSD-F	90104007		0.5	90.0	88.0	80	120	-2.1	20

Total Dissolved Solids									
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	110.65		
Mix		<0.1							
DUP	90108002							0.5	20

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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		Basin Electric Power Cooperative WO: 90275 		Chain of Custody Page <u>1</u> of <u>1</u>		Order # Only		
Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571				Account # 2040 Phone # 701-745-7238 701-557-5488		Contact Mark Dihle Emails mdihle@bepec.com aknutson@bepec.com		Name of Sampler Mariah Knutson		
Billing Address (indicate if different from above) Attn: Liabilities				Quote Number		Date Submitted 6/19/2025		Project Name/Number AVS Landfill CCR Wells Purchase Order # 79070801		
Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required			
001	MW-17S	GW	6/18/2025	949	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
002	MW-24S	GW	6/17/2025	1135	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
003	MW-27S	GW	6/17/2025	1219	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
004	MW-18S	GW	6/17/2025	1415	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
005	MW-19S	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
006	DUP	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
007	MW-21S	GW	6/18/2025	1247	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,			
Comments:										
Transferred by		Date	Time	Received by		Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS		6/19/2025	NOON	C. W. W. W.		6/19/25	1435	3.9°C	Y/N	71959
2.									Y/N	

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

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Account #: 2040

Client: Basin Electric Power Cooperative



**Sample Condition Checklist**

Date: 19 Jun 25 Time: 1458 Analyst: PW  
Work Order #: 90275

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Comments:

Number of Bottles	Container Size (mL)		Container Type		Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	F-(500) = Filtered	Other	CG = Clear Glass, P = Plastic, AG = Amber Glass	Other						
<u>7</u>	(125) (250) (500) F-(500) <u>(1000)</u>	Other	(CG) <u>(P)</u> (AG) Other	Other	<u>NONE</u> HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
<u>7</u>	(125) (250) <u>(500)</u> F-(500) (1000) Other	Other	(CG) <u>(P)</u> (AG) Other	Other	<u>NONE</u> HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000) Other	Other	(CG) (P) (AG) Other	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000) Other	Other	(CG) (P) (AG) Other	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000) Other	Other	(CG) (P) (AG) Other	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000) Other	Other	(CG) (P) (AG) Other	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000) Other	Other	(CG) (P) (AG) Other	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000) Other	Other	(CG) (P) (AG) Other	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease		(CG) (P) (AG) Other	Other	HCl	n/a				
	TOC Vials		(G) (AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials		(G) (AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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

**Lab ID:** 97784001      **Date Collected:** 08/26/2025 09:03      **Matrix:** Groundwater  
**Sample ID:** MW-19S      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	765	mg/L	25	5		09/03/2025 10:55	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 11:59	
Calcium	4.17	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:12	
Magnesium	3.27	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:12	
Potassium	4.40	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:12	
Sodium	808	mg/L	5	5	08/27/2025 16:36	08/29/2025 11:41	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	838	mg/L as CaCO3	20.5	1		08/27/2025 21:58	
Bicarbonate	838	mg/L as CaCO3	20.5	1		08/27/2025 21:58	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		08/27/2025 21:58	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		08/27/2025 21:58	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.8	mg/L	2.0	1		09/02/2025 10:49	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.66	mg/L	0.1	1		08/27/2025 21:58	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2170	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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Report Date: Tuesday, September 9, 2025 9:31:41 AM

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 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 515-382-5486 ~ Fax 515-382-3885  
 www.MVTL.com

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

**Lab ID:** 97784002      **Date Collected:** 08/26/2025 09:03      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	749	mg/L	25	5		09/03/2025 10:56	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 12:01	
Calcium	4.14	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:13	
Magnesium	3.28	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:13	
Potassium	4.36	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:13	
Sodium	827	mg/L	5	5	08/27/2025 16:36	08/29/2025 11:42	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	851	mg/L as CaCO3	20.5	1		08/27/2025 22:09	
Bicarbonate	851	mg/L as CaCO3	20.5	1		08/27/2025 22:09	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		08/27/2025 22:09	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		08/27/2025 22:09	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.9	mg/L	2.0	1		09/02/2025 10:50	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.68	mg/L	0.1	1		08/27/2025 22:09	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2170	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 97784003      **Date Collected:** 08/26/2025 11:37      **Matrix:** Groundwater  
**Sample ID:** MW-18S      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	596	mg/L	25	5		09/03/2025 10:57	
<b>Method: EPA 6010D</b>							
Boron	<0.1	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 12:02	
Calcium	4.29	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
Magnesium	1.69	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
Potassium	4.08	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
Sodium	679	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	846	mg/L as CaCO3	20.5	1		08/27/2025 22:20	
Bicarbonate	662	mg/L as CaCO3	20.5	1		08/27/2025 22:20	
Carbonate	183	mg/L as CaCO3	20.5	1		08/27/2025 22:20	
<b>Method: SM4500 H+ B-2021</b>							
pH	9.2	units	0.1	1		08/27/2025 22:20	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	8.7	mg/L	2.0	1		09/02/2025 10:52	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.23	mg/L	0.1	1		08/27/2025 22:20	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1860	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 97784004      **Date Collected:** 08/26/2025 14:03      **Matrix:** Groundwater  
**Sample ID:** MW-21S      **Date Received:** 08/27/2025 14:44      **Collector:** Client

**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	403	mg/L	25	5		09/03/2025 10:59	
<b>Method: EPA 6010D</b>							
Boron	0.11	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 12:02	
Calcium	4.16	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:18	
Magnesium	2.96	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:18	
Potassium	4.23	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:18	
Sodium	794	mg/L	5	5	08/27/2025 16:36	08/29/2025 11:46	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1189	mg/L as CaCO3	20.5	1		08/27/2025 22:33	
Bicarbonate	1189	mg/L as CaCO3	20.5	1		08/27/2025 22:33	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		08/27/2025 22:33	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		08/27/2025 22:33	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.0	mg/L	2.0	1		09/02/2025 10:53	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.53	mg/L	0.1	1		08/27/2025 22:33	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1990	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

**Analytical Results**

**Lab ID:** 97784005      **Date Collected:** 08/26/2025 14:35      **Matrix:** Surface Water  
**Sample ID:** AVS Leachate Pond      **Date Received:** 08/27/2025 14:44      **Collector:** Client

**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	5790	mg/L	100	20		09/03/2025 11:00	
<b>Method: EPA 353.2</b>							
Nitrate + Nitrite as N	4.80	mg/L	4	20		09/04/2025 15:39	
<b>Method: EPA 6010D</b>							
Boron	0.96	mg/L	0.5	5	08/27/2025 16:36	09/08/2025 12:03	
Calcium	312	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
Iron	2.60	mg/L	0.5	5	08/27/2025 16:36	08/28/2025 16:19	*
Magnesium	72.2	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
Manganese	0.72	mg/L	0.25	5	08/27/2025 16:36	08/28/2025 16:19	*
Potassium	233	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
Sodium	3080	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
<b>Method: EPA 6020B</b>							
Arsenic	0.1657	mg/L	0.002	5	08/27/2025 16:36	09/02/2025 11:39	
Barium	0.2089	mg/L	0.004	10	08/27/2025 16:36	09/02/2025 11:34	
Cadmium	0.0021	mg/L	0.0005	5	08/27/2025 16:36	09/02/2025 11:39	
Chromium	0.3005	mg/L	0.004	10	08/27/2025 16:36	09/02/2025 11:34	
Lead	0.0019	mg/L	0.0005	5	08/27/2025 16:36	09/02/2025 11:39	
Molybdenum	1.962	mg/L	0.02	50	08/27/2025 16:36	09/02/2025 11:29	
Selenium	0.1213	mg/L	0.005	5	08/27/2025 16:36	09/02/2025 11:39	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	293	mg/L as CaCO3	20.5	1		08/27/2025 22:44	
<b>Method: SM4500-CI-E 2021</b>							
Chloride	368	mg/L	20.0	10		09/02/2025 10:54	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	11500	mg/L	10	1		08/29/2025 15:38	

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

**Analytical Results**

**Analysis Results Comments**

**Iron**

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

**Manganese**

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



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 Electric Power Cooperative  
WO: 97784

**Chain of Custody**

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address <u>Basin Electric Power Coop.</u> <u>Leland Olds Station</u> <u>3901 Highway 200A</u> <u>Stanton, ND 58571</u>		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) <u>Attn: Liabilities</u>		Contact Mark Dihle	Emails mdihle@bepec.com aknutson@bepec.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 8/27/2025
		Project Name/Number AVS Landfill CCR	Purchase Order # 790708-01

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-19S	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	DUP	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-18S	GW	8/26/2025	1137	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-21S	GW	8/26/2025	1403	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	AVS LEACHATE POND	SW	8/26/2025	1435	1	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	8/27/2025	NOON	<i>[Signature]</i>	8/27/2025	1444	1.40C	Y/N	JMS05
2.							Y/N	

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

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Account #: 2040

Client: Basin Electric Power Cooperative



**Sample Condition Checklist**

Date: 27 Aug 25 Time: 1543 Analyst: PN  
Work Order #: 97754

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Comments:

Number of Bottles	Container Size (mL)		Container Type		Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	F-(500) = Filtered	Other	CG = Clear Glass, P = Plastic, AG = Amber Glass	Other						
5	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
5	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease		(CG) (P) (AG)	Other	HCl	n/a				
	TOC Vials		(G) (AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials		(G) (AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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

**Lab ID:** 103535001      **Date Collected:** 10/07/2025 10:04      **Matrix:** Groundwater  
**Sample ID:** MW-15S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	486	mg/L	25	5		10/15/2025 13:43	
<b>Method: EPA 6010D</b>							
Boron	0.11	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:56	
Calcium	3.93	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
Magnesium	2.70	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
Potassium	4.04	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
Sodium	727	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1074	mg/L as CaCO3	20.5	1		10/10/2025 18:00	
Bicarbonate	1074	mg/L as CaCO3	20.5	1		10/10/2025 18:00	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:00	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 18:00	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	13.1	mg/L	2.0	1		10/14/2025 11:55	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.40	mg/L	0.1	1		10/10/2025 18:00	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1930	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535002      **Date Collected:** 10/07/2025 10:52      **Matrix:** Groundwater  
**Sample ID:** MW-20S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	74.8	mg/L	5	1		10/15/2025 13:44	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:56	
Calcium	6.19	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
Magnesium	3.38	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
Potassium	4.56	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
Sodium	755	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1380	mg/L as CaCO3	20.5	1		10/10/2025 18:11	
Bicarbonate	1380	mg/L as CaCO3	20.5	1		10/10/2025 18:11	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:11	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 18:11	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	25.6	mg/L	2.0	1		10/14/2025 11:56	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.20	mg/L	0.1	1		10/10/2025 18:11	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1800	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535003      **Date Collected:** 10/08/2025 08:16      **Matrix:** Groundwater  
**Sample ID:** MW-16S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	125	mg/L	5	1		10/15/2025 13:45	
<b>Method: EPA 6010D</b>							
Boron	0.15	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:57	
Calcium	3.71	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
Magnesium	2.35	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
Potassium	3.70	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
Sodium	657	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	739	mg/L as CaCO3	20.5	1		10/10/2025 18:23	
Bicarbonate	730	mg/L as CaCO3	20.5	1		10/10/2025 18:23	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:23	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 18:23	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	32.6	mg/L	2.0	1		10/14/2025 11:58	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	2.37	mg/L	0.1	1		10/10/2025 18:23	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1150	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535004      **Date Collected:** 10/08/2025 09:34      **Matrix:** Groundwater  
**Sample ID:** MW-17S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	300	mg/L	25	5		10/15/2025 13:46	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:57	
Calcium	3.72	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
Magnesium	2.28	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
Potassium	3.66	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
Sodium	674	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1125	mg/L as CaCO3	20.5	1		10/10/2025 18:36	
Bicarbonate	1125	mg/L as CaCO3	20.5	1		10/10/2025 18:36	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:36	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 18:36	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	13.6	mg/L	2.0	1		10/14/2025 11:59	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.48	mg/L	0.1	1		10/10/2025 18:36	*
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1740	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****Fluoride**

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

**pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535005      **Date Collected:** 10/08/2025 11:16      **Matrix:** Groundwater  
**Sample ID:** MW-22S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	234	mg/L	25	5		10/15/2025 13:54	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:58	
Calcium	2.56	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
Magnesium	2.03	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
Potassium	3.53	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
Sodium	641	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1042	mg/L as CaCO3	20.5	1		10/10/2025 18:48	
Bicarbonate	1027	mg/L as CaCO3	20.5	1		10/10/2025 18:48	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:48	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 18:48	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	11.4	mg/L	2.0	1		10/14/2025 12:00	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.84	mg/L	0.1	1		10/10/2025 18:48	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1610	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535006      **Date Collected:** 10/08/2025 11:16      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	247	mg/L	25	5		10/15/2025 13:48	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:59	
Calcium	2.55	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
Magnesium	2.03	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
Potassium	3.47	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
Sodium	640	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1062	mg/L as CaCO3	20.5	1		10/10/2025 19:01	
Bicarbonate	1047	mg/L as CaCO3	20.5	1		10/10/2025 19:01	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 19:01	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 19:01	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	11.2	mg/L	2.0	1		10/14/2025 12:01	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.84	mg/L	0.1	1		10/10/2025 19:01	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1660	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535007      **Date Collected:** 10/08/2025 12:18      **Matrix:** Groundwater  
**Sample ID:** MW-25S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	36.0	mg/L	5	1		10/15/2025 14:02	
<b>Method: EPA 6010D</b>							
Boron	0.14	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:02	
Calcium	4.56	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
Magnesium	3.40	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
Potassium	4.50	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
Sodium	834	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1553	mg/L as CaCO3	20.5	1		10/10/2025 19:14	
Bicarbonate	1529	mg/L as CaCO3	20.5	1		10/10/2025 19:14	
Carbonate	24	mg/L as CaCO3	20.5	1		10/10/2025 19:14	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 19:14	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	40.4	mg/L	2.0	1		10/14/2025 12:02	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.42	mg/L	0.1	1		10/10/2025 19:14	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1940	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535008      **Date Collected:** 10/08/2025 13:47      **Matrix:** Groundwater  
**Sample ID:** MW-26S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	120	mg/L	5	1		10/15/2025 14:04	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:04	
Calcium	17.3	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
Magnesium	3.31	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
Potassium	5.21	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
Sodium	746	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1382	mg/L as CaCO3	20.5	1		10/10/2025 19:28	
Bicarbonate	1367	mg/L as CaCO3	20.5	1		10/10/2025 19:28	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 19:28	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 19:28	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	31.5	mg/L	2.0	1		10/14/2025 12:09	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.36	mg/L	0.1	1		10/10/2025 19:28	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1870	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535009      **Date Collected:** 10/08/2025 14:45      **Matrix:** Groundwater  
**Sample ID:** MW-24S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	52.6	mg/L	5	1		10/15/2025 14:05	
<b>Method: EPA 6010D</b>							
Boron	0.10	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:04	
Calcium	4.54	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
Magnesium	3.48	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
Potassium	4.58	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
Sodium	841	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1540	mg/L as CaCO3	20.5	1		10/10/2025 21:38	
Bicarbonate	1509	mg/L as CaCO3	20.5	1		10/10/2025 21:38	
Carbonate	31	mg/L as CaCO3	20.5	1		10/10/2025 21:38	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 21:38	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	49.7	mg/L	2.0	1		10/14/2025 12:11	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.61	mg/L	0.1	1		10/10/2025 21:38	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2040	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535010      **Date Collected:** 10/08/2025 13:09      **Matrix:** Groundwater  
**Sample ID:** MW-27S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	141	mg/L	25	5		10/15/2025 14:06	
<b>Method: EPA 6010D</b>							
Boron	0.21	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:05	
Calcium	58.1	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
Magnesium	27.4	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
Potassium	11.1	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
Sodium	952	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1686	mg/L as CaCO3	20.5	1		10/10/2025 21:52	
Bicarbonate	1678	mg/L as CaCO3	20.5	1		10/10/2025 21:52	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 21:52	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 21:52	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	65.0	mg/L	10.0	5		10/14/2025 12:12	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.48	mg/L	0.1	1		10/10/2025 21:52	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2370	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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# 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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



Account #: 2040

Client: Basin Electric Power Cooperative

QC Results Summary							WO #: 103535			
Sulfate	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)	
LFB			100	100.0		85	115			
LFB			100	96.9		85	115			
LFB			100	93.7		85	115			
LFB			100	96.4		85	115			
LFB			100	94.3		85	115			
LFB			100	99.3		85	115			
LFB			100	104.0		85	115			
LFB			100	110.0		85	115			
LFB			100	107.0		85	115			
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MS/MSD	103146005		500	80.4	83.0	85	115	1.8	20	
MS/MSD	103212003		1000	75.9	77.6	80	115	1.2	20	
MS/MSD	103374004		2000	66.8	72.8	85	115	3.6	20	
MS/MSD	103380005		500	91.4	81.9	85	115	0.4	20	
MS/MSD	103380013		4000	72.7	89.5	85	115	1.8	20	
MS/MSD	103385008		1000	99.5	103.9	85	115	2.2	20	
MS/MSD	103535005		500	99.5	100.2	85	115	0.5	20	
MS/MSD	103708001		1000	90.3	94.5	85	115	2.3	20	
MS/MSD	103818002		100	110.0	110.2	85	115	0.0	20	

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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	97.3		90	110		
LFB			30	97.5		90	110		
LFB			30	97.8		90	110		
LFB			30	97.9		90	110		
LFB			30	97.3		90	110		
LFB			30	97.2		90	110		
LFB			30	97.0		90	110		
LFB			30	97.1		90	110		
LFB			30	97.1		90	110		
LFB			30	96.5		90	110		
LFB			30	97.3		90	110		
LFB			30	97.0		90	110		
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	103115005		30	98.8	100.6	80	120	0.9	20
MS/MSD	103212003		30	99.7	99.6	80	120	0.5	20
MS/MSD	103380005		600	110.9	115.2	80	120	0.8	20
MS/MSD	103431001		30	88.1	95.3	80	120	1.6	20
MS/MSD	103689004		30	78.6	77.6	80	120	0.4	20

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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 (%)
MS/MSD	103708003		30	100.3	98.2	80	120	0.8	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 (%)
UB-OT			0.4	93.5		85	115		
UB-OT			0.4	104.6		85	115		

MB		<0.1							
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MB		<0.1							
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PDS/PDSO	103698017		8	87.5	88.8	75	118	0.1	20
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PDS/PDSO	103496001		4	87.4	88.9	75	125	1.0	20
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MS/MSD	103335007		0.4	92.5	91.8	70	130	1.0	20
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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 (%)
UB-MI			100	107.0		85	115		
UB-MI			100	108.0		85	115		

MB		<1							
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MB		<1							
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PDS/PDSO	103369003		500	105.0	105.0	75	125	0.1	20
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PDS/PDSO	103380005		500	97.7	99.3	75	125	0.5	20
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PDS/PDSO	103380012		500	96.8	97.0	75	125	0.2	20
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DUP	103471001							0.8	20
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PDS/PDSO	103502002		100	102.0	101.0	75	125	0.6	20
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PDS/PDSO	103571001		100	94.5	95.2	75	125	0.3	20
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PDS/PDSO	103571003		100	92.4	94.5	75	125	1.1	20
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PDS/PDSO	103927008		100	101.0	102.0	75	125	0.6	20
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Magnesium		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 (%)
UB-MI			100	105.0		85	115		
UB-MI			100	108.0		85	115		

MB		<1							
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MB		<1							
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PDS/PDSO	103369003		500	106.0	109.0	75	125	0.2	20
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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

Magnesium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
PDS/PDSO	103380005		500	102.0	102.0	75	125	0.5	20
PDS/PDSO	103380012		500	101.0	101.0	75	125	0.2	20
DUP	103471001							0.7	20
PDS/PDSO	103502002		100	103.0	102.0	75	125	0.6	20
PDS/PDSO	103572001		100	89.9	90.7	75	125	0.3	20
PDS/PDSO	103571003		100	86.2	89.5	75	125	1.2	20
PDS/PDSO	103927008		100	99.4	99.7	75	125	0.2	20

Potassium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFBAH			100	103.0		85	115		
LFBAH			100	105.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	103380003		500	95.4	97.5	75	125	1.1	20
PDS/PDSO	103380005		500	104.0	104.0	75	125	0.5	20
PDS/PDSO	103380012		500	104.0	104.0	75	125	0.7	20
DUP	103472001							0.9	20
PDS/PDSO	103502002		100	107.0	101.0	75	125	0.5	20
PDS/PDSO	103571001		100	100.0	101.0	75	125	0.5	20
PDS/PDSO	103571003		100	97.3	99.8	75	125	1.8	20
PDS/PDSO	103927008		100	100.0	99.5	75	125	0.6	20

Sodium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFBAH			100	104.0		85	115		
LFBAH			100	106.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	103360003		500	89.5	88.0	75	125	0.3	20
PDS/PDSO	103380005		500	81.1	84.2	75	125	0.5	20
PDS/PDSO	103380012		500	102.0	102.0	75	125	0.4	20
DUP	103471001							1.3	20

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Sodium		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/PDS0	103502002		100	81.4	79.3	75	125	0.6	20
PDS/PDS0	103571001		100	78.6	79.7	75	125	0.3	20
PDS/PDS0	103571003		100	75.0	76.2	75	125	0.3	20
PDS/PDS0	101927008		100	96.8	88.5	75	125	0.9	20

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 (%)
CRM			50	94.0		80	120		
U#1			40	90.6		90	110		
U#1			40	96.8		90	110		
U#1			40	94.3		90	110		
U#1			40	96.1		90	110		
MB		<20.5							
MB		<20.5							
MB		<20.5							
MB		<20.5							

MS/MSD	103369004		400	83.4	85.5	80	120	1.7	70
MS/MSD	103535002		400	86.3	96.6	80	120	7.8	20
MS/MSD	103577001		400	65.5	65.6	80	120	0.3	20

pH		Units: units							
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-PH			6	99.7					
CRM-PH			6	99.7					
CRM-PH			6	99.5					
DUK	103502002							0.8	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			3.34	103.0		83.83	111.07		
U#1-F			0.5	102.0		90	110		
U#1-F			0.5	100.0		90	110		
U#1-F			0.5	103.0		90	110		
MB-F		<0.1							

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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 (%)
MB-P		<0.1							
MB-F		<0.1							
MS/MSD	103335004		0.5	116.0	108.0	80	120	0.7	20
MS/MSD	103350001		0.5	100.0	98.0	80	120	0.6	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			750	100.0		80.35	119.65		
MB		<10							
DUP	103335007							0.5	20
DUP	103375001							0.7	20

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Minnesota Valley Testing Laboratories, Inc.  
2616 East Broadway Avenue  
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Phone: (701) 258-9720  
Toll Free: (800) 279-6885 Fax: (701) 258-9724

Basin Electric Power Cooperative  
WO: 103535



Chain of Custody

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (Indicate if different from above) Attn: Liabilities		Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 10/9/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-15S	GW	10/7/2025	1004	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	MW-20S	GW	10/7/2025	1052	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-16S	GW	10/8/2025	816	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-17S	GW	10/8/2025	934	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	MW-22S	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
006	DUP	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
007	MW-25S	GW	10/8/2025	1218	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
008	MW-26S	GW	10/8/2025	1347	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
009	MW-24S	GW	10/8/2025	1445	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
010	MW-27S	GW	10/8/2025	1309	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	10/9/2025	NOON	<i>[Signature]</i>	9/09/25	1443	5.0°C	Y/N	711959
2.							Y/N	

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

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Account #: 2040

Client: Basin Electric Power Cooperative



## Sample Condition Checklist

Date: 9 OCT 25 Time: 1550 Analyst: CC  
Work Order #: 163535

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Comments:														
Number of Bottles	Container Size (mL)				Container Type			Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst	
	(125)	(250)	(500)	F-(500) (1000)	Other	CG	P							AG
10	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
10	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	(125)	(250)	(500)	F-(500) (1000)	Other	(CG)	(P)	(AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2	>12		
	Oil and grease					(CG)	(P)	(AG)	Other	HCl	n/a			
	TOC Vials					(G)	(AG)			H <sub>3</sub> PO <sub>4</sub>	n/a			
	DOC Vials					(G)	(AG)			None H <sub>3</sub> PO <sub>4</sub>	n/a			

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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, October 24, 2025 8:33:11 AM



**Appendix B**  
**Alternative Source Demonstrations**

# Technical Memorandum

**To:** Mark Dihle, Basin Electric Power Cooperative  
**From:** Barr Engineering Co.  
**Subject:** Alternative Source Demonstration (ASD), Antelope Valley Station (Fall 2024)  
**Date:** March 28, 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 fall of 2024 on October 1-2 and 8, 2024:

- MW-16S – Chloride
- MW-20S – Chloride
- MW-24S – Chloride
- MW-25S – Chloride
- MW-26S – Chloride
- MW-27S – Boron, calcium, and chloride

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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 October 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 October 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. There is limited data at these locations for historical comparison.

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 October 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. Baseline monitoring for MW-25S, MW-26S, and MW-27S is ongoing.

**Table 1 SSIs Compared to Prediction Limits**

Event	Well	Parameter (units)	Measured	Interwell Prediction Limit
<b>Detection Monitoring – 2024 #2 (Fall)</b>	MW-16S	Chloride (mg/L)	26.0	18.7
	MW-20S	Chloride (mg/L)	25.8	18.7
	MW-24S	Chloride (mg/L)	50.0	18.7
	MW-25S	Chloride (mg/L)	42.3	18.7
	MW-26S	Chloride (mg/L)	29.7	18.7
	MW-27S	Boron (mg/L)	0.40	0.17
	MW-27S	Calcium (mg/L)	206	13.0
	MW-27S	Chloride (mg/L)	62.0	18.7

## 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 (January 3, 2025) following the review and analysis of the results provided in the final laboratory report which was received on October 18, 2024.

## 2 Potential Alternative Sources Review

The CCR Rule provides five potential alternative source categories:

1. A source other than the CCR unit
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, and chloride 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, and chloride 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 on the landfill liner and then migration through the unsaturated zone.

Considering the properties of the CCR materials in landfill, that the design to eliminate head on the liner, and the facility pumping operations have been normal, there is no evidence of any leachate accumulation on the liner. However, landfill leachate depth 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  $1 \times 10^{-7}$  cm/s ( $2.8 \times 10^{-4}$  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:

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

Or, stated in a more compact form:

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

Using an effective porosity for clay of 0.40, the above equation yields an advective velocity  $3.5 \times 10^{-4}$  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

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  $1.3 \times 10^{-7}$  cm/sec,  $4.0 \times 10^{-8}$  cm/sec,  $2.8 \times 10^{-6}$  cm/sec, and  $5.3 \times 10^{-7}$  cm/sec (Terracon, 2020), which have a geometric mean of  $3.0 \times 10^{-7}$  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 porosity measurements were 0.39, 0.45, 0.43, and 0.43. Lower effective porosity results in higher flow velocity so assuming  $n_e = 0.39$  is a conservative estimate. Using the values described above, groundwater flow velocity ( $v$ ) =  $3.0 \times 10^{-7}$  cm/sec \* 0.011 ft/ft / 0.39 =  $8.54 \times 10^{-9}$  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 native clay 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  $7.0 \times 10^{-9}$  cm/sec,  $1.1 \times 10^{-8}$  cm/sec,  $3.5 \times 10^{-9}$  cm/sec,  $2.5 \times 10^{-9}$  cm/sec, and  $6.7 \times 10^{-9}$  cm/sec. Six undisturbed vertical hydraulic conductivity values for the Sentinel Butte Formation at the Minnkota Coal Combustion Residuals Unit (Barr, 2012) were  $3.6 \times 10^{-8}$  cm/sec,  $5.0 \times 10^{-9}$  cm/sec,  $8.8 \times 10^{-8}$  cm/sec,  $1.2 \times 10^{-8}$  cm/sec,  $1.0 \times 10^{-8}$  cm/sec, and  $1.0 \times 10^{-9}$  cm/sec. Together, these eleven values have a geometric mean of  $8.0 \times 10^{-9}$  cm/sec.

The gradient is assumed to be a constant head of 1-foot above the liner during the entire travel time through the 80 ft thick 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 ( $K = 8.0 \times 10^{-9}$  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  $v = 8.0 \times 10^{-9}$  cm/sec \* 0.0125 / 0.39 =  $2.564 \times 10^{-8}$  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.

Conservatively, this scenario is calculated assuming a breach in the geomembrane liner and a continuous 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 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 average hydraulic gradient  $\left(\frac{dH}{dL}\right)$  between upgradient well MW-18S and downgradient wells in the expansion area (MW-24S, MW-25S, MW-26S, and MW-27S) is 0.005 ft/ft based on the October 2024 piezometric surface map. The hydraulic conductivity (K) is 0.234 ft/day and the porosity is 0.185 for the Spaer Lignite according to the Site's CCR Groundwater Monitoring System Report (AECOM, 2017). Using this information in the above equation, groundwater velocity for the wells in the expansion area is 2.45 ft/year.

Since the waste was placed in the lined landfill expansion cell (300 ft to the closest well MW-25S) only a year and a half prior to the fall 2024 detection monitoring event, it is not plausible for any leachate to reach the monitoring wells.

Using a groundwater velocity of 2.45 ft/year, it would take approximately 122 years for a release to reach MW-24S, MW-25S, MW-26S, or MW-27S. CCR placement in the Landfill began in 1996 and the Landfill Expansion Area in 2023. Therefore, the elevated chloride at MW-24S, MW-25S, MW-26S, and MW-27S and elevated boron and calcium at MW-27S cannot be from the CCR unit.

Since the waste was placed in the lined landfill area started in 1996 or about 29 years ago, it is not plausible for any leachate to reach the monitoring wells given these conservative assumptions. If the distances used to calculate travel time are measured from the existing waste limit, the shortest flow path to MW-25S (located closest to the existing landfill boundary) is approximately 1170 feet downgradient. It would take approximately 477 years for leachate from the existing landfill to reach MW-25S and even longer for leachate to reach MW-27S, which 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, and calcium 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 fall 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 19.4 mg/L as shown on time series graphs in Attachment A.

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, MW-26S, and MW-27S are not impacted by a release from the CCR landfill. Sulfate concentrations during the October 2024 sampling event at these locations ranged from 6.83 mg/L to 131 mg/L. The sulfate concentrations at the upgradient Landfill monitoring locations (MW-18S, MW-19S, and MW-21S) were higher and ranged from 263 to 892 mg/L from 2016 to 2024. At downgradient wells other than those with SSIs (MW-15S, MW-17S, and MW-22S), sulfate concentrations were higher and 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, MW-26S, and MW-27S 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, MW-26S, and MW-27S suggests 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.

Site specific historical groundwater samples have been collected from ten wells also screened in the Spaer Bed to the north and east of the landfill. These wells were installed and sampled in support of a groundwater monitoring program associated with the adjacent surface mine prior to development of the CCR landfill. Chloride concentrations within the Spaer Bed are variable ranging from 5.7 to 59 mg/L. Chloride concentrations at MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S (25.8 to 50.0 mg/L) fall within the site-specific background water quality.

**Therefore, because other indicators of the CCR unit release are absent and background chloride concentrations are variable within the Spaer Bed, we reject the hypothesis that the CCR unit is the source of the chloride observed at MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S.**

## 2.3 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 are no SSIs for chloride at MW-16S, 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.

**Table 2 SSIs Compared to Intrawell Prediction Limits**

Event	Well	Parameter (units)	Measured	Intrawell Prediction Limit
<b>Detection Monitoring – 2024 #2 (Fall)</b>	MW-16S	Chloride (mg/L)	26.0	29.7
	MW-20S	Chloride (mg/L)	25.8	31.0
	MW-24S	Chloride (mg/L)	50.0	59.4

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

## 2.4 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 were observed at 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.

## 2.5 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 October 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 fall 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 fall 2024 consisted of the initial draw of water from the well without stabilization. Turbidity readings were too high for the meter and the sample color was described as black, yielding a sample with a high concentration of suspended solids, which may not be representative of typical aquifer conditions. Therefore, the SSI could also be attributed to sampling error.

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, and chloride SSIs at monitoring well MW-27S are believed to be natural aquifer material and not mobilized CCR contaminants.

**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, and chloride 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 SSIs for chloride at MW-16S, 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, MW-26S, and MW-27S is attributed to a source other than the CCR Unit for chloride in the groundwater. The SSI analysis for boron, calcium, and chloride at MW-27S is attributed to sampling techniques due to non-representative aquifer conditions from slow groundwater recharge rates.

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

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## 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 and boron and calcium in 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 28th day of March 2025





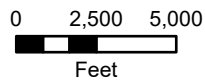
## Figures

Barr Footer: ArcGISPro 3.3.1, 2025-03-26 11:07 File: \\Projects\34\29\1134\Maps\Antelope Valley Station - Alternative Source\Antelope Valley Station - Alternative Source.aprx Layout: Figure 1 Site Location Map User: LGGKZ



# Antelope Valley Station

-  Permit Boundary
-  Railroad

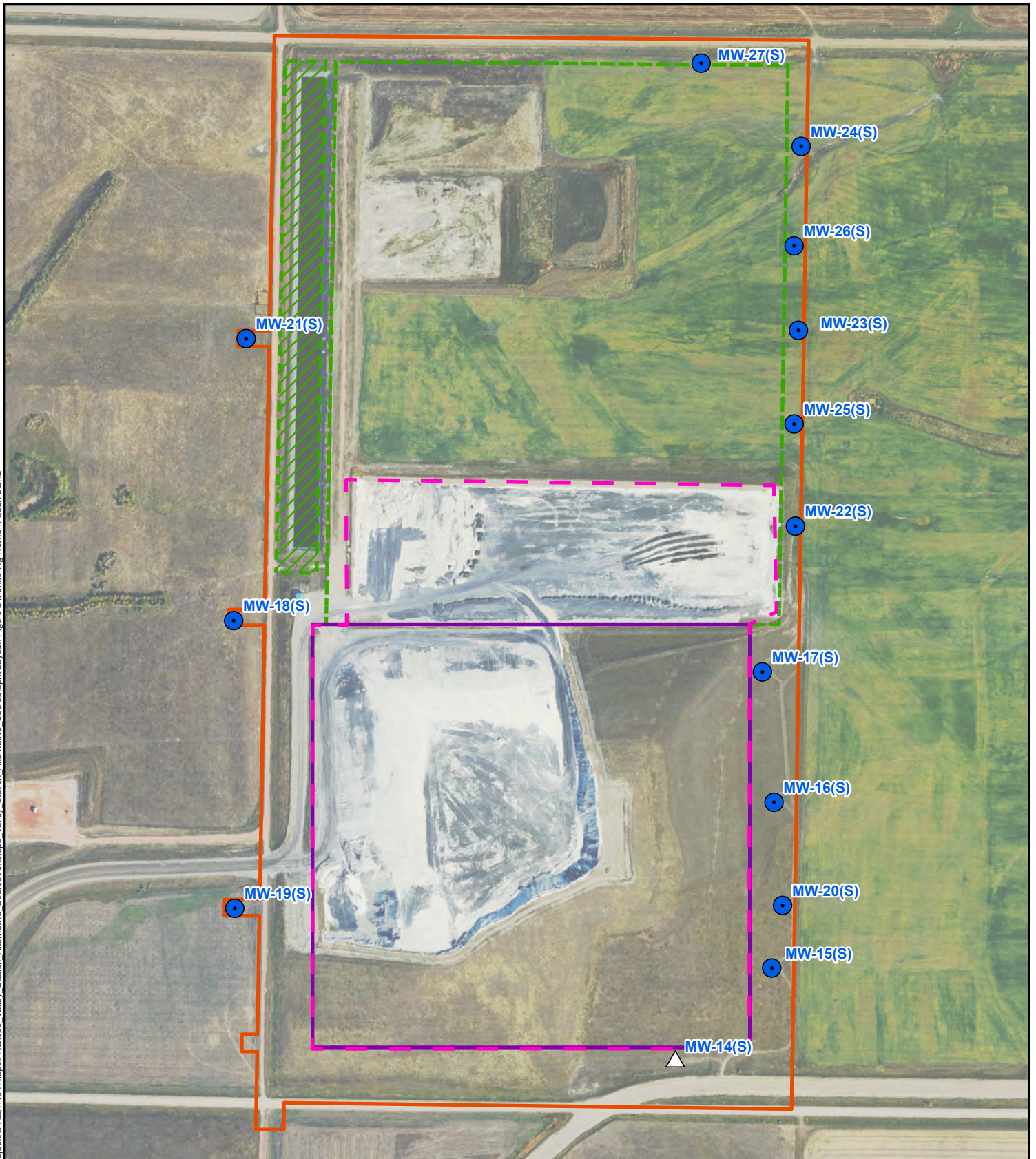


Imagery: USDA-NAIP, 2024

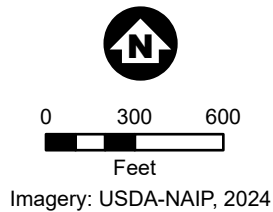
**Site Location**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 1





- Groundwater Monitoring System Wells
- Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)

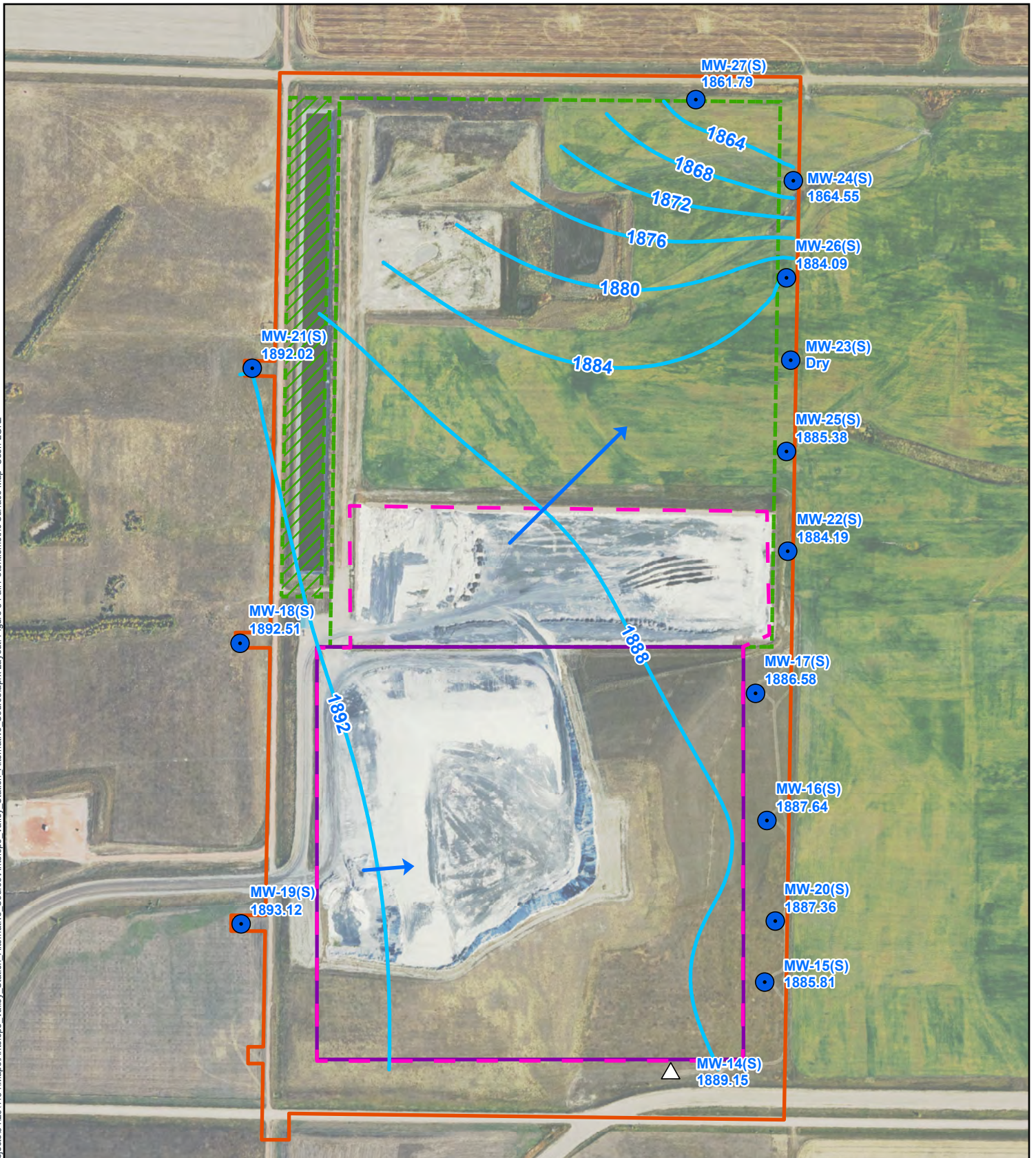


**Monitoring Network**  
**Antelope Valley Station**  
Basin Electric Power Cooperative  
Beulah, North Dakota

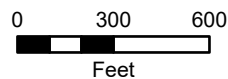
FIGURE 2



Barr Footer: ArcGISPro 3.3.1, 2025-03-26 11:07 File: \\Projects\34\291134\Maps\Antelope Valley Station - Alternative Source.aprx Layout: Figure 3 Fall Potentiometric Surface Map User: LGK2



- Groundwater Monitoring System Wells
- △ Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)
- Flow Direction
- Groundwater Contour



Imagery: USDA-NAIP, 2024

**Fall 2024 Potentiometric Surface**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 3





## **Attachments**



**Attachment A**  
**Time Series Graphs**

# Basin Electric North Dakota

Site Name: AVS Landfill  
 Event Date: 6-9-25  
 Weather Conditions: Nice  
 Field Technician: MK

River Elevation (if applicable)
1658.2

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-14S	1110	204.6	DRY	ALL IS WELL
MW-15S		218.96		
MW-20S		220.6		
MW-16S		235.82		
MW-17S		238.45		
MW-22S		210.14		
MW-25S		198.66		
MW-23S			DRY	
MW-26S		190.65		
MW-24S		206.22		
MW-27S		208		
MW-19S		149.4		
MW-18S		199.13		
MW-21S		202.75		

\* Depth to water as measured from the top of PVC casing.

# Ground Water Sample Collection Record

Client:	BEPC	Date:	10-10-25
Project No:		Time:	0803
Site Location:	AVS landfill	Finish:	1009
Weather Conds:	103; cloudy	Collector(s):	MK

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 34/200 max PSI

b. Water Table Depth 218.95 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
0929	INITIAL 3L	12.7	0.77	2904	8.01	89.9	1.85	Brown	223.55
0933	3.25L	12.8	0.80	2900	8.01	97.4	2.18	↓	223.57
0936	3.5 L	12.6	0.83	2912	8.01	102.5	4.28		223.75
0940	3.75 L	12.6	0.82	2894	8.01	105.1	2.76		223.80
0944	4 L	12.7	0.81	2899	8.01	104.5	2.46		223.90
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0945
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature] Date 10-10-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-10-25  
 Project No: \_\_\_\_\_ Time: 1015  
 Site Location: AVS Landfill Finish: 1034  
 Weather Conds: 103' breezy Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_b. Water Table Depth 220.00 d. Casing Diameter \_\_\_\_\_

## WELL PURGING DATA

a. Purge Method Dedicated Bladder Pump Hydrosleeve

b. Field Testing Equipment Used: Make Model Serial Number  
 YSI 5320084101  
 HACH 20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1029</u>	<u>INITIAL 605</u>	<u>10.6</u>	<u>2.98</u>	<u>2789</u>	<u>8.02</u>	<u>-314.0</u>	<u>27.5</u>	<u>Brown</u>	<u>220.60</u>
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	<u>1029</u>
	50mL	1	HNO3	Metals	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]Date 10-10-25

# Ground Water Sample Collection Record

Client:	BEPC	Date:	10-10-25
Project No:		Time:	1041
Site Location:	AVS Landfill	Finish:	0940 10/11/25
Weather Conds:	Sunny Breezy	Collector(s):	1 MK

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 21/39 e max PSI  
~ 25ml

b. Water Table Depth 235.82 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1325	INITIAL 1.75	19.9	4.55	2018	8.16	34.3	11.2	Brown	238.55
1329	1.9 L	20.8	3.60	2064	8.13	87.1	9.64		238.75
1333	1.92 L	21.5	3.15	2084	8.11	113.9	8.82		238.90
1337	2 L	21.8	2.98	2117	8.09	125.9	9.82		239
1341	2.1 L	21.8	2.8	2142	8.08	132.2	9.73		239.11
1344	2.14 L	21.4	2.69	2165	8.06	137.8	8.87		239.2
1348	2.17 L	22.3	2.22	2144	8.06	142.4	8.33		239.4
1352	2.2 L	21.4	2.19	2145	8.05	144.4	8.29		239.56
	L	pumped down to			245ft.				
	L								
0830	L	13.7	4.76	1955	8.08	-365.6	8.92		
	L								
	L								
	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	Yes <input checked="" type="checkbox"/>	N/A <input type="checkbox"/>

If no or N/A - Explain below. DTW

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0830
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature] Date 10-11-25

## Ground Water Sample Collection Record

Client: BEPC Date: 6-11-25  
 Project No: \_\_\_\_\_ Time: 0945  
 Site Location: AVS Landfill Finish: 1133  
 Weather Conds: cloudy, smoky, cool Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 40/20 @ max psi  
 b. Water Table Depth 210.14 d. Casing Diameter \_\_\_\_\_ ~100mm

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1047</u>	<u>INITIAL 5.5</u>	<u>11.0</u>	<u>.50</u>	<u>2518</u>	<u>8.15</u>	<u>-352.6</u>	<u>5.81</u>	<u>yellow/</u>	<u>210.40</u>
<u>1051</u>	<u>6 L</u>	<u>11.1</u>	<u>.52</u>	<u>2513</u>	<u>8.14</u>	<u>-351.8</u>	<u>6.15</u>	<u>Brown</u>	<u>210.40</u>
<u>1054</u>	<u>6.5 L</u>	<u>11.3</u>	<u>.49</u>	<u>2513</u>	<u>8.14</u>	<u>-350.5</u>	<u>6.75</u>		<u>210.46</u>
<u>1057</u>	<u>7 L</u>	<u>11.2</u>	<u>.50</u>	<u>2518</u>	<u>8.13</u>	<u>-349.9</u>	<u>6.90</u>		<u>210.49</u>
<u>1101</u>	<u>7.5 L</u>	<u>11.2</u>	<u>.50</u>	<u>2520</u>	<u>8.14</u>	<u>-350.1</u>	<u>6.22</u>		<u>210.50</u>
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								
	<u>L</u>								

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

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1102</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments DUPSignature [Signature]Date 6-11-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-11-25  
 Project No: \_\_\_\_\_ Time: 1140  
 Site Location: AVS Landfill Finish: 1300  
 Weather Conds: cloudy, smoggy, cool Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 44/110 e max PSI  
 b. Water Table Depth 198.100 d. Casing Diameter \_\_\_\_\_ ~100ml

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
Stabilization									
1240	INITIAL 4.5	9.8	.47	2997	8.16	-3108.0	16.9	Brown	201.40
1244	5 L	9.9	.42	2986	8.15	-3108.4	17.0		201.37
1248	5.5 L	10.0	.46	2992	8.15	-3108.0	16.2		201.30
1251	10 L	10.0	.49	3004	8.15	-3108.7	16.3		201.30

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1252
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature MKDate 10-11-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-11-25  
 Project No: \_\_\_\_\_ Time: 1315  
 Site Location: AVS Landfill Finish: \_\_\_\_\_  
 Weather Conds: smoky cool Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 34/26 e max PSI  
 b. Water Table Depth 190.65 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1403	INITIAL 4L	10.4	.77	2816	8.11	-370.7	21.0	brown	<del>192.50</del> 192.50
1407	4.5 L	10.5	.65	2807	8.10	-370.6	21.0		192.50
1411	5 L	10.5	.59	2803	8.10	-370.8	18.7		192.50
1415	5.5 L	10.6	.60	2812	8.09	-370.8	18.7		192.50
1419	6 L	10.5	.49	2808	8.09	-371.4	14.0		192.55
1422	6.5 L	10.6	.47	2798	8.09	-371.5	15.1		192.58
1426	7 L	10.5	.46	2801	8.09	-371.8	14.3		192.60
	L								
	L								
	L								
	L								
	L								
	L								
	L								

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

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Type	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1427
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature ManDate 10-11-25



**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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



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 Electric Power Cooperative**

WO: 89554

Chain of Custody



Page 1 of 4

Order #

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3991 Highway 209A Stanton, ND 58571 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) Attn: Liabilities		Contact Mark Dihle Name of Sampler Marlah Knutson	Emails mdihle@becp.com mknutson@becp.com
		Quote Number	Date Submitted 6/12/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
	001	MW-16S	GW	6/10/2025	945	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	002	MW-20S	GW	6/10/2025	1029	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	003	MW-16S	GW	6/11/2025	830	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	004	MW-22S	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	005	DUP	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	006	MW-26S	GW	6/11/2025	1252	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	007	MW-26S	GW	6/11/2025	1427	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	-	AVS LEACHATE POND	SW	6/10/2025	1435	2	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity
			GW					

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/12/2025	NOON	<i>[Signature]</i>	6/12/2025	14:34	4.8°C	(Y/N)	TM959
2.							Y/N	

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

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 1, 2025 2:32:47 PM

## Ground Water Sample Collection Record

Client: BEPC Date: 0817 10-17-25  
 Project No: \_\_\_\_\_ Time: 0817  
 Site Location: AVS Landfill Finish: 1055 10-18-25  
 Weather Conds: Sunny Humid Warm Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 23/37 e max PSI  
 b. Water Table Depth 238.45 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
0941	INITIAL 4L	12.9	12.9	2149	7.96	-20.2	4.75	Brown	245.25
0945	4.5 L	12.7	1.74	2154	7.97	10.3	5.04		245.90
0949	5 L	13.1	1.64	2148	7.97	30.0	5.05		246.10
0953	5.5 L	12.8	1.49	2142	7.97	55.4	5.22		246.75
0957	10 L	13.1	1.37	2143	7.97	88.3	5.76		247.1
1001	10.5 L	13.1	1.34	2149	7.96	106.6	6.59		247.55
0948									

e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

DTW

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0949
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature]Date 10-18-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-17-25  
 Project No: \_\_\_\_\_ Time: 1033  
 Site Location: AVS Landfill Finish: 1142  
 Weather Conds: Sunny Hot Humid Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 13/17 e max PSI  
 b. Water Table Depth 206.22 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1126</u>	<u>INITIAL 4.25</u>	<u>12.5</u>	<u>0.45</u>	<u>3083</u>	<u>8.08</u>	<u>-341.8</u>	<u>7.43</u>	<u>brown</u>	<u>207.10</u>
<u>1130</u>	<u>4.75 L</u>	<u>12.4</u>	<u>0.43</u>	<u>3081</u>	<u>8.08</u>	<u>-342.1</u>	<u>7.08</u>	<u>↓</u>	<u>207.11</u>
<u>1134</u>	<u>9.25 L</u>	<u>12.5</u>	<u>0.43</u>	<u>3077</u>	<u>8.08</u>	<u>-341.9</u>	<u>7.08</u>	<u>↓</u>	<u>207.10</u>
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1135</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature ManDate 10-17-25

## Ground Water Sample Collection Record

Client: BEPC Date: 4-17-25  
 Project No: \_\_\_\_\_ Time: 1150  
 Site Location: AVS Landfill Finish: 1220  
 Weather Conds: sunny warm Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_  
 b. Water Table Depth 208.0 d. Casing Diameter \_\_\_\_\_

## WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydro-sleeve

b. Field Testing Equipment Used: Make Model Serial Number  
 YSI 5320084101  
 HACH 20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
	INITIAL	<u>12.7</u>	<u>.28</u>	<u>3191</u>	<u>8.10</u>	<u>442</u>	<u>TOO HIGH</u>	<u>BLACK MUCK</u>	<u>208.0</u>
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e. Acceptance criteria pass/fail Yes No N/A  
 Has required volume been removed     
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1219</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature ManDate 4-17-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-17-25  
 Project No: \_\_\_\_\_ Time: 1250  
 Site Location: AVS Landfill Finish: 1424  
 Weather Conds: Sunny warm Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 39/24 c max PSI  
 b. Water Table Depth 199.13 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
1355	INITIAL	13.8	.72	21002	9.48	-173.9	4.69	yellow	119.55
1359	7.5 L	14.0	.70	21047	9.47	-183.0	4.77	↓	119.54
1402	8 L	13.9	.59	21070	9.44	-164.7	4.70	↓	119.56
1406	8.5 L	13.9	.55	21079	9.41	-157.3	4.51	↓	119.50
1410	9 L	13.9	.53	21088	9.38	-152.9	4.98	↓	119.50
1414	9.5 L	13.8	.53	2122	9.36	-143.2	4.40	↓	119.49
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1415
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature MKDate 10-17-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-18-25  
 Project No: \_\_\_\_\_ Time: 811  
 Site Location: AVS Landfill Finish: 0929  
 Weather Conds: cool, sunny Collector(s): mic

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 15/15 e max psi  
 b. Water Table Depth 149.40 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO ✓ mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity ✓ (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>0857</u>	<u>INITIAL 5L</u>	<u>10.0</u>	<u>.33</u>	<u>3194</u>	<u>8.01</u>	<u>-383.4</u>	<u>2.06</u>	<u>clear</u>	<u>149.60</u>
<u>0901</u>	<u>5.5 L</u>	<u>10.0</u>	<u>.33</u>	<u>3199</u>	<u>8.01</u>	<u>-383.8</u>	<u>1.95</u>		<u>149.59</u>
<u>0905</u>	<u>6 L</u>	<u>10.1</u>	<u>.34</u>	<u>3208</u>	<u>8.02</u>	<u>-383.7</u>	<u>1.10</u>		<u>149.55</u>
<u>0909</u>	<u>6.5 L</u>	<u>10.2</u>	<u>.43</u>	<u>3211</u>	<u>8.01</u>	<u>-383.6</u>	<u>1.06</u>		<u>149.59</u>
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached  Yes  No  N/A  
 Have parameters stabilized  Yes  No  N/A  
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>0910</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	

Comments DUPSignature micDate 10-18-25

## Ground Water Sample Collection Record

Client: BEPC Date: 10-18-25  
 Project No: \_\_\_\_\_ Time: 1115  
 Site Location: AVS Landfill Finish: 1257  
 Weather Conds: HOT, Sunny Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 28/32 @ max PSIb. Water Table Depth 202.75 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1229</u>	<u>INITIAL 7L</u>	<u>13.0</u>	<u>.05</u>	<u>3111</u>	<u>7.87</u>	<u>64.5</u>	<u>2.71</u>	<u>yellow/</u>	<u>212.0</u>
<u>1233</u>	<u>7.5 L</u>	<u>13.3</u>	<u>.01</u>	<u>3103</u>	<u>7.89</u>	<u>78.5</u>	<u>1.80</u>	<u>Brown</u>	<u>212.50</u>
<u>1237</u>	<u>8 L</u>	<u>13.9</u>	<u>.57</u>	<u>3090</u>	<u>7.87</u>	<u>85.6</u>	<u>1.94</u>	↓	<u>212.90</u>
<u>1241</u>	<u>8.5 L</u>	<u>14.0</u>	<u>.02</u>	<u>3097</u>	<u>7.88</u>	<u>91.5</u>	<u>1.90</u>		<u>213.11</u>
<u>1245</u>	<u>9 L</u>	<u>14.0</u>	<u>.02</u>	<u>3104</u>	<u>7.88</u>	<u>92.9</u>	<u>1.84</u>		<u>213.22</u>
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1247</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	↓

Comments \_\_\_\_\_

Signature ManDate 10-18-25



**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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



**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 Electric Power Cooperative WO: 90275 		Chain of Custody Page <u>1</u> of <u>1</u>		
Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040	Phone # 701-745-7238 701-557-5488	Contact Mark Dihle	Emails mdihle@bepec.com aknutson@bepec.com	Order # Only		
Billing Address (indicate if different from above) Attn: Liabilities		Name of Sampler Mariah Knutson	Quote Number	Date Submitted 6/19/2025		Purchase Order # 79070801		
Project Name/Number AVS Landfill CCR Wells								
Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required	
001	MW-17S	GW	6/18/2025	949	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
002	MW-24S	GW	6/17/2025	1135	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
003	MW-27S	GW	6/17/2025	1219	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
004	MW-18S	GW	6/17/2025	1415	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
005	MW-19S	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
006	DUP	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
007	MW-21S	GW	6/18/2025	1247	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
Comments:								
Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/19/2025	NOON	C. W. W. W.	6/19/25	1435	3.9°C	Y/N	TM959
2.							Y/N	

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

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 1, 2025 2:41:34 PM

## Ground Water Sample Collection Record

Client: BEPC Date: 8-26-25  
 Project No: \_\_\_\_\_ Time: 0801  
 Site Location: AVS Landfill Finish: 0920  
 Weather Conds: cool, sunny Collector(s): MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 15/15 @ max PSI

b. Water Table Depth 149.41 d. Casing Diameter \_\_\_\_\_

## WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (us/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>0850</u>	<u>INITIAL 5L</u>	<u>10.2</u>	<u>0.48</u>	<u>3286</u>	<u>8.00</u>	<u>-316.2</u>	<u>1.05</u>	<u>clear</u>	<u>149.55</u>
<u>0854</u>	<u>5.5 L</u>	<u>10.3</u>	<u>0.48</u>	<u>3285</u>	<u>8.01</u>	<u>-318.1</u>	<u>1.00</u>	<u>↓</u>	<u>149.55</u>
<u>0858</u>	<u>6 L</u>	<u>10.3</u>	<u>0.49</u>	<u>3289</u>	<u>8.01</u>	<u>-325.3</u>	<u>0.92</u>	<u>↓</u>	<u>149.56</u>
<u>0902</u>	<u>6.5 L</u>	<u>10.4</u>	<u>0.49</u>	<u>3299</u>	<u>8.01</u>	<u>-327.7</u>	<u>0.86</u>	<u>↓</u>	<u>149.56</u>
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>0903</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature MKDate 8-26-25

# Ground Water Sample Collection Record

Client: BEPC Date: 8.20.25  
 Project No: \_\_\_\_\_ Time: 0933  
 Site Location: AVS Landfill Finish: 1150  
 Weather Conds: Sunny, cool Collector(s): MK  
↳ warm

### WATER LEVEL DATA: (measured from Top of Casing)

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC

Pump Settings: 20/34 @ max PSI

b. Water Table Depth 199.20 d. Casing Diameter \_\_\_\_\_

### WELL 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 # 1 Page # 1  
<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1125</u>	<u>INITIAL 7L</u>	<u>15.1</u>	<u>1.29</u>	<u>2886</u>	<u>9.35</u>	<u>111.1</u>	<u>2.22</u>	<u>yellow</u>	<u>199.40</u>
<u>1129</u>	<u>7.5 L</u>	<u>15.2</u>	<u>1.27</u>	<u>2889</u>	<u>9.34</u>	<u>110.4</u>	<u>2.32</u>	<u>↓</u>	<u>199.41</u>
<u>1132</u>	<u>8 L</u>	<u>15.3</u>	<u>1.28</u>	<u>2903</u>	<u>9.32</u>	<u>108.4</u>	<u>3.73</u>	<u>↓</u>	<u>199.44</u>
<u>1136</u>	<u>8.5 L</u>	<u>15.1</u>	<u>1.27</u>	<u>2921</u>	<u>9.30</u>	<u>99.37</u>	<u>3.19</u>	<u>↓</u>	<u>199.45</u>
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

### SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1137</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]

Date 8.20.25

# Ground Water Sample Collection Record

Client: BEPC Date: 8-26-25  
 Project No: \_\_\_\_\_ Time: 1200  
 Site Location: AVS Landfill Finish: 1420  
 Weather Conds: Sunny, warm Collector(s): MK

**WATER LEVEL DATA: (measured from Top of Casing)**

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Well  Pump Settings: 20/40 @ max PSI  
 b. Water Table Depth 202.82 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (us/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1351</u>	<u>INITIAL 4.5L</u>	<u>17.8</u>	<u>1.44</u>	<u>3192</u>	<u>7.90</u>	<u>148.7</u>	<u>2.03</u>	<u>yellow</u>	<u>208.52</u>
<u>1355</u>	<u>5 L</u>	<u>17.7</u>	<u>1.37</u>	<u>3199</u>	<u>7.90</u>	<u>150.4</u>	<u>1.99</u>	<u>Brown</u>	<u>208.53</u>
<u>1359</u>	<u>55 L</u>	<u>17.7</u>	<u>1.37</u>	<u>3199</u>	<u>7.90</u>	<u>152.4</u>	<u>2.09</u>	<u>↓</u>	<u>208.61</u>
<u>1402</u>	<u>6 L</u>	<u>17.9</u>	<u>1.39</u>	<u>3187</u>	<u>7.89</u>	<u>153.8</u>	<u>1.87</u>	<u>↓</u>	<u>208.75</u>
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e. Acceptance criteria pass/fail  
 Has required volume been removed  Yes  No  N/A  
 Has required turbidity been reached  Yes  No  N/A  
 Have parameters stabilized  Yes  No  N/A  
 If no or N/A - Explain below.

**SAMPLE COLLECTION:**

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1403</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]

Date 8-26-25

# Basin Electric North Dakota

Site Name: AVS Landfill  
 Event Date: 8/25/2025  
 Weather Conditions:  
 Field Technician: MK

River Elevation (if applicable)

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-19s	800	149.41		
MW-18s		199.2		
MW-21S		202.82		
MW 15s		218.92		
MW 20s		220.28		
MW 16s		236.4		
MW 17s		238.35		
MW22s		210.12		
Mw25s		198.16		
MW23s		dry		
MW26s		190.52		
MW24s		206.3		
MW27s		203.71		

\* Depth to water as measured from the top of PVC casing.



**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 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



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 Electric Power Cooperative  
WO: 97784

**Chain of Custody**

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address <u>Basin Electric Power Coop.</u> <u>Leland Olds Station</u> <u>3901 Highway 200A</u> <u>Stanton, ND 58571</u>		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) <u>Attn: Liabilities</u>		Contact Mark Dihle	Emails mdihle@bepec.com aknutson@bepec.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 8/27/2025
		Project Name/Number AVS Landfill CCR	Purchase Order # 790708-01

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-19S	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	DUP	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-18S	GW	8/26/2025	1137	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-21S	GW	8/26/2025	1403	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	AVS LEACHATE POND	SW	8/26/2025	1435	1	N	Total Metals: Mn,Se,Ba,Cd,Cr,B,Mo,As,Pb,Fe,Ca,Mg,Na,K, Cl,So4, NO2, NO3,TDS, Alkalinity

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	8/27/2025	NOON	<i>[Signature]</i>	8/27/2025	1444	1.40C	Y/N	JMS05
2.							Y/N	

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

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.

# Ground Water Sample Collection Record

Client:	BEPC	Date:	10-7-25
Project No:		Time:	0817
Site Location:	AVS Landfill	Finish:	1042
Weather Conds:	cool, sunny	Collector(s):	MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 30/45 e max PSI  
 b. Water Table Depth 218.90 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	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 ft
Stabilization									
0950	INITIAL 3L	10.7	0.90	2947	8.06	-311.4	2.35	yellow	222.80
0954	3.25L	10.7	0.93	2959	8.06	-313.9	2.57	brown	222.92
0958	3.5 L	10.8	0.92	2949	8.06	-314.5	1.79	↓	223.09
1002	3.75 L	10.8	0.91	2951	8.06	-315.0	2.07	↓	223.15
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	L								
	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Have parameters stabilized	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1004
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature Mann

Date 10-7-25

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10-7-25
Project No:		Time:	1048
Site Location:	AVS Landfill	Finish:	1108
Weather Conds:	Sunny, cool Collector(s) MK		

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_

b. Water Table Depth 220.22 d. Casing Diameter \_\_\_\_\_

**WELL PURGING DATA**

a. Purge Method ~~Dedicated Bladder Pump~~ Hydro-sieve

b. Field Testing Equipment Used:

Make	Model	Serial Number
YSI		5320084101
HACH		20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1052</u>	INITIAL	<u>8.3</u>	<u>3.93</u>	<u>2869</u>	<u>7.97</u>	<u>-35.4</u>	<u>0.54</u>	<u>Brown</u>	<u>220.22</u>
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e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	<u>1052</u>
	500mL	1	HNO3	Metals	<u>↓</u>

Comments \_\_\_\_\_

Signature Man Date 10-7-25

Well/Piezo ID: MW-165

## Ground Water Sample Collection Record

Client: BEPC Date: 10-7-25  
 Project No: \_\_\_\_\_ Time: 1110  
 Site Location: AVS Landfill Finish: 0924 10-8-25  
 Weather Conds: Sunny, cool Collector(s) \_\_\_\_\_

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 40/1050 max PSI  
 b. Water Table Depth 230.31 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1303	INITIAL 1.5L	16.5	4.00	2174	8.21	124.9	55.2	Brown	238.99
1307	1.8 L	16.2	3.69	2139	8.21	124.8	57.8		239.13
1311	1.9 L	16.1	3.13	2093	8.20	124.1	55.5		239.25
1315	2 L	16.8	2.54	2085	8.19	124.2	56.2		239.40
1319	2.1 L	17.0	2.40	2059	8.18	124.4	58.1	↓	239.56
	L								
	L	pumped down to 245ft							
0816	L	9.9	4.65	1739	8.21	304.2	55.0	Brown w/ silt	243.37
	L								
	L								
	L								
	L								
	L								

e. Acceptance criteria pass/fail

Has required volume been removed	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
Has required turbidity been reached	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

DTW

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	0816
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature]

Date 10-8-25

# Ground Water Sample Collection Record

Client: BEPC Date: 10-7-25  
 Project No: \_\_\_\_\_ Time: 1418  
 Site Location: AVS Landfill Finish: 1002  
 Weather Conds: Sunny, nice Collector(s): MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 25/80 @ max PSI  
 b. Water Table Depth 238.32 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1450</u>	<u>INITIAL 3L</u>	<u>12.8</u>	<u>4.39</u>	<u>2751</u>	<u>8.00</u>	<u>-288.4</u>	<u>9.88</u>	<u>Brown</u>	<u>243.8</u>
<u>1454</u>	<u>3.2 L</u>	<u>12.6</u>	<u>3.57</u>	<u>2733</u>	<u>8.00</u>	<u>-289.0</u>	<u>9.77</u>	↓	<u>243.75</u>
<u>1458</u>	<u>3.4 L</u>	<u>12.4</u>	<u>3.23</u>	<u>2742</u>	<u>8.01</u>	<u>-288.6</u>	<u>9.22</u>	↓	<u>244.10</u>
<u>1502</u>	<u>3.6 L</u>	<u>12.6</u>	<u>3.03</u>	<u>2759</u>	<u>8.01</u>	<u>-291.7</u>	<u>9.37</u>	↓	<u>244.74</u>
<u>1506</u>	<u>3.8 L</u>	<u>12.7</u>	<u>1.45</u>	<u>2415</u>	<u>8.00</u>	<u>-294.5</u>	<u>9.69</u>	↓	<u>245.20</u>
	L								
	L	<u>pumped down to 250ft</u>							
	L								
<u>0934</u>	L	<u>11.3</u>	<u>4.83</u>	<u>2712</u>	<u>8.02</u>	<u>-314.8</u>	<u>7.04</u>	<u>Brown</u>	<u>244.51</u>
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e. Acceptance criteria pass/fail Yes No N/A  
 Has required volume been removed     
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

DTW

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>0934</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	↓

Comments \_\_\_\_\_

Signature [Signature]

Date 10-8-25

Well/Piezo ID: MW-225

## Ground Water Sample Collection Record

Client: BEPC Date: 10.8.25  
 Project No: \_\_\_\_\_ Time: 1009  
 Site Location: AVS Landfill Finish: 1130  
 Weather Conds: cold, sunny Collector(s) MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 22/38 @ max PSI  
 b. Water Table Depth 210.03 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1100</u>	<u>INITIAL 5.25</u>	<u>10.7</u>	<u>1.09</u>	<u>2530</u>	<u>8.17</u>	<u>-326.2</u>	<u>5.11</u>	<u>BROWN</u>	<u>210.49</u>
<u>1104</u>	<u>5.75 L</u>	<u>10.8</u>	<u>0.70</u>	<u>2529</u>	<u>8.17</u>	<u>-327.3</u>	<u>5.12</u>	↓	<u>210.45</u>
<u>1108</u>	<u>4.25 L</u>	<u>10.8</u>	<u>0.61</u>	<u>2535</u>	<u>8.16</u>	<u>-328.7</u>	<u>5.57</u>	↓	<u>210.30</u>
<u>1112</u>	<u>6.75 L</u>	<u>10.9</u>	<u>0.57</u>	<u>2529</u>	<u>8.16</u>	<u>-329.3</u>	<u>5.65</u>	↓	<u>210.30</u>
<u>1116</u>	<u>7.25 L</u>	<u>10.9</u>	<u>0.56</u>	<u>2532</u>	<u>8.17</u>	<u>-330.4</u>	<u>5.27</u>	↓	<u>210.29</u>
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e. Acceptance criteria pass/fail Yes No N/A  
 Has required volume been removed     
 Has required turbidity been reached     
 Have parameters stabilized     
 If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1116</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	↓

Comments DUP

Signature [Signature] Date 10.8.25

Well/Piezo ID: MW-255

# Ground Water Sample Collection Record

Client:	BEPC	Date:	10.8.25
Project No:		Time:	1130
Site Location:	AVS Landfill	Finish:	1225
Weather Conds:	Sunny, Breezy	Collector(s):	MK

### WATER LEVEL DATA: (measured from Top of Casing)

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC \_\_\_\_\_ Pump Settings 28/32 @ max PSI

b. Water Table Depth 198.43 d. Casing Diameter \_\_\_\_\_

### WELL 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 # 1 Page # 1  
<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1206	INITIAL 4.75	9.8	.46	3015	8.18	-314.0	9.0	yellow	202.20
1210	5.25 L	9.8	.39	3021	8.19	-313.4	9.29	brown	202.15
1214	5.75 L	9.7	.35	3010	8.19	-313.5	9.17		202.25
1218	6.25 L	9.8	.31	3011	8.18	-313.8	9.08		202.19
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

### SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1218
	500mL	1	HNO3	Metals	↓

Comments

Signature Mann

Date 10.8.25

Well/Piezo ID: MW-265

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10.8.25
Project No:		Time:	1229
Site Location:	AVS Landfill	Finish:	1350
Weather Conds:	Sunny, Breezy Collector(s) MK		

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings 20/45 @ max PSI  
 b. Water Table Depth 190.43 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1322	INITIAL 3.75	13.3	2.91	2880	8.10	-343.3	20.6	Brown	191.46
1326	4.25 L	12.0	2.42	2886	8.10	-344.0	20.7		191.5
1330	4.75 L	12.1	2.00	2894	8.09	-345.7	17.0		191.61
1334	5.25 L	11.9	1.70	2904	8.09	-347.3	12.2		191.61
1338	5.75 L	12.0	1.47	2885	8.08	-348.4	12.4		191.62
1342	6.25 L	12.1	1.46	2895	8.09	-348.5	11.6		191.63
1346	6.75 L	12.2	1.44	2884	8.08	-348.6	11.2		191.65
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:**

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1347
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature]

Date 10.8.25

Well/Piezo ID: MW-245

## Ground Water Sample Collection Record

Client:	BEPC	Date:	10.8.25
Project No:		Time:	1401
Site Location:	AVS Landfill	Finish:	1452
Weather Conds:	Sunny Breezy Collector(s) MK		

**WATER LEVEL DATA: (measured from Top of Casing)** Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings: 20/37e max PSI

b. Water Table Depth 206.27 d. Casing Diameter \_\_\_\_\_

**WELL 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 # 1 Page # 1

<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
1433	INITIAL 5.75	10.0	.57	3146	8.09	-300.3	8.32	BROWN	207.8
1437	0.25 L	10.1	.49	3142	8.11	-303.9	8.12	↓	207.81
1441	6.75 L	10.1	.45	3148	8.12	-307.6	8.12	↓	207.78
1445	7.25 L	10.1	.42	3145	8.12	-299.5	8.81		207.77
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e. Acceptance criteria pass/fail

	Yes	No	N/A
Has required volume been removed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Has required turbidity been reached	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have parameters stabilized	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

If no or N/A - Explain below.

**SAMPLE COLLECTION:** Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	1445
	500mL	1	HNO3	Metals	↓

Comments \_\_\_\_\_

Signature [Signature] Date 10.8.25

# Ground Water Sample Collection Record

Client: BEPC Date: 10-8-25  
 Project No: \_\_\_\_\_ Time: 1457  
 Site Location: AVS Landfill Finish: 1315  
 Weather Conds: Sunny Breezy Collector(s) MK

**WATER LEVEL DATA: (measured from Top of Casing)**

Well

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_  
 b. Water Table Depth 203.67 d. Casing Diameter \_\_\_\_\_

**WELL PURGING DATA**

a. Purge Method ~~Dedicated Bladder Pump~~ Hydrasleeve  
 b. Field Testing Equipment Used: Make Model Serial Number  
YSI 5320084101  
HACH 20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
<0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
<u>1309</u>	INITIAL	<u>12.0</u>	<u>.25</u>	<u>3254</u>	<u>7.96</u>	<u>-292.9</u>	<u>TOO High</u>	<u>Black mud</u>	<u>203.67</u>
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

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

**SAMPLE COLLECTION:**

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	1L	1		TDS/Anions	<u>1309</u>
	500mL	1	HNO3	Metals	<u>↓</u>

Comments \_\_\_\_\_

Signature [Signature]

Date 10-8-25

# Basin Electric North Dakota

**Site Name:** AVS Landfill  
**Event Date:** 10/6/2025  
**Weather Conditions:**  
**Field Technician:** MK

<b>River Elevation (if applicable)</b>

Well ID	Time	Depth to Water*	Well Condition	Comments
MW-19s	800	149.75		
MW-18s		199.17		
MW-21S		202.78		
MW 15s		218.9		
MW 20s		220.22		
MW 16s		236.31		
MW 17s		238.32		
MW22s		210.03		
Mw25s		198.1		
MW23s		190.43		
MW26s		190.43		
MW24s		206.27		
MW27s		203.67		

\* Depth to water as measured from the top of PVC casing.



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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

Basin Electric Power Cooperative  
WO: 103535



Chain of Custody

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (Indicate if different from above) Attn: Liabilities		Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 10/9/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-15S	GW	10/7/2025	1004	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	MW-20S	GW	10/7/2025	1052	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-16S	GW	10/8/2025	816	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-17S	GW	10/8/2025	934	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	MW-22S	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
006	DUP	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
007	MW-25S	GW	10/8/2025	1218	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
008	MW-26S	GW	10/8/2025	1347	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
009	MW-24S	GW	10/8/2025	1445	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
010	MW-27S	GW	10/8/2025	1309	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	10/9/2025	NOON	<i>[Signature]</i>	10/9/2025	1443	5.0°C	Y/N	711959
2.							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: Friday, October 24, 2025 8:33:11 AM



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

**Lab ID:** 89554001      **Date Collected:** 06/10/2025 09:45      **Matrix:** Groundwater  
**Sample ID:** MW-15S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	356	mg/L	25	5		06/18/2025 11:56	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:57	
Calcium	3.79	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Magnesium	2.55	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Potassium	3.82	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Sodium	733	mg/L	5	5	06/12/2025 16:25	06/16/2025 14:49	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1042	mg/L as CaCO3	20.5	1		06/13/2025 13:58	
Bicarbonate	1042	mg/L as CaCO3	20.5	1		06/13/2025 13:58	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 13:58	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/13/2025 13:58	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	13.2	mg/L	2.0	1		06/17/2025 10:41	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.32	mg/L	0.1	1		06/13/2025 13:58	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1910	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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Report Date: Tuesday, July 1, 2025 2:32:47 PM

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

**Lab ID:** 89554002      **Date Collected:** 06/10/2025 10:29      **Matrix:** Groundwater  
**Sample ID:** MW-20S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	56.1	mg/L	5	1		06/18/2025 12:03	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:57	
Calcium	4.65	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Magnesium	2.90	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Potassium	4.03	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
Sodium	698	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:54	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1372	mg/L as CaCO3	20.5	1		06/13/2025 14:09	
Bicarbonate	1372	mg/L as CaCO3	20.5	1		06/13/2025 14:09	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 14:09	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.1	units	0.1	1		06/13/2025 14:09	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	24.6	mg/L	2.0	1		06/17/2025 10:43	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.16	mg/L	0.1	1		06/13/2025 14:09	*
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1760	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****Fluoride**

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

**pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554003      **Date Collected:** 06/11/2025 08:30      **Matrix:** Groundwater  
**Sample ID:** MW-16S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	107	mg/L	5	1		06/18/2025 12:04	
<b>Method: EPA 6010D</b>							
Boron	0.14	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:58	
Calcium	5.41	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
Magnesium	2.30	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
Potassium	3.32	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
Sodium	473	mg/L	1	1	06/12/2025 16:25	06/16/2025 12:56	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	778	mg/L as CaCO3	20.5	1		06/13/2025 14:21	
Bicarbonate	778	mg/L as CaCO3	20.5	1		06/13/2025 14:21	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 14:21	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/13/2025 14:21	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	26.2	mg/L	2.0	1		06/17/2025 10:51	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	2.04	mg/L	0.1	1		06/13/2025 14:21	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1200	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554004      **Date Collected:** 06/11/2025 11:02      **Matrix:** Groundwater  
**Sample ID:** MW-22S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	193	mg/L	25	5		06/18/2025 11:59	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:59	
Calcium	2.49	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:50	
Magnesium	1.99	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:50	
Potassium	3.53	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:50	
Sodium	662	mg/L	5	5	06/12/2025 16:25	06/16/2025 14:51	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:37	
Bicarbonate	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:37	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 16:37	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/13/2025 16:37	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	11.1	mg/L	2.0	1		06/17/2025 10:52	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.75	mg/L	0.1	1		06/13/2025 16:37	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1650	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554005      **Date Collected:** 06/11/2025 11:02      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	171	mg/L	5	1		06/18/2025 12:23	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/12/2025 16:25	06/26/2025 10:59	
Calcium	2.38	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:52	
Magnesium	1.94	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:52	
Potassium	3.24	mg/L	1	1	06/12/2025 16:25	06/16/2025 14:52	
Sodium	648	mg/L	5	5	06/12/2025 16:25	06/16/2025 14:53	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:48	
Bicarbonate	1031	mg/L as CaCO3	20.5	1		06/13/2025 16:48	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 16:48	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/13/2025 16:48	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	11.1	mg/L	2.0	1		06/17/2025 10:53	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.65	mg/L	0.1	1		06/13/2025 16:48	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1670	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 89554006      **Date Collected:** 06/11/2025 12:52      **Matrix:** Groundwater  
**Sample ID:** MW-25S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	29.8	mg/L	5	1		06/18/2025 12:24	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/13/2025 16:10	06/26/2025 11:04	
Calcium	4.01	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:54	
Magnesium	3.11	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:54	
Potassium	4.04	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:54	
Sodium	826	mg/L	5	5	06/13/2025 16:10	06/16/2025 14:55	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1489	mg/L as CaCO3	20.5	1		06/13/2025 17:00	
Bicarbonate	1489	mg/L as CaCO3	20.5	1		06/13/2025 17:00	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 17:00	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/13/2025 17:00	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	39.6	mg/L	2.0	1		06/17/2025 10:54	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.26	mg/L	0.1	1		06/13/2025 17:00	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1910	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 515-382-5486 ~ Fax 515-382-3885  
 www.MVTL.com

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

**Lab ID:** 89554007      **Date Collected:** 06/11/2025 14:27      **Matrix:** Groundwater  
**Sample ID:** MW-26S      **Date Received:** 06/12/2025 14:34      **Collector:** Client  
**Temp @ Receipt (C):** 4.8      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	75.9	mg/L	5	1		06/18/2025 12:25	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	06/13/2025 16:10	06/26/2025 11:05	
Calcium	11.0	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:56	
Magnesium	2.90	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:56	
Potassium	4.72	mg/L	1	1	06/13/2025 16:10	06/16/2025 14:56	
Sodium	746	mg/L	5	5	06/13/2025 16:10	06/16/2025 14:57	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1335	mg/L as CaCO3	20.5	1		06/13/2025 17:12	
Bicarbonate	1335	mg/L as CaCO3	20.5	1		06/13/2025 17:12	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/13/2025 17:12	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/13/2025 17:12	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	30.6	mg/L	2.0	1		06/17/2025 10:56	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.28	mg/L	0.1	1		06/13/2025 17:12	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1820	mg/L	10	1		06/13/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

QC Results Summary							WO #: 89554			
Sulfate										
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)	Units: mg/L
LFB			100	101.0		85	115			
LFB			100	97.9		85	115			
LFB			100	95.8		85	115			
LFB			100	91.1		85	115			
LFB			100	89.6		85	115			
LFB			100	85.6		85	115			
UPL			100	97.8		85	115			
LFB			100	97.5		85	115			
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MB		<5								
MS/MSD	89364013		500	94.8	94.6	85	115	0.0	20	
MS/MSD	89364024		100	94.5	94.7	85	115	0.1	20	
MS/MSD	89416003		100	85.3	85.6	85	115	0.4	20	
MS/MSD	89554004		500	88.8	88.8	80	115	0.0	20	
MS/MSD	89584006		100	80.1	80.7	85	115	0.5	20	
MS/MSD	89758001		1000	95.8	96.0	85	115	0.0	20	
MS/MSD	89769002		100	97.2	97.2	85	115	0.0	20	

Chloride										
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)	Units: mg/L
LFB			30	96.4		90	110			
LFB			30	94.8		90	110			
LFB			30	95.8		90	110			
LFB			30	95.4		90	110			

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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	95.2		90	110		
LFB			30	95.6		90	110		
LFB			30	94.9		90	110		
LFB			30	95.0		90	110		
LFB			30	94.3		90	110		
LFB			30	94.4		90	110		
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	89364007		30	98.1	98.1	90	120	0.0	20
MS/MSD	89364028		30	98.0	97.3	90	120	0.5	20
MS/MSD	89554007		30	96.5	96.7	90	120	0.0	20
MS/MSD	89631003		30	95.7	94.7	90	120	0.6	20
MS/MSD	89761001		30	94.4	94.4	90	120	0.0	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-DE			0.4	101.0		85	115		
LFB-DE			0.4	102.0		85	115		
MB		<0.1							
MB		<0.1							
MS/MSD	89554005		0.4	94.3	83.3	70	130	0.6	20
POS/PDSO	89556001		1	107.0	108.0	75	125	0.8	20
POS/PDSO	90443002		1	83.3	83.0	75	125	0.6	20

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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 (%)
U/B-M			100	104.0		85	115		
U/B-M			100	106.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	89196001		100	107.0	102.0	75	125	0.2	20
PDS/PDSO	89364006		100	99.5	101.0	75	125	0.7	20
PDS/PDSO	89364012		100	95.0	95.7	75	125	0.3	20
PDS/PDSO	89416005		100	103.0	102.0	75	125	0.2	20
PDS/PDSO	89416008		100	100.0	101.0	75	125	0.4	20
DUP	89423002							2.5	20
PDS/PDSO	89584004		100	103.0	102.0	75	125	0.2	20
PDS/PDSO	89584009		100	103.0	105.0	75	125	1.1	20
PDS/PDSO	89584010		100	101.0	102.0	75	125	0.5	20

Magnesium		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 (%)
U/B-M			100	106.0		85	115		
U/B-M			100	108.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	89196001		100	103.0	102.0	75	125	0.3	20
PDS/PDSO	89364006		100	102.0	103.0	75	125	0.8	20
PDS/PDSO	89364012		100	101.0	101.0	75	125	0.4	20
PDS/PDSO	89416005		100	105.0	105.0	75	125	0.4	20
PDS/PDSO	89416008		100	108.0	104.0	75	125	0.6	20
DUP	89423002							0.6	20
PDS/PDSO	89584004		100	105.0	105.0	75	125	0.2	20
PDS/PDSO	89584009		100	105.0	107.0	75	125	1.2	20
PDS/PDSO	89584010		100	105.0	106.0	75	125	0.9	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 (%)
U/B-M			100	105.0		85	115		

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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	108.0		85	115		
MB		<1							
MS		<1							
PDS/PDSO	89186003		100	108.0	108.0	75	125	0.4	20
PDS/PDSO	89364006		100	105.0	107.0	75	125	1.8	20
PDS/PDSO	89364012		100	104.0	103.0	75	125	0.5	20
PDS/PDSO	89416005		100	107.0	104.0	75	125	1.4	20
PDS/PDSO	89416008		100	102.0	105.0	75	125	2.4	20
DUP	89423002							1.3	20
PDS/PDSO	89584004		100	104.0	104.0	75	125	0.1	20
PDS/PDSO	89584009		100	103.0	106.0	75	125	2.8	20
PDS/PDSO	89584010		100	102.0	106.0	75	125	3.1	20

Sodium			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	103.0		85	115		
LFB-MI			100	108.0		85	115		
MB		<1							
MS		<1							
PDS/PDSO	89186003		100	109.0	104.0	75	125	1.3	20
PDS/PDSO	89364006		100	105.0	105.0	75	125	0.1	20
PDS/PDSO	89364012		100	102.0	105.0	75	125	2.9	20
PDS/PDSO	89416005		100	106.0	107.0	75	125	3.1	20
PDS/PDSO	89416008		100	107.0	104.0	75	125	2.2	20
DUP	89423002							2.4	20
PDS/PDSO	89584004		100	104.0	106.0	75	125	1.8	20
PDS/PDSO	89584009		100	105.0	105.0	75	125	0.5	20
PDS/PDSO	89584010		100	106.0	105.0	75	125	0.7	20

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 (%)
CRM			501	89.7		80	120		
LFB			410	93.5		80	110		

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Alkalinity, Total									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LFB			410	93.8		90	110		
LFB			410	92.5		90	110		
LFB			410	92.4		90	110		
MB		<20.5							
MB		<20.5							
MB		<20.5							
MB		<20.5							
MS/MSD	89554001		410	83.3	86.9	90	120	0.0	20
MS/MSD	89584002		410	87.9	87.5	90	120	0.4	20
MS/MSD	89584007		410	87.1	87.0	90	120	0.2	20

pH									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-PH			6	100.7					
CRM-PH			6	100.2					
CRM-PH			6	100.0					
CRM-PH			6	100.0					
DUP	89584001							0.7	20
DUP	89584009							0.1	20

Fluoride									
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			0.6	101.0		88.99	111.11		
LFB-F			0.5	92.0		90	110		
LFB-F			0.5	93.0		90	110		
LFB-F			0.5	98.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD-F	89554002		0.5	107.0	122.0	90	120	5.8	20
MS/MSD-F	89554006		0.5	100.0	86.0	90	120	4.1	20

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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	96.0		90.35	110.33		
MB		<10							
MB	89564001							0.0	40

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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

**Basin Electric Power Cooperative**

WO: 89554

Chain of Custody

Page 1 of 4



Order # Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3991 Highway 209A Stanton, ND 58571 Phone: (701) 258-9720 Toll Free: (800) 279-6885 Fax: (701) 258-9724		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) Attn: Liabilities		Contact Mark Dihle Name of Sampler Marlah Knutson	Emails mdihle@becp.com mknutson@becp.com
		Quote Number	Date Submitted 6/12/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Lab	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
	001	MW-16S	GW	6/10/2025	945	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	002	MW-20S	GW	6/10/2025	1029	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	003	MW-16S	GW	6/11/2025	830	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	004	MW-22S	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	005	DUP	GW	6/11/2025	1102	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	006	MW-26S	GW	6/11/2025	1252	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	007	MW-26S	GW	6/11/2025	1427	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
	-	AVS LEACHATE POND	SW	6/10/2025	1435	2	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity
			GW					

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/12/2025	NOON	<i>[Signature]</i>	6/12/2025	14:34	4.8°C	(Y/N)	TM959
2.							Y/N	

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

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative



**Sample Condition Checklist**

Date: 12 Jun 25 Time: 1517 Analyst: PW  
Work Order #: 89554

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Number of Bottles	Container Size (mL)		Container Type		Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	F-(500) = Filtered	Other	CG = Clear Glass, P = Plastic, AG = Amber Glass	Other						
7	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
7	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease		(CG) (P) (AG)	Other	HCl	n/a				
	TOC Vials		(G) (AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials		(G) (AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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

**Lab ID:** 90275001      **Date Collected:** 06/18/2025 09:49      **Matrix:** Groundwater  
**Sample ID:** MW-17S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	293	mg/L	25	5		06/25/2025 09:17	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:30	
Calcium	4.05	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
Magnesium	2.28	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
Potassium	3.52	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
Sodium	684	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:24	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1097	mg/L as CaCO3	20.5	1		06/24/2025 13:17	
Bicarbonate	1087	mg/L as CaCO3	20.5	1		06/24/2025 13:17	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 13:17	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		06/24/2025 13:17	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	13.0	mg/L	2.0	1		06/24/2025 10:34	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.63	mg/L	0.1	1		06/23/2025 15:51	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1740	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275002      **Date Collected:** 06/17/2025 11:35      **Matrix:** Groundwater  
**Sample ID:** MW-24S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	62.4	mg/L	5	1		06/25/2025 09:30	
<b>Method: EPA 6010D</b>							
Boron	0.11	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:30	
Calcium	4.35	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:27	
Magnesium	3.46	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:27	
Potassium	4.48	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:27	
Sodium	881	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:13	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1592	mg/L as CaCO3	20.5	1		06/24/2025 13:28	
Bicarbonate	1589	mg/L as CaCO3	20.5	1		06/24/2025 13:28	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 13:28	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/24/2025 13:28	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	49.6	mg/L	2.0	1		06/24/2025 10:35	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.56	mg/L	0.1	1		06/23/2025 16:05	*
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1950	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****Fluoride**

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

**pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275003      **Date Collected:** 06/17/2025 12:19      **Matrix:** Groundwater  
**Sample ID:** MW-27S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	230	mg/L	25	5		06/25/2025 09:19	
<b>Method: EPA 6010D</b>							
Boron	0.68	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:31	
Calcium	419	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:28	
Magnesium	152	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:28	
Potassium	27.4	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:28	
Sodium	1040	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:14	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1659	mg/L as CaCO3	20.5	1		06/24/2025 13:39	
Bicarbonate	1659	mg/L as CaCO3	20.5	1		06/24/2025 13:39	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 13:39	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/24/2025 13:39	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	64.9	mg/L	10.0	5		06/24/2025 10:36	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.41	mg/L	0.1	1		06/23/2025 18:17	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2500	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275004      **Date Collected:** 06/17/2025 14:15      **Matrix:** Groundwater  
**Sample ID:** MW-18S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	555	mg/L	25	5		06/25/2025 09:20	
<b>Method: EPA 6010D</b>							
Boron	0.10	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:32	
Calcium	4.43	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
Magnesium	1.66	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
Potassium	3.92	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
Sodium	697	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:29	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	820	mg/L as CaCO3	20.5	1		06/24/2025 13:48	
Bicarbonate	638	mg/L as CaCO3	20.5	1		06/24/2025 13:48	
Carbonate	182	mg/L as CaCO3	20.5	1		06/24/2025 13:48	
<b>Method: SM4500 H+ B-2021</b>							
pH	9.2	units	0.1	1		06/24/2025 13:48	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	8.5	mg/L	2.0	1		06/24/2025 10:37	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.32	mg/L	0.1	1		06/23/2025 18:31	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1780	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275005      **Date Collected:** 06/18/2025 09:10      **Matrix:** Groundwater  
**Sample ID:** MW-19S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	696	mg/L	25	5		06/25/2025 09:21	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:32	
Calcium	4.30	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:30	
Magnesium	3.34	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:30	
Potassium	4.26	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:30	
Sodium	844	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:15	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	845	mg/L as CaCO3	20.5	1		06/24/2025 14:00	
Bicarbonate	845	mg/L as CaCO3	20.5	1		06/24/2025 14:00	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 14:00	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		06/24/2025 14:00	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.5	mg/L	2.0	1		06/24/2025 10:38	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.77	mg/L	0.1	1		06/23/2025 18:45	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2180	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275006      **Date Collected:** 06/18/2025 09:10      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	738	mg/L	25	5		06/25/2025 09:22	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:35	
Calcium	4.30	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:32	
Magnesium	3.37	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:32	
Potassium	4.30	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:32	
Sodium	840	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:16	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	825	mg/L as CaCO3	20.5	1		06/24/2025 14:08	
Bicarbonate	825	mg/L as CaCO3	20.5	1		06/24/2025 14:08	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 14:08	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/24/2025 14:08	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.7	mg/L	2.0	1		06/24/2025 10:40	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.73	mg/L	0.1	1		06/23/2025 18:58	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2190	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 90275007      **Date Collected:** 06/18/2025 12:47      **Matrix:** Groundwater  
**Sample ID:** MW-21S      **Date Received:** 06/19/2025 14:35      **Collector:** Client  
**Temp @ Receipt (C):** 3.9      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	401	mg/L	25	5		06/25/2025 09:23	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	06/19/2025 16:59	06/26/2025 11:37	
Calcium	4.54	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:33	
Magnesium	3.12	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:33	
Potassium	4.19	mg/L	1	1	06/19/2025 16:59	06/24/2025 13:33	
Sodium	827	mg/L	5	5	06/19/2025 16:59	06/24/2025 15:17	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1187	mg/L as CaCO3	20.5	1		06/24/2025 14:17	
Bicarbonate	1187	mg/L as CaCO3	20.5	1		06/24/2025 14:17	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		06/24/2025 14:17	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.2	units	0.1	1		06/24/2025 14:17	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.0	mg/L	2.0	1		06/24/2025 10:41	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.65	mg/L	0.1	1		06/23/2025 19:12	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2030	mg/L	10	1		06/24/2025 09:43	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

QC Results Summary						WO #: 90275			
Sulfate									
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	102.0		85	115		
LFB			100	102.0		85	115		
LFB			100	102.0		85	115		
LFB			100	100.0		85	115		
LFB			100	100.0		85	115		
LFB			100	109.0		85	115		
LFB			100	100.0		85	115		
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MB		<5							
MS/MSD	90134001		1000	80.6	89.2	85	115	1.2	20
MS/MSD	90167004		100	98.1	99.5	85	115	1.4	20
MS/MSD	90304002		100000	86.5	89.8	85	115	2.7	20
MS/MSD	90443002		10000	81.1	84.2	85	115	1.5	20
MS/MSD	90446002		500	81.0	85.8	85	115	2.6	20
MS/MSD	90448004		100	98.8	98.8	85	115	0.0	20
Chloride									
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	97.1		90	110		
LFB			30	97.4		90	110		
LFB			30	97.3		90	110		
LFB			30	96.8		90	110		
LFB			30	96.6		90	110		
LFB			30	96.2		90	110		
LFB			30	96.0		90	110		

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

Chloride									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	98926001		30	100.2	100.1	90	120	0.0	20
MS/MSD	90166003		30	109.1	103.1	90	120	0.8	20
MS/MSD	90304007		30	101.4	101.5	90	120	0.2	20

Boron									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LF8-OE			0.4	104.0		85	115		
MB		<0.1							
PDS/PDS0	89566001		2	107.0	108.0	75	125	0.6	20
MS/MSD	90273006		0.4	95.1	98.0	70	130	0.7	20
PDS/PDS0	90443002		2	82.3	83.0	75	125	0.6	20

Calcium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LF8-MI			100	95.8		85	115		
MB		<1							
PDS/PDS0	89096001		100	103.0	103.0	95	125	0.1	20
PDS/PDS0	89766001		100	99.5	98.1	75	125	0.6	20
PDS/PDS0	89938001		100	102.0	101.0	75	125	0.5	20
PDS/PDS0	90167005		100	101.0	102.0	75	125	0.1	20
PDS/PDS0	90304006		100	95.9	95.9	75	125	0.0	20

Magnesium									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
LF8-MI			100	99.0		85	115		
MB		<1							
PDS/PDS0	89096001		100	105.0	105.0	75	125	0.1	20

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Magnesium		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/PDS0	89760001		100	102.0	101.0	75	125	0.8	20
PDS/PDS0	89938001		100	104.0	103.0	75	125	0.8	20
PDS/PDS0	90167005		100	102.5	101.0	75	125	0.1	20
PDS/PDS0	90304006		100	97.2	97.8	75	125	0.4	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-MH			100	101.8		85	135		
MB		<1							
PDS/PDS0	89096001		100	103.0	103.0	75	125	0.3	20
PDS/PDS0	89760001		100	103.0	102.0	75	125	0.8	20
PDS/PDS0	89938001		100	105.0	104.0	75	125	0.8	20
PDS/PDS0	90167005		100	106.0	106.0	75	125	0.3	20
PDS/PDS0	90304006		100	102.0	105.0	75	125	2.6	20

Sodium		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-MH			100	98.9		85	135		
MB		<1							
PDS/PDS0	89096001		100	73.6	72.8	75	125	0.2	20
PDS/PDS0	89760001		100	104.0	105.0	75	125	0.6	20
PDS/PDS0	89938001		100	107.0	101.0	75	125	4.0	20
PDS/PDS0	90167005		100	108.0	108.0	75	125	0.1	20
PDS/PDS0	90304006		100	86.8	86.7	75	125	0.8	20

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 (%)
CRM			50	93.1		80	120		
LFB			410	96.9		90	110		
LFB			410	96.6		90	110		
LFB			410	95.7		90	110		
LFB			410	96.5		90	110		
LFB			410	96.1		90	110		
MB		<10.5							

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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 (%)
MB		<20.5							
MB		<20.5							
MB		<20.5							
MB		<20.5							
MS/MSD	90275006		410	90.5	88.3	80	120	0.6	20
MS/MSD	90304006		410	92.2	97.0	80	120	3.2	20
MS/MSD	90442002		410	91.2	91.4	80	120	0.1	20
MS/MSD	90446001		410	91.7	91.7	80	120	0.0	20

pH		Units: units							
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-PH			6	100.5					
CRM-PH			5	100.6					
CRM-PH			6	100.5					
CRM-PH			6	100.3					
CRM-PH			6	100.6					
DUP	90275002							0.7	20
DUP	90391001							0.1	20
DUP	90446001							0.4	20
DUP	90446002							0.9	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			0.6	99.2		63.99	111.11		
1FB-F			0.5	94.0		90	110		
1FB-F			0.5	98.0		90	110		
1FB-F			0.5	100.0		90	110		
1FB-F			0.5	104.0		90	110		
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MB-F		<0.1							
MS/MSD-F	90275002		0.5	92.0	70.0	80	120	5.6	20

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**Account #:** 2040

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Fluoride									
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-F	90295007		0.5	122.0	106.0	80	120	5.2	20
MS/MSD-F	90104007		0.5	90.0	88.0	80	120	2.1	20

Total Dissolved Solids									
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	110.11		
Mix		<0.1							
DUP	90108002							0.5	20

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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 Electric Power Cooperative WO: 90275 Chain of Custody Page <u>1</u> of <u>1</u> Order # _____						
Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040 Phone # 701-745-7238 701-557-5488	Contact Mark Dihle Emails mdihle@bepec.com aknutson@bepec.com					
Billing Address (indicate if different from above) Attn: Liabilities		Name of Sampler Mariah Knutson	Quote Number _____ Date Submitted 6/19/2025					
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801					
Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required	
001	MW-17S	GW	6/18/2025	949	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
002	MW-24S	GW	6/17/2025	1135	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
003	MW-27S	GW	6/17/2025	1219	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
004	MW-18S	GW	6/17/2025	1415	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
005	MW-19S	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
006	DUP	GW	6/18/2025	910	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
007	MW-21S	GW	6/18/2025	1247	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,	
Comments:								
Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	6/19/2025	NOON	C. W. W. W.	6/19/25	1435	3.9°C	Y/N	TM959
2.							Y/N	

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

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Account #: 2040

Client: Basin Electric Power Cooperative



**Sample Condition Checklist**

Date: 19 Jun 25 Time: 1458 Analyst: PW  
Work Order #: 90275

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Comments:

Number of Bottles	Container Size (mL)		Container Type		Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	F-(500) = Filtered	Other	CG = Clear Glass, P = Plastic, AG = Amber Glass	Other						
7	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
7	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease		(CG) (P) (AG)	Other	HCl	n/a				
	TOC Vials		(G) (AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials		(G) (AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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

**Lab ID:** 97784001      **Date Collected:** 08/26/2025 09:03      **Matrix:** Groundwater  
**Sample ID:** MW-19S      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	765	mg/L	25	5		09/03/2025 10:55	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 11:59	
Calcium	4.17	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:12	
Magnesium	3.27	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:12	
Potassium	4.40	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:12	
Sodium	808	mg/L	5	5	08/27/2025 16:36	08/29/2025 11:41	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	838	mg/L as CaCO3	20.5	1		08/27/2025 21:58	
Bicarbonate	838	mg/L as CaCO3	20.5	1		08/27/2025 21:58	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		08/27/2025 21:58	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		08/27/2025 21:58	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.8	mg/L	2.0	1		09/02/2025 10:49	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.66	mg/L	0.1	1		08/27/2025 21:58	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2170	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 97784002      **Date Collected:** 08/26/2025 09:03      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	749	mg/L	25	5		09/03/2025 10:56	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 12:01	
Calcium	4.14	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:13	
Magnesium	3.28	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:13	
Potassium	4.36	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:13	
Sodium	827	mg/L	5	5	08/27/2025 16:36	08/29/2025 11:42	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	851	mg/L as CaCO3	20.5	1		08/27/2025 22:09	
Bicarbonate	851	mg/L as CaCO3	20.5	1		08/27/2025 22:09	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		08/27/2025 22:09	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		08/27/2025 22:09	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.9	mg/L	2.0	1		09/02/2025 10:50	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	0.68	mg/L	0.1	1		08/27/2025 22:09	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2170	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 97784003      **Date Collected:** 08/26/2025 11:37      **Matrix:** Groundwater  
**Sample ID:** MW-18S      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	596	mg/L	25	5		09/03/2025 10:57	
<b>Method: EPA 6010D</b>							
Boron	<0.1	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 12:02	
Calcium	4.29	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
Magnesium	1.69	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
Potassium	4.08	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
Sodium	679	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:15	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	846	mg/L as CaCO3	20.5	1		08/27/2025 22:20	
Bicarbonate	662	mg/L as CaCO3	20.5	1		08/27/2025 22:20	
Carbonate	183	mg/L as CaCO3	20.5	1		08/27/2025 22:20	
<b>Method: SM4500 H+ B-2021</b>							
pH	9.2	units	0.1	1		08/27/2025 22:20	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	8.7	mg/L	2.0	1		09/02/2025 10:52	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.23	mg/L	0.1	1		08/27/2025 22:20	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1860	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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, September 9, 2025 9:31:41 AM

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 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 515-382-5486 ~ Fax 515-382-3885  
 www.MVTL.com

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

**Lab ID:** 97784004      **Date Collected:** 08/26/2025 14:03      **Matrix:** Groundwater  
**Sample ID:** MW-21S      **Date Received:** 08/27/2025 14:44      **Collector:** Client  
**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	403	mg/L	25	5		09/03/2025 10:59	
<b>Method: EPA 6010D</b>							
Boron	0.11	mg/L	0.1	1	08/27/2025 16:36	09/08/2025 12:02	
Calcium	4.16	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:18	
Magnesium	2.96	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:18	
Potassium	4.23	mg/L	1	1	08/27/2025 16:36	08/29/2025 13:18	
Sodium	794	mg/L	5	5	08/27/2025 16:36	08/29/2025 11:46	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1189	mg/L as CaCO3	20.5	1		08/27/2025 22:33	
Bicarbonate	1189	mg/L as CaCO3	20.5	1		08/27/2025 22:33	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		08/27/2025 22:33	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		08/27/2025 22:33	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	18.0	mg/L	2.0	1		09/02/2025 10:53	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.53	mg/L	0.1	1		08/27/2025 22:33	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1990	mg/L	10	1		08/29/2025 15:38	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 97784005      **Date Collected:** 08/26/2025 14:35      **Matrix:** Surface Water  
**Sample ID:** AVS Leachate Pond      **Date Received:** 08/27/2025 14:44      **Collector:** Client

**Temp @ Receipt (C):** 1.4      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	5790	mg/L	100	20		09/03/2025 11:00	
<b>Method: EPA 353.2</b>							
Nitrate + Nitrite as N	4.80	mg/L	4	20		09/04/2025 15:39	
<b>Method: EPA 6010D</b>							
Boron	0.96	mg/L	0.5	5	08/27/2025 16:36	09/08/2025 12:03	
Calcium	312	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
Iron	2.60	mg/L	0.5	5	08/27/2025 16:36	08/28/2025 16:19	*
Magnesium	72.2	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
Manganese	0.72	mg/L	0.25	5	08/27/2025 16:36	08/28/2025 16:19	*
Potassium	233	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
Sodium	3080	mg/L	20	20	08/27/2025 16:36	08/29/2025 11:47	
<b>Method: EPA 6020B</b>							
Arsenic	0.1657	mg/L	0.002	5	08/27/2025 16:36	09/02/2025 11:39	
Barium	0.2089	mg/L	0.004	10	08/27/2025 16:36	09/02/2025 11:34	
Cadmium	0.0021	mg/L	0.0005	5	08/27/2025 16:36	09/02/2025 11:39	
Chromium	0.3005	mg/L	0.004	10	08/27/2025 16:36	09/02/2025 11:34	
Lead	0.0019	mg/L	0.0005	5	08/27/2025 16:36	09/02/2025 11:39	
Molybdenum	1.962	mg/L	0.02	50	08/27/2025 16:36	09/02/2025 11:29	
Selenium	0.1213	mg/L	0.005	5	08/27/2025 16:36	09/02/2025 11:39	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	293	mg/L as CaCO3	20.5	1		08/27/2025 22:44	
<b>Method: SM4500-CI-E 2021</b>							
Chloride	368	mg/L	20.0	10		09/02/2025 10:54	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	11500	mg/L	10	1		08/29/2025 15:38	

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

**Analytical Results**

**Analysis Results Comments**

**Iron**

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

**Manganese**

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



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 Electric Power Cooperative  
WO: 97784

**Chain of Custody**

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address <u>Basin Electric Power Coop.</u> <u>Leland Olds Station</u> <u>3901 Highway 200A</u> <u>Stanton, ND 58571</u>		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (indicate if different from above) <u>Attn: Liabilities</u>		Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 8/27/2025
		Project Name/Number AVS Landfill CCR	Purchase Order # 790708-01

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-19S	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	DUP	GW	8/26/2025	903	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-18S	GW	8/26/2025	1137	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-21S	GW	8/26/2025	1403	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	AVS LEACHATE POND	SW	8/26/2025	1435	1	N	Total Metals: Mn, Se, Ba, Cd, Cr, B, Mo, As, Pb, Fe, Ca, Mg, Na, K, Cl, So4, NO2, NO3, TDS, Alkalinity

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	8/27/2025	NOON	<i>[Signature]</i>	8/27/2025	1444	1.40C	Y/N	JMS05
2.							Y/N	

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

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Account #: 2040

Client: Basin Electric Power Cooperative



**Sample Condition Checklist**

Date: 27 Aug 25 Time: 1543 Analyst: PN  
Work Order #: 97754

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Comments:

Number of Bottles	Container Size (mL)		Container Type		Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	F-(500) = Filtered	Other	CG = Clear Glass, P = Plastic, AG = Amber Glass	Other						
5	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
5	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125) (250) (500) F-(500) (1000)	Other	(CG) (P) (AG)	Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease		(CG) (P) (AG)	Other	HCl	n/a				
	TOC Vials		(G) (AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials		(G) (AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

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**Account #:** 2040                                   **Client:** Basin Electric Power Cooperative  
**Workorder:** AVS Landfill CCR Wells (103535)                   **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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**Account #:** 2040**Client:** Basin Electric Power Cooperative**Analytical Results**

**Lab ID:** 103535001      **Date Collected:** 10/07/2025 10:04      **Matrix:** Groundwater  
**Sample ID:** MW-15S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	486	mg/L	25	5		10/15/2025 13:43	
<b>Method: EPA 6010D</b>							
Boron	0.11	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:56	
Calcium	3.93	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
Magnesium	2.70	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
Potassium	4.04	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
Sodium	727	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:35	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1074	mg/L as CaCO3	20.5	1		10/10/2025 18:00	
Bicarbonate	1074	mg/L as CaCO3	20.5	1		10/10/2025 18:00	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:00	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 18:00	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	13.1	mg/L	2.0	1		10/14/2025 11:55	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.40	mg/L	0.1	1		10/10/2025 18:00	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1930	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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Report Date: Friday, October 24, 2025 8:33:11 AM

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

**Lab ID:** 103535002      **Date Collected:** 10/07/2025 10:52      **Matrix:** Groundwater  
**Sample ID:** MW-20S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	74.8	mg/L	5	1		10/15/2025 13:44	
<b>Method: EPA 6010D</b>							
Boron	0.13	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:56	
Calcium	6.19	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
Magnesium	3.38	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
Potassium	4.56	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
Sodium	755	mg/L	2	2	10/09/2025 16:13	10/20/2025 15:37	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1380	mg/L as CaCO3	20.5	1		10/10/2025 18:11	
Bicarbonate	1380	mg/L as CaCO3	20.5	1		10/10/2025 18:11	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:11	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 18:11	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	25.6	mg/L	2.0	1		10/14/2025 11:56	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.20	mg/L	0.1	1		10/10/2025 18:11	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1800	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535003      **Date Collected:** 10/08/2025 08:16      **Matrix:** Groundwater  
**Sample ID:** MW-16S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	125	mg/L	5	1		10/15/2025 13:45	
<b>Method: EPA 6010D</b>							
Boron	0.15	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:57	
Calcium	3.71	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
Magnesium	2.35	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
Potassium	3.70	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
Sodium	657	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:38	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	739	mg/L as CaCO3	20.5	1		10/10/2025 18:23	
Bicarbonate	730	mg/L as CaCO3	20.5	1		10/10/2025 18:23	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:23	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 18:23	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	32.6	mg/L	2.0	1		10/14/2025 11:58	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	2.37	mg/L	0.1	1		10/10/2025 18:23	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1150	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

**Analytical Results**

**Lab ID:** 103535004      **Date Collected:** 10/08/2025 09:34      **Matrix:** Groundwater  
**Sample ID:** MW-17S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	300	mg/L	25	5		10/15/2025 13:46	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:57	
Calcium	3.72	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
Magnesium	2.28	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
Potassium	3.66	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
Sodium	674	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:42	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1125	mg/L as CaCO3	20.5	1		10/10/2025 18:36	
Bicarbonate	1125	mg/L as CaCO3	20.5	1		10/10/2025 18:36	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:36	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 18:36	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	13.6	mg/L	2.0	1		10/14/2025 11:59	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.48	mg/L	0.1	1		10/10/2025 18:36	*
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1740	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments**

**Fluoride**

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

**pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535005      **Date Collected:** 10/08/2025 11:16      **Matrix:** Groundwater  
**Sample ID:** MW-22S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	234	mg/L	25	5		10/15/2025 13:54	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:58	
Calcium	2.56	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
Magnesium	2.03	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
Potassium	3.53	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
Sodium	641	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:43	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1042	mg/L as CaCO3	20.5	1		10/10/2025 18:48	
Bicarbonate	1027	mg/L as CaCO3	20.5	1		10/10/2025 18:48	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 18:48	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 18:48	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	11.4	mg/L	2.0	1		10/14/2025 12:00	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.84	mg/L	0.1	1		10/10/2025 18:48	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1610	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535006      **Date Collected:** 10/08/2025 11:16      **Matrix:** Groundwater  
**Sample ID:** DUP      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	247	mg/L	25	5		10/15/2025 13:48	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/09/2025 16:13	10/13/2025 15:59	
Calcium	2.55	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
Magnesium	2.03	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
Potassium	3.47	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
Sodium	640	mg/L	1	1	10/09/2025 16:13	10/20/2025 15:44	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1062	mg/L as CaCO3	20.5	1		10/10/2025 19:01	
Bicarbonate	1047	mg/L as CaCO3	20.5	1		10/10/2025 19:01	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 19:01	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 19:01	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	11.2	mg/L	2.0	1		10/14/2025 12:01	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.84	mg/L	0.1	1		10/10/2025 19:01	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1660	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535007      **Date Collected:** 10/08/2025 12:18      **Matrix:** Groundwater  
**Sample ID:** MW-25S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	36.0	mg/L	5	1		10/15/2025 14:02	
<b>Method: EPA 6010D</b>							
Boron	0.14	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:02	
Calcium	4.56	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
Magnesium	3.40	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
Potassium	4.50	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
Sodium	834	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:52	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1553	mg/L as CaCO3	20.5	1		10/10/2025 19:14	
Bicarbonate	1529	mg/L as CaCO3	20.5	1		10/10/2025 19:14	
Carbonate	24	mg/L as CaCO3	20.5	1		10/10/2025 19:14	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 19:14	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	40.4	mg/L	2.0	1		10/14/2025 12:02	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.42	mg/L	0.1	1		10/10/2025 19:14	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1940	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535008      **Date Collected:** 10/08/2025 13:47      **Matrix:** Groundwater  
**Sample ID:** MW-26S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	120	mg/L	5	1		10/15/2025 14:04	
<b>Method: EPA 6010D</b>							
Boron	0.12	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:04	
Calcium	17.3	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
Magnesium	3.31	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
Potassium	5.21	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
Sodium	746	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:53	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1382	mg/L as CaCO3	20.5	1		10/10/2025 19:28	
Bicarbonate	1367	mg/L as CaCO3	20.5	1		10/10/2025 19:28	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 19:28	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 19:28	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	31.5	mg/L	2.0	1		10/14/2025 12:09	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.36	mg/L	0.1	1		10/10/2025 19:28	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	1870	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535009      **Date Collected:** 10/08/2025 14:45      **Matrix:** Groundwater  
**Sample ID:** MW-24S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	52.6	mg/L	5	1		10/15/2025 14:05	
<b>Method: EPA 6010D</b>							
Boron	0.10	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:04	
Calcium	4.54	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
Magnesium	3.48	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
Potassium	4.58	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
Sodium	841	mg/L	2	2	10/10/2025 16:15	10/20/2025 15:55	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1540	mg/L as CaCO3	20.5	1		10/10/2025 21:38	
Bicarbonate	1509	mg/L as CaCO3	20.5	1		10/10/2025 21:38	
Carbonate	31	mg/L as CaCO3	20.5	1		10/10/2025 21:38	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.4	units	0.1	1		10/10/2025 21:38	*
<b>Method: SM4500-CI-E 2021</b>							
Chloride	49.7	mg/L	2.0	1		10/14/2025 12:11	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.61	mg/L	0.1	1		10/10/2025 21:38	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2040	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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

**Lab ID:** 103535010      **Date Collected:** 10/08/2025 13:09      **Matrix:** Groundwater  
**Sample ID:** MW-27S      **Date Received:** 10/09/2025 14:43      **Collector:** Client  
**Temp @ Receipt (C):** 5.0      **Received on Ice:** Yes

Parameter	Results	Units	RDL	DF	Prepared	Analyzed	Qual
<b>Method: ASTM D516-16</b>							
Sulfate	141	mg/L	25	5		10/15/2025 14:06	
<b>Method: EPA 6010D</b>							
Boron	0.21	mg/L	0.1	1	10/10/2025 16:15	10/13/2025 16:05	
Calcium	58.1	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
Magnesium	27.4	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
Potassium	11.1	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
Sodium	952	mg/L	5	5	10/10/2025 16:15	10/20/2025 15:56	
<b>Method: SM2320 B-2021</b>							
Alkalinity, Total	1686	mg/L as CaCO3	20.5	1		10/10/2025 21:52	
Bicarbonate	1678	mg/L as CaCO3	20.5	1		10/10/2025 21:52	
Carbonate	<20.5	mg/L as CaCO3	20.5	1		10/10/2025 21:52	
<b>Method: SM4500 H+ B-2021</b>							
pH	8.3	units	0.1	1		10/10/2025 21:52	*
<b>Method: SM4500-Cl-E 2021</b>							
Chloride	65.0	mg/L	10.0	5		10/14/2025 12:12	
<b>Method: SM4500-F-C-2021</b>							
Fluoride	1.48	mg/L	0.1	1		10/10/2025 21:52	
<b>Method: USGS I-1750-85</b>							
Total Dissolved Solids	2370	mg/L	10	1		10/10/2025 15:21	

**Analysis Results Comments****pH**

Sample analyzed beyond holding time.

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**Account #:** 2040

**Client:** Basin Electric Power Cooperative

QC Results Summary										WO #:	103535
Sulfate	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	100.0		85	115			
LFB				100	96.9		85	115			
LFB				100	93.7		85	115			
LFB				100	96.4		85	115			
LFB				100	94.3		85	115			
LFB				100	99.3		85	115			
LFB				100	104.0		85	115			
LFB				100	110.0		85	115			
LFB				100	107.0		85	115			
MB			<5								
MB			<5								
MB			<5								
MB			<5								
MB			<5								
MB			<5								
MB			<5								
MB			<5								
MS/MSD		103146005		500	80.4	83.0	85	115	1.8	20	
MS/MSD		103212003		1000	75.9	77.6	80	115	1.2	20	
MS/MSD		103374004		2000	66.8	72.8	85	115	3.6	20	
MS/MSD		103380005		500	91.4	81.9	85	115	0.4	20	
MS/MSD		103380013		4000	72.7	89.5	85	115	1.8	20	
MS/MSD		103385008		1000	99.5	103.9	85	115	2.2	20	
MS/MSD		103535005		500	99.5	100.2	85	115	0.5	20	
MS/MSD		103708001		1000	90.3	94.5	85	115	2.3	20	
MS/MSD		103818002		100	110.0	110.2	85	115	0.0	20	

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1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 515-382-5486 ~ Fax 515-382-3885  
www.MVTL.com



**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	97.3		90	110		
LFB			30	97.5		90	110		
LFB			30	97.8		90	110		
LFB			30	97.9		90	110		
LFB			30	97.3		90	110		
LFB			30	97.2		90	110		
LFB			30	97.0		90	110		
LFB			30	97.1		90	110		
LFB			30	97.1		90	110		
LFB			30	96.5		90	110		
LFB			30	97.3		90	110		
LFB			30	97.0		90	110		
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MB		<2.0							
MS/MSD	103115005		30	98.8	100.6	80	120	0.9	20
MS/MSD	103212003		30	99.7	99.6	80	120	0.5	20
MS/MSD	103380005		600	110.9	115.2	80	120	0.8	20
MS/MSD	103431001		30	88.1	95.3	80	120	1.6	20
MS/MSD	103689004		30	78.6	77.6	80	120	0.4	20

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**Account #:** 2040

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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 (%)
MS/MSD	103708003		30	100.3	98.2	80	120	0.8	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 (%)
UB-OT			0.4	93.5		85	115		
UB-OT			0.4	104.6		85	115		

MB		<0.1							
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MB		<0.1							
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PDS/PDSO	103698017		8	87.5	88.8	75	118	0.1	20
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PDS/PDSO	103496001		4	87.4	88.9	75	125	1.0	20
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MS/MSD	103335007		0.4	92.5	91.8	70	130	1.0	20
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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 (%)
UB-MI			100	107.0		85	115		
UB-MI			100	108.0		85	115		

MB		<1							
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MB		<1							
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PDS/PDSO	103369003		500	105.0	105.0	75	125	0.1	20
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PDS/PDSO	103380005		500	97.7	99.3	75	125	0.5	20
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PDS/PDSO	103380012		500	96.8	97.0	75	125	0.2	20
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DUP	103471001							0.8	20
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PDS/PDSO	103502002		100	102.0	101.0	75	125	0.6	20
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PDS/PDSO	103571001		100	94.5	95.2	75	125	0.3	20
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PDS/PDSO	103571003		100	92.4	94.5	75	125	1.1	20
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PDS/PDSO	103927008		100	101.0	102.0	75	125	0.6	20
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Magnesium		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 (%)
UB-MI			100	105.0		85	115		
UB-MI			100	108.0		85	115		

MB		<1							
----	--	----	--	--	--	--	--	--	--

MB		<1							
----	--	----	--	--	--	--	--	--	--

PDS/PDSO	103369003		500	106.0	109.0	75	125	0.2	20
----------	-----------	--	-----	-------	-------	----	-----	-----	----

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Account #: 2040

Client: Basin Electric Power Cooperative

Magnesium			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/PDSO	103380005		500	102.0	102.0	75	125	0.5	20
PDS/PDSO	103380012		500	101.0	101.0	75	125	0.2	20
DUP	103471001							0.7	20
PDS/PDSO	103502002		100	103.0	102.0	75	125	0.6	20
PDS/PDSO	103572001		100	89.9	90.7	75	125	0.3	20
PDS/PDSO	103571003		100	86.2	89.5	75	125	1.2	20
PDS/PDSO	103927008		100	99.4	99.7	75	125	0.2	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 (%)
LFBAH			100	103.0		85	115		
LFBAH			100	105.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	103380003		500	95.4	97.5	75	125	1.1	20
PDS/PDSO	103380005		500	104.0	104.0	75	125	0.5	20
PDS/PDSO	103380012		500	104.0	104.0	75	125	0.7	20
DUP	103472001							0.9	20
PDS/PDSO	103502002		100	107.0	101.0	75	125	0.5	20
PDS/PDSO	103571001		100	100.0	101.0	75	125	0.5	20
PDS/PDSO	103571003		100	97.3	99.8	75	125	1.8	20
PDS/PDSO	103927008		100	100.0	99.5	75	125	0.6	20

Sodium			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 (%)
LFBAH			100	104.0		85	115		
LFBAH			100	106.0		85	115		
MB		<1							
MB		<1							
PDS/PDSO	103360003		500	89.5	88.0	75	125	0.3	20
PDS/PDSO	103380005		500	81.1	84.2	75	125	0.5	20
PDS/PDSO	103380012		500	102.0	102.0	75	125	0.4	20
DUP	103471001							1.3	20

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Sodium									
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/PDS0	103502002		100	81.4	79.3	75	125	0.6	20
PDS/PDS0	103571001		100	78.6	79.7	75	125	0.3	20
PDS/PDS0	103571003		100	75.0	76.2	75	125	0.3	20
PDS/PDS0	101927008		100	96.8	88.5	75	125	0.9	20

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 (%)
CRM			50	94.0		80	120		
UPL			40	90.6		90	110		
UPL			40	96.8		90	110		
LPL			40	94.3		90	110		
LPL			40	96.1		90	110		
MB		<20.5							
MB		<20.5							
MB		<20.5							
MB		<20.5							
MS/MSD	103369004		400	83.4	85.5	80	120	1.7	70
MS/MSD	103535002		400	86.3	96.6	80	120	7.8	20
MS/MSD	103577001		400	65.5	65.6	80	120	0.3	20

pH									
Units: units									
QC Type	Original Sample ID	Blank Result	Spike Amount	Spike % Recovery	Spike Duplicate % Recovery	Lower Control Limit (%)	Upper Control Limit (%)	RPD (%)	RPD Limit (%)
CRM-PH			6	99.7					
CRM-PH			6	99.7					
CRM-PH			6	99.5					
DUK	103502002							0.8	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			3.34	103.0		83.83	111.07		
LPL-F			0.5	102.0		90	110		
UPL-F			0.5	100.0		90	110		
UPL-F			0.5	103.0		90	110		
MB-F		<0.1							

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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 (%)
MB-P		<0.1							
MB-F		<0.1							
MS/MSD	103335004		0.5	116.0	108.0	80	120	0.7	20
MS/MSD	103358001		0.5	100.0	98.0	80	120	0.6	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			750	100.0		80.35	110.65		
MB		<10							
DUP	103335007							0.5	20
DUP	103575001							0.7	20

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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

Basin Electric Power Cooperative  
WO: 103535



Chain of Custody

Page 1 of 1

Work Order #  
Lab Use Only

Company Name and Address Basin Electric Power Coop. Leland Olds Station 3901 Highway 200A Stanton, ND 58571		Account # 2040	Phone # 701-745-7238 701-557-5488
Billing Address (Indicate if different from above) Attn: Liabilities		Contact Mark Dihle	Emails mdihle@bepc.com aknutson@bepc.com
		Name of Sampler Mariah Knutson	
		Quote Number	Date Submitted 10/9/2025
		Project Name/Number AVS Landfill CCR Wells	Purchase Order # 79070801

Lab Use Only	Sample ID	Sample Matrix GW - Groundwater	Date Sampled	Time Sampled	# of	Filtered	Analysis Required
001	MW-15S	GW	10/7/2025	1004	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
002	MW-20S	GW	10/7/2025	1052	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
003	MW-16S	GW	10/8/2025	816	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
004	MW-17S	GW	10/8/2025	934	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
005	MW-22S	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
006	DUP	GW	10/8/2025	1116	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
007	MW-25S	GW	10/8/2025	1218	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
008	MW-26S	GW	10/8/2025	1347	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
009	MW-24S	GW	10/8/2025	1445	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,
010	MW-27S	GW	10/8/2025	1309	2	N	B, Ca, Cl, F, SO4, TDS, Mg, Na, K, Alkalinity, (Total Carbonate, Bicarbonate), pH,

Comments:

Transferred by	Date	Time	Received by	Date	Time	Temp	ROI	Therm. #
1. MILLENIUM EXPRESS	10/9/2025	NOON	<i>[Signature]</i>	10/9/2025	1443	5.0°C	Y/N	711959
2.							Y/N	

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

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Account #: 2040

Client: Basin Electric Power Cooperative



## Sample Condition Checklist

Date: 9 OCT 25 Time: 1550 Analyst: CC  
Work Order #: 163535

Containers Supplied by MVTL:  Yes  No (Designate customer supplied containers as "Other" in container size column)

Comments:													
Number of Bottles	Container Size (mL)				Container Type			Preservation	pH	Sample IDs Preservation reagent added Date/Time Analyst	Unique ID of preservation reagent added	Sample pH after preservation	Required for HNO <sub>3</sub> samples only (24 hours later) Sample ID pH Recheck Result Date/Time/Analyst
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other						
10	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
10	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	(125)	(250)	(500)	F-(500) (1000) Other	(CG)	(P)	(AG) Other	NONE HNO <sub>3</sub> H <sub>2</sub> SO <sub>4</sub> NaOH NaOH/ZnAcet HCl	<2 >12				
	Oil and grease				(CG)	(P)	(AG) Other	HCl	n/a				
	TOC Vials				(G)	(AG)		H <sub>3</sub> PO <sub>4</sub>	n/a				
	DOC Vials				(G)	(AG)		None H <sub>3</sub> PO <sub>4</sub>	n/a				

\*All samples requiring analyses performed outside of the Bismarck laboratory (New Ulm and Sub-Contract) are not documented on this form.  
\*All samples requiring microbiological tests are not documented on this form.

Form #80-910025-2

M:\Documents\FORMS\Approved Templates\Bismarck\Waters\80-910025-2 Sample Condition Checklist.xlsx  
Page 1 of 1

Effective Date : 1 July 2024

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**Attachment B**  
**Statistical Evaluation**

# Technical Memorandum

**To:** Mark Dihle, Basin Electric Power Cooperative  
**From:** Barr Engineering Co.  
**Subject:** Alternative Source Demonstration (ASD), Antelope Valley Station (Fall 2024)  
**Date:** March 28, 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 fall of 2024 on October 1-2 and 8, 2024:

- MW-16S – Chloride
- MW-20S – Chloride
- MW-24S – Chloride
- MW-25S – Chloride
- MW-26S – Chloride
- MW-27S – Boron, calcium, and chloride

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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 October 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 October 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. There is limited data at these locations for historical comparison.

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 October 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. Baseline monitoring for MW-25S, MW-26S, and MW-27S is ongoing.

**Table 1 SSIs Compared to Prediction Limits**

Event	Well	Parameter (units)	Measured	Interwell Prediction Limit
<b>Detection Monitoring – 2024 #2 (Fall)</b>	MW-16S	Chloride (mg/L)	26.0	18.7
	MW-20S	Chloride (mg/L)	25.8	18.7
	MW-24S	Chloride (mg/L)	50.0	18.7
	MW-25S	Chloride (mg/L)	42.3	18.7
	MW-26S	Chloride (mg/L)	29.7	18.7
	MW-27S	Boron (mg/L)	0.40	0.17
	MW-27S	Calcium (mg/L)	206	13.0
	MW-27S	Chloride (mg/L)	62.0	18.7

## 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 (January 3, 2025) following the review and analysis of the results provided in the final laboratory report which was received on October 18, 2024.

## 2 Potential Alternative Sources Review

The CCR Rule provides five potential alternative source categories:

1. A source other than the CCR unit
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, and chloride 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, and chloride 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 on the landfill liner and then migration through the unsaturated zone.

Considering the properties of the CCR materials in landfill, that the design to eliminate head on the liner, and the facility pumping operations have been normal, there is no evidence of any leachate accumulation on the liner. However, landfill leachate depth 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  $1 \times 10^{-7}$  cm/s ( $2.8 \times 10^{-4}$  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:

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

Or, stated in a more compact form:

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

Using an effective porosity for clay of 0.40, the above equation yields an advective velocity  $3.5 \times 10^{-4}$  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

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  $1.3 \times 10^{-7}$  cm/sec,  $4.0 \times 10^{-8}$  cm/sec,  $2.8 \times 10^{-6}$  cm/sec, and  $5.3 \times 10^{-7}$  cm/sec (Terracon, 2020), which have a geometric mean of  $3.0 \times 10^{-7}$  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 porosity measurements were 0.39, 0.45, 0.43, and 0.43. Lower effective porosity results in higher flow velocity so assuming  $n_e = 0.39$  is a conservative estimate. Using the values described above, groundwater flow velocity ( $v$ ) =  $3.0 \times 10^{-7}$  cm/sec \* 0.011 ft/ft / 0.39 =  $8.54 \times 10^{-9}$  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 native clay 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  $7.0 \times 10^{-9}$  cm/sec,  $1.1 \times 10^{-8}$  cm/sec,  $3.5 \times 10^{-9}$  cm/sec,  $2.5 \times 10^{-9}$  cm/sec, and  $6.7 \times 10^{-9}$  cm/sec. Six undisturbed vertical hydraulic conductivity values for the Sentinel Butte Formation at the Minnkota Coal Combustion Residuals Unit (Barr, 2012) were  $3.6 \times 10^{-8}$  cm/sec,  $5.0 \times 10^{-9}$  cm/sec,  $8.8 \times 10^{-8}$  cm/sec,  $1.2 \times 10^{-8}$  cm/sec,  $1.0 \times 10^{-8}$  cm/sec, and  $1.0 \times 10^{-9}$  cm/sec. Together, these eleven values have a geometric mean of  $8.0 \times 10^{-9}$  cm/sec.

The gradient is assumed to be a constant head of 1-foot above the liner during the entire travel time through the 80 ft thick 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 ( $K = 8.0 \times 10^{-9}$  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  $v = 8.0 \times 10^{-9}$  cm/sec \* 0.0125 / 0.39 =  $2.564 \times 10^{-8}$  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.

Conservatively, this scenario is calculated assuming a breach in the geomembrane liner and a continuous 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 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 average hydraulic gradient  $\left(\frac{dH}{dL}\right)$  between upgradient well MW-18S and downgradient wells in the expansion area (MW-24S, MW-25S, MW-26S, and MW-27S) is 0.005 ft/ft based on the October 2024 piezometric surface map. The hydraulic conductivity (K) is 0.234 ft/day and the porosity is 0.185 for the Spaer Lignite according to the Site's CCR Groundwater Monitoring System Report (AECOM, 2017). Using this information in the above equation, groundwater velocity for the wells in the expansion area is 2.45 ft/year.

Since the waste was placed in the lined landfill expansion cell (300 ft to the closest well MW-25S) only a year and a half prior to the fall 2024 detection monitoring event, it is not plausible for any leachate to reach the monitoring wells.

Using a groundwater velocity of 2.45 ft/year, it would take approximately 122 years for a release to reach MW-24S, MW-25S, MW-26S, or MW-27S. CCR placement in the Landfill began in 1996 and the Landfill Expansion Area in 2023. Therefore, the elevated chloride at MW-24S, MW-25S, MW-26S, and MW-27S and elevated boron and calcium at MW-27S cannot be from the CCR unit.

Since the waste was placed in the lined landfill area started in 1996 or about 29 years ago, it is not plausible for any leachate to reach the monitoring wells given these conservative assumptions. If the distances used to calculate travel time are measured from the existing waste limit, the shortest flow path to MW-25S (located closest to the existing landfill boundary) is approximately 1170 feet downgradient. It would take approximately 477 years for leachate from the existing landfill to reach MW-25S and even longer for leachate to reach MW-27S, which 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, and calcium 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 fall 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 19.4 mg/L as shown on time series graphs in Attachment A.

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, MW-26S, and MW-27S are not impacted by a release from the CCR landfill. Sulfate concentrations during the October 2024 sampling event at these locations ranged from 6.83 mg/L to 131 mg/L. The sulfate concentrations at the upgradient Landfill monitoring locations (MW-18S, MW-19S, and MW-21S) were higher and ranged from 263 to 892 mg/L from 2016 to 2024. At downgradient wells other than those with SSIs (MW-15S, MW-17S, and MW-22S), sulfate concentrations were higher and 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, MW-26S, and MW-27S 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, MW-26S, and MW-27S suggests 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.

Site specific historical groundwater samples have been collected from ten wells also screened in the Spaer Bed to the north and east of the landfill. These wells were installed and sampled in support of a groundwater monitoring program associated with the adjacent surface mine prior to development of the CCR landfill. Chloride concentrations within the Spaer Bed are variable ranging from 5.7 to 59 mg/L. Chloride concentrations at MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S (25.8 to 50.0 mg/L) fall within the site-specific background water quality.

**Therefore, because other indicators of the CCR unit release are absent and background chloride concentrations are variable within the Spaer Bed, we reject the hypothesis that the CCR unit is the source of the chloride observed at MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S.**

## 2.3 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 are no SSIs for chloride at MW-16S, 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.

**Table 2 SSIs Compared to Intrawell Prediction Limits**

Event	Well	Parameter (units)	Measured	Intrawell Prediction Limit
<b>Detection Monitoring – 2024 #2 (Fall)</b>	MW-16S	Chloride (mg/L)	26.0	29.7
	MW-20S	Chloride (mg/L)	25.8	31.0
	MW-24S	Chloride (mg/L)	50.0	59.4

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

## 2.4 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 were observed at 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.

## 2.5 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 October 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 fall 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 fall 2024 consisted of the initial draw of water from the well without stabilization. Turbidity readings were too high for the meter and the sample color was described as black, yielding a sample with a high concentration of suspended solids, which may not be representative of typical aquifer conditions. Therefore, the SSI could also be attributed to sampling error.

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, and chloride SSIs at monitoring well MW-27S are believed to be natural aquifer material and not mobilized CCR contaminants.

**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, and chloride 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 SSIs for chloride at MW-16S, 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, MW-26S, and MW-27S is attributed to a source other than the CCR Unit for chloride in the groundwater. The SSI analysis for boron, calcium, and chloride at MW-27S is attributed to sampling techniques due to non-representative aquifer conditions from slow groundwater recharge rates.

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

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## 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 and boron and calcium in 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 28th day of March 2025





## Figures

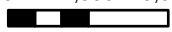
Barr Footer: ArcGISPro 3.3.1, 2025-03-26 11:07 File: \\Projects\34\29\1134\Maps\Antelope Valley Station - Alternative Source\Antelope Valley Station - Alternative Source.aprx Layout: Figure 1 Site Location Map User: LGGKZ



# Antelope Valley Station

-  Permit Boundary
-  Railroad



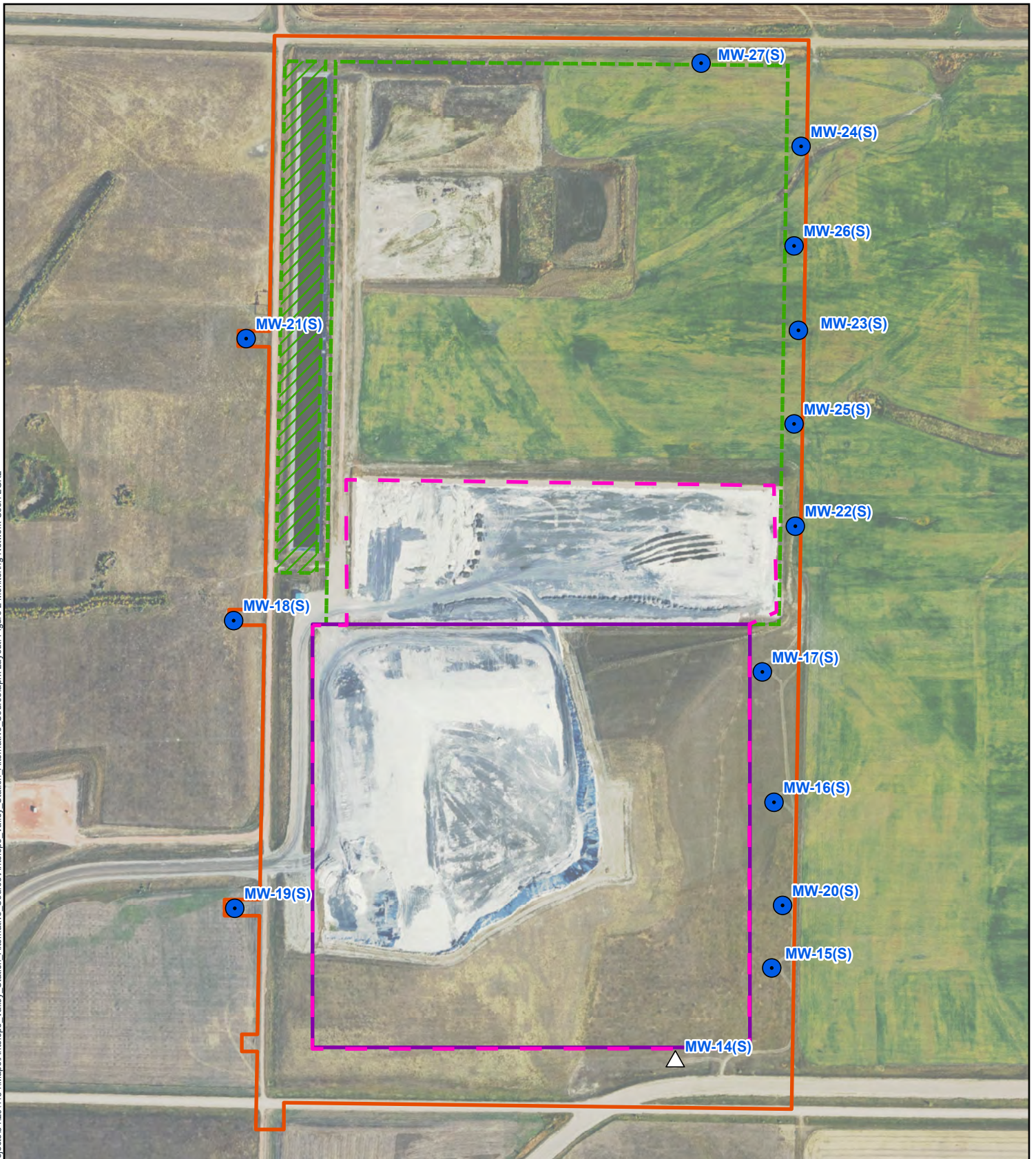
0 2,500 5,000  
  
 Feet

Imagery: USDA-NAIP, 2024

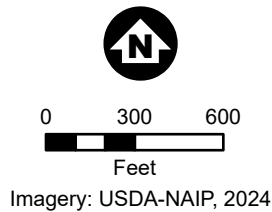
**Site Location**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 1





- Groundwater Monitoring System Wells
- Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)

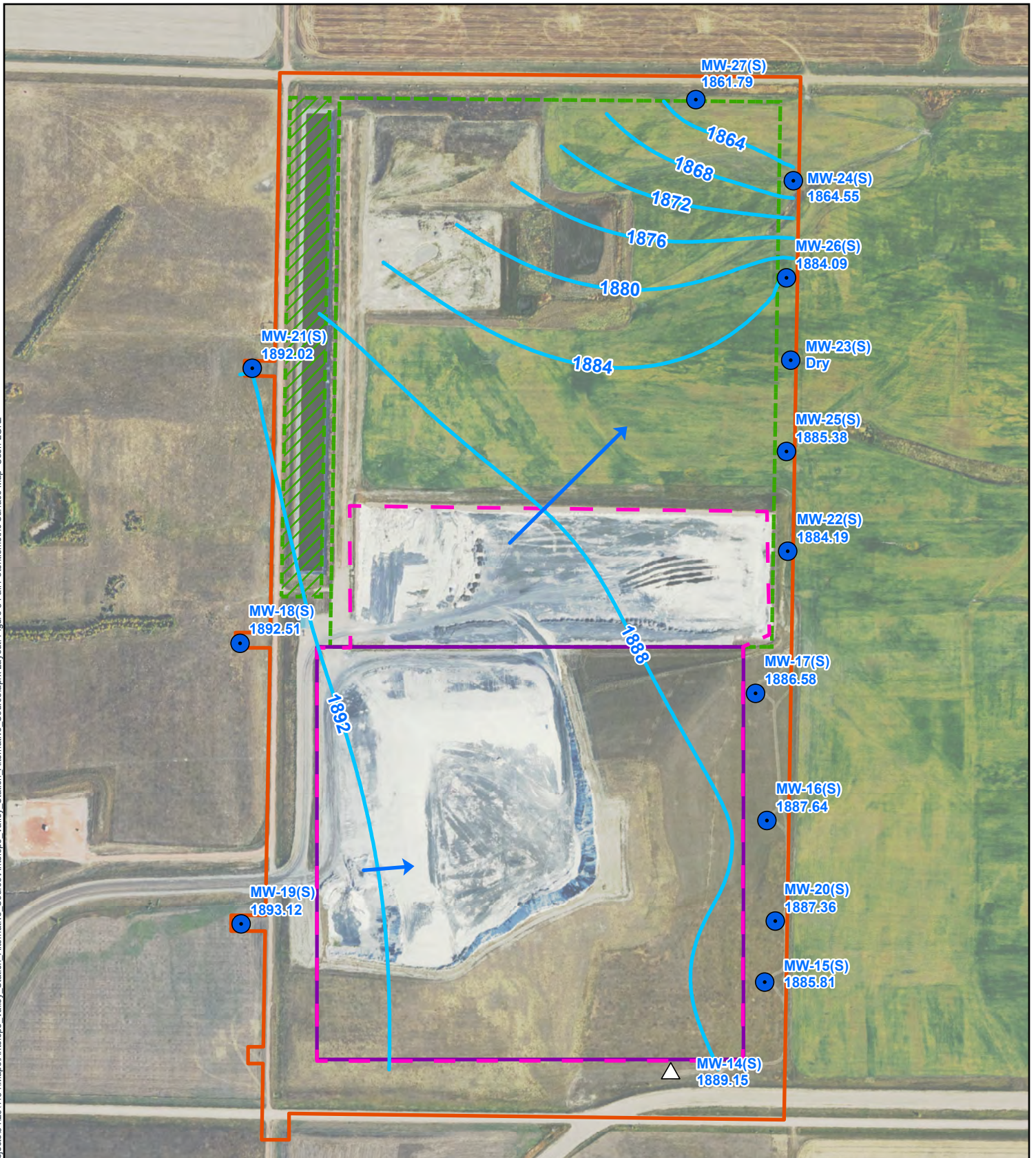


**Monitoring Network**  
**Antelope Valley Station**  
Basin Electric Power Cooperative  
Beulah, North Dakota

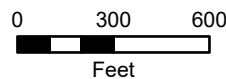
FIGURE 2



Barr Footer: ArcGISPro 3.3.1, 2025-03-26 11:07 File: \\Projects\34\291134\Maps\Antelope Valley Station - Alternative Source\Antelope Valley Station - Alternative Source.aprx Layout: Figure 3 Fall Potentiometric Surface Map User: LGK2



- Groundwater Monitoring System Wells
- △ Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)
- Flow Direction
- Groundwater Contour



Imagery: USDA-NAIP, 2024

**Fall 2024 Potentiometric Surface**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 3



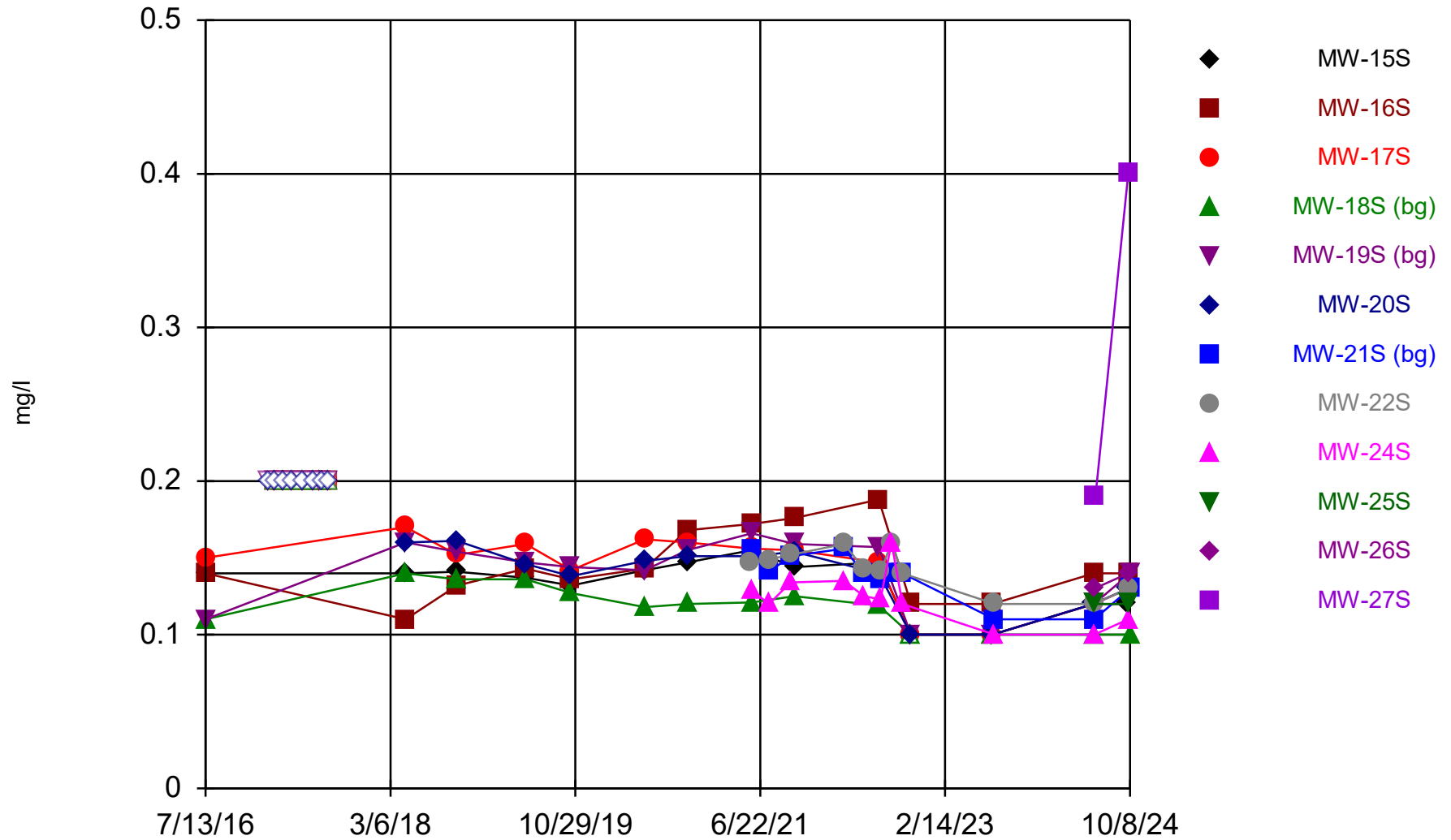


## **Attachments**



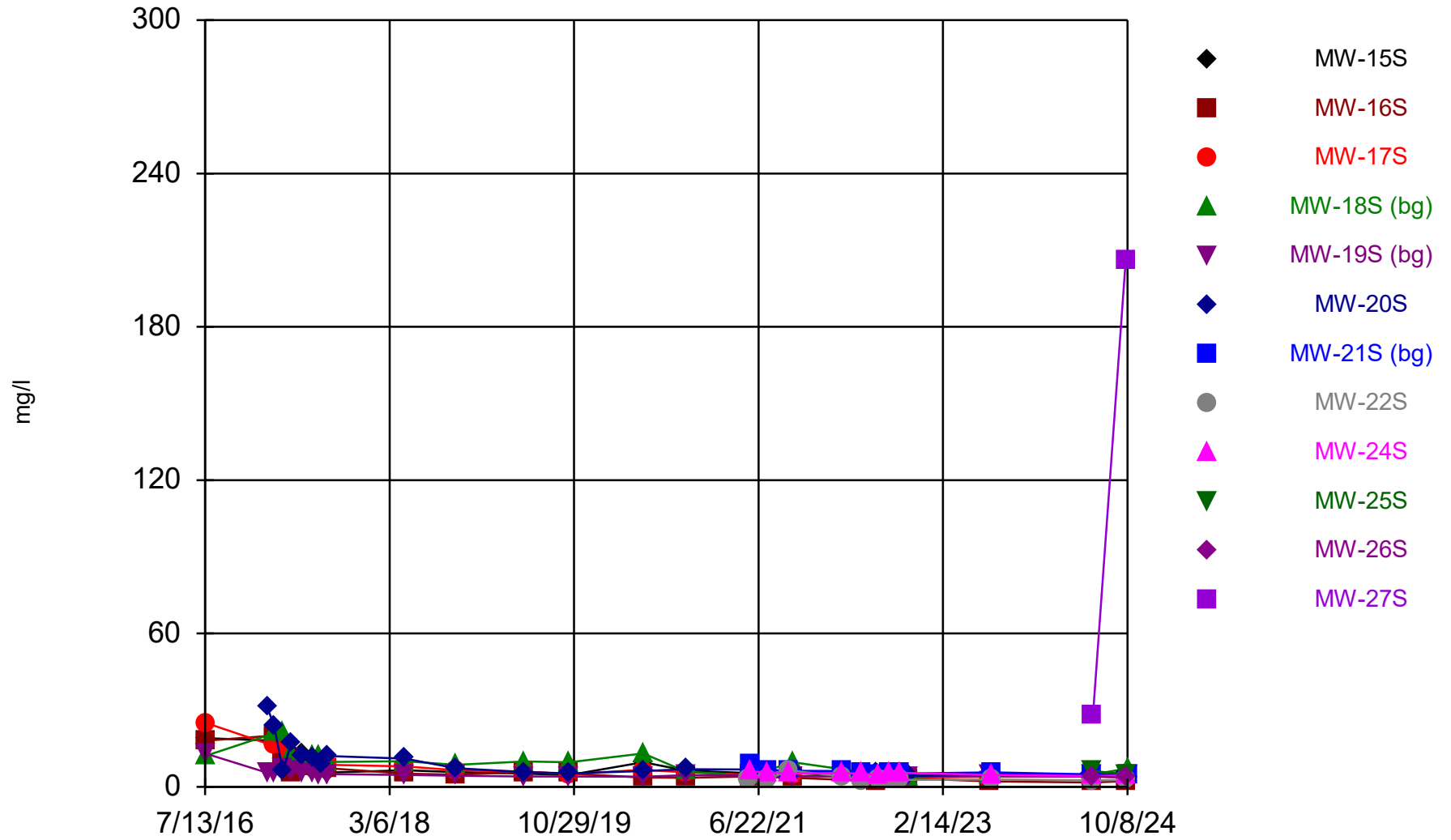
**Attachment A**  
**Time Series Graphs**

### Boron, total



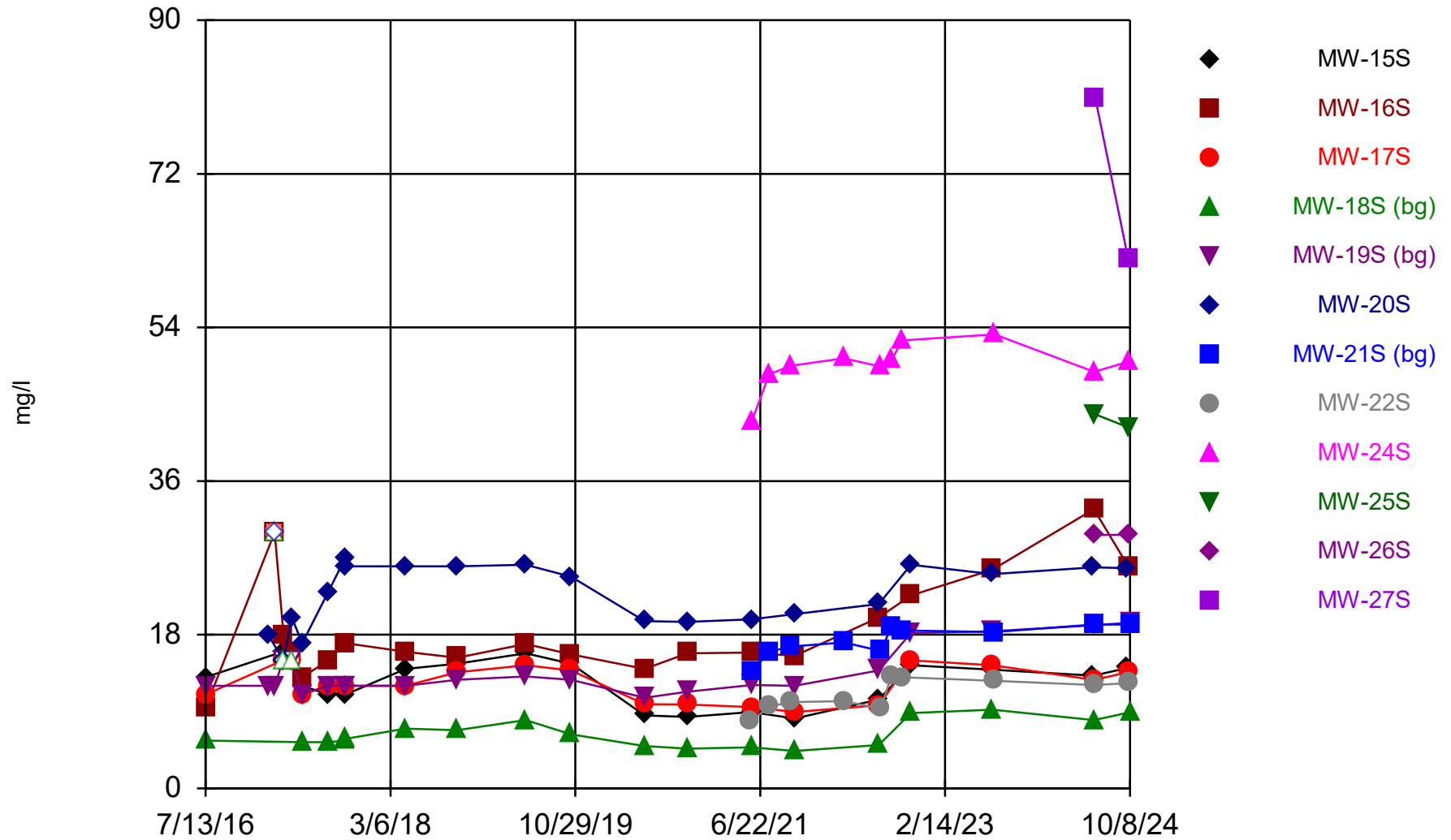
Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

### Calcium, total



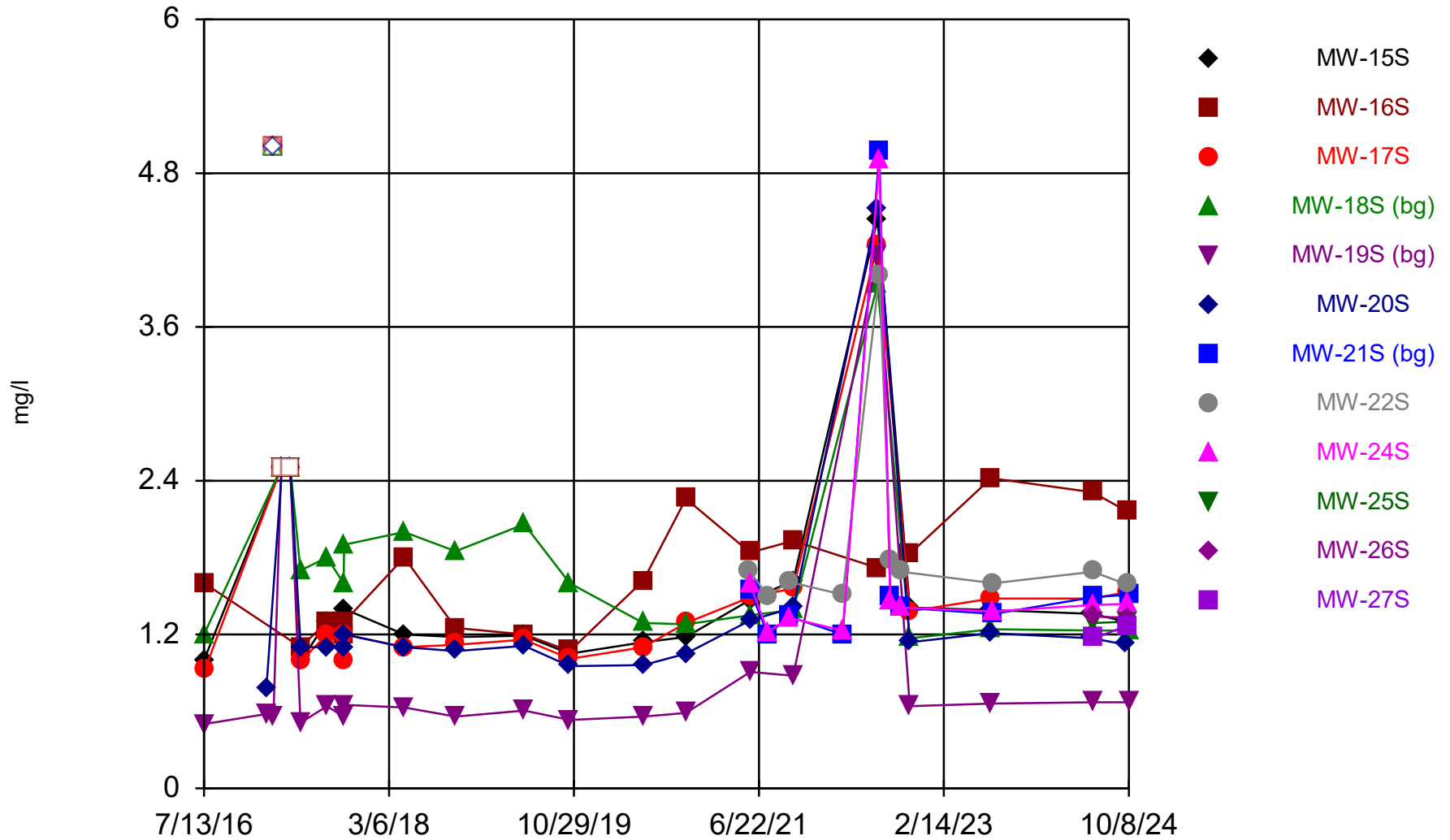
Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

# Chloride



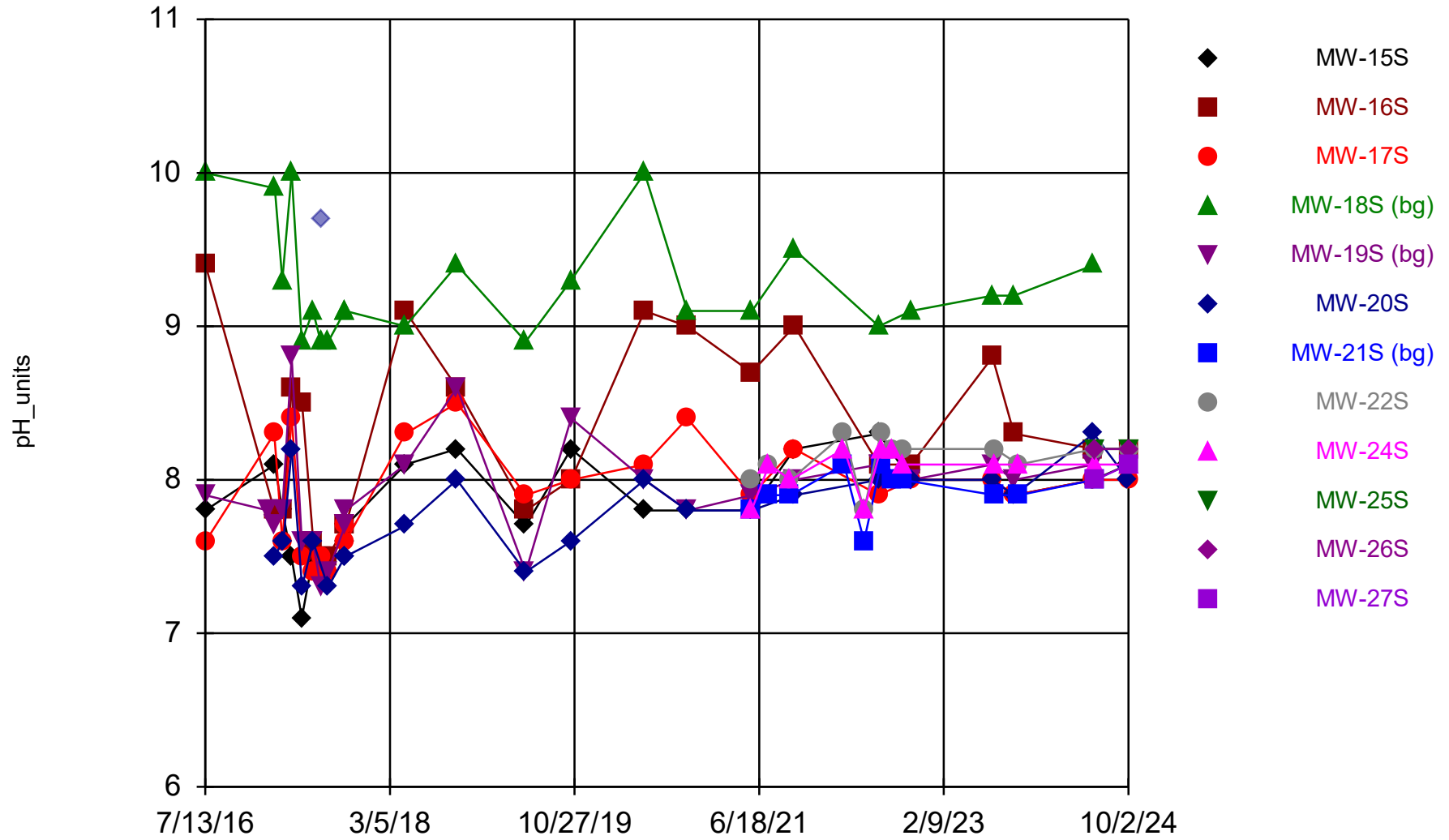
Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

# Fluoride



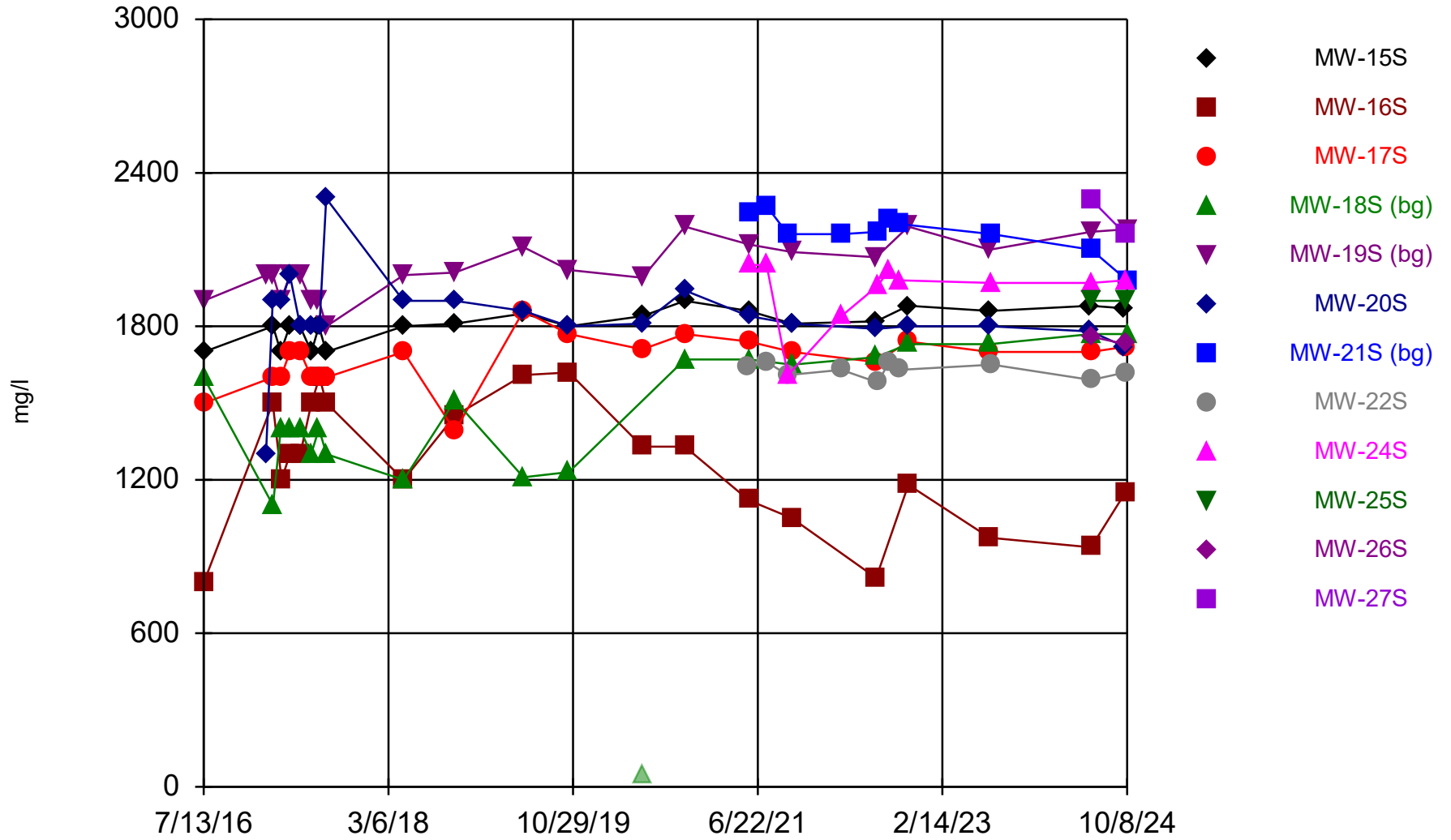
Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

# pH, field



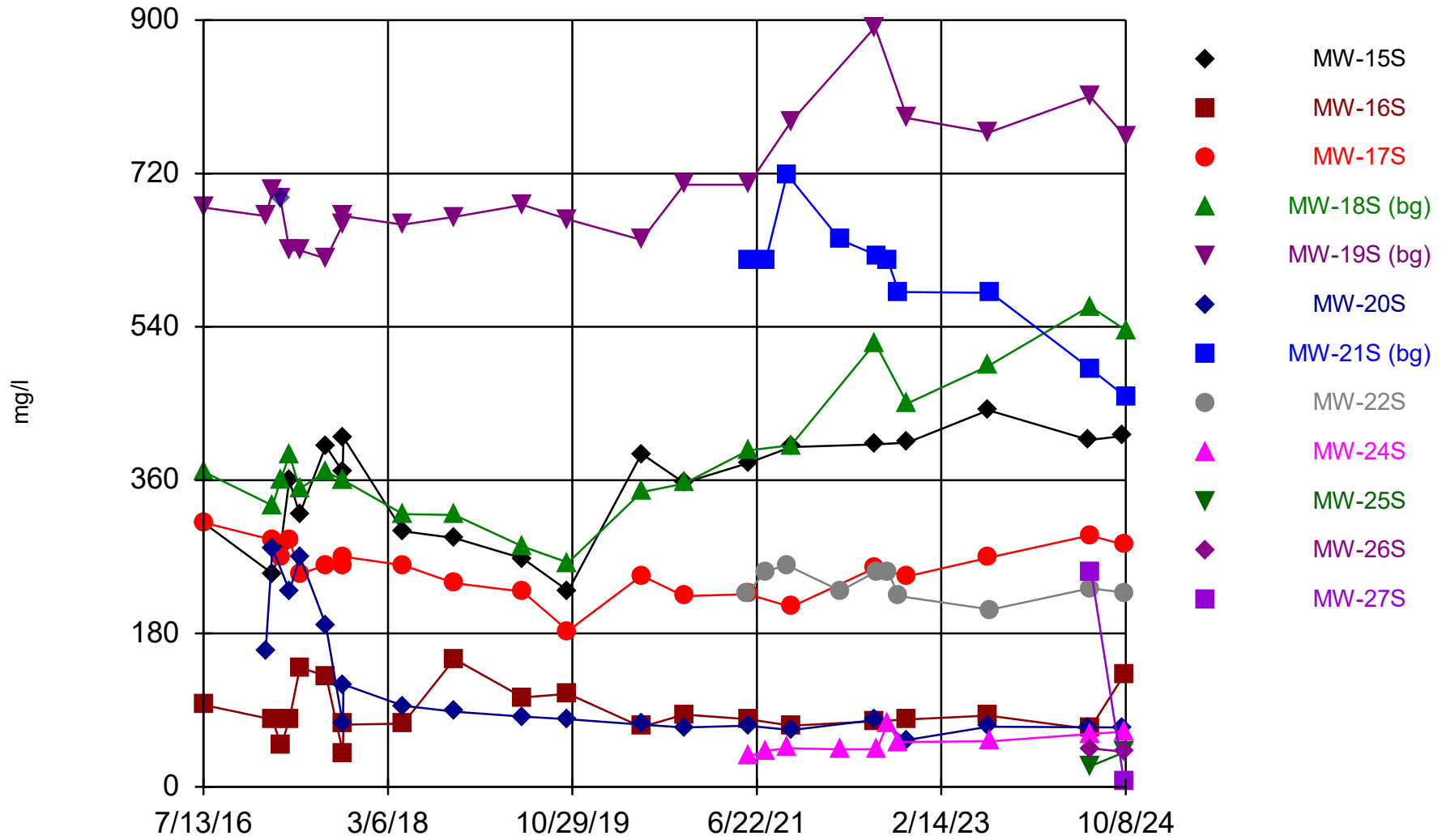
Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

### Solids, total dissolved



Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

### Sulfate, as SO4



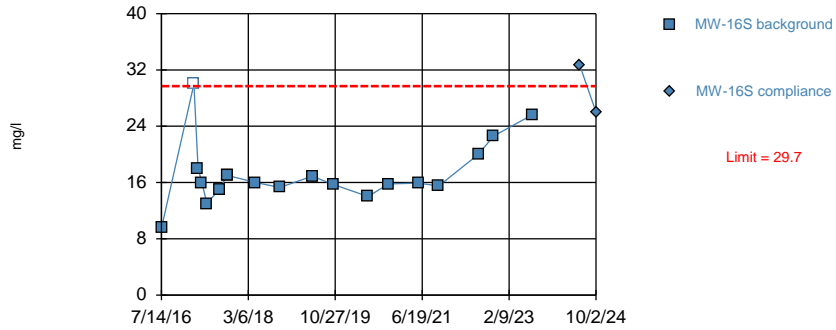
Time Series Analysis Run 1/3/2025 10:20 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR



**Attachment B**  
**Statistical Evaluation**

Within Limit

Chloride  
 Intrawell Parametric

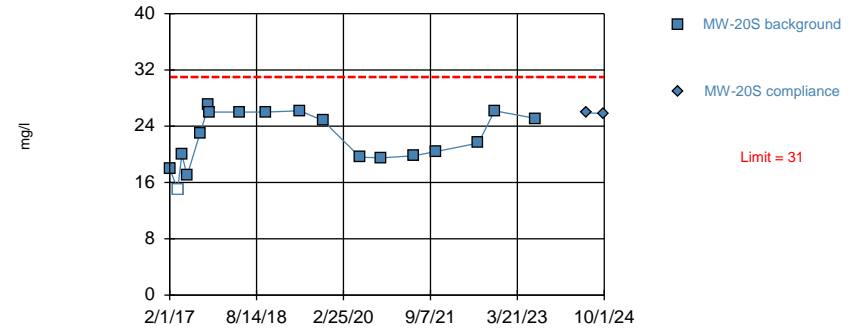


Background Data Summary (based on natural log transformation): Mean=2.821, Std. Dev.=0.2478, n=19, 5.263% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.9118, critical = 0.901. Kappa = 2.301 (c=7, w=10, 1 of 2, event alpha = 0.05132).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

Prediction Limit Analysis Run 3/27/2025 4:55 PM View: All  
 Antelope Valley Station Client: Basin Electric Data: BEPC\_AV\_S\_CCR

Within Limit

Chloride  
 Intrawell Parametric

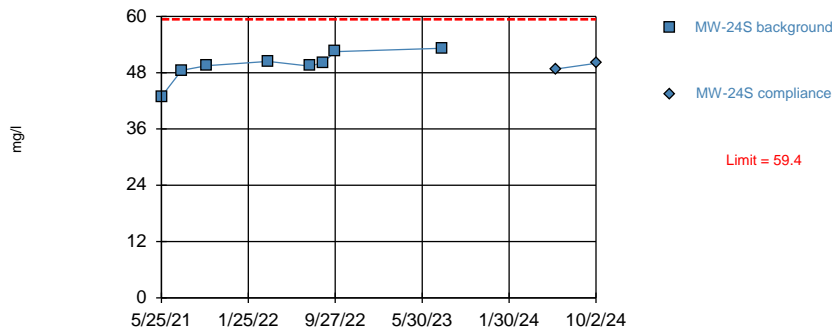


Background Data Summary: Mean=22.29, Std. Dev.=3.748, n=18, 5.556% NDs. Seasonality was not detected with 95% confidence. Normality test: Shapiro Wilk @alpha = 0.05, calculated = 0.904, critical = 0.897. Kappa = 2.33 (c=7, w=10, 1 of 2, event alpha = 0.05132). Report alpha = 0.0007523.

Prediction Limit Analysis Run 3/27/2025 4:55 PM View: All  
 Antelope Valley Station Client: Basin Electric Data: BEPC\_AV\_S\_CCR

Within Limit

Chloride  
 Intrawell Parametric

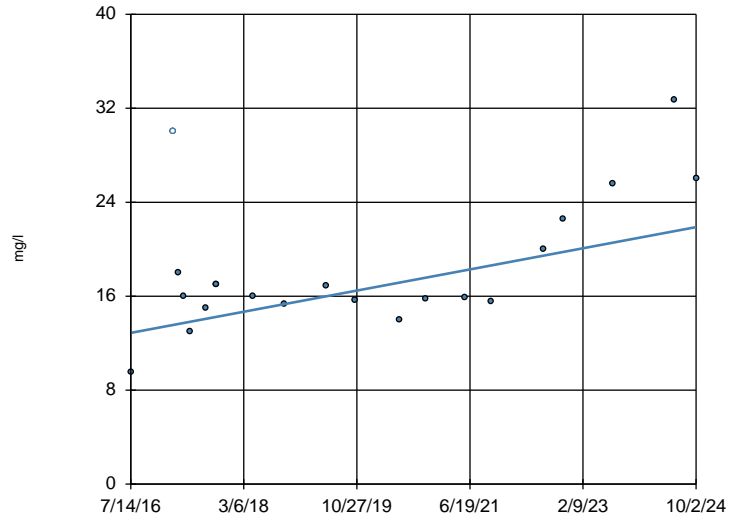


# Prediction Limit

Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR Printed 3/27/2025, 4:57 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Chloride (mg/l)	MW-16S	29.7	n/a	10/2/2024	26	No	19	5.263	ln(x)	0.000...	Param Intra 1 of 2
Chloride (mg/l)	MW-20S	31	n/a	10/1/2024	25.8	No	18	5.556	No	0.000...	Param Intra 1 of 2
Chloride (mg/l)	MW-24S	59.4	n/a	10/2/2024	50	No	8	0	No	0.000...	Param Intra 1 of 2

Chloride  
 MW-16S



# Trend Test

Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR Printed 3/27/2025, 4:58 PM

<u>Constituent</u>	<u>Well</u>	<u>Slope</u>	<u>Calc.</u>	<u>Critical</u>	<u>Sig.</u>	<u>N</u>	<u>%NDs</u>	<u>Normality</u>	<u>Xform</u>	<u>Alpha</u>	<u>Method</u>
Chloride (mg/l)	MW-16S	1.095	62	66	No	21	4.762	n/a	n/a	0.05	NP
Chloride (mg/l)	MW-20S	0.5175	44	62	No	20	5	n/a	n/a	0.05	NP
Chloride (mg/l)	MW-24S	1.931	19	23	No	10	0	n/a	n/a	0.05	NP



**Attachment C**  
**Well Development**





## Barr Engineering Company Field Log Data Sheet

Client: <u>Basin Electric</u>				Monitoring Point: <u>MW-27</u>				
Location: <u>AVS</u>		<u>CCR Wells</u>		Date: <u>4-25-2024</u>				
Project #: <u>34291126</u>				Sample Time:				
GENERAL DATA			STABILIZATION TEST					
Barr lock:	<u>Basin</u>			<u>µS/cm</u>			<u>NTU</u>	
Casing diameter:	<u>2"</u>	Time/ Volume	Temp. °C	Cond. @ 25	pH	<u>ORP</u> Eh	<u>Mg/L</u> D.O.	Turbidity Appearance
Total well depth:*	<u>~229.40</u>	<del>1425</del> <u>3.5 gal</u>	<u>13.5</u>	<u>2572</u>	<u>8.25</u>	<u>-96.3</u>	<u>0.83</u>	<u>Black</u> <u>oor</u>
Static water level:*	<u>205.83</u>							
Water depth:*	<u>23.57</u>							
Well volume: (gal)	<u>3.84</u>							
Purge method:	<u>Bailer</u>							
Sample method:	<u>Bailer</u>							
Start time:	<b>X</b>	Odor: <u>None</u>						
Stop time:		Purge Appearance: <u>Dark Brown / Black</u>						
Duration: (minutes)		Sample Appearance:						
Rate, gpm:		Comments: <u>Purged dry</u> <u>1 well volume</u>						
Volume, purged:		<u>~ 3.8 gal</u>						
Duplicate collected?	<u>NA</u>	<u>"sedimenty"</u>						
Sample collection by:		CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	Well Condition: <u>New</u>							
MW: groundwater monitoring well    WS: water supply well    SW: surface water    SE: sediment    other:								
<del>VOC-    semi-volatile-    general-    nutrient-    cyanide-    DRO-    Sulfide-</del>								
<del>oil, grease-    bacteria-    total metal-    filtered metal-    methane-    filter-</del>								
Others:								

Drk  
Brn

\*Measurements are referenced from top of riser pipe, unless otherwise indicated.

# Technical Memorandum

**To:** Mark Dihle, Basin Electric Power Cooperative  
**From:** Barr Engineering Co.  
**Subject:** Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2025)  
**Date:** December 22, 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 2025 on June 9-11 and 17-18, 2025:

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

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 2025 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. 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 2025. 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. There is limited data at these locations for historical comparison.

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 2025 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. Baseline monitoring for MW-25S, MW-26S, and MW-27S is ongoing.

**Table 1 SSIs Compared to Prediction Limits**

Event	Well	Parameter (units)	Measured	Interwell Prediction Limit
	MW-16S	Chloride (mg/L)	26.0	18.7
	MW-20S	Chloride (mg/L)	25.8	18.7

<b>Detection Monitoring – 2025 #1 (Spring)</b>	MW-24S	Chloride (mg/L)	50.0	18.7
	MW-25S	Chloride (mg/L)	42.3	18.7
	MW-26S	Chloride (mg/L)	29.7	18.7
	MW-27S	Boron (mg/L)	0.40	0.17
	MW-27S	Calcium (mg/L)	206	13.0
	MW-27S	Chloride (mg/L)	62.0	18.7
	MW-27S	Total Dissolved Solids (mg/L)	2,500	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 (September 29, 2025) following the review and analysis of the results provided in the final laboratory report which was received on July 1, 2025.

## 2 Potential Alternative Sources Review

The CCR Rule provides five potential alternative source categories:

1. A source other than the CCR unit
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 TDS 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 total 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 on the landfill liner and then migration through the unsaturated zone.

Considering the properties of the CCR materials in landfill, that the design to eliminate head on the liner, and the facility pumping operations have been normal, there is no evidence of any leachate accumulation on the liner. However, landfill leachate depth 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  $1 \times 10^{-7}$  cm/s ( $2.8 \times 10^{-4}$  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:

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

Or, stated in a more compact form:

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

Using an effective porosity for clay of 0.40, the above equation yields an advective velocity  $3.5 \times 10^{-4}$  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 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  $1.3 \times 10^{-7}$  cm/sec,  $4.0 \times 10^{-8}$  cm/sec,  $2.8 \times 10^{-6}$  cm/sec, and  $5.3 \times 10^{-7}$  cm/sec (Terracon, 2020), which have a geometric mean of  $3.0 \times 10^{-7}$  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 porosity measurements were 0.39, 0.45, 0.43, and 0.43. Lower effective porosity results in higher flow velocity so assuming  $n_e = 0.39$  is a conservative estimate. Using the values described above, groundwater flow velocity ( $v$ ) =  $3.0 \times 10^{-7}$  cm/sec \* 0.011 ft/ft / 0.39 =  $8.54 \times 10^{-9}$  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 native clay 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  $7.0 \times 10^{-9}$  cm/sec,  $1.1 \times 10^{-8}$  cm/sec,  $3.5 \times 10^{-9}$  cm/sec,  $2.5 \times 10^{-9}$  cm/sec, and  $6.7 \times 10^{-9}$  cm/sec. Six undisturbed vertical hydraulic conductivity values for the Sentinel Butte Formation at the Minnkota Coal Combustion Residuals Unit (Barr, 2012) were  $3.6 \times 10^{-8}$  cm/sec,  $5.0 \times 10^{-9}$  cm/sec,  $8.8 \times 10^{-8}$  cm/sec,  $1.2 \times 10^{-8}$  cm/sec,  $1.0 \times 10^{-8}$  cm/sec, and  $1.0 \times 10^{-9}$  cm/sec. Together, these eleven values have a geometric mean of  $8.0 \times 10^{-9}$  cm/sec.

The gradient is assumed to be a constant head of 1-foot above the liner during the entire travel time through the 80 ft thick 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 ( $K = 8.0 \times 10^{-9}$  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  $v = 8.0 \times 10^{-9} \text{ cm/sec} * 0.0125 / 0.39 = 2.564 \times 10^{-8} \text{ cm/sec}$  or 0.00265 ft/year. Given the thickness of the Sentinel Butte Formation overlying the Spaer Bed is approximately 80 feet, travel time is  $80 \text{ ft} / 0.00265 \text{ ft/year} = 301,552 \text{ years}$ .

Conservatively, this scenario is calculated assuming a breach in the geomembrane liner and a continuous 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 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 average hydraulic gradient  $\left( \frac{dH}{dL} \right)$  between upgradient well MW-18S and downgradient wells in the expansion area (MW-24S, MW-25S, MW-26S, and MW-27S) is 0.005 ft/ft based on the June 2025 piezometric surface map. The hydraulic conductivity ( $K$ ) is 0.234 ft/day and the porosity is 0.185 for the Spaer Lignite according to the Site's CCR Groundwater Monitoring System Report (AECOM, 2017). Using this information in the above equation, groundwater velocity for the wells in the expansion area is 2.42 ft/year.

Since the waste was placed in the lined landfill expansion cell (300 ft to the closest well MW-25S) only two years prior to the spring 2025 detection monitoring event, it is not plausible for any leachate to reach the monitoring wells.

Using a groundwater velocity of 2.42 ft/year, it would take approximately 124 years for a release to reach MW-24S, MW-25S, MW-26S, or MW-27S. CCR placement in the Landfill began in 1996 and the Landfill Expansion Area in 2023. 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 29 years ago, it is not plausible for any leachate to reach the monitoring wells given these conservative assumptions. If the distances used to calculate travel time are measured from the existing waste limit, the shortest flow path to MW-25S (located closest to the existing landfill boundary) is approximately 1170 feet downgradient. It would take approximately 477 years for leachate from the existing landfill to reach MW-25S and even longer for leachate to reach MW-27S, which 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 2025 (MW-15S, MW-17S, and MW-22S) from 2016 to 2025. Chloride at upgradient wells (MW-18S, MW-19S, and MW-21S) ranged from 4.38 to 19.4 mg/L as shown on time series graphs in Attachment A.

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, MW-26S, and MW-27S are not impacted by a release from the CCR landfill. Sulfate concentrations during the June 2025 sampling event at these locations ranged from 29.8 mg/L to 230 mg/L. The sulfate concentrations at the upgradient Landfill monitoring locations (MW-18S, MW-19S, and MW-21S) were higher and ranged from 263 to 892 mg/L from 2016 to 2025. At downgradient wells other than those with SSIs (MW-15S, MW-17S, and MW-22S), sulfate concentrations were higher and ranged from 183 to 442 mg/L from 2016 to 2025. 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, MW-26S, and MW-27S 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, MW-26S, and MW-27S suggests 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.

Site specific historical groundwater samples have been collected from ten wells also screened in the Spaer Bed to the north and east of the landfill. These wells were installed and sampled in support of a groundwater monitoring program associated with the adjacent surface mine prior to development of the CCR landfill. Chloride concentrations within the Spaer Bed are variable ranging from 5.7 to 59 mg/L. Chloride concentrations at MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S (24.6 to 64.9 mg/L) are similar to the site-specific background water quality.

To further test the hypothesis of a natural variability in the groundwater, a Piper diagram (Figure 4) was used to visually compare the measured groundwater quality at the Site. Piper diagrams are plots of major ion chemistry of water samples (calcium, magnesium, potassium, sodium, chloride, sulfate, and [bi]carbonate) that are used to differentiate between water types and to identify potential mixing of water types. The Piper diagram provides a means to identify or “fingerprint” water samples by their common characteristics (major ions) to assess which types of water are similar or dissimilar to potential source water types (Helsel et al., 2020). On the Piper diagram depicted in Figure 4, downgradient well compositions are shown as red symbols, and the upgradient well compositions as purple symbols using the spring 2025 sample results.

The Piper diagram shows the upgradient wells (MW-18S and MW-19S) as a sodium, sulfate and bicarbonate mixed type water. Downgradient wells and upgradient well (MW-21S) are characterized as

sodium bicarbonate type water. The upgradient wells (MW-18S and MW-19S) have a higher proportion of sulfate compared to downgradient wells. Wells MW-20S, MW-24S, MW-25S and MW-26S have the lowest proportion of sulfate. The water quality at MW-27S has a greater proportion of calcium and magnesium compared to the other monitoring locations. These differences underscore the natural variability within the groundwater system.

**Therefore, because other indicators of the CCR unit release are absent and background chloride concentrations are variable within the Spaer Bed, we reject the hypothesis that the CCR unit is the source of the chloride observed at MW-16S, MW-20S, MW-24S, MW-25S, MW-26S, and MW-27S.**

## 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 are no SSIs for chloride at MW-16S, 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.

**Table 2 SSIs Compared to Intrawell Prediction Limits**

Event	Well	Parameter (units)	Measured	Intrawell Prediction Limit
<b>Detection Monitoring – 2025 #1 (Spring)</b>	MW-16S	Chloride (mg/L)	26.2	29.7
	MW-20S	Chloride (mg/L)	24.6	31.0
	MW-24S	Chloride (mg/L)	49.6	59.4

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

## 2.5 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 2025 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 2025 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 2025 consisted of the initial draw of water from the well without stabilization. Turbidity readings were too high for the meter and the sample color was described as black, yielding a sample with a high concentration of suspended solids, which may not be representative of typical aquifer conditions. Therefore, the SSI could also be attributed to sampling error.

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 SSIs at monitoring well MW-27S are believed to be natural aquifer material and not mobilized CCR contaminants.

**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, and chloride 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.

To: Mark Dihle, Basin Electric Power Cooperative  
From: Barr Engineering Co.  
Subject: Alternative Source Demonstration (ASD), Antelope Valley Station (Spring 2025)  
Date: December 22, 2025  
Page: 10

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- Intrawell statistical methods did not result in SSIs for chloride at MW-16S, 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, MW-26S, and MW-27S 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 2025)  
Date: December 22, 2025  
Page: 11

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#### **4 References**

AECOM, 2024. 2023 Annual Groundwater Monitoring and Corrective Action Report, AVS CCR Landfill. January 2024.

Barr, 2012. Letter to Minnkota Power Cooperative, Inc., Regarding Cells 4, 5, and 6 Drilling Report. May 17, 2012.

Barr, 2013. Site Characterization Investigation Report and Environmental System Plan, WISCO Oilfield Special Waste Landfill, Williston, North Dakota. February 2013.

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Barr, 2025. 2024 Annual Groundwater Monitoring and Corrective Action Report, AVS CCR Landfill. January 2025.

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 2025)  
Date: December 22, 2025  
Page: 12

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## 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 and boron, calcium, and TDS in 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 22th day of December 2025

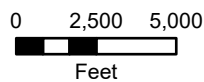


## Figures

Barr Footer: ArcGISPro 3.3.1, 2025-03-26 11:07 File: I:\Projects\341291134\Maps\Antelope Valley Station - Alternative Source\Antelope Valley Station - Alternative Source.aprx Layout: Figure 1 Site Location Map User: LGGKZ



-  Permit Boundary
-  Railroad

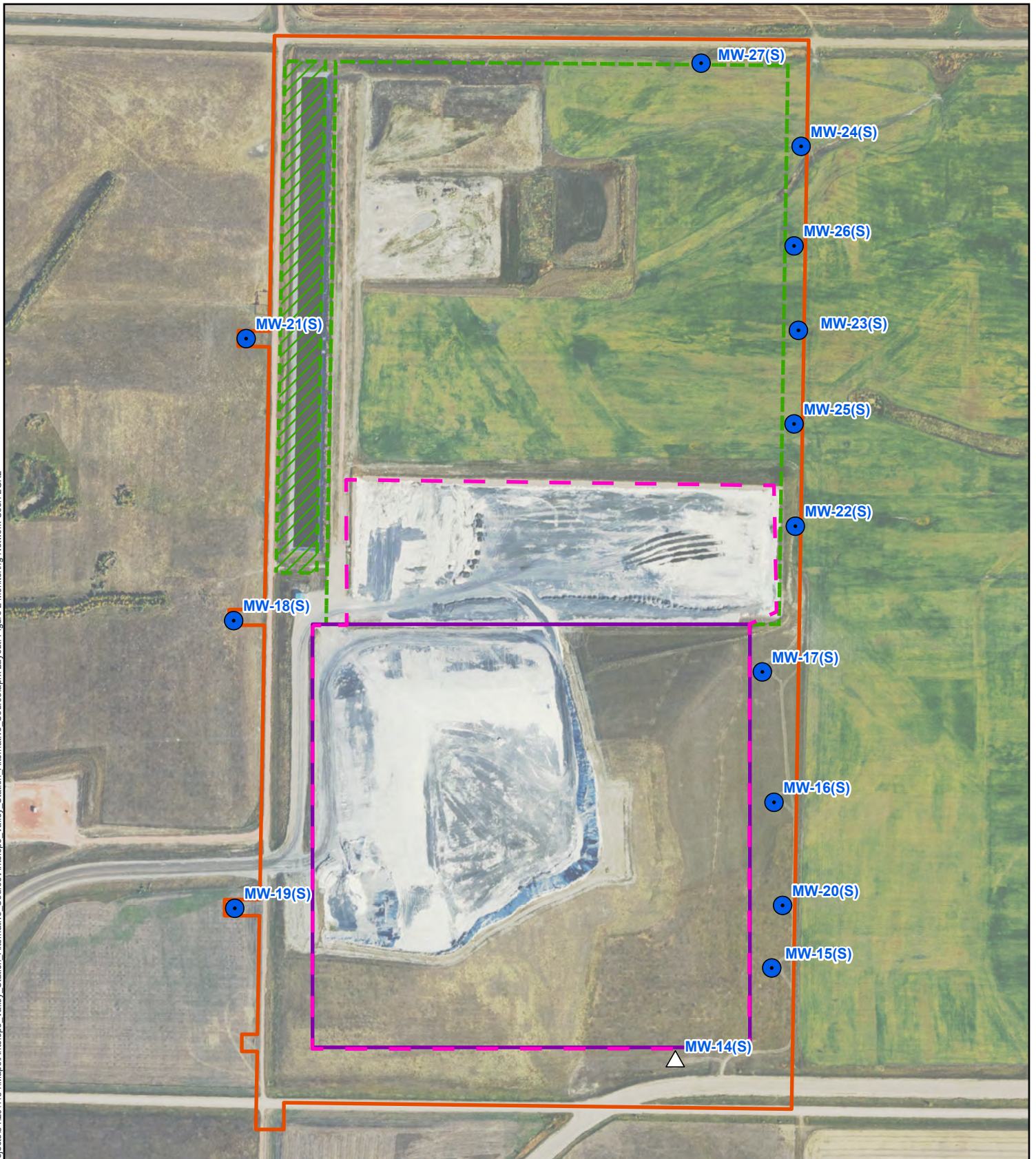


Imagery: USDA-NAIP, 2024

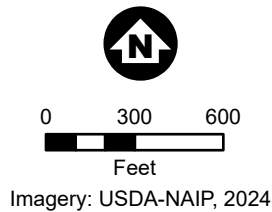
**Site Location**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 1





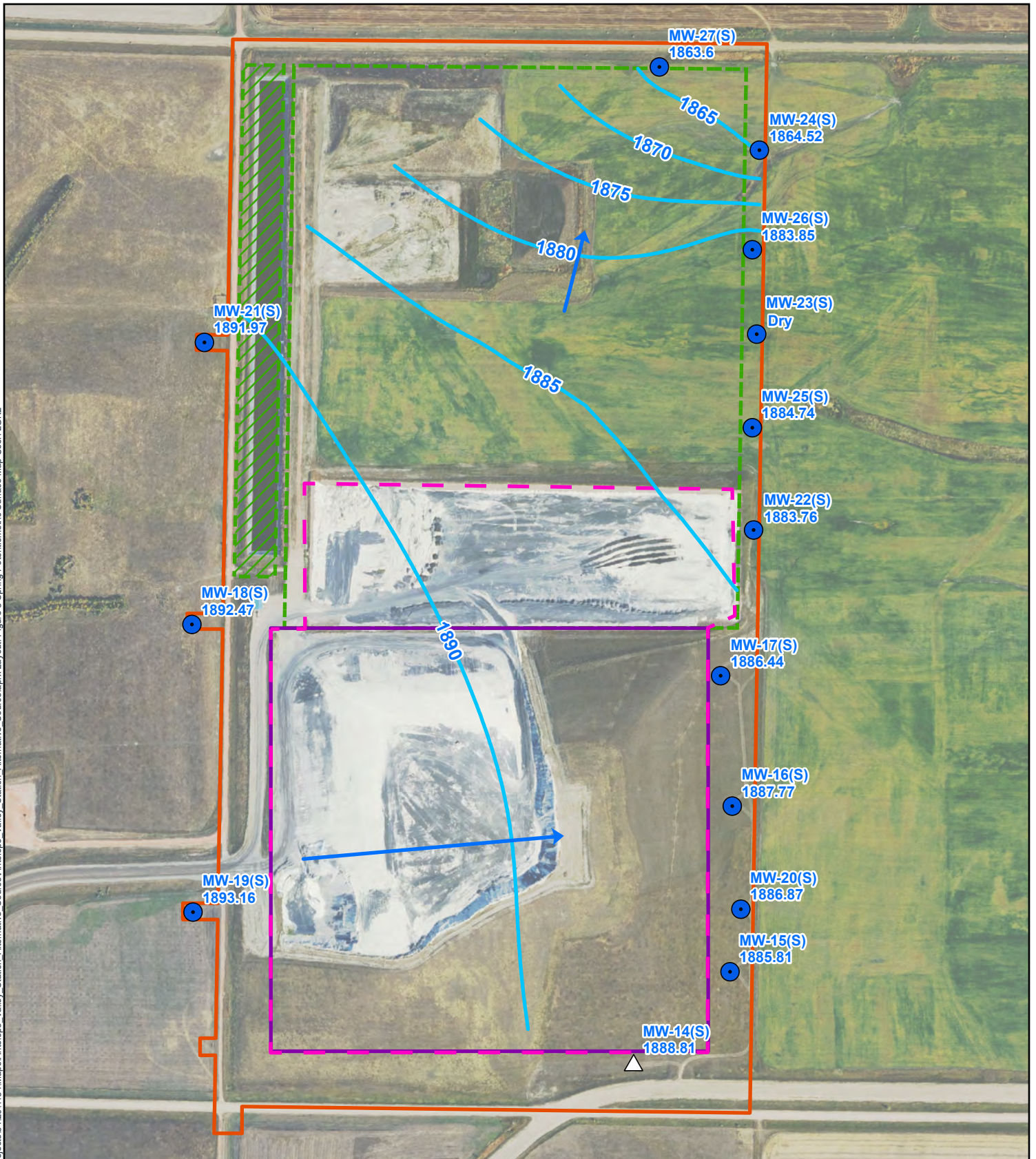
- Groundwater Monitoring System Wells
- Water Level Only Monitoring
- Permit Boundary
- Existing Landfill Limits
- Future Expansion Limit
- Leachate Management Area
- Limits of Ash as of 2025 (approximate)



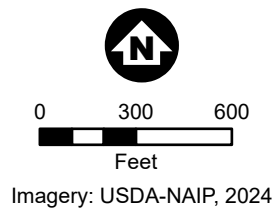
**Monitoring Network**  
**Antelope Valley Station**  
Basin Electric Power Cooperative  
Beulah, North Dakota

FIGURE 2





- Groundwater Monitoring System Wells
- △ Water Level Only Monitoring
- ▭ Permit Boundary
- ▭ Existing Landfill Limits
- - - Future Expansion Limit
- ▨ Leachate Management Area
- ▭ Limits of Ash as of 2025 (approximate)



**Spring 2025 Potentiometric Surface**  
**Antelope Valley Station**  
 Basin Electric Power Cooperative  
 Beulah, North Dakota

FIGURE 3

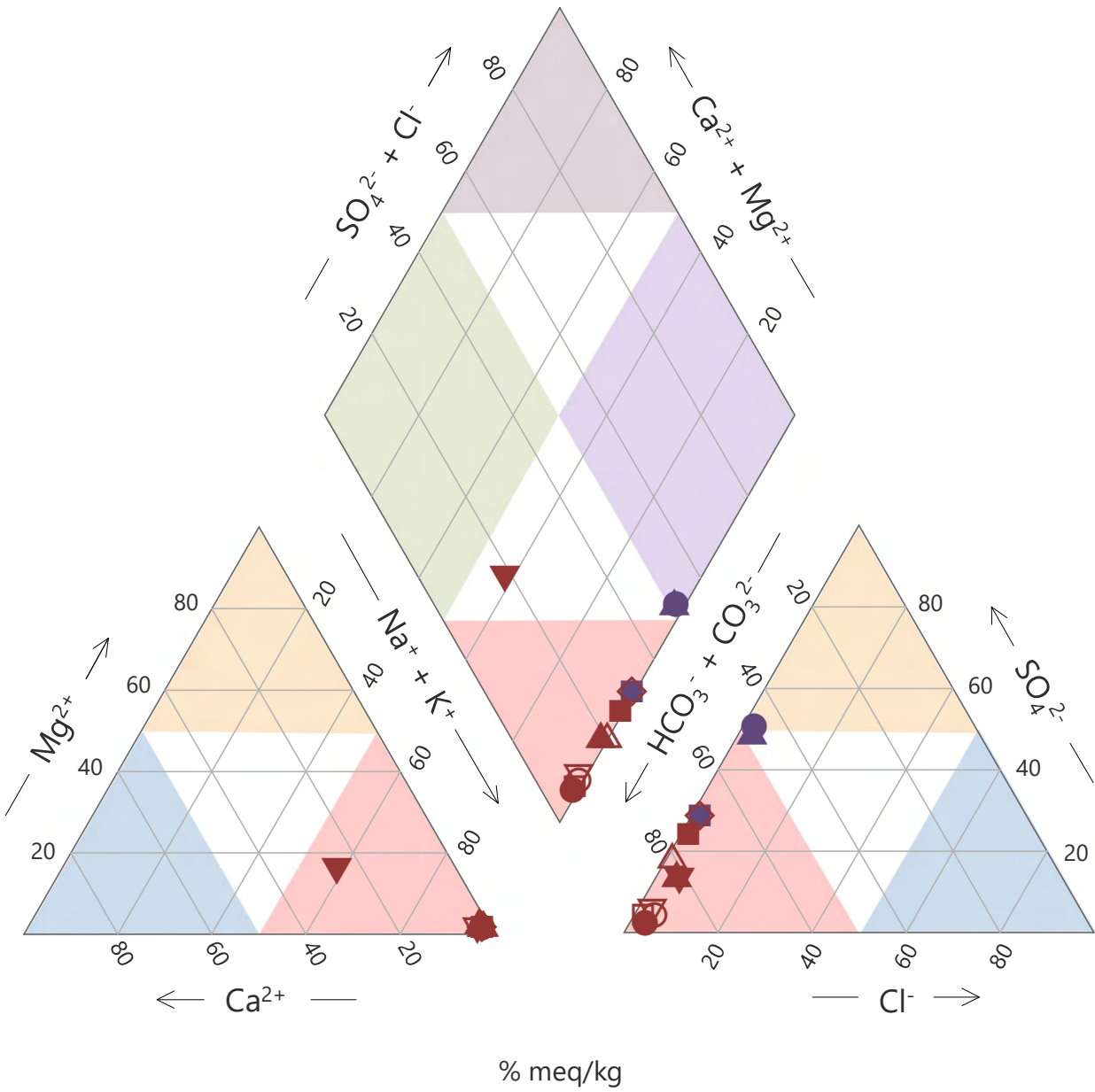


**Upgradient Wells**


- MW-18S
- ▲ MW-19S
- MW-21S

**Downgradient Wells**

- ◇ MW-15S
- ▲ MW-16S
- MW-17S
- MW-20S
- △ MW-22S
- MW-24S
- MW-25S
- ▽ MW-26S
- ▼ MW-27S



**Piper Diagram**  
 AVS  
 SPRING 2025  
 FIGURE 4



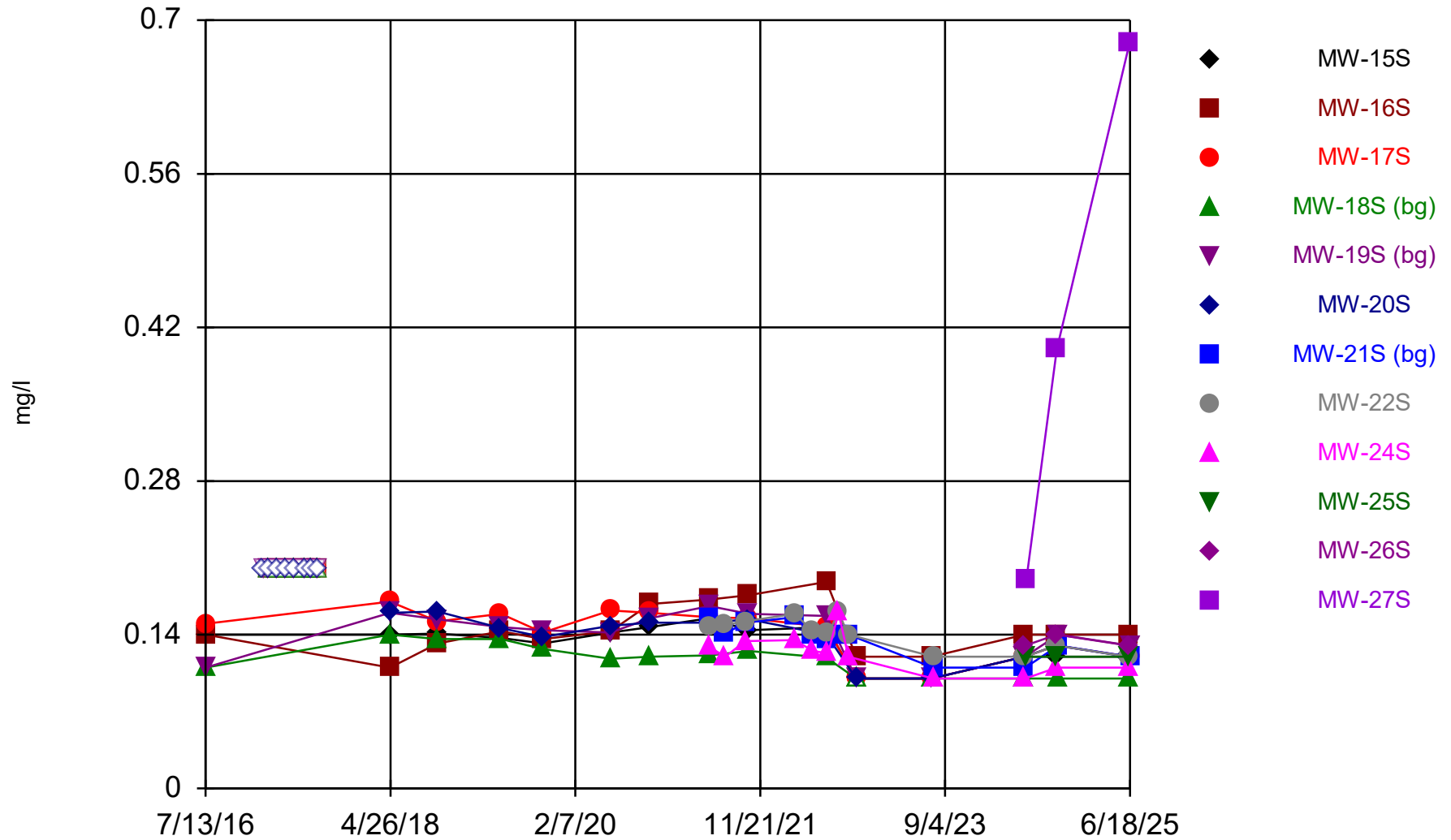


## **Attachments**



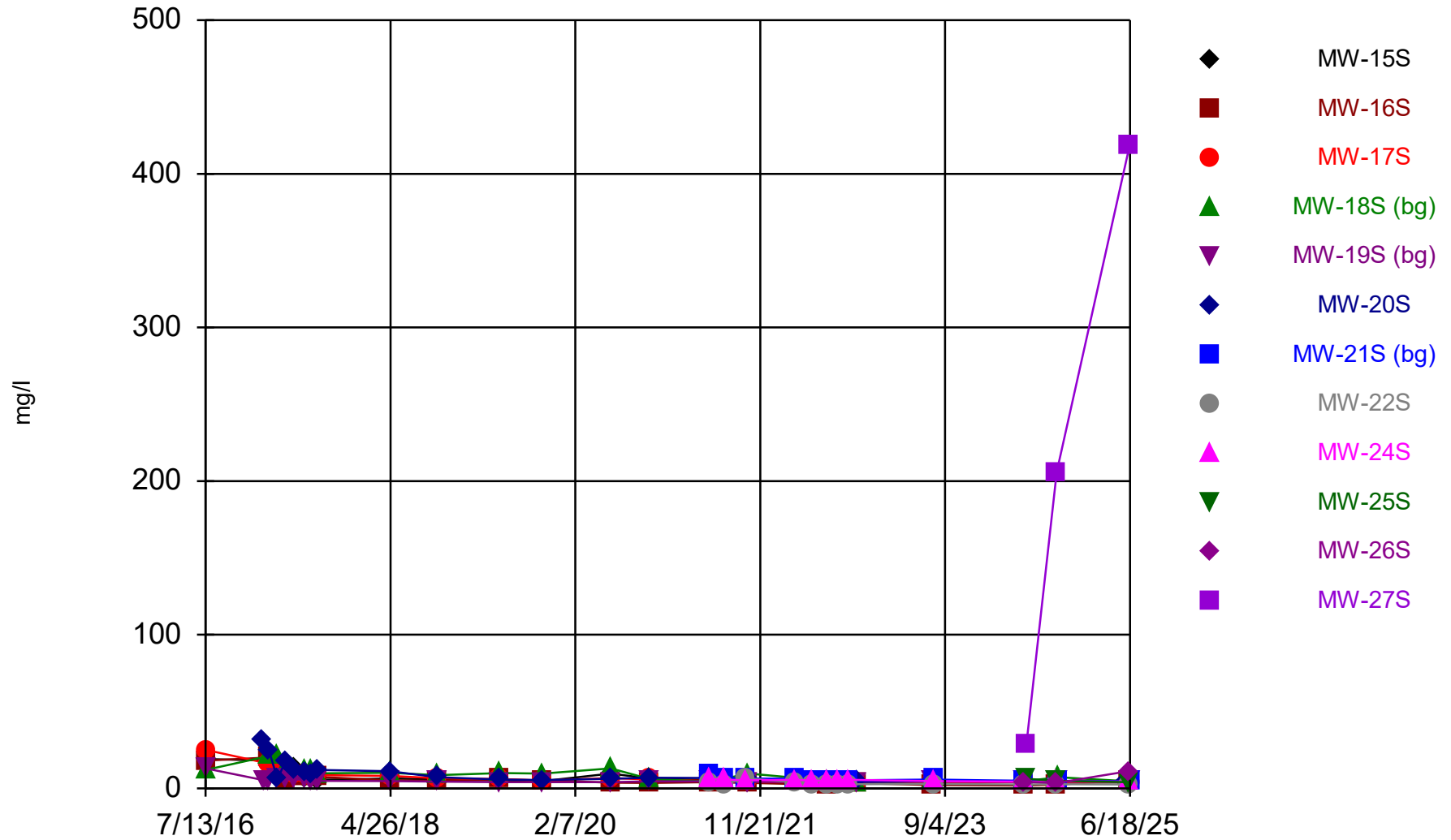
**Attachment A**  
**Time Series Graphs**

### Boron, total



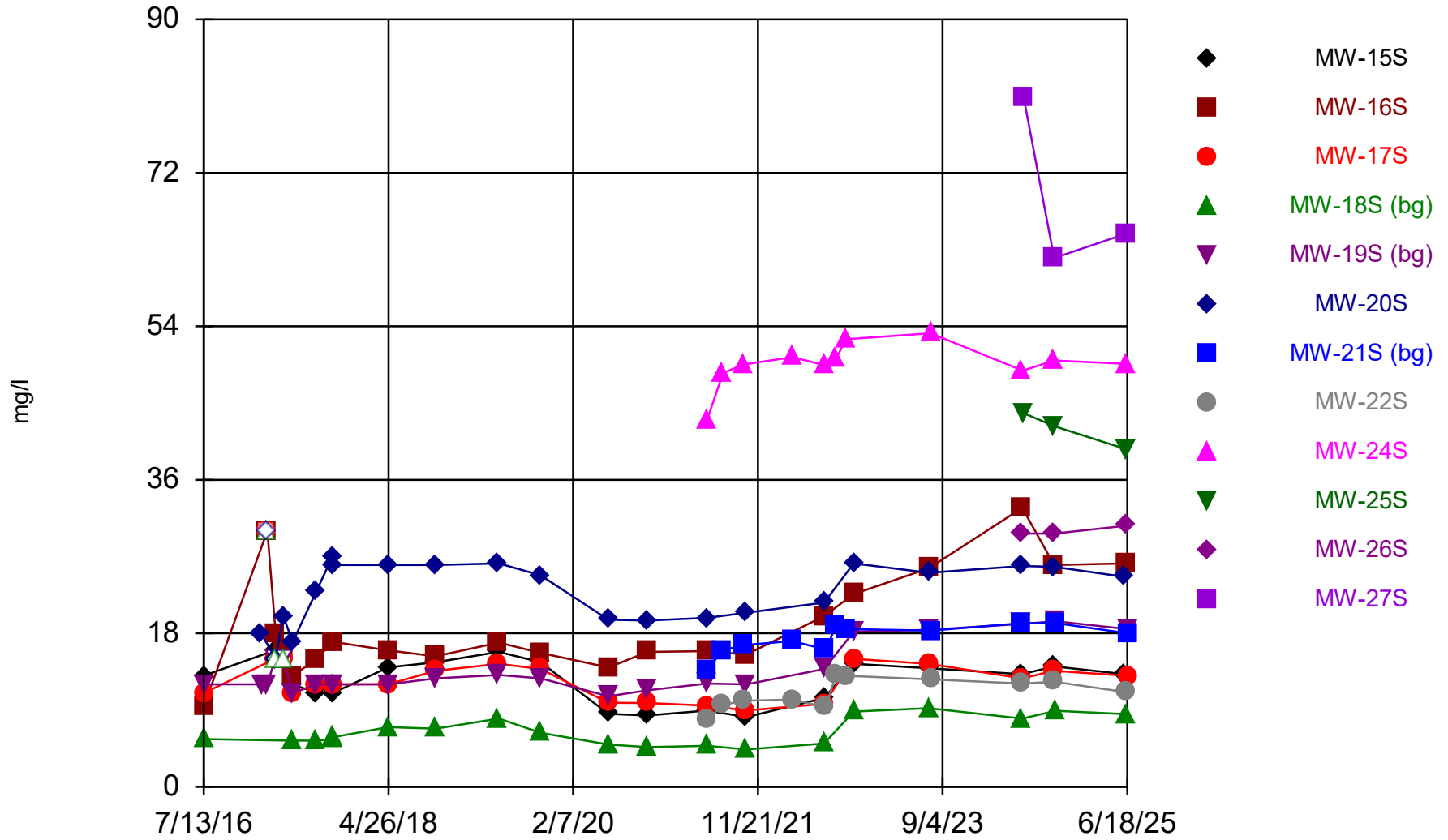
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Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

### Calcium, total



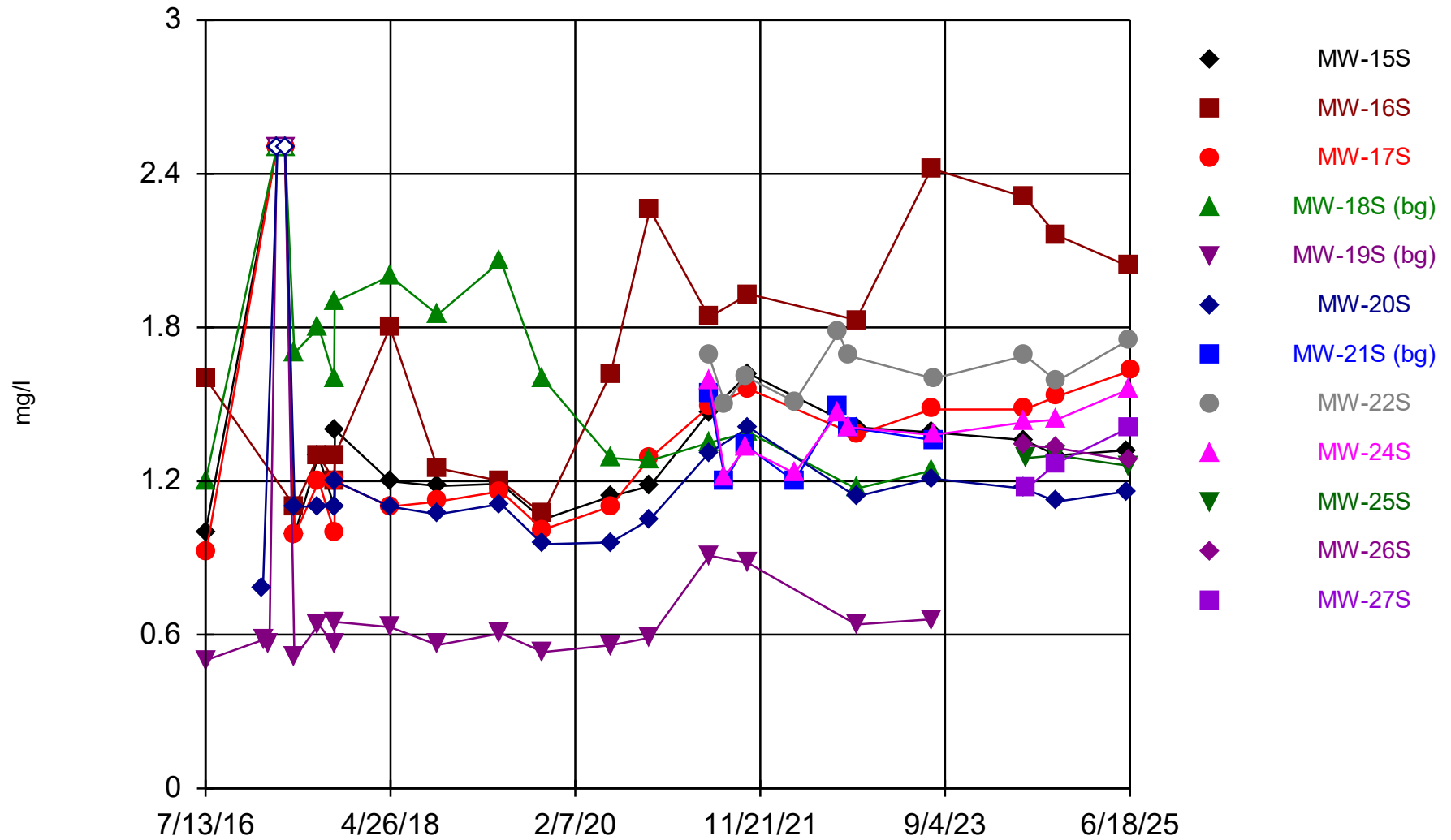
Time Series Analysis Run 12/3/2025 9:16 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

# Chloride



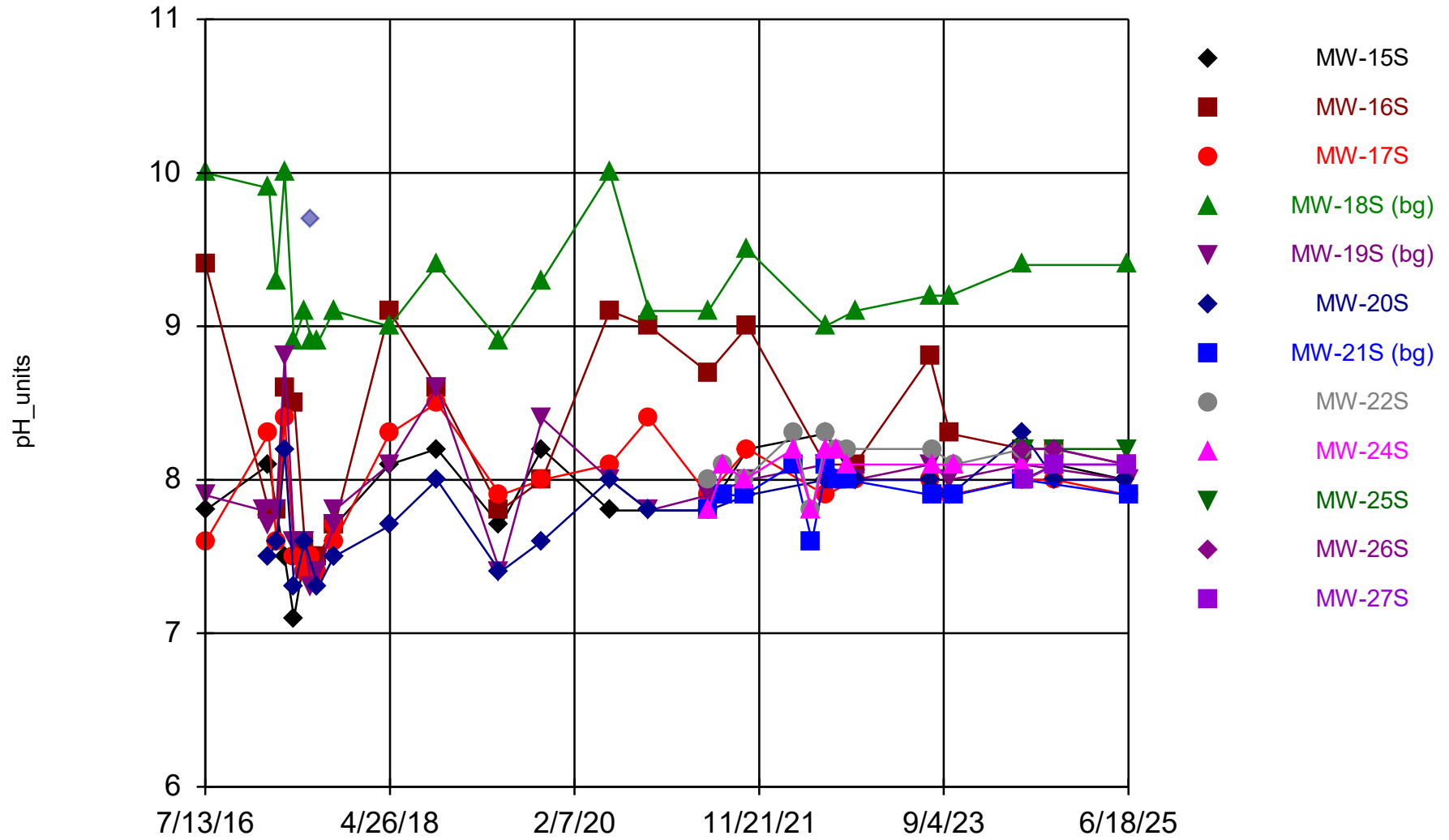
Time Series Analysis Run 12/3/2025 9:16 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AV5\_CCR

# Fluoride



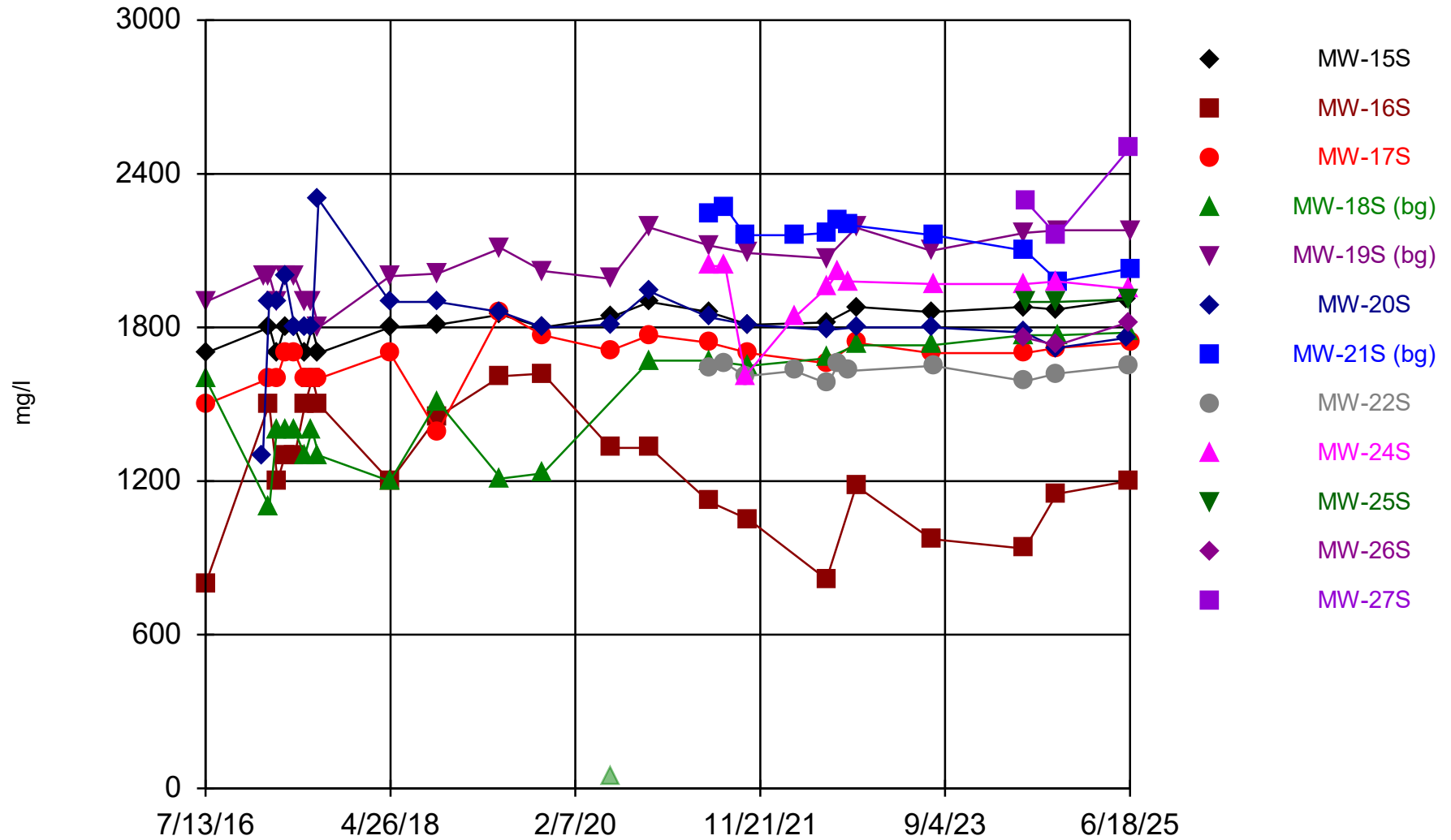
Time Series Analysis Run 12/2/2025 11:11 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

# pH, field



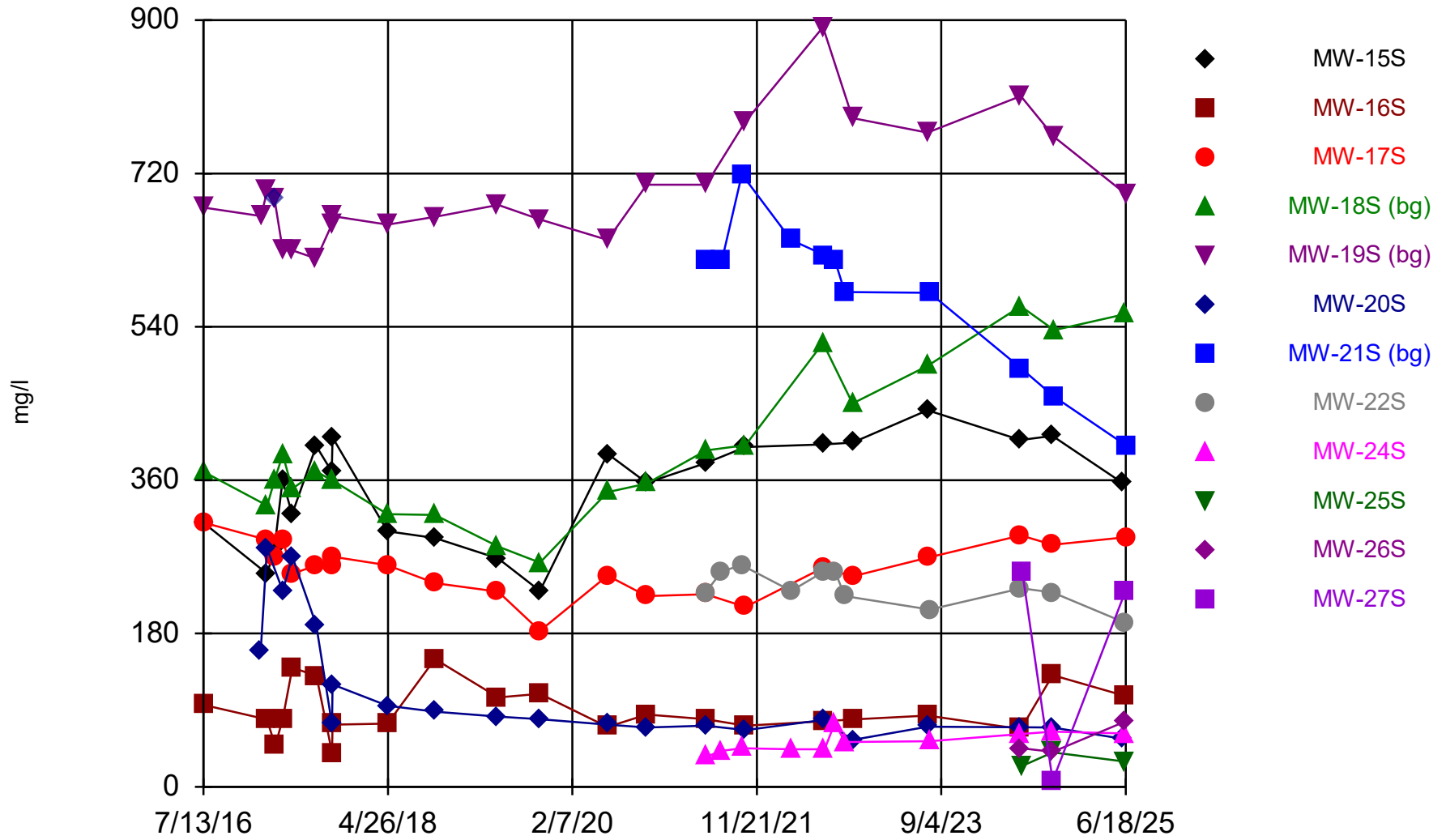
Time Series Analysis Run 12/3/2025 9:16 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

### Solids, total dissolved



Time Series Analysis Run 12/3/2025 9:16 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

### Sulfate, as SO4



Time Series Analysis Run 12/3/2025 9:16 AM View: All  
Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR

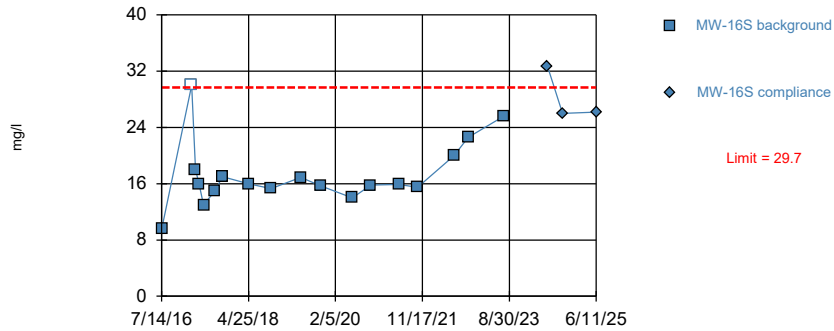


**Attachment B**  
**Statistical Evaluation**

Within Limit

### Chloride

Intrawell Parametric



# Intrawell Prediction Limit

Antelope Valley Station Client: Basin Electric Data: BEPC\_AVS\_CCR Printed 11/24/2025, 8:41 PM

<u>Constituent</u>	<u>Well</u>	<u>Upper Lim.</u>	<u>Lower Lim.</u>	<u>Date</u>	<u>Observ.</u>	<u>Sig.</u>	<u>Bg N</u>	<u>%NDs</u>	<u>Transform</u>	<u>Alpha</u>	<u>Method</u>
Chloride (mg/l)	MW-20S	31	n/a	6/10/2025	24.6	No	18	5.556	No	0.000...	Param 1 of 2
Chloride (mg/l)	MW-24S	59.4	n/a	6/17/2025	49.6	No	8	0	No	0.000...	Param 1 of 2
Chloride (mg/l)	MW-16S	29.7	n/a	6/11/2025	26.2	No	19	5.263	ln(x)	0.000...	Param 1 of 2



**Attachment C**  
**Well Development**



## Barr Engineering Company Field Log Data Sheet

Client: <u>Basin Electric</u>				Monitoring Point: <u>MW-27</u>				
Location: <u>AVS</u>		<u>CCR Wells</u>		Date: <u>4-25-2024</u>				
Project #: <u>34291126</u>				Sample Time:				
GENERAL DATA			STABILIZATION TEST					
Barr lock:	<u>Basin</u>			<u>µS/cm</u>			<u>NTU</u>	
Casing diameter:	<u>2"</u>	Time/ Volume	Temp. °C	Cond. @ 25	pH	<u>ORP</u> Eh	<u>Mg/L</u> D.O.	Turbidity Appearance
Total well depth:*	<u>~229.40</u>	<del>1425</del> <u>3.5 gal</u>	<u>13.5</u>	<u>2572</u>	<u>8.25</u>	<u>-96.3</u>	<u>0.83</u>	<u>Black</u> <u>oor</u>
Static water level:*	<u>205.83</u>							
Water depth:*	<u>23.57</u>							
Well volume: (gal)	<u>3.84</u>							
Purge method:	<u>Bailer</u>							
Sample method:	<u>Bailer</u>							
Start time:	<b>X</b>	Odor: <u>None</u>						
Stop time:		Purge Appearance: <u>Dark Brown / Black</u>						
Duration: (minutes)		Sample Appearance:						
Rate, gpm:		Comments: <u>Purged dry</u> <u>1 well volume</u>						
Volume, purged:		<u>~ 3.8 gal</u>						
Duplicate collected?	<u>NA</u>	<u>"sedimenty"</u>						
Sample collection by:		CO2-	Mn2-	Fe(T)-	Fe2-			
Others present:	Well Condition: <u>New</u>							
MW: groundwater monitoring well    WS: water supply well    SW: surface water    SE: sediment    other:								
<del>VOC-    semi-volatile-    general-    nutrient-    cyanide-    DRO-    Sulfide-</del>								
<del>oil,grease-    bacteria-    total metal-    filtered metal-    methane-    filter-</del>								
Others:								

Drk  
Brn

\*Measurements are referenced from top of riser pipe, unless otherwise indicated.

## Ground Water Sample Collection Record

Client: BEPC Date: 4-17-25  
 Project No: \_\_\_\_\_ Time: 1150  
 Site Location: AVS Landfill Finish: 1220  
 Weather Conds: sunny warm Collector(s) MK

## WATER LEVEL DATA: (measured from Top of Casing)

Well 

a. Total Well Length \_\_\_\_\_ c. Casing Material PVC Pump Settings \_\_\_\_\_  
 b. Water Table Depth 208.0 d. Casing Diameter \_\_\_\_\_

## WELL PURGING DATA

a. Purge Method ~~Dedicated Bladder Pump~~ Hydro-sleeve

b. Field Testing Equipment Used: Make Model Serial Number  
 YSI 5320084101  
 HACH 20030C084551

c. Field Testing Equipment Calibration Documentation Found in Field Notebook # 1 Page # 1  
 <0.5 <5

Time	Volume Removed (gal)	T° (C)	DO mg/L	Spec. Cond (µs/cm)	pH	ORP	Turbidity (NTU)	Color	DTW
Stabilization		+/- 0.2	+/- 10%	+/- 3%	+/- 0.1	+/- 10%	+/- 10%		0.33 ft
	INITIAL	<u>12.7</u>	<u>.28</u>	<u>3191</u>	<u>8.10</u>	<u>442</u>	<u>TOO HIGH</u>	<u>BLACK MUCK</u>	<u>208.0</u>
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								
	L								

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

## SAMPLE COLLECTION:

Method: Bladder Pump

Sample ID	Container Typ	No. of Containers	Preservation	Analysis	Time
	<u>1L</u>	<u>1</u>		<u>TDS/Anions</u>	<u>1219</u>
	<u>500mL</u>	<u>1</u>	<u>HNO3</u>	<u>Metals</u>	<u>↓</u>

Comments \_\_\_\_\_

Signature ManDate 4-17-25



## **Appendix C**

### **Groundwater Flow Rate**

Appendix C  
Groundwater Flow Rate  
2025  
Annual Monitoring Report  
AVS CCR Groundwater Compliance

**AVS Groundwater Velocity Calculation**

Date

6/10/2025

UG: MW-19S

UG: MW-18S

Kh (ft/d)	0.234	0.234	CCR Groundwater Monitoring System Report (AECOM, 2017)
porosity, n	0.185	0.185	
Average gradient, i (ft/ft)	0.002	0.004	CCR Groundwater Monitoring System Report (AECOM, 2017)
Average V (ft/d)	3.069E-03	5.450E-03	
Average V (ft/yr)	1.12	1.99	
Flow Direction	E-NE	NE	

	Top of Casing Elevation	Depth to Water	Water Level Elevation	
	ft amsl	ft below TOC	ft amsl	
MW-15S	2104.77	218.96	1885.81	
MW-16S	2123.59	235.82	1887.77	
MW-17S	2124.89	238.45	1886.44	
MW-18S	2091.60	199.13	1892.47	
MW-19S	2042.56	149.40	1893.16	
MW-20S	2107.47	220.60	1886.87	
MW-21S	2094.72	202.75	1891.97	
MW-22S	2093.90	210.14	1883.76	
MW-24S	2070.74	206.22	1864.52	
MW-25S	2083.40	198.66	1884.74	
MW-26S	2074.50	190.65	1883.85	
MW-27S	2071.60	208.00	1863.60	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 MW-15S, 16S, 17S, 20S, and 22S flow calculations

\*Used UG well MW-18S for MW-24S, 25S, and 26S flow calculations

**Appendix C**  
**Groundwater Flow Rate**  
**2025**  
**Annual Monitoring Report**  
**AVS CCR Groundwater Compliance**

**AVS difference in WL elevation, ft**

	<b>MW-19S</b>	<b>MW-18S</b>
<b>MW-15S</b>	7.35	
<b>MW-16S</b>	5.39	
<b>MW-17S</b>	6.72	
<b>MW-20S</b>	6.29	
<b>MW-22S</b>	9.40	
<b>MW-24S</b>		27.95
<b>MW-25S</b>		7.73
<b>MW-26S</b>		8.62

**AVS horizontal gradient, ft/ft**

	<b>MW-19S</b>	<b>MW-18S</b>
<b>MW-15S</b>	0.003	
<b>MW-16S</b>	0.002	
<b>MW-17S</b>	0.002	
<b>MW-20S</b>	0.002	
<b>MW-22S</b>	0.003	
<b>MW-24S</b>		0.008
<b>MW-25S</b>		0.003
<b>MW-26S</b>		0.003
<b>Average</b>	0.002	0.004

Appendix C  
Groundwater Flow Rate  
2025 Annual Monitoring Report  
AVS CCR Groundwater Compliance

**AVS Groundwater Velocity Calculation**

Date 10/6/2025

**UG: MW-19S                      UG: MW-18S**

<b>Kh (ft/d)</b>	0.234	0.234	<i>CCR Groundwater Monitoring System Report (AECOM, 2017)</i>
<b>porosity, n</b>	0.185	0.185	<i>CCR Groundwater Monitoring System Report (AECOM, 2017)</i>
<b>Average gradient,</b>	0.002	0.005	
<b>Average V (ft/d)</b>	2.900E-03	6.156E-03	
<b>Average V (ft/yr)</b>	1.06	2.25	
<b>Flow Direction</b>	<b>E-NE</b>	<b>NE</b>	

	<b>Top of Casing Elevation</b>	<b>Depth to Water</b>	<b>Water Level Elevation</b>
	ft amsl	ft below TOC	ft amsl
<b>MW-15S</b>	2104.77	218.90	1885.87
<b>MW-16S</b>	2123.59	236.31	1887.28
<b>MW-17S</b>	2124.89	238.32	1886.57
<b>MW-18S</b>	2091.60	199.17	1892.43
<b>MW-19S</b>	2042.56	149.75	1892.81
<b>MW-20S</b>	2107.47	220.22	1887.25
<b>MW-21S</b>	2094.72	202.78	1891.94
<b>MW-22S</b>	2093.90	210.03	1883.87
<b>MW-24S</b>	2070.74	206.27	1864.47
<b>MW-25S</b>	2083.40	198.10	1885.30
<b>MW-26S</b>	2074.50	190.43	1884.07
<b>MW-27S</b>	2071.60	203.67	1867.93

**AVS Landfill horizontal distance, ft**

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

MW-19S for MW-15S, 16S, 17S, 20S, and 22S flow calculations      MW-18S for MW-24S, 25S, and 26S flow calculations

Appendix C  
 Groundwater Flow Rate  
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**AVS difference in WL elevation, ft**

	<b>MW-19S</b>	<b>MW-18S</b>
<b>MW-15S</b>	6.94	
<b>MW-16S</b>	5.53	
<b>MW-17S</b>	6.24	
<b>MW-20S</b>	5.56	
<b>MW-22S</b>	8.94	
<b>MW-24S</b>		27.96
<b>MW-25S</b>		7.13
<b>MW-26S</b>		8.36
<b>MW-27S</b>		24.50

**AVS horizontal gradient, ft/ft**

	<b>MW-19S</b>	<b>MW-18S</b>
<b>MW-15S</b>	0.003	
<b>MW-16S</b>	0.002	
<b>MW-17S</b>	0.002	
<b>MW-20S</b>	0.002	
<b>MW-22S</b>	0.003	
<b>MW-24S</b>		0.008
<b>MW-25S</b>		0.002
<b>MW-26S</b>		0.003
<b>MW-27S</b>		0.007
<b>Average</b>	0.002	0.005



**Appendix D**  
**Baseline Sample Results**

Appendix D  
Baseline Sampling  
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Location			MW-25S		MW-25S	MW-25S	MW-25S	MW-26S	MW-26S	MW-26S	MW-26S	MW-27S	MW-27S
Date			6/17/2024		10/02/2024	6/11/2025	10/08/2025	6/13/2024	10/02/2024	6/11/2025	10/08/2025	6/17/2024	10/02/2024
Sample Type			N	FD	N	N	N	N	N	N	N	N	N
Parameter	Analysis Location	Units											
General Parameters													
Alkalinity, bicarbonate, as CaCO3	Lab	mg/l	--	--	--	1489	1529	--	--	1335	1367	--	--
Alkalinity, carbonate, as CO3	Lab	mg/l	--	--	--	< 20.5 U	24	--	--	< 20.5 U	< 20.5 U	--	--
Alkalinity, total, as CaCO3	Lab	mg/l	--	--	--	1489	1553	--	--	1335	1382	--	--
Chloride	Lab	mg/l	43.8	43.3	42.3	39.6	40.4	29.7	29.7	30.6	31.5	80.8	62.0
Fluoride	Lab	mg/l	1.29	1.29	1.30	1.26	1.42	1.34	1.33	1.28	1.36	1.17	1.27
pH	Lab	pH units	--	--	--	8.2	8.4	--	--	8.2	8.4	--	--
Solids, total dissolved	Lab	mg/l	1900	1900	1900	1910	1940	1760	1730	1820	1870	2290	2160
Sulfate, as SO4	Lab	mg/l	24.6	24.7	40.2	29.8	36.0	45.1	41.0	75.9	120	252	6.83
Dissolved oxygen	Field	mg/l	0.49	--	0.27	0.49	0.31	0.35	0.28	0.46	1.44	3.45	1.72
pH	Field	pH units	8.18	--	8.19	8.15	8.18	8.15	8.17	8.09	8.08	8.03	8.08
Redox (oxidation potential)	Field	mV	-3	--	-34	-368.7	-313.8	-43.2	-32.3	-371.8	-348.6	123.4	-116.9
Specific conductance @ 25 deg C	Field	umhos/cm	2889	--	2918	3004	3011	2665	2678	2801	2884	3016	3063
Temperature	Field	deg C	9.3	--	10.6	10.0	9.8	10.9	11.2	10.5	12.2	8.5	11.5
Turbidity	Field	NTU	37.7	--	14.3	16.3	9.08	27.9	19.7	14.3	11.2	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	0.12	0.14	0.13	0.14	0.13	0.12	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	4.01	4.56	4.10	3.51	11.0	17.3	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
Magnesium	Lab	mg/l	--	--	--	3.11	3.40	--	--	2.90	3.31	--	--
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
Potassium	Lab	mg/l	--	--	--	4.04	4.50	--	--	4.72	5.21	--	--
Selenium	Lab	mg/l	< 0.005 U	--	< 0.005 U	--	--	< 0.005 U	< 0.005 U	--	--	< 0.005 U	0.0088
Sodium	Lab	mg/l	--	--	--	826	834	--	--	746	746	--	--
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

Appendix D  
 Baseline Sampling  
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			Location	MW-27S	MW-27S
			Date	6/17/2025	10/08/2025
			Sample Type	N	N
Parameter	Analysis Location	Units			
General Parameters					
Alkalinity, bicarbonate, as CaCO3	Lab	mg/l	<b>1659</b>	<b>1678</b>	
Alkalinity, carbonate, as CO3	Lab	mg/l	< 20.5 U	< 20.5 U	
Alkalinity, total, as CaCO3	Lab	mg/l	<b>1659</b>	<b>1686</b>	
Chloride	Lab	mg/l	<b>64.9</b>	<b>65.0</b>	
Fluoride	Lab	mg/l	<b>1.41</b>	<b>1.48</b>	
pH	Lab	pH units	<b>8.2</b>	<b>8.3</b>	
Solids, total dissolved	Lab	mg/l	<b>2500</b>	<b>2370</b>	
Sulfate, as SO4	Lab	mg/l	<b>230</b>	<b>141</b>	
Dissolved oxygen	Field	mg/l	<b>0.28</b>	<b>0.25</b>	
pH	Field	pH units	<b>8.10</b>	<b>7.96</b>	
Redox (oxidation potential)	Field	mV	<b>44.2</b>	<b>-292.9</b>	
Specific conductance @ 25 deg C	Field	umhos/cm	<b>3191</b>	<b>3254</b>	
Temperature	Field	deg C	<b>12.7</b>	<b>12.0</b>	
Turbidity	Field	NTU	--	<b>999</b>	
Total Metals					
Antimony	Lab	mg/l	--	--	
Arsenic	Lab	mg/l	--	--	
Barium	Lab	mg/l	--	--	
Beryllium	Lab	mg/l	--	--	
Boron	Lab	mg/l	<b>0.68</b>	<b>0.21</b>	
Cadmium	Lab	mg/l	--	--	
Calcium	Lab	mg/l	<b>419</b>	<b>58.1</b>	
Chromium	Lab	mg/l	--	--	
Cobalt	Lab	mg/l	--	--	
Lead	Lab	mg/l	--	--	
Lithium	Lab	mg/l	--	--	
Magnesium	Lab	mg/l	<b>152</b>	<b>27.4</b>	
Mercury	Lab	mg/l	--	--	
Molybdenum	Lab	mg/l	--	--	
Potassium	Lab	mg/l	<b>27.4</b>	<b>11.1</b>	
Selenium	Lab	mg/l	--	--	
Sodium	Lab	mg/l	<b>1040</b>	<b>952</b>	
Thallium	Lab	mg/l	--	--	
Radiochemical Parameters					
Radium 226	Lab	pCi/l	--	--	
Radium 228	Lab	pCi/l	--	--	
Radium, combined (226+228)	Barr Calculation	pCi/l	--	--	