

# 2019 Annual Groundwater Monitoring and Corrective Action Report

Scrubber Pond and Temporary Storage Area

Lewis & Clark Station Sidney, Montana

Prepared for Montana Dakota Utilities

January 2020

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## 2019 Annual Groundwater Monitoring and Corrective Action Report

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## January 2020

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## Acronyms

Acronym	Description
ACM	Assessment of Corrective Measure
ASD	Alternative Source Demonstration
CCR	Coal Combustion Residuals
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FGD	Flue-Gas Desulfurization
GWPS	Groundwater Protection Standard
MDU	Montana Dakota Utilities Company
RL	Reporting Limit
RSL	Regional Screening Level
SSI	Statistically Significant Increase
TSP	Temporary Storage Pad

# 1.0 Introduction

Montana-Dakota Utilities Co. (MDU) owns and operates Lewis & Clark Station, a coal-fired electricity generation unit near Sidney, Montana (Figure 1). Lewis & Clark Station is a coal-fired electrical generating plant, operation of which results in coal combustion residuals (CCR) as a by-product. Two storage ponds and a CCR pile are situated at the property to manage CCR. The storage ponds—which comprise a single, multi-unit CCR surface impoundment under the CCR rule—are named the East and West Scrubber Ponds, or collectively the Scrubber Ponds.

The Scrubber Ponds store sluiced flue-gas desulfurization (FGD) solids. The CCR pile is located on a Temporary Storage Pad (TSP) where FGD solids (excavated from the Scrubber Ponds) are stored and allowed to drain prior to loading and hauling for disposal. The Scrubber Ponds are 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). Monitoring and reporting requirements in the CCR Rule do not apply to the current TSP because it qualifies for the CCR pile exemptions in the CCR Rule. The former TSP, which was located in the same location as the current TSP, is closed except for demonstrating that groundwater quality requirements are met.

Closure by removal of CCR began at the TSP in 2018 with the removal of CCR and CCR-contaminated sediments. Although physical removal actions have been completed, demonstration that groundwater meets the quality requirements of §257.102(c) is ongoing.

The locations of the Scrubber Ponds and TSP are shown on Figure 1. The groundwater monitoring system is a multi-unit groundwater monitoring system, as allowed in §257.91(d), meaning that both the Scrubber Ponds and the TSP are monitored by the groundwater monitoring system. This 2019 Annual Groundwater Monitoring and Corrective Action Report (Annual Report) describes the monitoring program and results for the Scrubber Ponds and TSP at MDU's Lewis & Clark Station.

## 1.1 Purpose

As stated in Section §257.90(e), the purpose of the Annual Report is to:

- Document the status of monitoring and corrective action program for the CCR unit
- Summarize key actions completed
- Describe any problems encountered
- Discuss actions to resolve the problems
- Project key activities for the upcoming year

## 1.2 Status of the Groundwater Monitoring and Corrective Action Program

The Scrubber Ponds and TSP are currently in assessment monitoring. Baseline groundwater monitoring was completed in 2017, as documented in the 2017 Annual Groundwater Monitoring and Corrective Action Report, Scrubber Pond and Temporary Storage Area (Barr, 2018a). A detection monitoring program

began on October 17, 2017, and continued until April 14, 2018 (Barr, 2019b). A statistically significant increase (SSI) over background levels was determined for one or more of the constituents listed in appendix III to the CCR Rule (§257.95(a)) in 2018, which resulted in initiation of the assessment monitoring program on April 15, 2018, and which continued through 2019.

It was determined on January 2, 2019, that the initial assessment monitoring and resample events resulted in detections of lithium and selenium at statistically significant levels above applicable groundwater protection standards (GWPS). An assessment of corrective measures (ACM) was initiated on April 2, 2019, and completed on August 29, 2019 (Barr, 2019c). The Scrubber Ponds and TSP are currently in selection of remedy, as described in §257.97, subject to the ongoing evaluation of a potential alternative source.

## 1.3 CCR Rule Requirements

This Annual Report has been prepared in accordance with the requirements of §257.90(e) of the CCR Rule, as outlined in the following Table 1.

CCR Rule Reference	Content Required in Report	Location
§257.90(e)(1)	Map showing the CCR unit and all monitoring wells that are part of the groundwater monitoring system	Section 2.1.1 Documentation; see Figure 1
§257.90(e)(2)	Discuss any new or decommissioned monitoring wells	Section 2.1.2 Changes to Monitoring System
§257.90(e)(3)	Provide the number and date groundwater samples were collected, and the monitoring data (i.e., detection or assessment)	Section 2.2 Monitoring and Analytical Results
§257.90(e)(4)	Discuss any transition between monitoring programs	Not applicable in 2019
§257.90(e)(5)	Other information specified in §257.90 through §257.98	See §257.95(d)(3) and §257.95(a) in this Table
§257.95(d)(3)	Assessment monitoring concentrations, background concentrations, and groundwater protection standards	Section 2.3 Establishment of Groundwater Protection Standards, Table 2, and Appendix A
§257.95(a)	Demonstration of additional time required for completion of assessment of corrective measures	Appendix B

## Table 1 CCR Rule Requirements

# 2.0 Groundwater Monitoring and Corrective Action Program

This section documents the status of the groundwater monitoring and corrective action program for the CCR units for 2019. The groundwater monitoring system is described in Section 2.1, monitoring and analytical results are described in Section 2.2, the corrective action program status is described in Section 2.4, key actions completed and problems encountered are described in Section 2.4, and key activities planned for 2020 are described in Section 2.6.

## 2.1 Groundwater Monitoring System

## 2.1.1 Documentation

Figure 1 shows an aerial image of the CCR units and all upgradient (or background) and downgradient monitoring wells in the groundwater monitoring system, including well identification numbers, that are part of the groundwater monitoring program, as required by §257.90(e)(1). Further details on the groundwater monitoring system are included in Groundwater Monitoring System Certification, Lewis & Clark Station (Barr, 2018b).

## 2.1.2 Changes to Monitoring System

There were no changes to the monitoring system in 2019.

## 2.2 Monitoring and Analytical Results

Groundwater samples were collected and analyzed in 2019 for the constituents listed in appendices III and IV (Part 257) under the assessment monitoring program.

- A total of fourteen samples (seven monitoring wells during two sampling events) were collected from the CCR groundwater monitoring system and were analyzed for the constituents listed in appendices III and IV during the assessment monitoring sampling events (March 4-5 and August 26-28, 2019) consistent with the requirements of §257.95(b) and §257.95(d)(1).
- Lithium was detected at statistically significant levels above the GWPS for both spring and fall monitoring events.
- Selenium was detected at statistically significant levels above the GWPS for the spring monitoring event at one well (MW-111). Selenium was below the GWPS in all wells for the fall monitoring event.

Sampling dates are reported on the field data sheets and analytical laboratory reports in Appendix A.

## 2.3 Establishment of Groundwater Protection Standards

In compliance with CCR Rule §257.95(d)(2), GWPS were established for all appendix IV constituents detected in groundwater. GWPS are defined as the highest of the following values: the applicable MCL; in the case of cobalt, lead, lithium and molybdenum, the default GWPS values established under the CCR

Rule; or, for any constituent, a site-specific background concentration established from baseline sampling. Background levels of lithium and selenium at the site are demonstrated to be higher than the default GWPS. Thus, site-specific GWPS have been adopted for lithium and selenium in accordance with §257.95(h)(3).

Background concentration levels were determined in accordance with the statistical methods established in §257.93(f-g) and the Statistical Method Selection Certification (Barr, 2017) using the monitoring results from samples collected from upgradient monitoring wells. Samples collected during the baseline sample collection period (Barr, 2018a) were used to establish the site-specific GWPS for selenium.

The lithium groundwater monitoring results for upgradient samples (from monitoring wells MW-103, MW-110, and MW-119) collected during the baseline period defined by the CCR Rule were reported as non-detect with a reporting limit (RL) of 100  $\mu$ g/L; therefore, the initial background lithium concentration level was set as the RL of 100  $\mu$ g/L for lithium.

On July 30, 2018, EPA promulgated for the first time a default lithium GWPS ( $40 \mu g/L$ ) in the agency's Phase I revision to the CCR Rule. All wells in the groundwater monitoring system (both upgradient and downgradient) were sampled and analyzed twice for lithium concentrations using a RL of 20  $\mu g/L$  (lower than the default GWPS established in the CCR Rule revision) in 2018. MDU determined on January 2, 2019, that lithium and selenium were detected in downgradient wells at statistically significant levels above the GWPS, as documented in the Notification of Statistically Significant Levels Above Ground Water Protection Standards (Barr letter, January 2, 2019a).

After the Phase I CCR Rule revision was issued and before completion of the ACM, all wells in the groundwater monitoring system had been sampled and analyzed three times for lithium concentrations with the lower RL. A lithium GWPS was determined for the ACM using the upgradient lithium monitoring results from the three events that used the lower RL. A fourth monitoring event was conducted in August 2019, and MDU is currently working to complete eight sampling events for each well for lithium at the lower RL.

Table 2 provides a summary of the GWPS and background concentration levels determined in August 2019, as required by §257.95(d)(3).

Parameter	Units	Groundwater Protection Standard	MCL or RSL	Background Concentration Level
Antimony	µg/L	6	6	5.7
Arsenic	µg/L	10	10	10
Barium	µg/L	2000	2000	40.2
Beryllium	µg/L	4	4	1
Cadmium	µg/L	5	5	2
Chromium	µg/L	100	100	2.3
Cobalt	µg/L	6	6	2
Fluoride	mg/L	4	4	0.87
Lead	µg/L	15	15	1
Lithium	µg/L	67.8	40	67.8
Mercury	µg/L	2	2	0.2
Molybdenum	µg/L	100	100	29.2
Selenium	µg/L	70.5	50	70.5
Thallium	µg/L	2	2	1
Radium, combined (226+228)	pCi/l	5	5	2.5

### Table 2 Groundwater Protection Standards

MCL: Maximum Contaminant Level, as established in 40 CFR 141.62 and 141.66.

RSL: Regional Screening Level (default GWPS), as included in the Phase I revision to 40 CFR 259.95(h) issued on July 30, 2018. Background concentration level based on statistical methods established in 40 CFR 257.93 (f-g).

## 2.4 Corrective Action Program Status

An assessment of corrective measures (ACM, §257.95(g)(4)) was initiated on April 2, 2019.

A demonstration for a 60-day extension for preparation of the ACM, as allowed by §257.96(a), was completed on June 28, 2019, allowing for additional investigation to better understand site conditions (Appendix B). The ACM was completed on August 29, 2019 (Barr, 2019c).

Based on the results of the ACM conducted under §257.96, the owner or operator must, as soon as feasible, select a remedy that, at a minimum, meets the standards listed in §257.97 (selection of remedy). The ACM was completed on August 29, 2019. Since then, MDU has commenced work to further understand the source and site conditions to better evaluate potential remedies.

## 2.5 Key Actions Completed/Problems Encountered

The following key actions were completed for the groundwater monitoring program through 2019:

- Assessment monitoring was conducted throughout 2019.
- Groundwater protection standards were established (Table 2).
- An assessment of corrective measures was completed.
- Selection of remedy started on August 30, 2019.

• A new monitoring well (MW-121) was installed (September 26-27, 2019) approximately 100 feet northwest of the Yellowstone River, between MW-111 and the river. Monitoring well MW-121 was installed to further evaluate groundwater conditions near the property boundary.

No problems were encountered.

## 2.6 Key Activities for Upcoming Year

The following key groundwater monitoring program activities are planned for 2020:

- Continue the assessment monitoring program in accordance with the CCR Rule
- Evaluate analytical results from monitoring events for SSIs according to the Statistical Method Selection Certification (Barr, 2017)
- Continue selection of remedy activities under §257.97
- Prepare semiannual reports required by §257.97(a) that describe the progress in selecting and designing a remedy

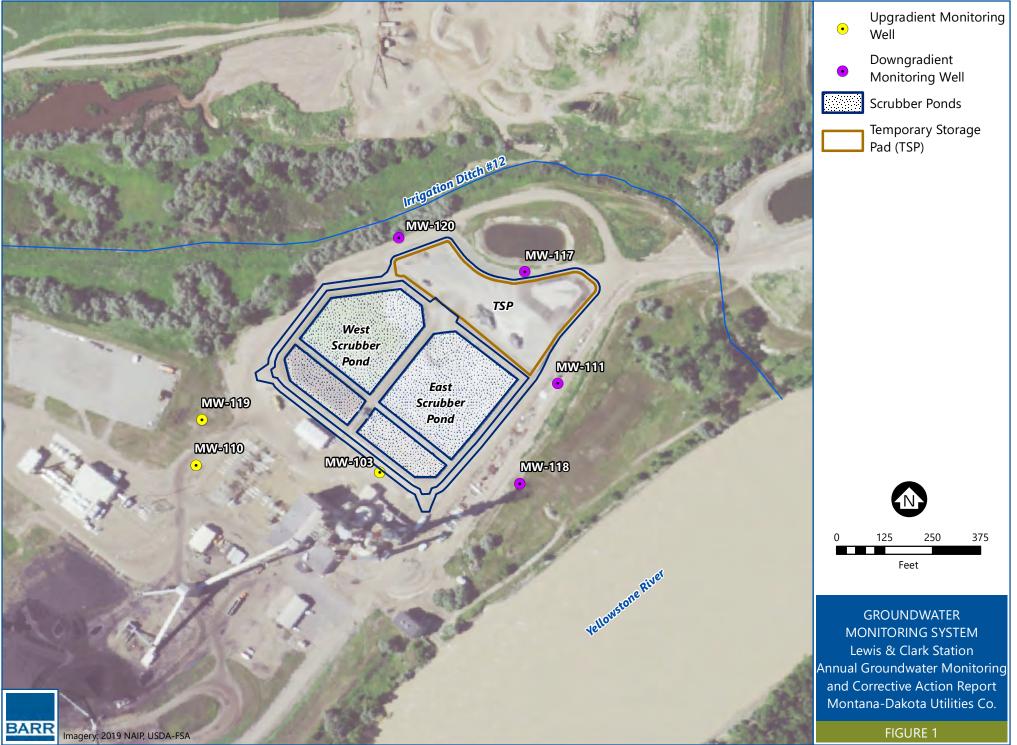
## 3.0 References

- Barr, 2019a. Letter to Montana-Dakota Utilities (Samantha Marshall) regarding Notification of Statistically Significant Levels Above Ground Water Protection Standards, January 2, 2019.
- Barr, 2019b. 2018 Annual Groundwater Monitoring and Corrective Action Report, Scrubber Pond and Temporary Storage Area, Prepared for Montana Dakota Utilities Company. January 2019.
- Barr, 2019c. Assessment of Corrective Measures, Lewis & Clark Station. Prepared for Montana Dakota Utilities Company. August 2019.
- Barr, 2018a. 2017 Annual Groundwater Monitoring and Corrective Action Report, Scrubber Pond and Temporary Storage Area, Prepared for Montana Dakota Utilities Company. January 2018.
- Barr, 2018b. Groundwater Monitoring System Certification, Prepared for Montana Dakota Utilities Company. November 2018.
- Barr, 2017. Statistical Method Selection Certification, Prepared for Montana Dakota Utilities Company. October 2017.

# Figures

Figure 1 Groundwater Monitoring System

Barr Footer: ArcGIS 10.7.1, 2020-01-29 10:04 File: I:\Projects\26\41\1007\Maps\Reports\CCR\_Monitoring\_Report\_2019\Figure 01 Groundwater Monitoring System.mxd User: MRQ



Appendices

# Appendix A

Laboratory Reports and Field Sheets

Appendix A Laboratory Reports and Field Sheets



MINNESOTA VALLEY TESTING LABORATORIES, INC 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-782-3557 ~ Fax 507-359-2890 1201 Lincoln Hwy. ~ Nevada, 1A 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



March 8, 2019

Montana Dakota Utilities Attn: Samantha Davies 5181 Southgate Dr. Billings, MT 59102

RE: Groundwater Sampling Event at MDU Lewis & Clark Site

Dear Ms. Marshall:

From March 4-5, 2019, MVTL Laboratories' Field Services division collected ground water samples at the MDU Lewis & Clark Station near Sidney, MT. Samples were collected from 8 of the 9 wells. Well MW109 was not sampled because it had been removed the previous year. A duplicate sample was collected from well MW111. Samples collected were placed on ice and transported to MVTL in Bismarck, ND for analysis.

Thank you for your trust and support of our services. If you have any questions, please call me at (701) 391-4900.

Sincerely,

Jeremy Meyer MVTL Field Services

**MVTL Laboratories Inc.** FIELD DATA REPORT

## MDU Lewis and Clark

CCR Sampling

WO# 82-0375 82-0373 82-0385

Attn: Samantha Davies 5181 Southgate Dr. Billings, MT 59102

		START		TIME	WATER	WATER				FIELD R	EADINGS		
WELL ID	PURGE DATE	PURGE TIME	SAMPLE DATE	OF SAMPLE	LEVEL START (FT)	LEVEL END (FT)	VOLUME REMOVED (mL)	SAMPLE METHOD	<b>ТЕМР</b> (°С)	EC	рН	<b>Turb.</b> NTU	SAMPLE APPEARANCE OR COMMENT
MW103	4-Mar-19	18:02	4-Mar-19	19:07	11.19	11.24	6500.0	Bladder	4.97	1424	7.13	4.69	clear
MW109	NA	NA	4-Mar-19	NA	NA	NA	NA	NA	NA	NA	NA	NA	Well Removed
MW110	5-Mar-19	11:04	5-Mar-19	12:39	9.87	9.87	9500.0	Bladder	6.68	1064	7.11	4.49	clear
MW111	5-Mar-19	16:46	5-Mar-19	17:36	8.08	8.20	5000.0	Bladder	5.40	3485	6.99	2.18	clear
MW119	4-Mar-19	12:20	4-Mar-19	14:55	9.58	9.64	15500.0	Bladder	2.40	1210	7.07	4.72	clear
MW117	4-Mar-19	17:23	5-Mar-19	8:15	7.53	11.34	3000.0	Bladder	1.97	8576	6.27	94.40	clear
MW118	5-Mar-19	8:53	5-Mar-19	9:58	8.88	8.90	6500.0	Bladder	4.35	1580	7.20	4.90	clear
MW120	4-Mar-19	16:00	5-Mar-19	7:05	15.97	top of pump	5000.0	Bladder	5.27	3949	6.62	19.00	slightly turbid
MW116	5-Mar-19	14:15	5-Mar-19	15:55	15.08	15.11	10000.0	Bladder	7.55	3087	7.09	10.90	clear
				NR=	Not Recor	ded on Field	Sheet NA = No	ot Applicable					

Site: MDU Lev	vis and Clark			Technician: )avien Nieswacy									
Instrument (Circle One):	#1 650 M	MDS 08F100	)203	#2 65	0 MDS 04H14	1736		#3 556 MPS 12E102056					
Date: 4March	<u>[9] ті</u>	Pre me: () 7	Site Calibra	ation		mv Range +/-	1	Pc Time: 280	Dest Site Chec	k			
<b>pH</b> Buffer 7	15,18 6	Pre Cal	Post Cal	Post Cal Range 6.95-7.05	mv 39.1/	50 0 +/- 50		<b>pH</b> Buffer 7	Temp °C	Reading			
Buffer 10 Buffer 4 <b>Conductivity</b>	15.06 14.85 i	1,01	10.00 4.00	9.95-10.05 4.95-5.05	-218:3 138:17	-180 +/- 50 180 +/- 50 Check		Conductivity					
Buffer 1413 ORP	14,88	1429	1413	±10%	Buffer 5000			Buffer 5000	13,41	4992			
231 mV @ 25C	5,05 2	241,1	231,6	±10 mV									
	14.86	8,76	9,5.7	mg/L	ic Pressure (m								
Date: <u>SM</u> pH Buffer 7 Buffer 10 Buffer 4 Conductivity	Temp °C 2/ <sub>1</sub> /υ 1 Gισγ	ime: 06 Pre Cal 7,06 9,93, 3,98	23 Post Cal 7,00 7,98 4,00	Post Cal Range 6.95-7.05 9.95-10.05 4.95-5.05	mv 43,4 417,3 131,8	mv Range +/- 50 0 +/- 50 -180 +/- 50 180 +/- 50 Check		rime: <u>99</u> pH Buffer 7 Conductivity	Temp °C	Reading			
Buffer 1413 ORP	8.9-1	1393	1-113	±10%	Buffer 5000	Linti		Buffer 5000	1073	5023			
231 mV @ 25C	8:16 2 2248 [	8,98	231,7 8140	±10 mV Barometr mg/L	ic Pressure (n	nm Hg)							

## **MVTL Calibration Worksheet**



**Field Datasheet** 

**Groundwater Assessment** 

Company:	MDU Lewis and Clark
Event:	March 2018
Sample ID:	103
Sampling Personal:	Darren Alieswaag

Phone: (701) 258-9720

Weather Conditions:		Temp:	4	°F	Wind:(	N/EST	@ 🗖	30		Precip	: Suni	ny / Partly (		oudy
We	ell Info	rmation	L			Sampling Information								
Well Locked?	Yes	Ale I				Purg	ging Meth	nod:	Blad	der				
Well Labeled?	<i>KQ</i> s	No				Samp	ling Meth	nod:	Blad	der		Co	ontrol Settin	gs
Casing Straight?	Nes	No				Dedica	ated Equi	ip?:	Yes	₩ø		Purge:	3	sec.
Grout Seal Intact?	Yes	No	Not V	isible		Duplicat	e Sample	e?:	Yes	No		Recover:		sec.
Repairs Necessary:						Duplicate	e Sample	ID:		-	**	PSI:	~	
Casing Dia	ameter:		2"							,				
Water Level Before	Purge:		11.19	ft			Purge Date: 4 Max 4 Time Purging Be						1802	am/pm
			ι` ι			Well	Purged D	)ry?	Yes	No)	Time F	Purged Dry:	$\sim$	am/pm
						S	Sample Date: Marl9 Time of Samp				f Sampling:	1907	- am/pm	
Depth to Top of	Pump:	l	8.47	ft						·				
Water Level After S	ample:	1	1,24	ft		Bottle	1L Ra	aw	500mL	Nitric	500mL Nit	ric (filtered)	250 S	ulfuric
Measurement Me	ethod:	Electric V	Vater Level	Indicator		List:					4 - 1L Nitric			
			•	Field	Measure	ements								

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 consecutive)		(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	18077		2269	7,13	0.93	-249.3	92.0	11.14	100	500	Slightly turbid
2	1837	Ø169	21443	7.12	0123	- 306.0	14.0	11.23	100	7000	da—
3	1857	5,19	1429	7.13	0,24.	-318,8	5,07	11.28	100	2000	cu
4	1902	4.99	128	-7,13	Oizy.	37.0,5	4.91	11,24	100	500	da
5	19004	4.907		7,13	0,23	-3/6.3	4.69	11,24	100	500	ch
6							````	· · · ·			
7											
8							İ				
9											
10	( a									4	
Stabilized:	(res	No		•			Т	otal Volume	e Removed:	6500	mL
Comments											



# **Field Datasheet**

**Groundwater Assessment** 

Company:	MDU Lewis and Clark								
Event:	March 2018								
Sample ID: 109									
Sampling Personal: Darren	Nieswag,								

Weather Conditions:		Temp:	°F	Wind:		@		F	Precip:	Sunny / Partly Cloudy / Cloudy		
	Well Information Samp						ling Information					
Well Locked?	Yes	No			Purgi	ng Method:		Bladder				
Well Labeled?	Yes	No			Sampli	ng Method:		Bladder			Cont	trol Settings
Casing Straight?	Yes	No			Dedicat	ted Equip?:		Yes N	0		Purge:	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate	Sample?:		Yes N	0		Recover:	sec.
Repairs Necessary:					Duplicate	Sample ID:					PSI:	
Casing	Diameter:		2"						••••••	•		
Water Level Befo	ore Purge:			ft	Purge Date:		4	Marly		Time Purging Began:		am/pm
					Well P	urged Dry?		Yes N	0	Time P	urged Dry:	am/pm
					Sa	mple Date:				Time of	Sampling:	am/pm
Depth to Top	of Pump:			ft								
Water Level After Sample:				ft	Bottle	1L Raw		500mL Nitri	c t	500mL Nitr	ic (filtered)	250 Sulfuric
Measuremen	t Method:	Electric W	ater Level Indicator	r (	List:		4 - 1L Nitric					

## **Field Measurements**

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1											
2											
3				-							
4											
5											
6											
7											
8											
9											
10											
Stabilized:	Yes	No	•				Т	otal Volume	e Removed:		mL

Well is removed





Groundwater Assess

ft

ft

ft

Wind:

۴F

Not Visible

2"

87

9.87

**Electric Water Level Indicator** 

Well Locked?

Well Labeled?

Casing Straight?

Grout Seal Intact?

Repairs Necessary:

Weather Conditions:

Phone: (701) 258-9720

Temp:

(No)

No

No

No

Well Information

Yes des

Yes

Yes

Casing Diameter:

Water Level Before Purge:

Water Level After Sample:

Depth to Top of Pump:

Measurement Method:

heet		Company: Event:			MDU Lewis Marcl	s and C n 2018	lark	,,
ment		Sample ID		M	W10			
		Sampling F	Personal:	arren.	NEESU	Mag	;	
						$\leq$		
Wist	<u>e</u> 20		Precip	: Sun	ny /(Partly (	Cloudy	/ Clor	udy
		S	ampling I	nformatio				
Purgin	g Method:	Bla	dder		lia.	blad	de	ermo
Samplin	g Method:	Bla	dder		Co	ontrol S	etting	5
Dedicate	ed Equip?:	Yes	(No)		Purge:	3		sec.
Duplicate	Sample?:	Yes	×NO	]	Recover:	17		sec.
Duplicate S	Sample ID:		~	]	PSI:			
				_				
Pi	urge Date:	5 Mar	19	Time Purg	ing Began:	110	4	(am)pm
Well Pu	irged Dry?	Yes	No	Time F	Purged Dry:		<u>i</u>	am/pm
Sar	nple Date:	5 Narl	9	Time of	f Sampling:	123	59	am/prin
Bottle	1L Raw	500m	L Nitric	500mL Nit	ric (filtered)	25	50 Sul	furic

4 - 1L Nitric + Additional Constituents

**Field Measurements** 

List:

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1109	5,37	1766	7.17	6,22	-179.8	72,2	9.86	100	500	slightly tubid
2	1139		1065	T.12	6.23	-18-7,4	13,4	9,90	400	3000	Cler
3	1204	6.96	1016	7.12	7,00	-183,3	8.47	9.87	100	2500	dy
4	1209	6.84	1065	7.11	4,39	-175.6	5.62	9.87	(00	1500	cler
5	12-29	7,03	1065	111	4.32	-175,7	4.94	9.802	100	1280	a
6	1234	6.58	1065	7.11	4,30	-174,3	4,83	9.87	100	500	ch
7	1239	6.68	1064	-11	4.22	-173.6	4.49	9,87	100	500	d
8	1 -	0					.,,		L		
9											
10	$\frown$										
Stabilized:	(Yes/	No					Т	otal Volume	e Removed:	9500	mL

Comments: Used a lin blatter pump on well due to astruction.



**Field Datasheet** 

**Groundwater Assessment** 

2616 E.	Broadway	Ave,	Bismarck,	N
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Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	March 2018
Sample ID:	119
Sampling Personal: D	allen Niesmaaa

Weather Conditions:		Temp:	4	۴F	Wind:	West	<u>@ 30</u>	)	Preci	o: Sun	ny / Partly (	Cloudy HCI	oudy /
v	Vell Info	rmation	(			·	-	Sa	ampling	Informati	on		
Well Locked?	Yes	NO				Purgi	ng Method:	Bla	lder				
Well Labeled?	Yes	No				Sampli	ng Method:	Bla	lder		Co	ontrol Settin	igs
Casing Straight?	Aes	No				Dedicat	ed Equip?:	Yes	NO		Purge:	3	sec
Grout Seal Intact?	Yes	No	Not	Visible		Duplicate	Sample?:	Yes	NO		Recover:	217	sec
Repairs Necessary:						Duplicate	Sample ID:		_		PSI:		
Casing D	)iameter:		2"										
Water Level Befor	e Purge:		9,58		ft	F	ourge Date:	\$041	varia	Time Purg	ging Began:	1220	am/pn
						Well P	urged Dry?	Yes	(No)	Time I	Purged Dry:		am/pn
						Sa	mple Date:	Unar.	19	Time o	f Sampling:	1455	am/ph
Depth to Top	of Pump:	14	1,11		ft								
Water Level After	Sample:	9	+64		ft	Bottle	1L Raw	500m	L Nitric	500mL Nit	tric (filtered)	250 S	Sulfuric
Measurement	Method:	Electric	Water Lev	el Indicato	r	List:				4 - 1L Nitrio	2		

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 conse	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1225	3,55	11677	691	2.017	-129.3	225	9164	100	500	Trus in
2	1295	3.56	1181	Q7.04	1.00	-167.6	170	9,62	100	3000	Stightly The bill
3	1325	202	1202	7.05	1.69	-162, 9	26.2	9.68	100	3000-	Class
4	1355	2.18	1202	7.05	1,73	-1477	9,72	9.65	/00	3000	clem
5	1425	2.71	1203	7.05	1.89	-13/12	8:91	9,67	100	3000	ch
6	1445	2.60	1204	7.06	1.62	-120,9	5.19	9.68	66 /	2000	ch
7	1450	2-11	1205	7.07	1.11	-113.3	4.98	9.68	100	500	ch
8	1455	2,40	1210	7.07	1.76	-117.3	4,72	9,65	100	500	in
9	, ,								-		
10	$\sim$										
Stabilized:	Yes	No					Т	otal Volum	e Removed:	15,500	mL

Comments:

ررور /olume Removeu.



**Field Datasheet** 

**Groundwater Assessment** 

2616 E.	Broadway	Ave,	Bismarck,	NC
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Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	March 2018
Sample ID:	MWILL
Sampling Personal:	Darren Niesmans
<u> </u>	

Weather Conditions:		Temp:	16	°F	Wind:	West	@15		Precip	: Sum	iy / Partly Cl	oudy / Clo	udy
,	Well Info	rmation	ιp			2	-	Sa	mpling	Informatio	on		
Well Locked?	Yes	No				Purgir	ng Method:	Blac	der				
Well Labeled?	Nes	No				Samplir	ng Method:	Blac	der		Con	trol Setting	S
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No		Purge:	3	sec
Grout Seal Intact?	Yes	No	Not V	isible		Duplicate	Sample?:	Yes	No		Recover:	27	sec
Repairs Necessary:	(	<del></del>				Duplicate \$	Sample ID:	Dul	1		PSI:		
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	6	6,08	ft		P	urge Date:	5Mar	19	Time Purg	ing Began:	646	am/pr
		0				Well Pu	urged Dry?	Yes	(No	Time F	ourged Dry:		am/pŋ
					]	Sa	mple Date:	5 Mari	9	Time of	f Sampling:	-36	am/pr
Depth to Top	of Pump:	<u> </u>	4,75	ft	]						l		
Water Level Afte	er Sample:	8	120	ft		Bottle	1L Raw	500mL	Nitric	500mL Nit	ric (filtered)	250 Su	lfuric
Measuremen	t Method:	Electric	Water Level	Indicator	1	List:		4	- 1L Nitric	+ Additional	Constituents		
				Field	Measure								
Stabilization	Temp	Snec		DO	ORP	Turbidity	Water	Pumping	ml		Description:		

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 conse	ecutive)	(°C)	Cond.	рΗ	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	_ ±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1651	5.88	3951	6,79	1,65	-226.7	25.6	8,19	500100	100	d
2	1706	513	13576	6.95	2,06	159,4	llet	8:20	100	1500	ch
3	1716	5153	3465	6.99	2,86	-1574	4,13	8,20	100	1000	Clea
4	1721	5,51	3483	6,91	2,71	-151.4	3.10	8,20	100	SOV	ch
5	1726	5144	3483	\$7.00	2:72	750, 7	235	8,20	100	- COJ	cr
6	1721	Siti	3484	6.99	2170	-14810	2,27	8,20	100	τoo	A
7	172%	5.40	3485	6.99	2.68	-147.7	2.18	8,20	780	500	$\mathcal{C}$
8			5 10 5	0							
9											
10	$\bigcirc$										
Stabilized:	Yes	No					Т	otal Volume	e Removed:	5000	mL





**Groundwater Assessment** 

2616	F	Broadway	v Ave	Bismarck,	ND
2010	L.	Digauwa	y Ave,	DisinalCK,	ND

Phone: (701) 258-9720

Event:	March 2018
Sample ID:	117
Sampling Personal: Da	Min Nieswaas
Sampling Personal:	MA NICSWAA

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Weather Conditions:		Temp:	°F	-	Wind:	·.	@		Preci	o: 🗡	Sunny/ Partly (	Cloudy / Clo	udy
	Well Info	rmation						Sa	mpling	Inform	nation		
Well Locked?	Yes	No				Purgi	ng Method:	Blac	lder				
Well Labeled?	Æs	No	-			Sampli	ng Method:	Blac	lder		Co	ontrol Setting	js
Casing Straight?	Xes	No		0		Dedicat	ted Equip?:	Yes	No		Purge:	3	sec.
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate	Sample?:	Yes	No		Recover:	27	sec.
Repairs Necessary:						Duplicate	Sample ID:	<i>c</i>			PSI:	<b>`</b>	
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	~	7.53	ft		F	Purge Date: 4	Mar 1	1		Purging Began:		am/pm
			******** <u>*</u> *******			Well P	urged Dry?	Yes	No	Т	ime Purged Dry:	0815	am/pm
						Sa	mple Date: 5	Mar 19		Ti	me of Sampling:		am/pm
Depth to Top	of Pump:	C	1.86	ft									
Water Level Afte	r Sample:		1,34	ft		Bottle	1L Raw	500ml	Nitric	500m	L Nitric (filtered)	250 Su	lfuric
Measurement	Method:	Electric	Water Level In	dicator		List:			2	1L	Nitric And	Front	

### Field Measurements

Stabil	ization	Temp	Spec.	****	DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1728	1.27	8276	6.87	2,42	-134.0	673	6,36	100	500	Tword .
2	1748	1,24	8322	6.86	4.22	-137.1	136	100	100	2000	stightly twid
3	1		0								
4	08/0	5 MOR19	(urger	5 mir.	toclea	- lic		9.44			
5	0815			6,99	6.27	-206,4	94.4	For	100	062	ST
6				5				. /			
7	0815		Coa	Hed to	Wie			100 9.86			
8	1.			•	/ /0			1			
9											
10											
Stabilized:	Yes	Ng				~	Т	otal Volume	e Removed:	3006	mL
Commonte	<u></u>									-	



**Field Datasheet** 

Groundwater Assessment

Company:	1	MDU Lewis and Clark	
Event:		March 2018	
Sample ID:	118	Month	
Sampling Personal:	Darron	Nieswara	

•

Phone: (701) 258-9720

			_			-					1
Weather Conditions:		Temp	: <i>T</i> <b>F</b>	ر:Wind	su	@/?	Pr	ecip: Sun	ny / Partly Cl	oudy / ¢lo	oudy)
	Well Info	rmation	, 1			/	Sampli	ng Informati	on	C	
Well Locked?	Yes	No			Purg	ing Method:	Bladder				
Well Labeled?	Yes	No			Sampl	ing Method:	Bladder		Con	trol Setting	gs
Casing Straight?	Yes	No			Dedica	ated Equip?:	Yes No		Purge:	3	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate	e Sample?:	-Yes No	~	Recover: 7	27	sec.
Repairs Necessary:	1	~			Duplicate	Sample ID:			PSI:		
Casing	Diameter:		2"								
Water Level Bef	ore Purge:	8	ft ft			Purge Date:	5Mar 19	Time Purg	ging Began:	1853	@n/pm
			~~~		Well F	Purged Dry?	Yes No	) Time I	Purged Dry:		am/pm
					Sa	ample Date:	5mar 19	Time c	f Sampling:	795X	(am/pm
Depth to Top	o of Pump:	(	1,74 ft								
Water Level After	er Sample:	8	7,90 ft		Bottle	1L Raw	500mL Nitric	500mL Ni	ric (filtered)	250 Si	ulfuric
Measuremer	t Method:	Electric	Water Level Indicator		List:		4 - 1L N	itric + Additiona	Constituents		

**Field Measurements** 

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	0858	3,76	1559	7.2.1	3.61	-228,1	204	8.91	100	500	Turkid
2	0928	3160	1574	5.19	2.61	-229.0	9022	8,89	100	3000	cla
3	0942	4,28	1578	7,19	2.48	-127.3	5,24	8.92	100	1500	den
4	0948	4,09	1579	7.19	2.47	-2280	5.20	8,91	100	500	ch
5	0953	4,22	1580	7120	2,63	-2151		Bigi	100	500	de.
6	09-8	4135	1580	7,20	2161	-224,9	4.90	8,91	100	500	ch
7	1.5 0										
8											
9											
10	$\bigcirc$										
Stabilized:	(Yes)	No					Т	otal Volume	e Removed:	6500	mL





**Groundwater Assessment** 

Company:	MDU Lewis and Clark
Event:	March 2018
Sample ID:	120
Sampling Personal:	arren Nisswaag
r	

\_\_\_\_

Phone: (701) 258-9720

Weather Conditions:		Temp	∵ TZ °F	Wind:	West	@ 177		Precip	: <i>(</i> Sur	ny/Partly	Cloudy / Clo	udy
	Well Info	ormation	י ו		-		Sa	ampling	Informat	ion		
Well Locked?	Yes	No			Purgi	ng Method:	Blac	lder				
Well Labeled?	Yes	No			Sampli	ing Method:	Blac	lder		C	ontrol Setting	IS
Casing Straight?	Yes	No	a la constante de la constante		Dedica	ted Equip?:	(Yes	No Tu	bing	Purge:	3	sec
Grout Seal Intact?	Yes	No	(Not Visible		Duplicate	e Sample?:	Yes	NO		Recover:	27	sec
Repairs Necessary:		$\sim$			Duplicate	Sample ID:	<	`		PSI:	>	
Casing	Diameter:		2"									
Water Level Bef	ore Purge:		15.97	ft	F	Purge Date:	4 Mari	19	Time Pur	ging Began:	1600	am/øjn
					Well P	Purged Dry?	- Yes	-Alo-	Time	Purged Dry:	1645	-am/pm
					Sa	ample Dates	PMar 19		Time	of Sampling:	Ĵ	am/pm
Depth to Top	of Pump:		16.81	ft								
Water Level After	er Sample:		TOD OF PUMO	ft	Bottle	1L Raw	500ml	. Nitric	500mL N	itric (filtered)	250 Su	lfuric
Measuremen	t Method:	Electric	Water Level Indicato		List:			YE	🛹 - 1L Nitri	c		

## Field Measurements

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	165	1.03	3641	6,59	1.30	-212,1	14,5	16.16	100	500	Clar
2	120	3.63	3568	613	2.91	-264.5	6.62	16.810	100	1500	ch
3	1635	1.20	3676	6,60	1,19	-25%7	4.68	16.81	100	1500	(In
4	1640	1:23	3636	6.59	1,20.	-247.7	4.44	16.81	601	500	di
5	1645	1.24	35-15		1.2.8	-2514	50,1	16.81	100	500	ch
6	l'	(1-1		0101	1-1-0					<b>,</b>	, , , , , , , , , , , , , , , , , , ,
7	047-00	Priva	a liz	e for	5 mi	h.		1603			
8	0705	5,207	3949	6162	3,12	-255/7	+190		100	500	che Slightly the
9											
10		$\square$									
tabilized	Yes	No					T	otal Volume	e Removed:	5000	mL

## MINNESOTA VALLEY TESTING LABORATORIES, INC.

MVTL

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### CASE NARRATIVE

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 1 201982-0373 Montana Dakota Utilities MDU Lewis & Clark March 2019 19-W307 through 19-W315

MDU Sample Identification	MVTL Laboratory #
Dup 1	19-W307
Field Blank (FB)	19-W308
MW103	19-W309
MW109	No sample
MW110	19-W310
MW119	19-W311
MW111	19-W312
MW117	19-W313
MW118	19-W314
MW120	19-W315

### I. RECEIPT

- All samples were received at the laboratory on 6 Mar 2019 at 1327.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- · Samples were received on ice and evidence of cooling had begun.
  - o Temperature of samples upon receipt was 1.1°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

### II. HOLDING TIMES

 All holding times were met for both preparation and analysis unless noted on the individual analytical laboratory report.

### III. METHODS

Approved methodology was followed for all sample analyses.

### IV. ANALYSIS

 All acceptance criteria were met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted on the individual analytical laboratory report.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

DATE: ZG MAr 19

Claudette Carroll - MVTL Bismarck Laboratory Manager

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.

## MINNESOTA VALLEY TESTING LABORATORIES, INC.

Page: 1 of 4

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## **Quality Control Report**

Lab IDs: 19-W307 to 19-W3	15	Pr	oject: MI	DU Lewis	s & Clark	۲	Work Oı	<b>der:</b> 201	982-0373	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0200	97	80-120	0.100	19W315q	< 0.001	0.1010	101	75-125	0.1010	0.1010	101	0.0	20	-	-	< 0.001
Antimony - Total mg/l	0.1000	90	80-120	0.400 0.400 0.400	19W297q 19W308q 19-W326	< 0.001 < 0.001 < 0.004	0.4312 0.3956 0.3856		75-125 75-125 75-125	0.4312 0.3956 0.3856	0.4044 0.3902 0.3788	101 98 95	6.4 1.4 1.8	20 20 20	-		< 0.001
Arsenic - Dissolved mg/l	0.0200	97	80-120	0.100	19W315q	< 0.002	0.1069	107	75-125	0.1069	0.1008	101	5.9	20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	83	80-120	0.400 0.400	19W297q 19W308q	< 0.002 < 0.002	0.4206 0.3966		75-125 75-125	0.4206 0.3966	0.4122 0.3936	103 98	2.0 0.8	20 20	-	-	< 0.002
Barium - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	0.0235	0.1174	94	75-125	0.1174	0.1142	91	2.8	20	-	-	< 0.002
Barium - Total mg/l	0.1000	96	80-120	0.400 0.400	19W297q 19W308q	0.1052 < 0.002	0.5150 0.3860	102 96	75-125 75-125	0.5150 0.3860	0.4892 0.3774	96 94	5.1 2.3	20 20	-		< 0.002
Beryllium - Dissolved mg/l	0.0200	94	80-120	0.100	19W315q	< 0.0005	0.1140	114	75-125	0.1140	0.1089	109	4.6	20		-	< 0.0005
Beryllium - Total mg/l	0.1000	92	80-120	0.400 0.400	19W297q 19W308q	< 0.0005 < 0.0005	0.4420 0.4266	110 107	75-125 75-125	0.4420 0.4266	0.4186 0.4100	105 102	5.4 4.0	20 20	-		< 0.0005
Boron - Dissolved mg/l	0.40 0.40	102 102	80-120 80-120	0.400 0.400	19-W285 19-W314	0.38 1.48	0.80 1.80	105 80	75-125 75-125	0.80 1.80	0.75 1.83	92 88	6.5 1.7	20 20	-		< 0.1 < 0.1
Boron - Total mg/l	0.40 0.40	102 102	80-120 80-120	0.400 0.400	19-D496 19-W308	0.37 < 0.1	0.74 0.42	92 105	75-125 75-125	0.74 0.42	0.75 0.42	95 105	1.3 0.0	20 20	-		< 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.0200	97	80-120	0.100	19W315q	< 0.0005	0.0944	94	75-125	0.0944	0.0948	95	0.4	20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000	96	80-120	0.400 0.400	19W297q 19W308q	< 0.0005 < 0.0005		104 103	75-125 75-125	0.4144 0.4102	0.4068 0.4070	102 102	1.9 0.8	20 20	-	-	< 0.0005
Calcium - Dissolved mg/l	20.0	113	80-120	100	19W310q	89.4	180	91	75-125	180	181	92	0.6	20	-	-	< 1
Calcium - Total mg/l	20.0 20.0	114 114	80-120 80-120	100 100 100	19M385q 19W296q 19W310q	58.8 < 1 88.7	156 94.2 180	97 94 91	75-125 75-125 75-125	94.2	156 94.4 180	97 94 91	0.0 0.2 0.0	20 20 20	-	-	<1 <1 <1 <1 <1

94

80-120

0.100

19W315q

0.0035

0.0200

Molybdenum - Dissolved mg/l

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### **Quality Control Report** Lab IDs: 19-W307 to 19-W315 Project: MDU Lewis & Clark Work Order: 201982-0373 Matrix Matrix MSD/ Matrix MSD/ LCS LCS LCS Matrix Matrix Matrix Spike Spike Spike Dup MSD/ MSD MSD Dup Known Known Spike Rec % Rec Spike Spike Orig Spike Rec % Rec Orig Dup Rec Dup **RPD** Rec % Rec Method Analyte % Limits ID Amt Amt Result Result % Result Result % RPD Limit (<) (%) Limits Limits Blank Chloride mg/l 30.0 98 80-120 30.0 19-D513 50.9 80.6 99 80-120 80.6 81.8 103 1.5 20 < 1 97 30.0 80-120 30.0 19-W343 97 5.8 34.9 80-120 34.9 99 35.6 2.0 20 \_ -< 1 Chromium - Dissolved mg/l 95 0.0200 80-120 0.100 19W315q < 0.002 0.1045 104 75-125 0.1045 0.1006 101 3.8 20 < 0.002\_ .... Chromium - Total mg/l 0.1000 86 80-120 0.400 19W297a < 0.002 0.4134 103 75-125 0.4134 0.4006 100 3.1 20 < 0.002--0.400 19W308q < 0.002 0.3998 100 75-125 0.3998 0.3888 97 2.8 20 --Cobalt - Dissolved mg/l 0.0200 95 80-120 0.100 19W315q < 0.002 0.1039 104 75-125 0.1039 0.1003 100 3.5 20 < 0.002--Cobalt - Total mg/1 86 0.1000 80-120 0.400 19W297q < 0.002 0.4126 103 75-125 0.4126 0.3944 99 4.5 < 0.002 20 --0.400 19W308q < 0.002 0.4020 100 75-125 0.4020 0.3900 98 3.0 20 --Fluoride mg/l 0.50 104 90-110 0.500 19-W308 < 0.1 0.54 108 80-120 0.54 0.54 108 0.0 -20 < 0.1\_ < 0.1 Lead - Dissolved mg/l 0.0200 95 80-120 0.100 19W315q < 0.00050.0878 88 75-125 0.0878 0.0862 86 < 0.0005 1.8 20 \_ -Lead - Total mg/l 0.1000 94 80-120 0.400 19W297q < 0.00050.4160 104 75-125 0.4160 0.3916 98 6.0 20 < 0.0005 --0.400 19W308a < 0.00050.3946 99 75-125 0.3946 0.3976 99 0.8 20 -\_ Lithium - Dissolved mg/l 0.400 105 80-120 0.400 19-W310 0.034 90 0.395 75-125 0.395 0.401 92 1.5 20 -< 0.02-Lithium - Total mg/l 0.400 105 80-120 0.400 19-W308 < 0.020.407 102 75-125 0.407 0.410 102 0.720 < 0.02\_ \_ < 0.02\_ -Magnesium - Dissolved mg/l 20.0 108 80-120 100 19W310q 53.4 150 97 75-125 150 98 151 0.720 < 1 --Magnesium - Total mg/l 20.0 108 80-120 100 19M385a < 1 99.3 99 75-125 99.3 99.5 100 0.2 20 -< 1 -20.0 108 80-120 100 19W296q < 1 90.8 91 75-125 90.8 91.3 91 0.5 20 < 1 --100 19W310q 53.8 149 95 75-125 149 152 98 2.0 20 < 1 \_ -< 1--Mercury - Dissolved mg/l 0.0020 95 85-115 0.002 19-W315 < 0.00020.0016 80 70-130 0.0016 0.0016 80 0.0 20 -< 0.0002 -Mercury - Total mg/l 0.0020 100 85-115 0.002 A8962 < 0.0002 0.0019 95 70-130 0.0019 0.0019 0.0 20 95 < 0.0002--0.0020 95 85-115 0.002 19-W312 < 0.00020.0016 80 70-130 0.0016 0.0015 75 6.5 20 < 0.0002 \_ -0.002 19-W315 < 0.00020.0016 80 70-130 0.0016 0.0016 80 0.0 20 --

98

75-125

0.1018

0.1018

99

0.4

20

-

< 0.002

0.1022

### Page: 2 of 4

## MINNESOTA VALLEY TESTING LABORATORIES, INC.

Page: 3 of 4

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MEMBER ACIL

## **Quality Control Report**

Lab IDs: 19-W307 to 19-W3	315	Pr	oject: MI	DU Lewis	s & Clark	•	Work Or	<b>der:</b> 201	982-0373	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Molybdenum - Total mg/l	0.1000	95	80-120	0.400 0.400	19W297q 19W308q	< 0.002 < 0.002	0.4006 0.3884	100 97	. 75-125 75-125	0.4006 0.3884	0.3920 0.3822	98 96	2.2 1.6	20 20	-	-	< 0.002
Nitrate-Nitrite as N mg/l	0.50 0.50	108 106	90-110 90-110	1.00 1.00	19-W296 19-W329	< 0.1 < 0.1	1.10 1.02	110 102	90-110 90-110	1.10 1.02	1.09 1.02	109 102	0.9	20 20	-	-	< 0.1 < 0.1
pH units	-	-			-	-	-		-	7.8 7.6	7.7	-	1.3 1.3	20 20	-	-	-
Potassium - Dissolved mg/l	10.0	105	80-120	20.0	19W310q	6.2	25.7	98	75-125	25.7	26.0	99	1.2	20	-	_	< 1
Potassium - Total mg/l	10.0 10.0	104 104	80-120 80-120	20.0 20.0 20.0	19M385q 19W296q 19W310q	7.4 <1 6.2	27.4 18.4 25.4	100 92 96	75-125 75-125 75-125	27.4 18.4 25.4	27.0 18.6 27.3	98 93 106	1.5 1.1 7.2	20 20 20			<1 <1 <1 <1
Selenium - Dissolved mg/l	0.0200	94	80-120	0.100	19W315q	< 0.005	0.1076	108	75-125	0.1076	0.0998	100	7.5	20	-	-	< 0.005
Selenium - Total mg/l	0.1000	90	80-120	0.400 0.400	19W297q 19W308q	0.0107 < 0.005	0.4398 0.3942	107 99	75-125 75-125	0.4398 0.3942	0.4406 0.3984	107 100	0.2	20 20	-	-	< 0.005
Sodium - Dissolved mg/l	20.0	108	80-120	100	19W310q	80.2	175	95	75-125	175	177	97	1.1	20	-	-	< 1
Sodium - Total mg/l	20.0 20.0	110 106	80-120 80-120	100 100 100	19M385q 19W296q 19W310q	220 116 81.1	300 201 174	80 85 93	75-125 75-125 75-125	300 201 174	300 201 176	80 85 95	0.0 0.0 1.1	20 20 20	- - -	- - -	<1 <1 <1 <1
Sulfate mg/l	100 100	103 100	80-120 80-120	500 500	19 <b>-</b> D504 19-W314	368 512	823 949	91 87	80-120 80-120	823 949	806 959	88 89	2.1 1.0	20 20	-	-	< 5 < 5
Thallium - Dissolved mg/l	0.0200	95	80-120	0.100	19W315q	< 0.0005	0.0900	90	75-125	0.0900	0.0875	88	2.8	20	-	-	< 0.0005
Thallium - Total mg/l	0.1000	95	80-120	0.400 0.400	19W297q 19W308q	< 0.0005 < 0.0005	0.4158 0.3962	104 99	75-125 75-125	0.4158 0.3962	0.3946 0.4010	99 100	5.2 1.2	20 20	-	-	< 0.0005
Total Alkalinity mg/l CaCO3	410	98	90-110	410 410	19-D504 19-W307	550 437	947 821	97 94	80-120 80-120	947 821	951 828	98 95	0.4 0.8	20 20	97	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-	-	-	-	_	35300	35500	-	0.6	20	-	-	< 10

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## **Quality Control Report**

Lab IDs: 19-W307 to 19-W3	b IDs: 19-W307 to 19-W315 Project: MDU Lewis						Work O	der: 201	982-0373	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result		a state of a distance of the second state of the	Matrix Spike % Rec Limits	Dup Orig	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Rec	SHITE CONTRACTOR STATE	Method Blank
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	90 81	90 67	-	0.0 18.9	20 20	-	-	< 2

Approved by: \_\_\_\_\_\_ 26 Mar 19

### Page: 4 of 4

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W307 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion	5 F			EPA 200.2	6 Mar 19	SVS
pH	* 7.6	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Cotal Suspended Solids	5	mg/l	2	13765-85	6 Mar 19 15:41	SVS
otal Alkalinity	437	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
luoride	2.01	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
ulfate	1790	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
hloride	37.7	mg/1	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
itrate-Nitrite as N	12.4	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
ercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
ercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
otal Dissolved Solids	3250	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
alcium - Total	164	mg/1	1.0	6010D	8 Mar 19 10:53	SZ
lagnesium - Total	487	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
odium - Total	128	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
otassium - Total	9.2	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
ithium - Total	0.173	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
oron - Total	6.90	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
alcium - Dissolved	157	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
agnesium - Dissolved	474	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
odium - Dissolved	121	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
otassium - Dissolved	9.1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
ithium - Dissolved	0.162	mg/1	0.020	6010D	12 Mar 19 9:45	SZ
oron - Dissolved	6.60	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
ntimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
rsenic - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
arium - Total	0.0202	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
eryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
admium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
hromium - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
obalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
ead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
olybdenum - Total	0.0556	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
elenium - Total	0.0760	mg/1	0.0050	6020B	8 Mar 19 13:19	CC
'hallium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
ntimony - Dissolved	< 0.001	mg/1	0.0010	6020B	8 Mar 19 16:20	CC
rsenic - Dissolved	< 0.002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC

### RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016

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Samantha Davies

5181 Southgate Dr

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: March 2019

Billings MT 59102

Montana Dakota Utilities

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Page:

Report Date: 13 Mar 19 Lab Number: 19-W307 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

2 of 2

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0178	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0522	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0748	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16;20	CC

\* Holding time exceeded

Approved by:

CC 26 Mar 19 Claudette K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W308 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

Metal Digestion OH Cotal Suspended Solids Cotal Alkalinity Fluoride Sulfate	* 6.4 < 2 < 20 < 0.1 < 5	units mg/l mg/l CaCO3	N/A 2	EPA 200.2 SM4500 H+ B	6 Mar 19 6 Mar 19 17:00	SVS
oH Cotal Suspended Solids Cotal Alkalinity Fluoride Sulfate	< 2 < 20 < 0.1	mg/l mg/l CaCO3		SM4500 H+ B	6 Mar 19 17.00	
Cotal Suspended Solids Cotal Alkalinity Fluoride Sulfate	< 20 < 0.1	mg/l CaCO3	2			SVS
otal Alkalinity Yuoride Sulfate	< 20 < 0.1	mg/l CaCO3		13765-85	6 Mar 19 15:41	SVS
'luoride Sulfate	< 0.1		20	SM2320-B	6 Mar 19 17:00	SVS
Sulfate		mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
		mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
hloride	< 1	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
itrate-Nitrite as N	< 0.1	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
lercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0,0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
otal Dissolved Solids	< 10	mg/1	10	11750-85	8 Mar 19 8:10	SVS
alcium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Lagnesium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
Sodium - Total	< 1	mg/1	1.0	6010D	8 Mar 19 10:53	SZ
Potassium - Total	< 1	mg/l	1.0	6010D	8 Mar 19 10:53	SZ
ithium - Total	< 0.02	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
loron - Total	< 0.1	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lagnesium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
odium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
ithium - Dissolved	< 0.02	mg/1	0.020	6010D	12 Mar 19 9:45	SZ
Soron - Dissolved	< 0.1	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
antimony - Total	< 0.001	mg/1	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
eryllium - Total	< 0.0002	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
admium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
obalt - Total	< 0.002	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
ead - Total	< 0.0005	mg/1	0,0020	6020B	8 Mar 19 13:19	CC
olybdenum - Total	< 0.002	mg/1	0.0050	6020B	8 Mar 19 13:19	CC
Selenium - Total			0.0005	6020B	8 Mar 19 13:19	CC
hallium - Total	< 0.0005	mg/1	0.0010	6020B	8 Mar 19 16:20	CC
Antimony - Dissolved Arsenic - Dissolved	< 0.001 < 0.002	mg/l mg/l	0.0010	6020B	8 Mar 19 16:20	CC

RL = Me	thod Rep	orting	Limit
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# = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

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Samantha Davies

5181 Southgate Dr

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

Event and Year: March 2019

Billings MT 59102

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Report Date: 13 Mar 19 Lab Number: 19-W308 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
< 0.002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC
< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
< 0,002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC
< 0.005	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
	Result < 0.002 < 0.0005 < 0.0002 < 0.002 < 0.0002 < 0.0005 < 0.002 < 0.002 < 0.002	<pre>&lt; 0.002 mg/l &lt; 0.0005 mg/l &lt; 0.0005 mg/l &lt; 0.002 mg/l &lt; 0.002 mg/l &lt; 0.002 mg/l &lt; 0.0005 mg/l &lt; 0.0005 mg/l &lt; 0.005 mg/l &lt; 0.005 mg/l</pre>	Result         RL           < 0.002	Result         RL         Reference           < 0.002	Result         RL         Reference         Analyzed           < 0,002

\* Holding time exceeded

Approved by:

6 26 Mar 19 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

MVTL woman is the analysis the analysis intervention on the sample protected for testing. It is not possible for MVTL to guarantee that a test result abrained on a particular sample will be the same on any other sample unless in sampling or a man or angle of the same or any other sample unless in sampling or a man or angle of the same or any other sample unless in sampling or a man or angle of the same or any other sample unless in sampling or a man or angle of the same or any other sample unless in sampling or a man or angle of the same or any other sample unless in sampling or angle of the same or any other sample unless in sampling or angle of the same or any other sample unless in sampling or angle of the same or any other sample unless in sampling or angle of the same or any other sample unless in sample unless of a man or angle of the same or any other sample unless in sample unless of a man or angle of the same or any other sample unless in sample unless of the same or angle of the same or any other sample unless in sample unless of a man or angle of the same or any other sample unless of a man or angle of the same or

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W309 Work Order #: 82-0373 Account #: 002800 Date Sampled: 4 Mar 19 19:07 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.6	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
otal Suspended Solids	5	mg/l	2	13765-85	6 Mar 19 15:41	SVS
H - Field	7.13	units	NA	SM 4500 H+ B	4 Mar 19 19:07	DJN
emperature - Field	4.97	Degrees C	NA	SM 2550B	4 Mar 19 19:07	DJN
otal Alkalinity	340	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
onductivity - Field	1424	umhos/cm	1	EPA 120.1	4 Mar 19 19:07	DJN
luoride	0.72	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
ulfate	433	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
hloride	23.0	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
itrate-Nitrite as N	5.42	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
ercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
lercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
'otal Dissolved Solids	994	mg/l	10	I1750-85	B Mar 19 8:10	SVS
alcium - Total	94.3	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
agnesium - Total	121	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
odium - Total	90.3	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
otassium - Total	8.0	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
ithium - Total	0.056	mg/1	0.020	6010D	12 Mar 19 8:45	SZ
oron - Total	1.24	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
alcium - Dissolved	91.5	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
agnesium - Dissolved	116	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
odium - Dissolved	87.7	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
otassium - Dissolved	7.8	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
ithium - Dissolved	0.053	mg/1	0.020	6010D	12 Mar 19 9:45	SZ
oron - Dissolved	1.16	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
ntimony - Total	0.0047	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
rsenic - Total	0.0030	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
arium - Total	0.0279	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
eryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
admium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
hromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
obalt - Total	0.0027	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
ead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
olybdenum - Total	0.0234	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Gelenium - Total	0.0450	mg/l	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: March 2019

2 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W309 Work Order #: 82-0373 Account #: 002800 Date Sampled: 4 Mar 19 19:07 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	0.0036	mg/1	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	0.0025	mg/1	0,0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0212	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0,0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0197	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0464	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

24 MAR 19 Claudite K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

MVTE paramises the assumes of the analysis there on the sample submitted for testing. It is not possible for MVTE or guarance that a test evoil obtained on a particular sample will be the same on any other sample under all conditions of sample submitted for testing. It is not possible for MVTE or guarance that a test evoil obtained on a particular sample will be the same on any other sample under all conditions of sample sample and submitted for testing. It is not possible for the public and outselves, all reports are submitted as the confidential property of elients, and submitted for testing. publication of a press of a statement of the statement operating one reports is reserved pending our softlen approval.

MVT

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W310 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 12:39 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
oH	* 7.7	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	2	mg/l	2	13765-85	6 Mar 19 15:41	SVS
oH - Field	7.11	units	NA	SM 4500 H+ B	5 Mar 19 12:39	DJN
Cemperature - Field	6.68	Degrees C	NA	SM 2550B	5 Mar 19 12:39	DJN
Fotal Alkalinity	348	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	1064	umhos/cm	1	EPA 120.1	5 Mar 19 12:39	DJN
Fluoride	0.46	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	175	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
hloride	22.4	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	5.40	mg/l	0.10	EPA 353.2	7 Mar 19 10:58	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245,1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	655	mg/1	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	88.7	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Agnesium - Total	53.8	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	81.1	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	6.2	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.037	mg/l	0.020	601.0D	12 Mar 19 8:45	SZ
Boron - Total	0.20	mg/1	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	89.4	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
Agnesium - Dissolved	53.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	80.2	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	6.2	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Jithium - Dissolved	0.034	mg/1	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	0.20	mg/1	0.10	6010D	12 Mar 19 12:27	SZ
antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0278	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
ead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Alybdenum - Total	0.0032	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	< 0.005	mg/l	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: March 2019

2 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W310 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 12:39 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0267	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0032	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

CC 26 Mar 19 Claudette K Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

VVTE plottents (the second state of the tribuil) to be second and construction of the tribuility of texture 1 is not possible for MV11, to guarantee that a test rooth ablained on a particular sample will be the same many other sample unless and construction and ourselves, all reports are submitted as the confidential property of clients, and authorization has proved and ourselves, all reports are submitted as the confidential property of clients, and authorization has proved and ourselves, all reports are submitted as the confidential property of clients, and authorization has proved and ourselves.

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

## Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W311 Work Order #: 82-0373 Account #: 002800 Date Sampled: 4 Mar 19 14:55 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	As Received Result		Method Reference	Date Analyzed	Analys
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.7	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	6	mg/l	2	13765-85	6 Mar 19 15:41	SVS
oH - Field	7.07	units	NA	SM 4500 H+ B	4 Mar 19 14:55	DJN
Temperature - Field	2.40	Degrees C	NA	SM 2550B	4 Mar 19 14:55	DJN
Fotal Alkalinity	394	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	1210	umhos/cm	1	EPA 120.1	4 Mar 19 14:55	DJN
luoride	0.42	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	191	mg/l	5.00	ASTM D516-07	11 Mar 19 11:19	EV
Thloride	25.3	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	9.95	mg/1	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	778	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	99.5	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	61.8	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	90.5	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	7.3	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.037	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	0.22	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	103	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	63.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	95.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	7.6	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.038	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	0.23	mg/l	0.10	6010D	12 Mar 19 12:27	SZ
Antimony - Total	< 0.001	mg/1	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0338	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0,002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0,0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0033	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	< 0,005	mg/l	0,0050	6020B	8 Mar 19 13:19	CC

RL =	Method	Reporting	Limit
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# = Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016

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Report Date: 13 Mar 19 Lab Number: 19-W311 Work Order #: 82-0373 Account #: 002800 Date Sampled: 4 Mar 19 14:55 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

Method Date As Received Method Analyst Reference Analyzed RL Result 6020B 8 Mar 19 13:19 CC 0.0005 0.0005 Thallium - Total mg/1< Antimony - Dissolved Arsenic - Dissolved 0.0010 6020B 8 Mar 19 16:20 CC < 0.001 mg/l 8 Mar 19 16:20 CC mg/l 0.0020 6020B < 0.002 6020B 8 Mar 19 16:20 CC Barium - Dissolved 0.0020 0.0305 mg/l CC 8 Mar 19 16:20 < 0,0005 mg/l 0.0005 6020B Beryllium - Dissolved 8 Mar 19 16:20 CC 0.0005 6020B Cadmium - Dissolved < 0,0005 mg/1 Chromium - Dissolved < 0.002 mg/l 0.0020 6020B 8 Mar 19 16:20 CC 0.0020 6020B 8 Mar 19 16:20 CC Cobalt - Dissolved < 0.002 mg/l 8 Mar 19 16:20 CC 6020B Lead - Dissolved < 0.0005 mg/l 0.0005 8 Mar 19 16:20 CC Molybdenum - Dissolved 0.0026 mg/1 0.0020 6020B Selenium - Dissolved < 0.005 mg/10.0050 6020B 8 Mar 19 16:20 CC 6020B 8 Mar 19 16:20 CC Thallium - Dissolved < 0.0005 mg/l 0.0005

\* Holding time exceeded

Samantha Davies

5181 Southgate Dr

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: March 2019

Billings MT 59102

Montana Dakota Utilities

Approved by:

1C 26 Mar 19 Clauditte K. Canreo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

MVTL requirement of the sector of the for MVTL requirements that a feet result obtained on a portfuller sample will be the same on any other sample unless all sectors are submatically confidential property of clients, and authorization for and automatical sectors are submatical as the confidential property of clients, and authorization for and automatical sectors are submatical as the confidential property of clients, and authorization for and automatical sectors are submatical as the confidential property of clients, and authorization for an advector of a sector of a



Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

# Project Name: MDU Lewis & Clark

Sample Description: MW111

MV

Event and Year: March 2019

Page: 1 of 2

Report Date: 13 Mar 19 Lab Number: 19-W312 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 17:36 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			- A.T	EPA 200.2	6 Mar 19	SVS
Hq	* 7.6	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	< 2	mg/1	2	13765-85	6 Mar 19 15:41	SVS
pH - Field	6.99	units	NA	SM 4500 H+ B	5 Mar 19 17:36	DJN
Temperature - Field	5.40	Degrees C	NA	SM 2550B	5 Mar 19 17:36	DJN
Total Alkalinity	444	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	3485	umhos/cm	1	EPA 120.1	5 Mar 19 17:36	DJN
Fluoride	2.03	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	1820	mg/l	5.00	ASTM D516-07	11 Mar 19 11:36	EV
Chloride	37.4	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	11.4	mg/l	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0.0002	mg/l	0,0002	EPA 245.1	13 Mar 19 11:03	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	3240	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	163	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	482	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	128	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	9.2	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Lithium - Total	0.168	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	6.60	mg/1	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	156	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
Magnesium - Dissolved	468	mg/l	1.0	6010D	B Mar 19 13:53	SZ
Sodium - Dissolved	122	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	8.8	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.156	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	6.50	mg/l	0.10	6010D	12 Mar 19 13:27	SZ
Antimony - Total	< 0.001	mg/1	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0195	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Molybdenum - Total	0.0542	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	0.0724	mg/1	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

MVTL re-increase the neuronal of the anti-terminal function of the neuronal function of the provide for AVVTL the provide state of the state provide will be the same of the state of the s publication provides a second s



MEMBER

Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: March 2019

Page: 2 of 2

Report Date: 13 Mar 19 Lab Number: 19-W312 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 17:36 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	13:19	CC
Antimony - Dissolved	< 0.001	mg/1	0.0010	6020B	8 Mar 19	16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Barium - Dissolved	0.0176	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC
Molybdenum - Dissolved	0.0528	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Selenium - Dissolved	0.0773	mg/l	0.0050	6020B	8 Mar 19	16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC

\* Holding time exceeded

Approved by:

CC 26 MAY 19 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to con ! = Due to sample quantity + = Due to int # = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016

MVT1 parameters that a test result objective on the same many adapter of the testing of the result of the provide for MVT1, to granutee that a test result objected on a particular sample will be the same many other sample unless all reactions are included as the confidential property of clouts, and authorization for authorization for authorized and authorization for authorized and authorization for authorized and authorization for authorized and authorization for authorized automatic automatic and authorization for authorized automatic automatic automatic automatic automatic automatic approxit.



Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W313 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 8:15 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	6 Mar 19	SVS
pH	* 7.5	units	N/A	SM4500 H+ B	6 Mar 19 17:0	SVS
Total Suspended Solids	62	mg/l	2	13765-85	6 Mar 19 15:4	1 SVS
pH - Field	6,99	units	NA	SM 4500 H+ B	5 Mar 19 8:1	5 DJN
Temperature - Field	1.97	Degrees C	NA	SM 2550B	5 Mar 19 8:1	
Total Alkalinity	400	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:0	
Conductivity - Field	8576	umhos/cm	1	EPA 120.1	5 Mar 19 8:1	
Fluoride	0.21	mg/l	0.10	SM4500-F-C	6 Mar 19 17:0	
Sulfate	6150	mg/1	5.00	ASTM D516-07	11 Mar 19 11:3	6 EV
Chloride	44.7	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:0	0 EMS
Nitrate-Nitrite as N	19.8	mg/l	0.10	EPA 353.2	7 Mar 19 11:2	
Mercury - Total	< 0.0002	mg/1	0.0002	EPA 245.1	13 Mar 19 12:0	4 EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:0	4 EMS
Total Dissolved Solids	9320	mg/l	10	11750-85	8 Mar 19 8:1	0 SVS
Calcium - Total	448	mg/l	1.0	6010D	8 Mar 19 11:5	
Magnesium - Total	1340	mg/l	1.0	6010D	8 Mar 19 11:5	
Sodium - Total	600	mg/l	1.0	6010D	8 Mar 19 11:5	
Potassium - Total	27.2	mg/1	1.0	6010D	8 Mar 19 11:5	3 SZ
Lithium - Total	0.155	mg/1	0.020	6010D	12 Mar 19 8:4	
Boron - Total	10.5	mg/l	0.10	6010D	12 Mar 19 11:2	7 SZ
Calcium - Dissolved	432	mg/l	1.0	6010D	8 Mar 19 13:5	3 SZ
Magnesium - Dissolved	1280	mg/l	1.0	6010D	8 Mar 19 13:5	3 SZ
Sodium - Dissolved	590	mg/l	1.0	6010D	8 Mar 19 13:5	3 SZ
Potassium - Dissolved	26.0	mg/1	1.0	6010D	8 Mar 19 13:5	
Lithium - Dissolved	0.130	mg/l	0.020	6010D	12 Mar 19 9:4	5 SZ
Boron - Dissolved	9.98	mg/l	0.10	6010D	12 Mar 19 13:2	7 SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:1	9 CC
Arsenic - Total	< 0.002	mg/1	0.0020	6020B	8 Mar 19 13:1	9 CC
Barium - Total	0.0442	mg/l	0.0020	6020B	8 Mar 19 13:1	9 CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:1	9 CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:1	
Chromium - Total	0.0071	mg/l	0.0020	6020B	8 Mar 19 13:1	
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:1	
Lead - Total	0.0016	mg/l	0.0005	6020B	8 Mar 19 13:1	
Molybdenum - Total	0.0038	mg/l	0.0020	6020B	8 Mar 19 13:1	9 CC
Selenium - Total	0.0307	mg/l	0.0050	6020B	8 Mar 19 13:1	9 CC

RL = Method Reporting Limit

 The reporting limit was elevated for any analyte requiring a dilution as coded below:

 Ø = Due to sample matrix
 # = Due to concentration of other analytes

 ! = Due to sample quantity
 + = Due to internal standard response

CERTIFICATION: ND # ND-00016

TO US UNDER USE OF USE TO A WAR obtained on a particular sample will be the same on any other sample unless resultion of two from on sets. If the second process of the additional and an end of the end of the second second production and the second production and an and the



Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: March 2019

2 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W313 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 8:15 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed		Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19	16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Barium - Dissolved	0.0140	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC
Molybdenum - Dissolved	0.0028	mg/l	0.0020	6020B	8 Mar 19	16:20	CC
Selenium - Dissolved	0.0296	mg/l	0.0050	6020B	8 Mar 19	16:20	CC
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19	16:20	CC

\* Holding time exceeded

Approved by:

26 Mar 19 Claudette K. Canrelo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016

MYTE automation these requires of the analysis does not the analysis control for resting. It is not provide for MYTE to purpose that a fest reput obtained on a particular sample will be the same on any other sample unless iff control matter in the analysis are the constrained and analysis of the the resting of the same of the constrained of the consideration property of cleans, and authorization for automatical discusses conclusions are constrained in a constrained provider out written approval.

MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 North Front St. - New Ulm, MN 56073 - 800-782-3557 - Fax 507-359-2890 2 North German St. - New Ulm, MN 56073 - 800-782-3557 - Fax 507-359-2890 2616 Laur Broadwart Acc. - Biomarch, ND 58501 - 800 279 6885 - Fax 701-258 9724 1201 Laurda (1989) - Nevada, IA 50201 - 800.362 0855 - Uax 515-382 3885 www.msil.com



Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W314 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 9:58 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			- 1 A	EPA 200.2	6 Mar 19	SVS
pH	* 7.8	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Fotal Suspended Solids	2	mg/l	2	I3765-85	6 Mar 19 15:41	SVS
oH - Field	7.20	units	NA	SM 4500 H+ B	5 Mar 19 9:58	DJN
Cemperature - Field	4.35	Degrees C	NA	SM 2550B	5 Mar 19 9:58	DJN
Fotal Alkalinity	351	mg/l CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	1580	umhos/cm	1	EPA 120.1	5 Mar 19 9:58	DJN
Fluoride	1.15	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	512	mg/l	5.00	ASTM D516-07	11 Mar 19 11:36	EV
Chloride	23.4	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	5.95	mg/l	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0,0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
Aercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Mar 19 12:04	EMS
fotal Dissolved Solids	1160	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	78.5	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	155	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	82.5	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	6.3	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
ithium - Total	0.074	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	1.46	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	78.8	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
Agnesium - Dissolved	155	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	81.3	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	6.4	mg/l	1.0	6010D	8 Mar 19 13:53	SZ
Lithium - Dissolved	0.074	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Boron - Dissolved	1.48	mg/l	0.10	6010D	12 Mar 19 13:27	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0187	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Cadmium - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
Thromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Lead - Total	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 13:19	CC
Aolybdenum - Total	0.0381	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Selenium - Total	0.0574	mg/1	0.0050	6020B	8 Mar 19 13:19	CC

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016

WORL DIE MXT1 or a strenge or the enderty former discount or more and to more the net production. We produce that a high result obtained on a particular sample will be the same on any other sample natives and non-strength and enderty former of the strength of the same of any other sample natives and non-strength and the same of any other sample natives and automation for the same of a strength of a strength of the same of a strength and the second distances a second second second second second second second second with the approximation of the second sec

# MINNESOTA VALLEY TESTING LABORATORIES, INC.

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: March 2019

Page: 2 of 2

Report Date: 13 Mar 19 Lab Number: 19-W314 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 9:58 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	bed	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0167	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0384	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	0.0620	mg/1	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC

\* Holding time exceeded

Approved by:

CC 26 Mar 19 Claudite K Canter

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

MVTL parameters do receive of the milton done on the serger submitted for testine. It is not possible for AVTL to purchase that a next result singured an a particular sample will be the same on my other sample unlessed and the server of a single and the server of



Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW120

Event and Year: March 2019

1 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W315 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 7:05 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			-	EPA 200.2	6 Mar 19	SVS
bH	* 7.3	units	N/A	SM4500 H+ B	6 Mar 19 17:00	SVS
Total Suspended Solids	199	mg/1	2	13765-85	6 Mar 19 15:41	SVS
oH - Field	6.62	units	NA	SM 4500 H+ B	5 Mar 19 7:05	DJN
Cemperature - Field	5.27	Degrees C	NA	SM 2550B	5 Mar 19 7:05	DJN
Cotal Alkalinity	447	mg/1 CaCO3	20	SM2320-B	6 Mar 19 17:00	SVS
Conductivity - Field	3949	umhos/cm	1	EPA 120.1	5 Mar 19 7:05	DJN
luoride	0.45	mg/l	0.10	SM4500-F-C	6 Mar 19 17:00	SVS
Sulfate	1870	mg/l	5.00	ASTM D516-07	11 Mar 19 11:36	EV
Thloride	31.6	mg/l	1.0	SM4500-C1-E	13 Mar 19 11:00	EMS
Nitrate-Nitrite as N	0.10	mg/l	0.10	EPA 353.2	7 Mar 19 11:20	EV
Mercury - Total	< 0.0002	mg/l	0,0002	EPA 245.1	13 Mar 19 12:04	EMS
Mercury - Dissolved	< 0.0002	mg/l	0,0002	EPA 245.1	13 Mar 19 12:04	EMS
Total Dissolved Solids	3320	mg/l	10	I1750-85	8 Mar 19 8:10	SVS
Calcium - Total	229	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Magnesium - Total	342	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Sodium - Total	191	mg/1	1.0	6010D	8 Mar 19 11:53	SZ
Potassium - Total	16.4	mg/l	1.0	6010D	8 Mar 19 11:53	SZ
Jithium - Total	0.069	mg/l	0.020	6010D	12 Mar 19 8:45	SZ
Boron - Total	3.32	mg/l	0.10	6010D	12 Mar 19 11:27	SZ
Calcium - Dissolved	230	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
Agnesium - Dissolved	337	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
	193	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
Sodium - Dissolved	15.9	mg/1	1.0	6010D	8 Mar 19 13:53	SZ
Potassium - Dissolved	0.069	mg/l	0.020	6010D	12 Mar 19 9:45	SZ
Lithium - Dissolved	3.32	mg/1	0.10	6010D	12 Mar 19 13:27	SZ
Boron - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 13:19	CC
Antimony - Total	< 0.001	mg/1	0.0020	6020B	8 Mar 19 13:19	CC
Arsenic - Total			0.0020	6020B	8 Mar 19 13:19	CC
Barium - Total	0.0367	mg/l mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Beryllium - Total	< 0.0005		0.0005	6020B	8 Mar 19 13:19	
admium - Total	< 0.0005	mg/l	0.0020	6020B	8 Mar 19 13:19	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020B	8 Mar 19 13:19	
Cobalt - Total	< 0.002	mg/1	0.0005	6020B	8 Mar 19 13:19	
Lead - Total	< 0.0005	mg/l			8 Mar 19 13:19	
Molybdenum - Total Selenium - Total	0.0040	mg/l mg/l	0.0020	6020B 6020B	8 Mar 19 13:19	

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016

MVTE or provide states of the output of a second state on the output of 


Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

Sample Description: MW120

Event and Year: March 2019

2 of 2 Page:

Report Date: 13 Mar 19 Lab Number: 19-W315 Work Order #: 82-0373 Account #: 002800 Date Sampled: 5 Mar 19 7:05 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 174105 OP

Temp at Receipt: 1.1C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 13:19	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	8 Mar 19 16:20	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Barium - Dissolved	0.0235	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Beryllium - Dissolved	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	8 Mar 19 16:20	CC
Molybdenum - Dissolved	0.0035	mg/l	0.0020	6020B	8 Mar 19 16:20	CC
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	8 Mar 19 16:20	CC
Thallium - Dissolved	< 0.0005	mg/1	0.0005	6020B	8 Mar 19 16:20	CC
indiffun bibborroo	12 12 12 12 12					

\* Holding time exceeded

Approved by:

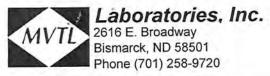
10 26 Mar 19 Claudette K. Cunto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

STVTD uniques the restrict of the second second second in terms for an provide for MVTL to guarante that a first result obtained on spaticular sample will be life same on any other sample unless all subharment is rule to the second s



# **Chain of Custody Record**

Project Name	e: MDU Lewis and Clari	k	Event:	N	larch 2019				Wor	k Orde	er Nu	mber:	2-6	373	
Report To: Attn: Address: phone:	MDU Samantha Davies 5181 Southgate Dr. Billings, MT 59102 406-896-4227		Carbon Co Attn: Address:	ру:					Nam	e of S			NE	eswaa	
	Sample Information			В	ott	le T	ype		Fie	eld Para	meters	Analysis			
Lab Number	Sample ID	Date	Time	Sample Tuno	pt.	1 liter	500mL Nites	500mL Mar.	250 mL Sulfaced)	0110		Temp (°C)	Spec. Cond.	Hd	Analysis Required
1,2307	Dup 1	5 mar 19	NA	GW		X	X	Х	X	*****		NA	NA	NA	
(2308	Field Blank (FB)	5mar19	NA	GW		X	х	х	X			NA	NA	NA	
6309	MW103	4 maria	1907	GW		X	х	х	Х			1.97	1424	7-13	
-	MW109	4 marl9	-	GW	¥	*	×	×	×	1			Remove		
6310	MW110	Smar19	1239	GW		X	Х	Х	Х			5.68	1064	7.11	MDU L&C 2019
(160)	MW119	4mar19	1455	GW		X	Х	Х	X			2.40	1210	7.07	
WB12	MW111	5 marl9	1736	GW	1	X	X	Х	X		5	-	3485	6.99	
W313	MW117	5 Mar19	0815	GW		X	х	Х	X			1977	8576	6.99	
W314	MW118	5 Marl9	0958	GW		X	х	Х	X	B.F.		1.35	1580	17,20	
WBIS	MW120	5 Mar 19	0705	GW		X	Х	Х	X	_		5,27	3949	6.62	
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Comments: #4Mar 19 BAN

Relinguished By:		San	nple Condition:	Receiv	ved by:
Name:	Date/Time	Location:	Temp (°C)	Name:	Date/Time
Som Nie	6 ma/19 (32:7)	Walk In #2	1 . FM562 TM805	Teracte	6Mar2019 1227





# CASE NARRATIVE - AMENDED 14 MAY 19

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201982-0375 Montana Dakota Utilities MDU Lewis & Clark March 2019 (Radiochem) 19-W317 through 19-W325

MDU Sample Identification	MVTL Laboratory #
Dup1	19-W317
Field Blank (FB)	19-W318
MW103	19-W319
MW109	No sample
MW110	19-W320
MW119	19-W321
MW111	19-W322
MW117	19-W323
MW118	19-W324
MW120	19-W325

# I. RECEIPT

- All samples were received at the laboratory on 6 Mar 2019 at 1327.
- Samples were collected and hand delivered by MVTL Field Service personnel to the laboratory.
- Samples were received on ice and evidence of cooling had begun.
  - o Temperature of samples upon receipt was 1.1°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 11 Mar 19.
  - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

# II. HOLDING TIMES

 All holding times were met for both preparation and analysis unless noted on the individual analytical laboratory report or on the IML Case Narrative.

# III. METHODS

Approved methodology was followed for all sample analyses.
 Please refer to the IML Case Narrative for more information regarding methodology.

# IV. ANALYSIS

 All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted on the individual analytical laboratory report or on the IML Case Narrative.





# CASE NARRATIVE - AMENDED 14 MAY 19

MVTL Lab Reference No/SDG: Client: Location: **Project Identification: MVTL Laboratory Identifications:** Page 2 of 2

201982-0375 Montana Dakota Utilities MDU Lewis & Clark March 2019 (Radiochem) 19-W317 through 19-W325

### REPORTING v.

- Per email dated 7 May 19 from Terri Olson with Barr, the data package was missing some QC criteria and gualifiers. The data package was amended to include this information.
  - According to IML Laboratories, although the RPD is above the limit of 20%, the RER for the Ó sample and its duplicate is <2. In radiochemistry, an RER <2 is considered acceptable, the samples are considered within acceptable range for duplicates and no flagging is required.

All laboratory data has been approved by MVTL Laboratories.

Claudette and SIGNED:

\_ DATE: 14 May 19 Claudette Carroll - MVTL Bismarck Laboratory Manager

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.

# **Claudette Carroll**

From:	Terri A. Olson <tolson@barr.com></tolson@barr.com>
Sent:	Tuesday, May 7, 2019 9:38 PM
То:	Claudette Carroll; Samantha Davies (samantha.davies@mdu.com)
Cc:	Barr Data Management; Justin Soberaski
Subject:	RE: Emailing: EFWEDD_201982-0375.zip, 201982-0375 MDU L&C RADCHEM.pdf

Hi Claudette,

Couple of items on this report:

- The Ra 226 LCS/LCSD RPD appears to be missing along with the applicable RPD criteria.
- The Ra 228 RPD is above the RPD criteria listed but is not qualified.

Please check with the lab and let us know.

Thank-you,

Terri A. Olson Senior Data Quality Specialist Minneapolis, MN office: 952.842.3578 TOlson@barr.com www.barr.com

This e-mail message (including attachments, forwards, and replies) is correspondence transmitted between Barr Engineering Co. and its clients and related parties in the course of business, and is intended solely for use by the addressees. This transmission contains information which may be confidential and proprietary. If you are not the addressee, note that any disclosure, copying, distribution, or use of the contents of this message (or any attachments, replies, or forwards) is prohibited. If you have received this transmission in error, please destroy it and notify us at 952-832-2600.

If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

-----Original Message-----From: Claudette Carroll <ccarroll@mvtl.com> Sent: Tuesday, May 7, 2019 9:35 AM To: Samantha Davies (samantha.davies@mdu.com) <samantha.davies@mdu.com> Cc: Barr Data Management <BarrDM@barr.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com> Subject: Emailing: EFWEDD\_201982-0375.zip, 201982-0375 MDU L&C RADCHEM.pdf

Hi Sam,

Please find attached the radiochem results for the sampling done at MDU Lewis & Clark. Hard copies will follow in the mail. Let me know if you have any questions.

# Have a great rest of your day!

Claudette

<u>ccarroll@mvtl.com</u> 701-258-9720 2616 E. Broadway Ave/Bismarck, ND 58501

Our mailing address changed 1 Mar 2019. Listed below is our new mailing address. MVTL Laboratories 2616 E. Broadway Bismarck, ND 58501

Your message is ready to be sent with the following file or link attachments:

https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD\_201982-0375.zip&c=E,1,nQ-0P9tOAWRNP8moCmcXdwsXykED7loqncxndoRtNFpLdyJMzJ9QDwTiyvgl3MeTkOTvc1eBrpUvzV0lGfSbhE8-GRN5HhROEyAi-ZuzgGLISwd4NMQCqjE4s,&typo=1 201982-0375 MDU L&C RADCHEM.pdf

Note: To protect against computer viruses, e-mail programs may prevent sending or receiving certain types of file attachments. Check your e-mail security settings to determine how attachments are handled.





1 of 1 Page:

Samantha Da Montana Dak 5181 Southg Billings M	ota Utilities ate Dr		Lab Number Work Order Account #: Date Sampl Date Recei	#: 82-0375	
Project Name: MDU	Lewis & Clark		PO #: 1751		
Sample Description Event and Year: Ma	-			ceipt: 1.1C	
	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226 Radium 228	See Attached Report See Attached Report			22 Mar 19 13 Apr 19	OL OL

OL = Analysis performed by an Outside Laboratory.

CC. 6 May 19 Clauditte K. Canto Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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.





Page: 1 of 1

Samantha Davie Montana Dakota 5181 Southgate Billings MT	Utilities Dr		Lab Nu Work C Accour Date S Date F	Date: 1 May 19 mber: 19-W318 order #: 82-0375 at #: 002800 campled: 5 Mar 19 deceived: 6 Mar 19 13:27 ed By: MVTL Field Services
Project Name: MDU Lew	is & Clark		<u>F</u>	
Sample Description: F	ield Blank		PO #:	175104 OP
			Temp a	t Receipt: 1.1C
Event and Year: March	2019			
	As Received	Method	Method	Date

	Result		Reference	Analyzed	Analyst
Radium 226 Radium 228	See Attached Report See Attached Report			22 Mar 19 13 Apr 19	OI <sup>1</sup>

OL = Analysis performed by an Outside Laboratory.

(C 6 May 19 Claudite K. Cantle Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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.





Samantha Davies

Page: 1 of 1

Report Date: 1 May 19 Lab Number: 19-W319 Work Order #: 82-0375 Account #: 002800 Date Sampled: 4 Mar 19 19:07 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 1.1C

Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

### Sample Description: MW103

Event and Year: March 2019

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.13	units	NA	SM 4500 H+ B	4 Mar 19 19:0'	DJN
Temperature - Field	4,97	Degrees C	NA	SM 2550B	4 Mar 19 19:0'	DJN DJN
Conductivity - Field	1424	umĥos/cm	1	EPA 120.1	4 Mar 19 19:0	DJN
Radium 226	See Atta	ached Report			22 Mar 19	OL
Radium 228		ached Report			13 Apr 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC. 6 May 19 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND || ND-00016

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





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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102 Page: 1 of 1

Report Date: 1 May 19 Lab Number: 19-W320 Work Order #: 82-0375 Account #: 002800 Date Sampled: 5 Mar 19 12:39 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 1.1C

Project Name: MDU Lewis & Clark

### Sample Description: MW110

Event and Year: March 2019

	As Recei Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.11	units	NA	SM 4500 H+ B	5 Mar 19 12:39	DJN
Temperature - Field	6,68	Degrees C	NA	SM 2550B	5 Mar 19 12:39	DJN
Conductivity - Field	1064	umhos/cm	1	EPA 120,1	5 Mar 19 12:39	DJN
Radium 226	See Atta	ached Report			22 Mar 19	OL
Radium 228		ached Report			13 Apr 19	OL .

OL = Analysis performed by an Outside Laboratory.

Approved by:

1c le May 19 Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

ARTIFICATION: ND # ND-00010

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, ond authorization for publication of statements, conclusions or extracts from or regarding our reports is reserved pending our written approval.





Page: 1 of 1

Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102 Report Date: 1 May 19 Lab Number: 19-W321 Work Order #: 82-0375 Account #: 002800 Date Sampled: 4 Mar 19 14:55 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 1.1C

Project Name: MDU Lewis & Clark

### Sample Description: MW119

Event and Year: March 2019

	As Recei Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.07	units Degrees C	NA NA	SM 4500 H+ B SM 2550B	4 Mar 19 14;55 4 Mar 19 14:55	
Temperature - Field Conductivity - Field	2,40 1210	umhos/cm	1	EPA 120,1	4 Mar 19 14:55	DJN
Radium 226 Radium 228		ached Report ached Report			22 Mar 19 13 Apr 19	OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

6 1/24 19 Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016

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 regording our reports is reserved pending our written approval.





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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

### Sample Description: MW111

Event and Year: March 2019

Page: 1 of 1

Report Date: 1 May 19 Lab Number: 19-W322 Work Order #: 82-0375 Account #: 002800 Date Sampled: 5 Mar 19 17:36 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 1.1C

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.99	units	NA	SM 4500 H+ B	5 Mar 19 17:36	DJN
Temperature - Field	5.40	Degrees C	NA	SM 2550B	5 Mar 19 17:36	DJN
Conductivity - Field	3485	umhos/cm	1	EPA 120.1	5 Mar 19 17;36	DJN
Radium 226	See Atta	ached Report			22 Mar 19	OL
Radium 228		ached Report			13 Apr 19	OL

OL = Analysis performed by an Outside Laboratory.

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Approved by:

6 May 19 Claudithe K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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 samplo unless all conditions affecting the sample are the same, including sampling by MVTL. As a mutual protection to clients, and outselves, 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.





Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

### Sample Description: MW117

Event and Year: March 2019

Report Date: 1 May 19 Lab Number: 19-W323 Work Order #: 82-0375 Account #: 002800 Date Sampled: 5 Mar 19 8:15 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 1.1C

1 of 1

Page:

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
pH - Field	6.99	units	NA	SM 4500 H+ B	5 Mar 19	8:15	DJN
Temperature - Field	1,97	Degrees C	NA	SM 2550B	5 Mar 19	8:15	DJN
Conductivity - Field	· 8576	umhos/cm	1	EPA 120.1	5 Mar 19	8:15	DJN
Radium 226	See Att	ached Report			22 Mar 19		OL
Radium 228		ached Report			13 Apr 19		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

1C 4 M 20 19 Claudithe K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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Page: 1 of 1

PO #: 175104 OP

Temp at Receipt: 1.1C

Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Report Date: 1 May 19 Lab Number: 19-W324 Work Order #: 82-0375 Account #: 002800 Date Sampled: 5 Mar 19 9:58 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark

### Sample Description: MW118

Event and Year: March 2019

	As Recei Result	ived	Method RL	Method Reference	Date Analyzed	Analyst	
pH - Field	7.20	units	NA	SM 4500 H+ B	5 Mar 19	9:58	NTQ
Temperature - Field	4,35	Degrees C	NA	SM 2550B	5 Mar 19	9:58	NLC
Conductivity - Field	1580	umhos/cm	1	EPA 120.1	5 Mar 19	9:58	DJN
Radium 226	See Atta	ached Report			22 Mar 19		OL
Radium 228		ached Report			14 Apr 19		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC-6 May 19 Clauditte K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response

CERTIFICATION: ND # ND-00016

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Samantha Davies Montana Dakota Utilities 5181 Southgate Dr Billings MT 59102

Project Name: MDU Lewis & Clark

### Sample Description: MW120

Event and Year: March 2019

Page: 1 of 1

Report Date: 1 May 19 Lab Number: 19-W325 Work Order #: 82-0375 Account #: 002800 Date Sampled: 5 Mar 19 7:05 Date Received: 6 Mar 19 13:27 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 1.1C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
pH - Field	6.62	units	NA	SM 4500 H+ B	5 Mar 19	7:05	NLD
Temperature - Field	5,27	Degrees C	NA	SM 2550B	5 Mar 19	7:05	NLD
Conductivity - Field	3949	umhos/cm	1	EPA 120,1	5 Mar 19	7:05	DJN
Radium 226	See Atta	ached Report			22 Mar 19		OL
Radium 228		ached Report			14 Apr 19		OL

OL = Analysis performed by an Outside Laboratory.

6 May 19 Clauditte K. Cantop Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample guantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016

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.



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Date: 4/26/2019

CLIENT:	MVTL Laboratories, Inc.	CASE NARRATIVE
Project: Lab Order:	201982-0375 S1903117	Report ID: S1903117001

Samples 19-W317 Dup 1, 19-W318 Field Blank(FB), 19-W319 MW103, 19-W320 MW110, 19-W321 MW119, 19-W322 MW111, 19-W323 MW117, 19-W324 MW118 and 19-W325 MW120 were received on March 11, 2019.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by:



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

• •	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501					te Reported port ID	4/26/2019 S1903117001	
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-001 19-W317 Dup 1				Co Da Fie	orkOrder: IlectionDate: teReceived: eldSampler: trix:	S1903117 3/5/2019 3/11/2019 10:18:00 AM Water	
Analyses		Result	Units	Qual	RL	Metho	d Date Analyzed	/Init
Radionuclides - Tot Radium 226 Radium 226 Precision Radium 228 Radium 228 Precision	ı (±)	0.3 0.1 0.3 1.9	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech		WN WN WN WN

These results apply only to the samples tested.

# **RL - Reporting Limit**

- Qualifiers:
- Value above quantitation range Е
- н Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- s X Spike Recovery outside accepted recovery limits

Analyte detected in the associated Method Blank

Matrix Effect

В

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- J Analyte detected below quantitation limits
- М Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- Analysis reported under the reporting limit U

Page 1 of 9



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Samp	le Ana	lysis	Report
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Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	2.				te Reported port ID	4/26/2019 S1903117001	
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-002 19-W318 Field Blanki	(FB)			Co Da Fie	orkOrder: IlectionDate: teReceived: IdSampler: Itrix:	S1903117 3/5/2019 3/11/2019 10:18:00 Al Water	М
Analyses		Result	Units	Qual	RL	Metho	d Date Analyze	d/Init
Radionuclides - To Radium 226 Radium 226 Precision Radium 228 Radium 228 Precision	יייי ר (±)	0.02 0.03 -1.7 1.6	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech		6 WN WN

These results apply only to the samples tested.

# **RL - Reporting Limit**

- Qualifiers:
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded н
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S X Spike Recovery outside accepted recovery limits

Analyte detected in the associated Method Blank

Matrix Effect

в

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- М Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- U Analysis reported under the reporting limit

Page 2 of 9



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	2.				te Reported port ID	4/26/2019 S1903117001	
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-003 19-W319 MW103				Co Da Fie	orkOrder: IlectionDate: teReceived: IdSampler: itrix:	S1903117 3/4/2019 7:07:00 PM 3/11/2019 10:18:00 AM Water	
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/	Init
Radionuclides - To Radium 226		0.14 0.05	pCi/L pCi/L		0.2	SM 7500 Ra SM 7500 Ra		WN
Radium 226 Precisio Radium 228 Radium 228 Precisio	.,	-0.3 1.6	pCi/L pCi/L		2	Ga-Tech Ga-Tech	04/13/2019 1133 04/13/2019 1133	W

These results apply only to the samples tested.

### Qualifiers:

- Е Value above quantitation range
- н Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- s X Spike Recovery outside accepted recovery limits

Analyte detected in the associated Method Blank

Matrix Effect

В

Reviewed by: A

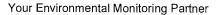
Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory G
- J Analyte detected below quantitation limits
- М Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- U Analysis reported under the reporting limit

Page 3 of 9





Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501					te Reported port ID	4/26/2019 S1903117001	
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-004 19-W320 MW110				Co Da Fie	orkOrder: IllectionDate: teReceived: IdSampler: Itrix:	S1903117 3/5/2019 12:39:00 PM 3/11/2019 10:18:00 A Water	
Analyses		Result	Units	Qual	RL	Metho	d Date Analyz	ed/Init
<b>Radionuclides - To</b> Radium 226 Radium 226 Precisio Radium 228 Radium 228 Precisio	n (±)	0.13 0.05 0.6 2.2	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech		6 WN 7 WN

These results apply only to the samples tested.

### Qualifiers:

- Analyte detected in the associated Method Blank Е Value above quantitation range
- н Holding times for preparation or analysis exceeded
- Analyzed by another laboratory L
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits
- х . Matrix Effect

Reviewed by:

в

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits Т
- М Value exceeds Monthly Ave or MCL or is less than LCL
- 0 Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Page 4 of 9



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501					te Reported port ID	4/26/201 S190311		
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-005 19-W321 MW119				Co Da Fie	orkOrder: ellectionDate: teReceived: eldSampler: atrix:			
Analyses		Result	Units	Qual	RL	Metho	d [	Date Analyzed/i	nit
<b>Radionuclides - To</b> Radium 226 Radium 226 Precision Radium 228 Radium 228 Precision	n (±)	0.13 0.05 -2.4 1.8	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech	-B 0:	3/22/2019 1216 3/22/2019 1216 4/13/2019 1740 4/13/2019 1740	WN WN WN

These results apply only to the samples tested.

Qualifiers:

- в Analyte detected in the associated Method Blank Е Value above quantitation range
- Holding times for preparation or analysis exceeded н
- Analyzed by another laboratory L
- ND Not Detected at the Reporting Limit
- s X Spike Recovery outside accepted recovery limits
- Matrix Effect

Reviewed by: <u>A</u>

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL** - Reporting Limit

- G Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits J
- М Value exceeds Monthly Ave or MCL or is less than LCL
- 0 Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Page 5 of 9



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	<u>).</u>				te Reported port ID	4/26/2019 S1903117001		
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-006 19-W322 MW111				Co Da Fie	orkOrder: IlectionDate: teReceived: IdSampler: htrix:	S1903117 3/5/2019 5:36:00 Pl 3/11/2019 10:18:00 Water		
Analyses	··· · · · · · · · · · · · · · · · · ·	Result	Units	Qual	RL	Metho	Date Analy	zed/lı	nit
Radionuclides - Tot Radium 226 Radium 226 Precisior Radium 228		0.12 0.05 -3.4	pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech		216	WN WN WN

These results apply only to the samples tested.

# **RL - Reporting Limit**

- Qualifiers:
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded н
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- s X Spike Recovery outside accepted recovery limits

Analyte detected in the associated Method Blank

Matrix Effect

В

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Μ Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- U Analysis reported under the reporting limit

Page 6 of 9



Inter-Mountain Labs

1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

Company: MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501					Date Reported Report ID		4/26/2019 S1903117001		
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-007 19-W323 MW117				WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:		S1903117 3/5/2019 8:15:00 AM 3/11/2019 10:18:00 AM Water		
Analyses		Result	Units	Qual	RL	Metho	d	Date Analyzed/I	nit
Radionuclides - To Radium 226 Radium 226 Precisio Radium 228 Radium 228 Precisio	n (±)	0.8 0.1 2.2 5.9	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech	_	03/22/2019 1216 03/22/2019 1216 04/13/2019 2348 04/13/2019 2348	WN WN WN

These results apply only to the samples tested.

### Qualifiers:

- E Value above quantitation range
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- S Spike Recovery outside accepted recovery limits

Analyte detected in the associated Method Blank

X Matrix Effect

Reviewed by: A

В

Wade Nieuwsma, Assistant Laboratory Manager

C Calculated Value

**RL - Reporting Limit** 

- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- U Analysis reported under the reporting limit

Page 7 of 9

Your Environmental Monitoring Partner



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501					te Reported port ID	4/26/2019 S1903117		
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-008 19-W324 MW118				Co Da Fie	orkOrder: IlectionDate: teReceived: eldSampler: atrix:		-	
Analyses		Result	Units	Qual	RL	Metho	ji C	Date Analyzed/I	nit
Radionuclides - Tot Radium 226 Radium 226 Precisior Radium 228 Radium 228 Precisior	n (±)	0.12 0.05 -3.0 2.5	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech	-B 03	3/22/2019 1216 3/22/2019 1216 4/14/2019 251 4/14/2019 251	WN WN WN

These results apply only to the samples tested.

#### Qualifiers:

- Value above quantitation range Е
- Н Holding times for preparation or analysis exceeded

Analyte detected in the associated Method Blank

- L Analyzed by another laboratory
- Not Detected at the Reporting Limit ND
- s X Spike Recovery outside accepted recovery limits
- Matrix Effect

В

Reviewed by: <u>A</u>

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory G
- J Analyte detected below quantitation limits
- М Value exceeds Monthly Ave or MCL or is less than LCL
- Outside the Range of Dilutions 0
- Analysis reported under the reporting limit U

Page 8 of 9

Your Environmental Monitoring Partner



1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Sample Analysis Report

	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501					te Reported port ID	4/26/2 S1903	019 117001	
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-0375 S1903117-009 19-W325 MW120				Co Da Fie	orkOrder: IlectionDate: teReceived: eldSampler: atrix:		19 7:05:00 AM 019 10:18:00 AM	
Analyses		Result	Units	Qual	RL	Metho	d	Date Analyzed/I	nit
Radionuclides - Tot Radium 226 Radium 226 Precisior Radium 228 Radium 228 Precisior	ı (±)	0.16 0.1 -0.2 1.5	pCi/L pCi/L pCi/L pCi/L		0.2 2	SM 7500 Ra SM 7500 Ra Ga-Tech Ga-Tech		03/22/2019 1216 03/22/2019 1216 04/14/2019 555 04/14/2019 555	WN WN WN

These results apply only to the samples tested.

#### Qualifiers:

- Analyte detected in the associated Method Blank Е Value above quantitation range
- н Holding times for preparation or analysis exceeded
- Analyzed by another laboratory L
- ND Not Detected at the Reporting Limit
- S X Spike Recovery outside accepted recovery limits
- Matrix Effect

Reviewed by: <u>A</u>

в

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- G Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL М
- 0 Outside the Range of Dilutions
- υ Analysis reported under the reporting limit

Page 9 of 9



Inter-Mountain Labs-

# 1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945 ANALYTICAL QC SUMMARY REPORT

ENT: rk Order:	MVTL Laboratories, Inc. S1903117				: 4/26/20 <sup>-</sup>		
ject:	201982-0375			Report ID	: S19031	17001	
Radium 2	228 by Ga/Tech	Sample Type MBLK		Units: pCi/L			
м	B-564 (04/12/19 14:08)	RunNo: 167190	PrepD	Date: 03/27/19 0:0	0 Bat	chID 15777	
	Analyte	Result	RL	Spike Ref Sa	mp %REC	% Rec Limits	Qual
Padium (	Total Radium 228 228 by Ga/Tech	ND Somela Turca - LOD	1				
<b></b>		Sample Type LCS		Units: pCi/L			
	CS-564 (04/12/19 17:11)	RunNo: 167190		Date: 03/27/19 0:0		chID 15777	
L	Analyte	Result	RL	Spike Ref Sa	mp %REC	% Rec Limits	Qual
Radium 2	Total Radium 228 228 by Ga/Tech	27 Sample T <b>y</b> pe <b>MS</b>	1	31.4 Units: pCi/L	85.6	65.9 - 132	
M	S-564 (04/12/19 23:18)	RunNo: 167190	PrepE	Date: 03/27/19 0:0	D Bat	chID 15777	
	Analyte	Result	RL	Spike Ref Sa		% Rec Limits	Qual
Padium 2	Total Radium 228 228 by Ga/Tech	27 Sample Type MSD	1	31.4 ND	84.5	50 - 139	
r		Sample Type MSD		Units: pCi/L			
M	SD-564 (04/13/19 02:22) Analyte	RunNo: 167190 Result	PrepĽ RL	0ate: 03/27/19 0:0 Conc %RP		chID 15777 % RPD Limits	Qual
	Total Radium 228	34	1	27 25.0	109	20	
Radium 2	226 in Water -	Sample Type MBLK		Units: pCi/L			
м	B-1983 (03/22/19 12:16)	RunNo: 166469	PrepE	ate: 03/13/19 0:0	) Bat	chID 15717	
	Analyte	Result	RL	Spike Ref Sa	mp %REC	% Rec Limits	Qual
	Radium 226	ND	0.2				
Radium 2	26 in Water -	Sample Type LCS		Units: pCi/L			
LC	CS-1983 (03/22/19 12:16)	RunNo: 166469	PrepD	)ate: 03/13/19 0:0	) Bat	chID 15717	
	Analyte	Result	RL	Spike Ref Sa	mp %REC	% Rec Limits	Qual
	Radium 226	5.6	0.2	6.9	81.4	67.1 - 122	
Radium 2	26 in Water -	Sample Type LCSD		Units: pCi/L			
LC	CSD-1983 (03/22/19 12:16)	RunNo: 166469	PrepD	ate: 03/13/19 0:0	) Bat	chID 15717	
	Analyte	Result	RL	Conc %RPI	D %REC	% RPD Limits	Qual
	Radium 226	5.3	0.2	5.6 5.80	76.8	20	
Radium 2	26 in Water -	Sample Type MS		Units: pCi/L			
S1	1903117-001AMS (03/22/19 12:16)	RunNo: 166469	PrepD	ate: 03/13/19 0:0	) Bat	chID 15717	
	Analyte	Result	RL	Spike Ref Sa	np %REC	% Rec Limits	Quai
	Radium 226	11.2	0.2	13.8 0.3	78.3	65 - 131	

Qualifiers:	В	Analyte detected in the associated Method Blank	E	Value above quantitation range
	G	Analyzed at IML Gillette laboratory	н	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	L	Analyzed by another laboratory
	ND	Not Detected at the Reporting Limit	0	Outside the Range of Dilutions
	R	RPD outside accepted recovery limits	S	Spike Recovery outside accepted recovery limits

S Spike Recovery outside accepted recovery limits



008

009

LABORATORIES. Inc. 2616 E Broadway Ave Bismarck, ND 58501 Phone: (701) 258-9720

# Chain of Custody Record

Page 1 of 1.

201982-0375 Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address: Account #: Phone #: 701-258-9720 **MVTL** Contact: Fax #: 2616 E Broadway Claudette For faxed report check box Bismarck, ND 58501 Name of Sampler: E-mail: ccarroll@mvtl.com Billing Address (indicate if different from above): For e-mail report check box Quote Number Date Submitted: PO Box 249 6-Mar-19 New Ulm, MN 56073 Project Name/Number: Purchase Order #: BL6147 Sample Information Bottle Type Analysis 519031174 VOC Vials Umpreserved 1000 ml HNO3 Glass Jar Untreated IML Lab MVTL Lab Sample Date Time Other Number Number Client Sample ID Type Sampled Sampled Analysis Required 19-W317 Dup 1 GW 5-Mar-19  $\infty$ N/A Ra226 & Ra228 002 19-W318 Field Blank (FB) GW 5-Mar-19 N/A Ra226 & Ra228 ODR 19-W319 MW103 GW 4-Mar-19 1907 Ra226 & Ra228 not 19-W320 MW110 GW 5-Mar-19 1239 Ra226 & Ra228 205 19-W321 MW119 GW 4-Mar-19 1455 Ra226 & Ra228 006 19-W322 MW111 GW 5-Mar-19 1736 Ra226 & Ra228 707 19-W323 -

GW

GW

GW

Comments: All results must be reported as a numerical value.

19-W324

19-W325

MW117

MW118

MW120

2 coolers

Ra226 & Ra228

Ra226 & Ra228

Ra226 & Ra228

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
Tera Olson	6-Mar-19	1700		Kathy Bays	3.11.19	10:18	0.7°C
2.				1	· · · · · · · · · · · · · · · · · · ·		ROI
							OF'C

5-Mar-19

5-Mar-19

5-Mar-19

0815

0958

0705

Site: MDU Lev	wis and Clark		Technician:)	Avian Nie Sunal
Instrument (Circle One):	#1 650 MDS 08F1002	203 #2 65	50 MDS 04H14736	#3.556 MPS 12E102056
;		Site Calibration		Post Site Check
Date: 4March	<u>19</u> <u>Time: 071</u>	)5		<u>Time: 0800</u>
pН	Temp ℃ Pre Cal	Post Cal Post Cal Range	mv Range +/- mv 50	<b>pH</b> Temp ℃ Readir
Buffer 7		-7.0.0 6.95-7.05	-394 0+/-50	Buffer 7 303 7.0
Buffer 10		10.00 9.95-10.05	-218:3 -180 +/- 50	
Buffer 4		4.95-5.05	175: "F 180 +/- 50	
Conductivity		4.95-5.05	(1)) / 180 +/- 50 Check	Conductivity
Buffer 1413	14,88 1429	1413 ±10%	Buffer 5000 50/9	Buffer 5000 / 3 4/ 490
ORP	t <u>errenni</u> skutinun <del>u</del> t t <del>radinis</del> terren interrietat ter		••••••••••••••••••••••••••••••••••••••	
231 mV @ 25C	5,05 241,1	23/16 ±10 mV		
DO		Barometr	ic Pressure (mm Hg)	
	14.86 8:76	7157 mg/L	720.6	
Date: 5MM	<u>cch19</u> Time: 062	23		Time: (9915
pH	Temp °C Pre Cal	Post Cal Post Cal Range	mv Range +/- mv 50	pH Temp °C Readir
Buffer 7	21,10 7.06	7,00 6.95-7.05	-43.4 0+/-50	Buffer 7 09,72 6,9
Buffer 10		9.95-10.05	2/17.3 -180 +/- 50	
Buffer 4		L/ J D 4.95-5.05	131,8 180 +/- 50	
Conductivity			Check	Conductivity
Buffer 1413	8.94 1393	1-{13 ±10%	Buffer 5000 4984	Buffer 5000 1073 502
ORP	•		,	
231 mV @ 25C	8.16 220,1	231,17 ±10 mV		
DO	-	Barometr	ic Pressure (mm Hg)	
	29.48 8.98 8	M mg/L	716.0	

**MVTL Calibration Worksheet** 

	Field Detechant	Company:	M
MVTL	Field Datasheet	Event:	
	Groundwater Assessment	Sample ID:	103
2616 E. Broadway Ave, Bismarck, ND		Sampling Personal:	a sien 1
Phone: (701) 258-9720			

Weather Conditions:		Temp:	4 "	F	Wind: Wind:	@# 30		Preci	p: Sun	ny / Partly C	loudy Clo	udy
١	Well Info	rmation	L		2		S	ampling	Informati	on	$\sim$	
Well Locked?	Yes	No			Pu	Irging Method:	Bla	dder				
Well Labeled?	<i>Ke</i> s	No			· San	pling Method:	Bla	dder		Co	ntrol Setting	s
Casing Straight?	Res	No		~	Ded	icated Equip?:	Yes	<b>H</b>		Purge:	3	sec.
Grout Seal Intact?	Yes	No	Not Vis	rible	Duplic	ate Sample?:	Yes	100		Recover:	27	sec.
Repairs Necessary:					Duplica	ate Sample ID:		<u></u>	-	PSI:	1	
Casing	Diameter:		2"					,				•
Water Level Befo	re Purge:		11.19	ft		Purge Date:	4 Mar	19	Time Purg	ging Began:	1802	am/pm
			;		We	Il Purged Dry?	Yes	No)	Time I	Purged Dry:	·	am/pm
						Sample Date:	ina/	9	Time c	of Sampling:	1907	- am/pm
Depth to Top	of Pump:		18,47	ft								ئ <del>ى (</del>
Water Level Afte			11.24	ft	Bottle	e 1L Raw	500m	L Nitric	500mL Ni	tric (filtered)	250 Su	lfuric
Measurement	Method:	Electric	Water Level In	dicator	List:	· · · · · · · · · · · · · · · · · · ·		/'	4 - 1L Nitrio	C		

MDU Lewis and Clark March 2018

Alieswaag

### Field Measurements

					1.014	Medouro					
Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	18mit	5.29	2269	7,13	0143	-249.3	92:0	11.14	100	500	Slightly turbid
2	183.7	0169	21443	7172	0123	-706.0	140	11.23	100	7000	di
3	18517	5,19	1429	7,13	0,24.	-318,8	5.07	11.28	100	2000	cu
4	1902	4.99	NZS		O,ZY.	-37.0,5	4.91	11,24	100	500	ch-
5	1904	- 4,907	1424	7.13	0,23	-316.3	4.69	11.24	100	.500	ch
6						,,					
7											
8											
9											•
10	( a									1	
Stabilized:	(Yeş	No					Т	otal Volume	e Removed:	6500	mL

Comments:



Phone: (701) 258-9720

# **Field Datasheet**

Groundwater Assessment

Company:		MDU Lewis and Clark	
Event:		March 2018	
Sample ID:	109		
Sampling Personal	: Jarren	Nieswag 2	

Weather Conditions: Temp: °F Wind: Well Information Well Locked? Yes No Well Labeled? Yes No Casing Straight? Yes No Grout Seal Intact? Not Visible Yes No Repairs Necessary: Casing Diameter: 2" Water Level Before Purge: ft Depth to Top of Pump: ft ft Water Level After Sample: Measurement Method: Electric Water Level Indicator

	@		Preci	p: Sun	iny / Partly Cl	oudy / Cloudy
		on				
Purgi	ing Method:	Blac	lder			
Sampli	ing Method:	Blac	lder		Con	trol Settings
Dedica	ted Equip?:	Yes	No		Purge:	sec.
Duplicate	e Sample?:	Yes	No		Recover:	sec.
Duplicate	Sample ID:				PSI:	
F	Purge Date:	4 Mar	.19	Time Purg	ging Began:	am/pm
Well P	urged Dry?	<sup>(</sup> Yes	No	Time	Purged Dry:	am/pm
Sa	ample Date:			Time c	of Sampling:	am/pm
Bottle	1L Raw	500mL	Nitric	500mL Ni	tric (filtered)	250 Sulfuric
List:				4 - 1L Nitrie	C	•

#### **Field Measurements**

Stabiliz	ation	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 conse	cutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1											
2		1									
3											
4											
5											
6											
7											
8											
9											
10											
Stabilized:	Yes	No					Τ	otal Volume	e Removed:		mL

Comments:

Well is removed

			Field	D۶	Itae	heet		Company:				and Clark	
MVT					itas			Event:			March	2018	
			Ground	water	Assess	ment		Sample ID	):	M.	w10		
2616 E. Broadway Ave, Bis	smarck, ND							Sampling	Personal:	Arrin	NTESU	ang.	
Phone: (701) 258-9	720									¥		<<	
Weather Conditions:		Temp:	18 °F		Wind:	Wist	@ 20		Precip	Sunr	ny / Partly (	Cloudy / Clo	oudy
	Well Info		-i "					S	ampling I				
Well Locked?	Yes	(No)				Purgir	ng Method	Bla	dder		line	bladde	funo
Well Labeled?	Tes	No				Samplir	ng Method	Bla	ldder		Co	ontrol Setting	jś
Casing Straight?	Yes	No				Dedicat	ed Equip?	Yes	(No)	].	Purge:	3	sec.
Grout Seal Intact?	Yes	No	Not Visibl	è		Duplicate	Sample?:	Yes	NO		Recover:	17	sec.
Repairs Necessary:						Duplicate \$	Sample ID:				PSI:		
	Diameter:		2"										
Water Level Befo	ore Purge:	9	.87	ft		P	urge Date	5 Mar	19	Time Purg	ing Began:	1104	/am/pm
						Well P	urged Dry?	Yes		Time F	ourged Dry:	· · · · · ·	am/pm
						Sa	mple Date	5 Mari	19	Time of	f Sampling:	1239	am/ora
Depth to Top	o of Pump:	——— <b>—</b>		ft				0	•			-	
Water Level After	er Sample:		9.87	ft	-	Bottle	1L Raw	500m	nL Nitric	500mL Niti	ric (filtered)	250 St	ulfuric
Measuremen		Electric V	Vater Level Indic	ator		List:		4	4 - 1L Nitri <mark>c</mark> -	+ Additional	Constituen	ts	
L				Field	Measure	ements							
F1.				<u></u>		Turbidity	Water	Dumping	r	1	Description		

					1 1010	mououro					
Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	ու	Description:
	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time	, , , , , , , , , , , , , , , , , , , ,	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft ,	ml/min		Clear, Slightly Turbid, Turbid
1	1109	5,307	1766	7.17	6,22	-179,8	172.2	9.86	100	500	slightly tubid
2	11301	6.98	1065	7.12	6,23	-18-7,4	13,4	9,90	400	3000	Cler
3	1204	6,96	1016	7.12	2,00	-183,3	8.47	9.87	100	2500	dy
4	1209	6.84	1. 20 00-	7.11	4,39	-175.6	5.62	9.87	(00	1500	clin
5	12 29	7,03	1065	7.11	4.32	-175,7	4,94	9.907	100	1280	a
6	1234	6.58	1065	7.11	4,30	-174,3	4,83	9.87	100	500	ch
7	1239	6068	1264	-7.11	4.22	-173.6	4,49	9,87	100	500	d
8	1						- " (		ć		
9											
10											
Stabilized:	Yes	No	·	•	£		Т	otal Volum	e Removed:	4500	mL

Stabilized: (Yes/ No Comments: Used a lin blatter pump on well due to assirution.

TEAW	2616 E. Broadway Ave, Bismarck, ND
------	------------------------------------

**Field Datasheet** 

**Groundwater Assessment** 

Company: MDU Lewis and Clark Event: March 2018 Sample ID: Advisor Avenue Compliant

Phone: (701) 258-9720

			() () ()	LICOP.	Summy ramy cloudy relian
Well Information	iation <sup>t</sup>		,	Sampling Information	formation
Well Locked? Yes	(ON-	Purgir	Purging Method: BI	Bladder	
Well Labeled?	No	Samplii	Sampling Method: BI	Bladder	Control Settings
Casing Straight?	No	Dedicat	Dedicated Equip?: Yes	(N)	Purge: 3
Grout Seal Intact? Yes	No <u>(Not Visibl</u> è	Duplicate	Duplicate Sample?: Yes	ØŊ	Recover. 217
Repairs Necessary:		Duplicate ;	Duplicate Sample ID:		PSI:
Casing Diameter:	. 2"				
Water Level Before Purge:	9,5% Ħ	۵.	Purge Date: Com	They marig T	Time Purging Began: $1220$
		Well Pr	Well Purged Dry?	(No)	Time Purged Dry:
		Sa	Sample Date: Hmar 19	19	Time of Sampling: $ /\gamma S_{S} $
Depth to Top of Pump:	14,11 ft				
Water Level After Sample:	9.64 ft	Bottle	1L Raw 500n	500mL Nitric 51	500mL Nitric (filtered) 250 Sulf
Measurement Method: E	Electric Water Level Indicator	List:		4 -	4 - 1L Nitric

am/pm

am/pm am/pm

lfuric

sec.

( )

Clarity, Color, Odor, Ect. Clear, Slightly Turbid, Turbid Description: Tah PL 2 Ц В Removed  $\mathfrak{O}$ 3000. 3000. Total Volume Removed: パデチョウ 3000 3000 Ę 2000 500 O 580 Turbidity Water Pumping Rate ml/min 0 130 ୍ତ ବ/ 001 160 0 20 ç Ö Level (ft) 0.25 ft 9.6 9.45 916 7,6) 3 dife. 9.6 5 コン (NTU) ±10% 17 Ţ Q 2 Q c Ŧ 9 トビナニー 5112 29. 7 ORP 120,09 (**x**C) ±20 mV -162. 2 1 22 ) DO (mg/L) L L 0 ±10% ٢ \$7.64 202 7.04 7.85 Hd Zues 7,06 6 Spec. Cond. 202 203 000 G, ±5% 797 200 201 Temp (°C) 2.02 ů ŭ 1 8 7 5 7 5 ( r 2 225 2 246 (Yes) Time いいの (3 consecutive) New York Stabilization  $\mathcal{Z}$ ን Comments:// Stabilized: SEO # 9 2 3 4 ю ဖ ∞ თ 7

		Field Da	atasl	heet		Company:			ewis and Clark	
MVTL			alasi	ICCL		Event:			arch 2018	
		Groundwate	er Assess	ment		Sample ID:		MW	.V(	
2616 E. Broadway Ave, Bismarck, N	D					Sampling Pe	ersonal: 🌈	Gillen N	FISWARD.	Ş
Рһоле: (701) 258-9720										
Weather Conditions:	Temp	: 16 °F	Wind: "	Nest	@ 15	<u>`</u>	Precip:	Sunny / Par	tly Cloudy / Clo	oudy
Well I	formation	יישער איז איז דער איז ד ז				Sai	mpling Inf	formation		
Well Locked? Yes	17		7	Purgi	ng Method:	Blade	der			
Well Labeled?			-	Samplii	ng Method:	Blade	der		Control Setting	gs
Casing Straight? Yes				Dedicat	ed Equip?:	Yes	No	Ρι	irge: 3	sec.
Grout Seal Intact? (Xes		Not Visible		Duplicate	Sample ?:	Yes	No	Reco	over: , 217	sec.
Repairs Necessary:				Duplicate :	Sample ID:	Dul	1		PSI:	
Casing Diamet	er.	2"								
Water Level Before Purg		6:08	ft	F	urge Date:	SUMary	19 7	Time Purging Beg	jan: 1696	am/pm
		<u>y</u>		Well P	urged Dry?		No	Time Purged	Dry: ľ	am/pm
		- · · · · · · · · · · · · · · · · · · ·	7	Sa	mple Date:	SMar1º	î	Time of Sampl	ing: <u>36</u>	am/pm
Depth to Top of Pun	np:	4,75	ft							
Water Level After Samp		(20	ft	Bottle	1L Raw	500mL	Nitric 5	00mL Nitric (filte	red) 250 Si	ulfuric
Measurement Metho		Water Level Indicator		List:		4 -	1L Nitric + A	Additional Consti	tuents	
	*	Field	d Measure	ements						

		Tomp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
Stabili		Temp	- 1							Removed	Clarity, Color, Odor, Ect.
(3 conse	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)		Removeu	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1651	5188	3951	6,79	1,65	Db.7	25.6	8,19	50000	100	cl
2	1706	513	#3576	6.95	2,06	-15914	1/d	8:20	<u>ioo</u>	1500	ch
3	1716	5153	3465	6.99	2,86	-15724	4,13	8,20	100	1000.	Clea
4	7721	5,51	34.83	6,99	2.11	-151.4	3.10	8,20	100	500	ch
5	1726	5144	3483	£7.00	2:72	750, 7	235	8,20	100	500	cr
6	1721	5142	3484	6,99	2070	-14810	2.27	8120	100	500	d
7	1-12%	5140	3485	6.99	2.68	-1477	2.18	8,20	700	500	$\mathcal{C}$
8	<i>(150</i>	<b>3</b> , ,									
9											
10	$\bigcap$					<u> </u>					·
Stabilized:	Yes	No					T	otal Volum	e Removed:	5000	mL

Stabilized: Yes

------



Phone: (701) 258-9720

# **Field Datasheet**

Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	March 2018
Sample ID:	117
Sampling Personal: 6	MAN Nieswaas
p	

°F Temp: Weather Conditions: Well Information NO Well Locked? Yes xes Well Labeled? No Yes Casing Straight? No Grout Seal Intact? Not Visible Yes No Repairs Necessary:  $\sim$ Casing Diameter: 2" 7.53 Water Level Before Purge: ft Depth to Top of Pump: ft Water Level After Sample: ft Measurement Method: Electric Water Level Indicator

Wind:	۸. 	@		Preci	p: ;	Sum	y Partly (	Cloudy /	Cloudy
			Sa	mpling	Infor	matio	n		
	Purgi	ng Method:	Blad	der					
	Samplin	ng Method:	Blad	der			Co	ontrol Set	tings
	Dedicat	ed Equip?:	Yes	No			Purge:	3	sec.
	Duplicate	Sample?:	Yes	No			Recover	27	sec.
	Duplicate :	Sample ID:					PSI:	~	
	P	urge Date:	t Mar 1ª	1	Time	e Purgi	ng Began:	81723	am/rm
	Well P	urged Dry?	Yes	No		Time Pu	urged Dry:	0875	am/pm
	Sa	mple Date:  \$	Mar 19		Т	ïme of	Sampling:	0,00	am/pm
	Bottle	1L Raw	500mL	Nitric	500r	nL Nitri	c (filtered)	250	Sulfuric
	List:			2	-1L	Nitric	facha.	FORT	4

#### **Field Measurements**

Stabi	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 con	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1728	1.27	8276	6.87	2,42	-134.0	673	6.136	100	500	TWSTA .
2	1748	1,24	(327	6.26	4.22	-1311	136	TON	100	2000	slightly turbid
3	<i>t</i>		0	- 0			, , , , , , , , , , , , , , , , , , , ,				
4	08/0	5,00,19	(hrged	Smin	toclea	- lic		9.44			
5	0815	1.97	9576		6.27	-266,4	944	Est.	100	662	Sit
6			0	<u> </u>			1	. /			· · · · · · · · · · · · · · · · · · ·
7	0815		Çoo	Ared to	2 hvig			100 9.8%	-		
8	1				7 70			.,			
9											
10											
Stabilized	: Yes	No		•			T	otal Volume	e Removed:	3006	mL
Comment		$\overline{\bigcirc}$								- <u>1</u> 2	





Groundwater Assessment

MDU Lewis and Clark
March 2018
TIS Hwitz
Arran Nieswang
£

2616 E. Broadway Ave, Bismarck, ND

. Phone: (701) 258-9720

Temp: F↓ °F	Wind: Sh	@13	Precip:	Sunny / Partly Clo	udy / Cloudy
ormation			Sampling Inf	ormation	
	Purgin	ng Method: BI	adder		
	Samplin	ng Method: BI	adder	Contr	ol Settings
	Dedicat	ted Equip?: Yes	NO	Purge:	3 sec.
	Duplicate	Sample?:	~ No	Recover: Ź	.77 sec.
	Duplicate	Sample ID:		PSI:	
2" ,					<u></u>
	F	Purge Date: 5Ma,			f53 am/pm
0:00	Well P	urged Dry? Yes	No		am/pm
	Sa	ample Date: 5 Mar	19	Time of Sampling:	952 (am/pm
9.74 ft			-		00
	Bottle	1L Raw 500	mL Nitric 5	00mL Nitric (filtered)	250 Sulfuric
	List:		4 - 1L Nitric + A	dditional Constituents	
	$\begin{array}{c c} remp. & r \\ \hline remp. & r \\ \hline rormation \\ \hline \hline No \\ \hline \hline No \\ \hline No \\ \hline \hline \hline No \\ \hline \hline No \\ \hline \hline \hline \hline No \\ \hline \hline \hline No \\ \hline \hline \hline \hline \hline No \\ \hline \hline \hline \hline No \\ \hline \hline \hline \hline \hline No \\ \hline \hline \hline \hline \hline No \\ \hline \hline \hline \hline \hline \hline \hline \hline No \\ \hline $	Purgi       No     Purgi       No     Sampli       No     Dedicat       No     Not Visible       2"     Duplicate $S_2SS$ ft       Sampli     Dedicat       Duplicate     Duplicate       Sampli     Sampli       Sampli     Sampli       Sampli     Dedicat       No     Not Visible       Sampli     Sampli       Sampli     Sampli	Purging Method:     BI       No     Sampling Method:     BI       No     Dedicated Equip?:     Yes       No     Not Visible     Duplicate Sample ID:       2"     Sind ft     Purge Date:       2"     Sample Date:     Smart       8     9     ft     Bottle       1     Bottle     1L Raw     500	Prenip.       Prenip.       Purging Method:       Bladder         No       No       Sampling Method:       Bladder         No       No       Not Visible       Dedicated Equip?:       Yes       No         No       Not Visible       Duplicate Sample?:       Yes       No         2"       Yes       No       No       No         No       Not Visible       Duplicate Sample?:       Yes       No         Uplicate Sample ID:       Yes       No       No       No         1       Singer fit       Purge Date:       Smar/19       T         Yes       Yes       Yes       Yes       Yes         Sample Date:       Smar/19       T       Yes       Yes         Sample Date:       Smar/19       T       Yes       Yes         Sample Date:       Smar/19       T       Yes       Yes         Sample Date:       SoomL Nitric       SoomL Nitric       SoomL Nitric	Image: Processing information       Sampling Information         No       Purging Method:       Bladder         No       Dedicated Equip?:       Yes       No         No       Not Visible       Duplicate Sample?:       Yes       No         2"       Purge Date:       Smar/19       Time Purged Dry:       Prime Purged Dry:         2"       Sample Date:       Smar/19       Time Purged Dry:       Time of Sampling:         3.158       ft       Bottle       1L Raw       Sourt filtered         Bottle       1L Raw       Sourt filtered       Sourt filtered

#### Field Measurements

					1 1010	moadaro					
Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
		(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
	secutive)		±5%	±0.1	±10%	+20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
SEQ #	Time		±0%							500	Turbid
1	0858	3,76	1559	7,2.1	3,6	-2281	204	8.91	100		101910
2	0920	3160	1574	5.19	2,61	-229.0	9022	8,89	100	3000	<u>Clan</u>
3	0942	4.28	1578	7.19	1.48	-127.3	5,24	8.92	100	1500	dea
			18-14	210	2:47	-2280	C20	8.91	100	500	ch
4	0948	4.09	12 1	7,19			620	8,91	100	500	~1
5	0953	4,22	1580	7120		-251	7.50			500	du
6	09-8	4135	1580	7,20	2161	-224.9	9.90	8191	1,00	200	ch
7			2.50								
8	· ·										
9											
10	6										
Stabilized		No					Т	otal Volum	e Removed:	6500	mL

Stabilized: / Yes

Comments:

MVTL		Field D			•	Company: Event: Sample ID:		12	MDU Lewis March	2018	
2616 E. Broadway Ave, Bismarck, M Phone: (701) 258-9720					-	Sampling Po	ersonal.	PATTA	NIESN	raag	
Weather Conditions:	Tem	p:	Wind:	West @ 1	157	· · · · · · · · · · · · · · · · · · ·	Prec	pip: <b>(Sun</b>	ny/Partly (	Cloudy / Clo	udy
Well I	nformatio	n		-		Sa	mpling	g Informati	on		
Well Locked? Ye	s No			Purging Met	thod:	Blad	der				
Well Labeled? Ye	s No			Sampling Met	thod:	Blad	der		Co	ontrol Setting	s
Casing Straight?	s No			Dedicated Equ	uip?:	(jes	ΎNο	Rubing	Purge:	3	sec.
Grout Seal Intact? Ye	s No	(Not Visible		Duplicate Samp	le?:	Yes	NO		Recover:	27	sec.
Repairs Necessary:	$\sim$			Duplicate Sample	e ID:	ć			PSI:	-	
Casing Diame	ter:	2"									
Water Level Before Pur	ge:	15.97	ft	Purge D	Date:	4 Marl	9	Time Pure	ging Began:	1600	am/ฮุภิท
				Well Purged	Dry?	(Ves)	-		Purged Dry:	1645	-am/pm
				Sample D	Date:	EPMar 19		Time c	of Sampling:	-	am/pm
Depth to Top of Pur	np:	16.81	ft			<u> </u>					
Water Level After Sam	ole:	TOD OF PUMp	ft	Bottle 1L R	Raw	500mL	Nitric	500mL Ni	tric (filtered)	250 Su	lfuric
Measurement Metho	od: Electri	c Water Level Indicato	<u>.</u>	List:			48	- 1L Nitri	<u> </u>		

### Field Measurements

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:	· · ·
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.	* u
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid	
1	11.05	1.03	3641	6,59	1.30	-212,1	145	16.1h	100	500	Cla	
2	120	3.13	30-68	113	2.91	2645	6.62	16.81%	100	1500	Ch	
3	1635	1.20	3676	6,60	1,19	-259.7	4.68	16.81	100	1500	(In-	
4	114A	1,23	3636	6.59	1,20.	-247.7	4.44	16.81	661	500	di	
5	1645	1.74	3-15	6.61	1.2.8	-2514	50,1	16.81	100	500	ch	
6	i	1121			1,400	r			-		)	
7	34F00	Parte	a liz	c for	5 mi			1603				
8	0705	5,207	394.9	6.62	3,12	-255/7	+190	· • • •	100	500	che Slightly th	é, A
9												//
10		$\square$										
Stabilized:	Yes	No	A				Т	otal Volume	e Removed:	5000	mL	
			-									

Comments:



Laboratories, Inc. 2616 E. Broadway Bismarck, ND 58501 Phone (701) 258-9720

# **Chain of Custody Record**

Project Name	•		Event:				Wor	rk Or	der N	lumber:	$\mathcal{Q}\mathcal{A}$	$\Lambda 3$	75
	MDU Lewis and Clark	ζ.		N	larch 2019						DØ	-00	$\mathbb{N}$
Report To: Attn: Address: phone:	MDU Samantha Davies 5181 Southgate Dr. Billings, MT 59102 406-896-4227		<b>Carbon Co</b> Attn: Address:	ору:			Nan	ne of	Sam Da	pler(s): t//tn	N iesi	r de g	
		le Informatio	on			Bot	ttle T	ype		Fie	eld Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample T <sub>vno</sub>		utter Nitric				Temp (°C)	Spec. Cond.	Ha	Analysis Required
W317	Dup 1	5 Mar 19	NA	GW	4		$\uparrow$	1		NA	NA	NA	
W313	Field Blank (FB)	5 Ma/19	NA	GW	4					NA	NA	NA	
W313 W319	MW103	4Marla	12007	GW	2					4.97	1424	7-13	
	MW109	4 mar 19		GW	¥ -	-				Well	(emov	red	
W320	MW110	5 maria	1239	GW						6.68	1064	7.11	Rad 226 and 228
W321	MW119	4 Mar 19	1455	GW	2						1210	707	
W322	MW111	5 marly	1736	GW	4						3485	6.99	
W323	MW117	5 mar 19	0815	GW	#	2					8576	6.99	
42324	MW118	5 Martig	0958	GW	4							7.20	
WBAS	MW120	5.mar 19	0705	GW	4	•	+			5,27	3949	6.62	
								_	_				
									_				,
			<u> </u>	L					l	<u> </u>	l	L	

Comments ymarla Om # 5Marla Om

Relinguished By:	Relinquished By:		nple Condition:		Received by:				
Name:	Date/Time	Location:	Temp (°C)	] [	Name:	Date/Time			
$1 \Omega = 1$	6 Mar 19	- KOG-HT	].		TAINAN	6/1022019			
Paren Vien	1327	Walk in #2	TM562/ITM805			1.527			





#### **REVISION 1**

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: August 2019

1 of 2 Page:

Report Date: 1 Oct 19 Lab Number: 19-W3294 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receiv Result	bed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7,7	units	N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
Total Suspended Solids	2	mg/l	2	13765-85	30 Aug 19 16:24	SVS
Total Alkalinity	351	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Fluoride	0.70	mg/1	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	378	mg/1	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	22.1	mg/1	1.0	SM4500-C1-E	6 Sep 19 13:56	EV
Nitrate-Nitrite as N	6.85	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	961	mg/l	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	91.9	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Magnesium - Total	109	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Sodium - Total	86.7	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Potassium - Total	8.2	mg/l	1.0	6010D	12 Sep 19 14:04	SZ
Lithium - Total	0.055	mg/1	0.020	6010D	3 Sep 19 13:30	SZ
Boron - Total	1.16	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	97.6	mg/1	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	111	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	88.9	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	8.8	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.049	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	1.22	mg/l	0.10	6010D	30 Aug 19 15:47	SZ
Antimony - Total	0.0042	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	0.0027	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0247	mg/1	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	25 Sep 19 19:40	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	
Molybdenum - Total	0.0198	mg/1	0.0020	6020B	13 Sep 19 10:56	
Selenium - Total	0.0447	mg/l	0.0050	6020B	13 Sep 19 10:56	MDE
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	25 Sep 19 19:40	MDE
Antimony - Dissolved	0,0039	mg/l	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	0.0026	mg/l	0.0020	6020B	17 Sep 19 9:30	MDE

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016



Todd Peterson

400 N 4th St

Bismarck ND

Sample Description: Dup 1

Event and Year: August 2019

Project Name: MDU Lewis & Clark

Montana-Dakota Utilities Co.

58501

MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3294 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Da An	Analys			
Barium - Dissolved	0.0232	mg/l	0.0020	6020B	17	Sep	19 9	:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0,0005	6020B	24	Sep	19 14	:57	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19 9	:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep	19 9	:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep	19 9	:30	MDE
Lead - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep	19 9	:30	MDE
Molybdenum - Dissolved	0.0204	mg/l	0,0020	6020B	17	Sep	19 9	:30	MDE
Selenium - Dissolved	0.0477	mg/l	0.0050	6020B	19	Sep	19 12	:37	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	24	Sep	19 14	:57	MDE

\* Holding time exceeded

Approved by:

10 Claudithe K. Canto OCTIG

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit



Todd Peterson

400 N 4th St

Prost and Warman Dispute 2010

Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Field Blank (FB)

Montana-Dakota Utilities Co.

MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



Page: 1 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3295 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 5.9	units	N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
Total Suspended Solids	2	mg/l	2	13765-85	30 Aug 19 16:24	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	< 5	mg/1	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	< 1	mg/l	1.0	SM4500-C1-E	6 Sep 19 13:56	EV
Nitrate-Nitrite as N	< 0.1	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	EV
Mercury - Total	< 0.0002	mg/l	0,0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	< 10	mg/l	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	< 1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	< 0.02	mg/1	0.020	6010D	3 Sep 19 13:30	SZ
Boron - Total	< 0.1	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	< 1	mg/1	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	< 0.02	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	< 0.1	mg/l	0.10	6010D	30 Aug 19 15:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0,0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0,0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Lead - Total	< 0,0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum 4 Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:56	
Selenium - Total	< 0.005	mg/l	0.0050	6020B	13 Sep 19 10:56	
Fhallium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	
Antimony - Dissolved	< 0,001	mg/1	0.0010	6020B	17 Sep 19 9:30	MDE
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020B	17 Sep 19 9:30	MDE

RL = Method Reporting Limit

# MIVTL

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Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Field Blank (FB)

Event and Year: August 2019

Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3295 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Dat Ana	Analyst		
Barium - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	15:13	MDE
Cadmium - Dissolved	< 0,0005	mg/l	0,0005	6020B	17	Sep 19	9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep 19	9:30	MDE
Lead - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep 19	9:30	MDE
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	17	Sep 19	9:30	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	9:30	MDE

\* Holding time exceeded

(C Approved by: Claudite K. Canreo OCTIO

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: August 2019

Page: 1 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3296 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 10:15 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Method RL	Method Reference	Date Analyzed	Analyst
	EPA 200.2	29 Aug 19	SVS
N/A	SM4500 H+ B	29 Aug 19 17:00	SVS
2	13765-85	30 Aug 19 16:24	SVS
NA	SM 4500 H+ B	27 Aug 19 10:15	JSM
NA	SM 2550B	27 Aug 19 10:15	JSM
20	SM2320-B	29 Aug 19 17:00	SVS
1	EPA 120.1	27 Aug 19 10:15	JSM
0.10	SM4500-F-C	3 Sep 19 18:00	SVS
5.00	ASTM D516-07	5 Sep 19 8:59	EV
1.0	SM4500-C1-E	6 Sep 19 14:36	EV
0.10	EPA 353.2	3 Sep 19 8:37	EV
0.0002	7470A	5 Sep 19 11:40	EMS
0.0002	EPA 245.1	5 Sep 19 12:46	EMS
10	I1750-85	30 Aug 19 10:32	SVS
1.0	6010D	12 Sep 19 15:04	SZ
1.0	6010D	12 Sep 19 15:04	SZ
1.0	6010D	12 Sep 19 15:04	SZ
1.0	6010D	12 Sep 19 15:04	SZ
0.020	6010D	3 Sep 19 13:30	SZ
0.10	6010D	30 Aug 19 13:47	SZ
1.0	6010D	9 Sep 19 17:04	SZ
1.0	6010D	9 Sep 19 17:04	SZ
1.0	6010D	9 Sep 19 17:04	SZ
1.0	6010D	9 Sep 19 17:04	SZ
0.020	6010D	3 Sep 19 15:30	SZ
0.10	6010D	30 Aug 19 15:47	SZ
0.0010	6020B	13 Sep 19 10:56	MDE
0.0020	6020B	13 Sep 19 10:56	MDE
0.0020	6020B	13 Sep 19 10:56	MDE
0.0005	6020B	13 Sep 19 10:56	MDE
0.0005	6020B	13 Sep 19 10:56	MDE
0.0020	6020B	13 Sep 19 10:56	MDE
0.0020	6020B	13 Sep 19 10:56	MDE
0.0005	6020B	13 Sep 19 10:56	MDE
			MDE
			MDE
	0.0020 0.0050		· · · · · · · · · · · · · · · · · · ·

RL = Method Reporting Limit





Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St

58501

Project Name: MDU Lewis & Clark

Sample Description: MW103

Bismarck ND

Event and Year: August 2019

Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3296 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 10:15 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Dal	Analyst			
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13	Sep	19	10:56	MDE
Antimony - Dissolved	0.0037	mg/l	0.0010	6020B	17	Sep	19	9:30	MDE
Arsenic - Dissolved	0.0028	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Barium - Dissolved	0.0222	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	24	Sep	19	14:57	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep	19	9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE
Alybdenum - Dissolved	0.0201	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Selenium - Dissolved	0.0541	mg/l	0.0050	6020B	17	Sep	19	9:30	MDE
Fhallium - Dissolved	< 0.0005	mg/1	0.0005	6020B	24	Sep	19	14:57	MDE

\* Holding time exceeded

Approved by:

10 Clauditte K. Canto 10CT 19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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Report Date: 1 Oct 19 Lab Number: 19-W3297 Work Order #: 82-2358 Account #: 002800 Date Sampled: 26 Aug 19 15:50 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Todd Peterson Montana-Dakota Uțilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: August 2019

	As Receive Result	ad	Method RL	Method Reference	Dat Ana		Analys	
Metal Digestion			1.110	EPA 200.2		Aug 19		SVS
pH	* 7.8	units	N/A	SM4500 H+ B		Aug 19		SVS
Total Suspended Solids	12	mg/l	2	13765-85		Aug 19		SVS
oH - Field	7.26	units	NA	SM 4500 H+ B	26	Aug 19	15:50	JSM
Temperature - Field	16.8	Degrees C	NA	SM 2550B	26	Aug 19	15:50	JSM
Total Alkalinity	338	mg/l CaCO3	20	SM2320-B		Aug 19		SVS
Conductivity - Field	1023	umhos/cm	1	EPA 120.1		Aug 19		JSM
Fluoride	0,49	mg/1	0.10	SM4500-F-C		Sep 19		SVS
Sulfate	181	mg/l	5.00	ASTM D516-07		Sep 19		EV
Chloride	21.7	mg/l	1.0	SM4500-Cl-E	6	Sep 19		EV
Nitrate-Nitrite as N	7.15	mg/l	0.10	EPA 353.2	3	Sep 19	8:37	EV
Mercury - Total	< 0.0002	mg/1	0.0002	7470A	5		11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5	Sep 19	12:46	EMS
Total Dissolved Solids	695	mg/l	10	I1750-85			10:32	SVS
Calcium - Total	93.0	mg/l	1.0	6010D		Sep 19		SZ
Magnesium - Total	54.2	mg/l	1.0	6010D	12	Sep 19	15:04	SZ
Sodium - Total	82.9	mg/1	1.0	6010D		Sep 19		SZ
Potassium - Total	7.2	mg/l	1.0	6010D		Sep 19		SZ
Lithium - Total	0.040	mg/l	0.020	6010D			13:30	SZ
Boron - Total	0.22	mg/l	0.10	6010D			13:47	SZ
Calcium - Dissolved	91.5	mg/l	1.0	6010D			17:04	SZ
Magnesium - Dissolved	53.7	mg/l	1.0	6010D		Sep 19		SZ
Sodium - Dissolved	84.3	mg/l	1.0	6010D		Sep 19		SZ
Potassium - Dissolved	7.4	mg/l	1.0	6010D			17:04	SZ
Lithium - Dissolved	0.038	mg/l	0.020	6010D			15:30	SZ
Boron - Dissolved	0.22	mg/l	0.10	6010D			16:47	SZ
Antimony - Total	< 0,001	mg/l	0.0010	6020B			10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B			10:56	MDE
Barium - Total	0.0324	mg/l	0.0020	6020B			10:56	MDE
Beryllium - Total	< 0,0005	mg/l	0.0005	6020B			10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B			10:56	MDE
Chromium - Total	< 0.002	mg/l	0.0020	6020B			10:56	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B			10:56	MDE
Lead - Total	< 0.0005	mg/l	0.0005	6020B			10:56	MDE
Molybdenum - Total	0.0034	mg/l	0.0020	6020B		-	10:56	MDE
Selenium - Total	< 0.005	mg/l	0.0050	6020B	13	Sep 19	10:56	MDE

RL = Method Reporting Limit





Page: 2 of 2

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: August 2019

Report Date: 1 Oct 19 Lab Number: 19-W3297 Work Order #: 82-2358 Account #: 002800 Date Sampled: 26 Aug 19 15:50 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Dat Ana	Analyst			
Thallium - Total	< 0.0005	mg/1	0.0005	6020B	13	Sep	19	10:56	MDE
Antimony - Dissolved	< 0.001	mg/1	0.0010	6020B	17	Sep	19	9:30	MDE
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep	19	9:30	MDE
Barium - Dissolved	0.0289	mg/1	0.0020	6020B	17	Sep	19	9:30	MDE
Beryllium - Dissolved	< 0.0005	mq/1	0.0005	6020B	17	Sep	19	15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE
Chromium - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep	19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Lead - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep	19	9:30	MDE
Molybdenum - Dissolved	0.0033	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	17	Sep	19	9:30	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE

\* Holding time exceeded

Approved by:

Clauditte K. Canto 10CT19

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

#### MII 1126 2 No 2616 1201

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Page: 1 of 2

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: August 2019

Report Date: 1 Oct 19 Lab Number: 19-W3298 Work Order #: 82-2358 Account #: 002800 Date Sampled: 26 Aug 19 12:35 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

As Rece: Result		ed Method RL		Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	29 Aug 19	SVS
oH	* 7.7	units	N/A	SM4500 H+ B	29 Aug 19 17:00	
Fotal Suspended Solids	< 2	mg/1	2	13765-85	30 Aug 19 16:24	
oH - Field	7.27	units	NA	SM 4500 H+ B	26 Aug 19 12:35	JSM
femperature - Field	15.9	Degrees C	NA	SM 2550B	26 Aug 19 12:35	
Fotal Alkalinity	364	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	SVS
Conductivity - Field	1108	umhos/cm	1	EPA 120.1	26 Aug 19 12:35	JSM
Fluoride	0.46	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	SVS
Sulfate	189	mg/l	5.00	ASTM D516-07	5 Sep 19 8:59	EV
Chloride	25.5	mg/l	1.0	SM4500-C1-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	6.85	mg/l	0.10	EPA 353.2	3 Sep 19 8:37	
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	760	mg/l	10	11750-85	30 Aug 19 10:32	SVS
Calcium - Total	95.7	mg/1	1.0	6010D	12 Sep 19 15:04	
Magnesium - Total	56.8	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	90.1	mg/1	1.0	6010D	12 Sep 19 15:04	
Potassium - Total	8.1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.041	mg/l	0.020	6010D	3 Sep 19 13:30	SZ
Boron - Total	0.26	mg/1	0.10	6010D	30 Aug 19 13:47	
Calcium - Dissolved	91.2	mg/1	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	58.3	mg/l	1.0	6010D	9 Sep 19 17:04	
Sodium - Dissolved	93.4	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	8.5	mg/l	1.0	6010D	9 Sep 19 17:04	
Lithium - Dissolved	0.040	mg/l	0.020	6010D	3 Sep 19 15:30	
Boron - Dissolved	0.25	mg/1	0.10	6010D	30 Aug 19 16:4'	
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:50	
Arsenic - Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:50	
Barium - Total	0.0297	mg/l	0.0020	6020B	13 Sep 19 10:50	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:50	
	< 0.0005	mg/1	0.0005	6020B	13 Sep 19 10:50	
Cadmium - Total	< 0.0005	mg/1	0.0020	6020B	13 Sep 19 10:50	MDE
Chromium - Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:50	
Cobalt - Total	< 0.002	mg/1	0.0005	6020B	13 Sep 19 10:50	
Lead - Total	0.0036	mg/1	0.0020	6020B	13 Sep 19 10:50	
Molybdenum - Total Selenium - Total	< 0.005	mg/1	0.0020	6020B	13 Sep 19 10:50	

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3298 Work Order #: 82-2358 Account #: 002800 Date Sampled: 26 Aug 19 12:35 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Bismarck ND 58501	L L
	D
	S
Project Name: MDU Lewis & Clark	
	P
Sample Description: MW119	

Event and Year: August 2019

Todd Peterson

400 N 4th St

Montana-Dakota Utilities Co.

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	As Receive Result	ed	Method RL	Method Reference	Dal	Analyst		
Thallium - Total	< 0,0005	mg/l	0.0005	6020B	13	Sep 19	10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17	Sep 19	9:30	MDE
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep 19	9:30	MDE
Barium - Dissolved	0.0296	mg/1	0.0020	6020B	17	Sep 19	9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	9:30	MDE
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	9:30	MDE
Molybdenum - Dissolved	0.0041	mg/1	0.0020	6020B	17	Sep 19	9:30	MDE
Selenium - Dissolved	< 0.005	mg/l	0.0050	6020B	17	Sep 19	9:30	MDE
Thallium - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep 19	9:30	MDE

\* Holding time exceeded

Approved by:

10 OCT Clauditte K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

# WIVIL

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Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: August 2019

Page: 1 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3299 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 16:27 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receive Result	bed	Method RL	Method Reference	Date Analyzed	Analys
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.7	units	N/A	SM4500 H+ B	29 Aug 19 17:00	
Total Suspended Solids	5	mg/1	2	13765-85	30 Aug 19 16:24	SVS
pH - Field	7.17	units	NA	SM 4500 H+ B	27 Aug 19 16:27	
Temperature - Field	15.0	Degrees C	NA	SM 2550B	27 Aug 19 16:27	
Total Alkalinity	436	mg/l CaCO3	20	SM2320-B	29 Aug 19 17:00	
Conductivity - Field	3757	umhos/cm	1	EPA 120.1	27 Aug 19 16:27	
Fluoride	2.11	mg/l	0.10	SM4500-F-C	3 Sep 19 18:00	
Sulfate	2130	mg/l	5.00	ASTM D516-07	5 Sep 19 8:59	
Chloride	36.6	mg/l	1.0	SM4500-C1-E	6 Sep 19 14:36	
Nitrate-Nitrite as N	11.2	mg/l	0.10	EPA 353,2	3 Sep 19 8:37	
Mercury - Total	< 0.0002	mg/1	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	3680	mg/l	10	I1750-85	30 Aug 19 10:32	
Calcium - Total	179	mg/1	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	520	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	139	mg/l	1.0	6010D	12 Sep 19 15:04	
Potassium - Total	12.1	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.200	mg/l	0.020	6010D	3 Sep 19 14:30	SZ
Boron - Total	8.20	mg/1	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	181	mg/1	1.0	6010D	9 Sep 19 17:04	
Magnesium - Dissolved	519	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	146	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	12.6	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.201	mg/1	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	7.94	mg/l	0.10	6010D	30 Aug 19 16:4'	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:50	
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:50	MDE
Barium - Total	0.0196	mg/l	0.0020	6020B	13 Sep 19 10:50	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:50	
Cadmium - Total	< 0.0005	mg/1	0.0005	6020B	13 Sep 19 10:50	MDE
Chromium - Total	0.0043	mg/1	0.0020	6020B	13 Sep 19 10:50	
Cobalt - Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:50	MDE
Lead - Total	< 0.0005	mg/1	0.0005	6020B	13 Sep 19 10:50	
Molybdenum - Total	0.0518	mg/l	0.0020	6020B	13 Sep 19 10:50	
Selenium - Total	0.0612	mg/l	0.0050	6020B	13 Sep 19 10:50	

RL = Method Reporting Limit

A DEFE





Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3299 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 16:27 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: August 2019

	As Receive Result	ed	Method RL	Method Reference	Da An	Analys			
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13	Sep	19	10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17	Sep	19	9:30	MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Barium - Dissolved	0.0197	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE
Chromium - Dissolved	0.0033	mg/1	0,0020	6020B	17	Sep	19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep	19	9:30	MDE
Lead - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep	19	9:30	MDE
Molybdenum - Dissolved	0.0556	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Selenium - Dissolved	0.0692	mg/1	0.0050	6020B	19	Sep	19	12:37	MDE
Thallium - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep	19	9:30	MDE

\* Holding time exceeded

Approved by:

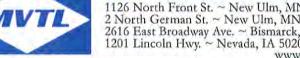
CC Claudette K. Cantle OCTIG

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes : = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016

# MINNESOTA VALLEY TESTING LABORATORIES, INC. 1126 North Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2 North German St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890



2616 East Broadway Ave. ~ Bismarck, ND 58501 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Hwy. ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com



1 of 2 Page:

Amended 23Oct19 (Tl rerun)

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: August 2019

Report Date: 1 Oct 19 Lab Number: 19-W3300 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 13:28 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

As Recei Result		ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion		-17-1		EPA 200.2	29 Aug 19	SVS
pH	* 7.6	units	N/A	SM4500 H+ B	29 Aug 19 18:00	SVS
Total Suspended Solids	15	mg/1	2	13765-85	30 Aug 19 16:24	SVS
pH - Field	7.10	units	NA	SM 4500 H+ B	27 Aug 19 13:28	JSM
Temperature - Field	15.4	Degrees C	NA	SM 2550B	27 Aug 19 13:28	JSM
Total Alkalinity	393	mg/l CaCO3	20	SM2320-B	29 Aug 19 18:00	SVS
Conductivity - Field	8108	umhos/cm	1	EPA 120.1	27 Aug 19 13:28	JSM
Fluoride	0.26	mg/l	0.10	SM4500-F-C	3 Sep 19 19:00	SVS
Sulfate	6730	mg/1	5.00	ASTM D516-07	5 Sep 19 9:21	EV
Chloride	45.7	mg/1	1.0	SM4500-C1-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	26.6	mg/1	0.10	EPA 353.2	3 Sep 19 8:59	EV
Mercury - Total	< 0,0002	mq/1	0.0002	7470A	5 Sep 19 11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	9230	mg/1	10	I1750-85	30 Aug 19 10:32	SVS
Calcium - Total	398	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	1230	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	585	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	30.2	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.140	mg/l	0.020	6010D	3 Sep 19 14:30	SZ
Boron - Total	11.5	mg/l	0.10	6010D	30 Aug 19 13:47	SZ
Calcium - Dissolved	398	mg/1	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	1240	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	600	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	31.3	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Lithium - Dissolved	0.140	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	11.6	mg/l	0.10	6010D	30 Aug 19 16:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0175	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Bervllium - Total	0.0008	mg/1	0.0005	6020B	13 Sep 19 10:56	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	0.0126	mg/1	0.0020	6020B	13 Sep 19 10:56	
Cobalt - Total	< 0.002	mg/1	0.0020	6020B	13 Sep 19 10:56	
Lead - Total	0.0006	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Molybdenum - Total	0.0061	mg/1	0.0020	6020B	13 Sep 19 10:56	MDE

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 2 of 2

Amended 23Oct19 (Tl rerun)

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: August 2019

Report Date: 1 Oct 19 Lab Number: 19-W3300 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 13:28 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receive Result	ed	Method RL	Method Reference	Da Ana	Analyst		
Selenium - Total	0.0333	mg/l	0.0050	6020B			10:56	MDE
Fhallium - Total	< 0.0005	mg/1	0.0005	6020B	23	Oct 19	13:51	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17	Sep 19	9:30	MDE
rsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
arium - Dissolved	0.0169	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
eryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	15:13	MDE
admium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	9:30	MDE
hromium - Dissolved	0.0118	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
ead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 19	9:30	MDE
olybdenum - Dissolved	0.0058	mg/l	0.0020	6020B	17	Sep 19	9:30	MDE
elenium - Dissolved	0.0381	mg/l	0.0050	6020B	19	Sep 1	12:37	MDE
hallium - Dissolved	< 0.0005	mg/1	0.0005	6020B		Sep 1		MDE

\* Holding time exceeded

1c Clauditte K. Cantle TIVOUS Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND || ND-00016

# = Due to concentration of other analytes
\* = Due to internal standard response





Page: 1 of 2

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: August 2019

Report Date: 1 Oct 19 Lab Number: 19-W3301 Work Order #: 82-2358 Account #: 002800 Date Sampled: 28 Aug 19 9:10 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receive Result	ed	Method RL	Method Reference	Dat	Analys			
Metal Digestion				EPA 200.2	29	Aug	19	17-6-17	SVS
oH	* 7.8	units	N/A	SM4500 H+ B	29	Aug	19	18:00	SVS
Fotal Suspended Solids	4	mg/l	2	I3765-85	30	Aug	19	16:24	SVS
oH - Field	7.27	units	NA	SM 4500 H+ B	28	Aug	19	9:10	JSM
Cemperature - Field	16.2	Degrees C	NA	SM 2550B	28	Aug	19	9:10	JSM
otal Alkalinity	359	mg/l CaCO3	20	SM2320-B	29	Aug	19	18:00	SVS
Conductivity - Field	1741	umhos/cm	1	EPA 120.1	28	Aug		9:10	JSM
Pluoride	1.18	mg/l	0.10	SM4500-F-C	3	Sep	19	19:00	SVS
Sulfate	600	mg/l	5.00	ASTM D516-07	5	Sep	19	9:21	EV
hloride	21.5	mg/l	1.0	SM4500-C1-E	6	Sep	19	14:36	EV
Nitrate-Nitrite as N	7.55	mg/l	0.10	EPA 353.2	3			8:59	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5	Sep	19	11:40	EMS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	5	Sep	19	12:46	EMS
Total Dissolved Solids	1280	mg/l	10	I1750-85	3	Sep	19	16:39	CC
Calcium - Total	94.0	mg/l	1.0	6010D	12	Sep	19	15:04	SZ
lagnesium - Total	173	mg/1	1.0	6010D	12	Sep	19	15:04	SZ
Sodium - Total	95.5	mg/l	1.0	6010D				15:04	SZ
Potassium - Total	9.0	mg/l	1.0	6010D	12	Sep	19	15:04	SZ
ithium - Total	0.102	mg/l	0.020	6010D	3	Sep	19	14:30	SZ
Boron - Total	1.82	mg/1	0.10	6010D	30	Aug	19	13:47	SZ
Calcium - Dissolved	93.1	mg/l	1.0	6010D	9	Sep	19	17:04	SZ
Agnesium - Dissolved	171	mg/l	1.0	6010D	9	Sep	19	17:04	SZ
Sodium - Dissolved	95.2	mq/1	1.0	6010D	9	Sep	19	17:04	SZ
Potassium - Dissolved	9.2	mg/l	1.0	6010D	9	Sep	19	17:04	SZ
ithium - Dissolved	0.097	mg/l	0.020	6010D	3	Sep	19	15:30	SZ
Boron - Dissolved	1.82	mg/1	0.10	6010D	30	Aug	19	16:47	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020B	13	Sep	19	10:56	MDE
Arsenic - Total	< 0,002	mg/l	0,0020	6020B	13	Sep	19	10:56	MDE
Barium - Total	0.0248	mq/1	0.0020	6020B	13	Sep	19	10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13	Sep	19	10:56	MDE
Cadmium - Total	< 0,0005	mg/l	0.0005	6020B	13	Sep	19	10:56	MDE
Chromium - Total	0.0030	mg/l	0.0020	6020B	13	Sep	19	10:56	MDE
Cobalt - Total	< 0.002	mg/1	0.0020	6020B				10:56	MDE
Lead - Total	< 0.0005	mg/1	0.0005	6020B	13	Sep	19	10:56	MDE
Alybdenum - Total	0.0403	mg/l	0.0020	6020B	13	Sep	19	10:56	MDE
Selenium - Total	0.0546	mg/1	0.0050	6020B				10:56	MDE

RL = Method Reporting Limit





Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: August 2019

Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3301 Work Order #: 82-2358 Account #: 002800 Date Sampled: 28 Aug 19 9:10 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result		Method RL	Method Reference	Dat	Analys		
Thallium - Total	< 0,0005	mg/l	0.0005	6020B	13	Sep 1	9 10:5	5 MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17	Sep 1	9 9:3	D MDE
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep 1	9 9:3	D MDE
Barium - Dissolved	0.0234	mg/l	0.0020	6020B	17	Sep 1	9 9:3	D MDE
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 1	9 15:1	3 MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 1	9 9:3	D MDE
Chromium - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep 3	9 9:3	D MDE
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep 1	9 9:3	) MDE
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 1	9 9:3	D MDE
Nolybdenum - Dissolved	0.0446	mg/1	0.0020	6020B	17	Sep 1	9 9:3	D MDE
Selenium - Dissolved	0.0586	mg/l	0.0050	6020B	19	Sep 1	9 12:3	7 MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep 1	9 9:3	D MDE

\* Holding time exceeded

Approved by:

6c Clauditte K Cantep 10/TIG

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:

 Image: style="text-align: center;">Image: style="text-align: center;"/>Image: styl





Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW120

Event and Year: August 2019

Page: 1 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3302 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 12:35 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analys
Metal Digestion				EPA 200.2	29 Aug 19	SVS
pH	* 7.4	units	N/A	SM4500 H+ B	29 Aug 19 18:00	SVS
Total Suspended Solids	8	mg/l	2	13765-85	30 Aug 19 16:24	
pH - Field	6.69	units	NA	SM 4500 H+ B	27 Aug 19 12:35	
Temperature - Field	12.9	Degrees C	NA	SM 2550B	27 Aug 19 12:35	JSM
Total Alkalinity	854	mg/l CaCO3	20	SM2320-B	29 Aug 19 18:00	SVS
Conductivity - Field	7820	umhos/cm	1	EPA 120.1	27 Aug 19 12:35	
Fluoride	0.42	mg/l	0.10	SM4500-F-C	3 Sep 19 19:00	SVS
Sulfate	5220	mg/l	5.00	ASTM D516-07	5 Sep 19 9:21	EV
Chloride	63.5	mg/1	1.0	SM4500-C1-E	6 Sep 19 14:36	EV
Nitrate-Nitrite as N	16.3	mg/l	0.10	EPA 353.2	3 Sep 19 8:59	EV
Mercury - Total	< 0.0002	mg/l	0.0002	7470A	5 Sep 19 12:46	EMS
Mercury - Dissolved	< 0.0002	mg/1	0.0002	EPA 245.1	5 Sep 19 12:46	EMS
Total Dissolved Solids	8690	mg/l	10	I1750-85	30 Aug 19 10:32	
Calcium - Total	530	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Magnesium - Total	1140	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Sodium - Total	585	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Potassium - Total	37.5	mg/l	1.0	6010D	12 Sep 19 15:04	SZ
Lithium - Total	0.175	mg/l	0.020	6010D	3 Sep 19 14:30	SZ
Boron - Total	11.1	mg/l	0.10	6010D	30 Aug 19 14:47	
Calcium - Dissolved	520	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Magnesium - Dissolved	1120	mg/l	1.0	6010D	9 Sep 19 17:04	SZ
Sodium - Dissolved	590	mg/1	1.0	6010D	9 Sep 19 17:04	SZ
Potassium - Dissolved	38.4	mg/l	1.0	6010D	9 Sep 19 17:04	
Lithium - Dissolved	0.165	mg/l	0.020	6010D	3 Sep 19 15:30	SZ
Boron - Dissolved	10.3	mg/l	0.10	6010D	30 Aug 19 16:47	
Antimony - Total	< 0.001	mg/1	0.0010	6020B	13 Sep 19 10:56	MDE
Arsenic - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	MDE
Barium - Total	0.0198	mg/1	0.0020	6020B	13 Sep 19 10:56	MDE
Beryllium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:50	MDE
Cadmium - Total	< 0.0005	mg/l	0.0005	6020B	13 Sep 19 10:56	MDE
Chromium - Total	0.0238	mg/1	0.0020	6020B	13 Sep 19 10:50	MDE
Cobalt - Total	< 0.002	mg/l	0.0020	6020B	13 Sep 19 10:56	
Lead - Total	< 0.0005	mg/1	0.0005	6020B	13 Sep 19 10:50	
Molybdenum - Total	0.0050	mg/l	0.0020	6020B	13 Sep 19 10:50	
Selenium - Total	0.0067	mg/1	0.0050	6020B	24 Sep 19 15:10	

RL - Method Reporting Limit

CERTIFICATION: ND # ND-00016





Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW120

Event and Year: August 2019

Page: 2 of 2

Report Date: 1 Oct 19 Lab Number: 19-W3302 Work Order #: 82-2358 Account #: 002800 Date Sampled: 27 Aug 19 12:35 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Receive Result	ed	Method RL	Method Reference	Dat	Analyst			
Thallium - Total	< 0.0005	mg/l	0.0005	6020B	13	Sep	19	10:56	MDE
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020B	17	Sep	19	9:30	MDE
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020B	17	Sep	19	9:30	MDE
Barium - Dissolved	0.0193	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Bervllium - Dissolved	< 0.0005	mg/1	0.0005	6020B	17	Sep	19	15:13	MDE
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE
Chromium - Dissolved	0,0269	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Lead - Dissolved	< 0,0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE
Molvbdenum - Dissolved	0.0044	mg/l	0.0020	6020B	17	Sep	19	9:30	MDE
Selenium - Dissolved	0.0071	mg/l	0.0050	6020B	24	Sep	19	14:57	MDE
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020B	17	Sep	19	9:30	MDE

\* Holding time exceeded

Approved by:

10 Claudette K. Canrelo 0(719

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit



**Laboratories, Inc.** 2616 E. Broadway Bismarck, ND 58501 Phone (701) 258-9720

# Chain of Custody Record

		Event:						vow	rk O	rder	'Nu	mber:	$\sim$	00	- 1
IDU Lewis and Clark			Α	ugust 2019									SA.	- 635	58
MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844		Carbon Co Attn: Address:	ору:		Name of Sampler(s):										
Sample	e Informatio	n				E	Sott	le T	ype	<u>.</u>		Fie	eld Para	ameters	Analysis
Sample ID	Date	Time	Sample Type		1 liter	500mL Nite.	500mL Nii.	250 mL Suits	Suntric		 	Temp (°C)	Spec. Cond.	Hd	Analysis Required
Dup 1	27 A.19	NA	GW		X	X	X	Х				NA	NA	NA	
Field Blank (FB)	27A 19	NA	GW		X	X	Х	Х				NA	NA	NA	
MW103	274419	1015	GW		<u>x</u>	X	X	Х						7,30	
MW110	26 Aug 19	1550	GW		X	X	Х	Х			l	6.80		7.26	
MW119	26Ay19	1235	GW		<u>x</u>	X	X	Х					1108	727	MDU L&C 2019
MW111	27 Aug 19	1627	GW		X	Х	Х	Х						7.17	
MW117	27Aug19	1325	GW		X	X	Х	Х				15.36	BIUB	7.10	
MW118	28 Ag 19	0910	GW		X	X	х	Х				16.22	1741	7,27	
MW120	274,19	1235	GW		X	X	Х	Х			1	12.90	7820	6.69	
					<u> </u>				-+		+				
	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844 Sample Dup 1 Field Blank (FB) MW103 MW103 MW110 MW119 MW111 MW117 MW117 MW118	MDU           Abbie Krebsbach           400 N. 4th St.           Bismarck, ND 58501           701-222-7844           Sample Information           Sample ID           Dup 1           Dup 1           Field Blank (FB)           744.19           MW103           274.4.19           MW110           26.4.5.19           MW111           27.4.3.19           MW113           27.4.3.19           MW113           27.4.3.19           MW113           27.4.3.19           MW113           27.4.3.19           MW111           27.4.3.19           MW111           27.4.3.19	MDU         Carbon	MDU         Carbon Copy:           Abbie Krebsbach         Attn:           400 N. 4th St.         Bismarck, ND 58501           701-222-7844         Address:           Sample Information           Sample ID         Enformation           Bismarck, ND 58501         Bismarck, ND 58501           701-222-7844         Address:           Sample Information         Enformation           Sample ID         Enformation           Bismarck, ND 58501         Bismarck, ND 58501           Dup 1         ZBA, 19         NA           GW         Field Blank (FB)         Z7A, 19         NA           MW103         Z1A, 19         NA         GW           MW110         Z6A, 19         1015         GW           MW111         Z7A, 19         162.7         GW           MW111         Z7A, 19         162.7         GW           MW117         Z7A, 19         132.6         GW           MW118         Z6A, 19         Ø910         GW	MDU       Carbon Copy:         Abbie Krebsbach       Attn:         400 N. 4th St.       Attn:         Bismarck, ND 58501       Attn:         701-222-7844       Address:         Sample Information         Sample ID         Bismarck, ND 58501       Attn:         Address:         Sample Information         Sample ID       Bismarck       Address:         Bismarck       Bismarck       Bismarck       Bismarck         Sample ID       Bismarck       Address:       Bismarck         Bismarck       Bismarck       Bismarck       Bismarck       Bismarck         Sample ID       Bismarck       Bismarck       Bismarck       Bismarck         Dup 1       Bismarck       Bismarck       Bismarck       Bismarck         Dup 1       Bismarck       Bismarck       Bismarck       Bismarck         MW103       Cathon       NA       GW         MW110       Bismarck       If SSO       GW         MW111       Pick Argin       If SSO       GW         MW1111       Pick Argin       If SSO       GW         MW1111       Pick Argin       If SSO	MDU         Carbon Copy:           Abbie Krebsbach         Attn:           400 N. 4th St.         Address:           Bismarck, ND 58501         Address:           701-222-7844         Sample Information           Sample Information           Sample Information           Sample ID         Address:           Dup 1         ZBAL 19         NA           Field Blank (FB)         774519         NA         GW         X           MW103         2744919         1015         GW         X           MW110         264519         1550         GW         X           MW110         264519         1627-         GW         X           MW111         2744919         0760         GW         X	MDU         Carbon Copy:           Abbie Krebsbach         Attn:           400 N. 4th St.         Address:           Bismarck, ND 58501         701-222-7844           Sample Information         E           Sample ID         E           Bismarck, ND 58501         E           Dup 1         ZBA, 19         NA           GW         X           MW103         Z+A, 19         NA           MW110         Z(A, 19         1015           GW         X         X           MW110         Z(A, 19         1/550           MW111         Z/A, 19         1/627           MW111         Z/A, 19         1/326           MW1117         Z/A, 19         1/326           MW118         ZBA, 19	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Sample Information         Bott           Sample Information         Bott         Attn: Address:         Attn: Address:         X         X         X           Sample ID         Attn: Address:         Attn: Address:         Attn: Address:         Bott           Sample ID         Attn: Address:         Attn: Address:         X         X         X         X           Dup 1         ZAA, 19         NA         GW         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X </td <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Nar           Sample Information         Bottle T           Sample ID         E         Sample Information         Souther T           Sample ID         E         Sample Information         Souther T           MW103         Z4A: II         NA         GW         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X<td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Attn: Address:         Name of Name br/>Name of Name br/>Name of Name of Name of Name Name of Name of Name of Name of Name of</td><td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sa           Sample Information         Bottle Type           Sample ID         <math>\frac{e}{2}</math> <math>\frac{e}{2</math></td><td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Samp Sample Information           Sample Information         Bottle Type           Sample ID         B C         B C         B C         B C         B C         B C         C C         C C</td><td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): Address:           Sample Information         Bottle Type         Fie           Sample ID         <math>\mathcal{B}_{G}</math> /td><td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): July 2010         July 2010           Sample ID         B         E         B         E         Field Para           Sample ID         B         E         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B</td><td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): Mathematical Structure         Name of Sampler(s): Mathematical Structure         Mathematical Structure         Math         Mathematical Structure</td></td>	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Nar           Sample Information         Bottle T           Sample ID         E         Sample Information         Souther T           Sample ID         E         Sample Information         Souther T           MW103         Z4A: II         NA         GW         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X         X <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Attn: Address:         Name of Name br/>Name of Name br/>Name of Name of Name of Name Name of Name of Name of Name of Name of</td> <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sa           Sample Information         Bottle Type           Sample ID         <math>\frac{e}{2}</math> <math>\frac{e}{2</math></td> <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Samp Sample Information           Sample Information         Bottle Type           Sample ID         B C         B C         B C         B C         B C         B C         C C         C C</td> <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): Address:           Sample Information         Bottle Type         Fie           Sample ID         <math>\mathcal{B}_{G}</math> /td> <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): July 2010         July 2010           Sample ID         B         E         B         E         Field Para           Sample ID         B         E         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B</td> <td>MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): Mathematical Structure         Name of Sampler(s): Mathematical Structure         Mathematical Structure         Math         Mathematical Structure</td>	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Attn: Address:         Name of Name br>Name of Name br>Name of Name of Name of Name Name of Name of Name of Name of Name of	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sa           Sample Information         Bottle Type           Sample ID $\frac{e}{2}$ $\frac{e}{2$	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Samp Sample Information           Sample Information         Bottle Type           Sample ID         B C         B C         B C         B C         B C         B C         C C         C C	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): Address:           Sample Information         Bottle Type         Fie           Sample ID $\mathcal{B}_{G}$	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): July 2010         July 2010           Sample ID         B         E         B         E         Field Para           Sample ID         B         E         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B         B	MDU Abbie Krebsbach 400 N. 4th St. Bismarck, ND 58501 701-222-7844         Carbon Copy: Attn: Address:         Name of Sampler(s): Mathematical Structure         Name of Sampler(s): Mathematical Structure         Mathematical Structure         Math         Mathematical Structure

Comments:

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## Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-V	Lab IDs: 19-W3294 to 19-W3302 Project: MDU Lewis & Clark Work Order: 201982-2358																
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0160	100	80-120	0.100 0.100	19W3237q 19W3297Q	< 0.001 < 0.001	0.1040 0.1011	104 101	75-125 75-125	0.1040 0.1011	0.1041 0.1028	104 103	0.1 1.7	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000	92	80-120	0.400	19W3299q	< 0.001	0.3968	99	75-125	0.3968	0.3932	98	0.9	20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.0160	102	80-120	0.100 0.100	19W3237q 19W3297Q	<0.002 <0.002	0.1126 0.1066	113 107	75-125 75-125	0.1126 0.1066	0.1101 0.1092	110 109	2.2 2.4	20 20	-	-	< 0.002
Arsenic - Total mg/l	0.1000	88	80-120	0.400	19W3299q	< 0.002	0.3844	96	75-125	0.3844	0.3836	96	0.2	20	-	-	< 0.002
Barium - Dissolved mg/l	0.0160	98	80-120	0.100 0.100	19W3237q 19W3297Q	0.0300 0.0289	0.1242 0.1189	94 90	75-125 75-125	0.1242 0.1189	0.1230 0.1218	93 93	1.0 2.4	20 20	-	-	< 0.002
Barium - Total mg/l	0.1000	90	80-120	0.400	19W3299q	0.0196	0.3938	94	75-125	0.3938	0.3930	93	0.2	20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.1000 0.0160	100 102	80-120 80-120	0.100 0.400	19-W3297 19W3288q	< 0.0005 < 0.0005	0.1134 0.4650	113 116	75-125 75-125	0.1134 0.4650	0.1182 0.4328	118 108	4.1 7.2	20 20		-	< 0.0005 < 0.0005
Beryllium - Total mg/l	0.1000 0.1000	103 95	80-120 80-120	0.400 0.100	19W3299q 19W3294q	< 0.0005 < 0.0005	0.4160 0.0956	104 96	75-125 75-125	0.4160 0.0956	0.4178 0.0939	104 94	0.4 1.8	20 20		-	< 0.0005
Boron - Dissolved mg/l	0.40 0.40	95 92	80-120 80-120	0.400 1.00	19-W3237 19-W3301	0.39 1.82	0.73 2.72	85 90	75-125 75-125	0.73 2.72	0.72 2.71	82 89	1.4 0.4	20 20		-	< 0.1 < 0.1
Boron - Total mg/l	0.40 0.40	100 100	80-120 80-120	4.00 2.00	19-W3299 19-W3302	8.20 11.1	12.1 13.1	98 100	75-125 75-125	12.1 13.1	12.2 12.9	100 90	0.8 1.5	20 20	-		<0.1 <0.1 <0.1 <0.1
Cadmium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	19W3237q 19W3297Q	< 0.0005 < 0.0005	0.1042 0.1019	104 102	75-125 75-125	0.1042 0.1019	0.1038 0.1060	104 106	0.4 3.9	20 20		-	< 0.0005
Cadmium - Total mg/l	0.1000	94	80-120	0.400	19W3299q	< 0.0005	0.3854	96	75-125	0.3854	0.3796	95	1.5	20	-	-	< 0.0005
Calcium - Dissolved mg/l	20.0	111	80-120	100	19W3297q	91.5	189	98	75-125	189	189	98	0.0	20	-	-	< 1

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## Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-W	3302	Pro	oject: MI	JU Lewis	& Clark		Work Or										
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Calcium - Total mg/l	20.0 20.0 20.0 20.0	111 110 114 112	80-120 80-120 80-120 80-120	100 100	19W3237q 19W3297q	182 93.0	267 192	85 99	75-125 75-125	267 192	266 191	84 98	0.4 0.5	20 20			<1 <1 <1 <1 <1 <1 <1
Chloride mg/l	30.0 30.0 30.0 30.0 30.0	91 91 91 90	80-120 80-120 80-120 80-120		19-D2794 19-W3296	9.6 22.3	63.2 51.1	89 96	80-120 80-120	63.2 51.1	67.0 52.3	96 100	5.8 2.3	20 20	- - -		< 1 < 1 < 1 < 1 < 1
Chromium - Dissolved mg/l	0.0160	102	80-120	0.100 0.100	19W3237q 19W3297Q	< 0.002 < 0.002	0.0988 0.0976	99 98	75-125 75-125	0.0988 0.0976	0.0993 0.0996	99 100	0.5 2.0	20 20	-	-	< 0.002
Chromium - Total mg/l	0.1000	93	80-120	0.400	19W3299q	0.0043	0.3980	98	75-125	0.3980	0.3944	98	0.9	20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	19W3237q 19W3297Q	< 0.002 < 0.002	0.0976 0.0954	98 95	75-125 75-125	0.0976 0.0954	0.0976 0.0960	98 96	0.0 0.6	20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	91	80-120	0.400	19W3299q	< 0.002	0.3762	94	75-125	0.3762	0.3802	95	1.1	20	-	-	< 0.002
Fluoride mg/l	0.50 0.50	102 104	90-110 90-110	0.500 0.500	19-W3247 19-W3302	< 0.1 0.42	0.61 0.84	122 84	80-120 80-120	0.61 0.84	0.61 0.83	122 82	0.0 1.2	20 20	-	-	< 0.1 < 0.1 < 0.1
Lead - Dissolved mg/l	0.0160	97	80-120	0.100 0.100	19W3237q 19W3297Q	< 0.0005 < 0.0005		91 91	75-125 75-125	0.0910 0.0910	0.0898 0.0924	90 92	1.3 1.5	20 20	-	-	< 0.0005
Lead - Total mg/l	0.1000	90	80-120	0.400	19W3299q	< 0.0005	0.3728	93	75-125	0.3728	0.3714	93	0.4	20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.400	104	80-120	0.400	19-W3297	0.038	0.410	93	75-125	0.410	0.411	93	0.2	20		-	< 0.02
Lithium - Total mg/l	0.400 0.400	99 99	80-120 80-120	0.400 0.400	19-W3288 19-W3299	0.038 0.200	0.457 0.635	105 109	75-125 75-125	0.457 0.635	0.449 0.642	103 110	1.8 1.1	20 20			< 0.02 < 0.02 < 0.02 < 0.02 < 0.02
Magnesium - Dissolved mg/l	20.0	108	80-120	100	19W3297q	53.7	152	98	75-125	152	153	99	0.7	20	-	-	< 1

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## Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-W	3302	Pr	oject: MI	DU Lewis	s & Clark	۲	Work Or	der: 201	982-2358	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Magnesium - Total mg/l	20.0 20.0 20.0 20.0 20.0	106 107 111 110	80-120 80-120 80-120 80-120	100 100	19W3237q 19W3297q	104 54.2	198 153	94 99	75-125 75-125	198 153	197 153	93 99	0.5 0.0	20 20			<1 <1 <1 <1 <1 <1 <1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002 0.002	19-W3237 19-W3379	<0.0002 <0.0002	0.0020 0.0018	100 90	70-130 70-130	0.0020 0.0018	0.0019 0.0020	95 100	5.1 10.5	20 20	-	-	< 0.0002
Mercury - Total mg/l	0.0020 0.0020	100 100	85-115 85-115	0.100 0.002 0.002 0.002 0.002	19-M1610 19-W3247 19-W3301 19-W3302 A42851	<0.01 <0.0002 <0.0002 <0.0002 <0.0002	0.1013 0.0019 0.0018 0.0016 0.0020	101 95 90 80 100	70-130 70-130 70-130 70-130 70-130	0.0019 0.0018 0.0016 0.0020	0.0019 0.0018 0.0017 0.0024	95 90 85 120	0.0 0.0 6.1 18.2	20 20 20 20 20	- - - -	- - - -	< 0.0002 < 0.0002
Molybdenum - Dissolved mg/l	0.0160	102	80-120	0.100 0.100	19W3237q 19W3297Q	<0.002 0.0033	0.1052 0.1074	105 104	75-125 75-125	0.1052 0.1074	0.1062 0.1117	106 108	0.9 3.9	20 20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000	93	80-120	0.400	19W3299q	0.0518	0.4462	99	75-125	0.4462	0.4434	98	0.6	20	-	-	< 0.002
Nitrate-Nitrite as N mg/l	0.50 0.50	102 102	90-110 90-110	1.00 1.00	19-W3295 19-W3333	< 0.1 < 0.1	1.05 0.89	105 89	90-110 90-110	1.05 0.89	1.06 0.89	106 89	0.9 0.0	20 20	-	-	< 0.1 < 0.1
pH units	-			- - -						8.4 7.8 7.8 8.2	8.4 7.8 7.9 8.2	- - -	0.0 0.0 1.3 0.0	20 20 20 20 20		- - -	
Potassium - Dissolved mg/l	10.0	102	80-120	20.0	19W3297q	7.4	27.4	100	75-125	27.4	27.5	100	0.4	20	-	-	< 1

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#### Page: 4 of 5

# Quality Control Report - Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-V Analyte	LCS Spike Amt	LCS Rec %	oject: MI LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix	982-2358 Matrix Spike % Rec Limits	1	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Potassium - Total mg/l	10.0 10.0 10.0 10.0	99 100 105 104	80-120 80-120 80-120 80-120	20.0 20.0	19W3237q 19W3297q	10.3 7.2	29.7 26.6	97 97	75-125 75-125	29.7 26.6	29.8 26.9	97 98	0.3 1.1	20 20	-		<1 <1 <1 <1 <1 <1 <1
Selenium - Dissolved mg/l	0.1000 0.0160 0.1000	102 96 97	80-120 80-120 80-120	0.100 0.100 0.400 0.400	19W3237q 19W3297Q 19-W3412Q 19W3288q	<0.005 <0.005 <0.005 <0.005	0.1205 0.1208 0.4056 0.4234	120 121 101 106	75-125 75-125 75-125 75-125 75-125	0.1205 0.1208 0.4056 0.4234	0.1172 0.1222 0.4448 0.4104	117 122 111 103	2.8 1.2 9.2 3.1	20 20 20 20 20	- - - -	- - -	< 0.005 < 0.005 < 0.005
Selenium - Total mg/l	0.1000 0.1000	92 94	80-120 80-120	0.400 0.400	19W3299q 19W3288q	0.0612 < 0.005	0.4538 0.4234	98 106	75-125 75-125	0.4538 0.4234	0.4518 0.4104	98 103	0.4 3.1	20 20	-		< 0.005 < 0.005
Sodium - Dissolved mg/l	20.0	107	80-120	100	19W3297q	84.3	179	95	75-125	179	179	95	0.0	20	-	-	< 1
Sodium - Total mg/l	20.0 20.0 20.0 20.0	104 103 108 106	80-120 80-120 80-120 80-120	500 100	19W3237q 19W3297q	342 82.9	870 174	106 91	75-125 75-125	870 174	855 176	103 93	1.7 1.1	20 20	-		<1 <1 <1 <1 <1 <1 <1
Sulfate mg/l	100 100	102 100	80-120 80-120	500 1000	19-W3241 19-W3330	820 1200	1280 2300	92 110	80-120 80-120	1280 2300	1270 2240	90 104	0.8 2.6	20 20	-	-	< 5 < 5
Thallium - Dissolved mg/l	0.1000 0.0160	98 97	80-120 80-120	0.100 0.100 0.400	19W3237q 19W3297Q 19W3288q	< 0.0005 < 0.0005 < 0.0005	0.0923	93 92 108	75-125 75-125 75-125	0.0926 0.0923 0.4318	0.0914 0.0939 0.4024	91 94 101	1.3 1.7 7.0	20 20 20			< 0.000 < 0.000
Thallium - Total mg/l	0.1000 0.1000 0.1000	102 90 98	80-120 80-120 80-120	0.400 0.100 0.400	19W3299q 19W3294q 19D3458q	<0.0005 <0.0005 <0.0005	0.0926		75-125 75-125 75-125	0.3652 0.0926 0.4040	0.3678 0.0914 0.4096	92 91 102	0.7 1.3 1.4	20 20 20		-	< 0.0003 < 0.0003

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#### Page: 5 of 5

# Quality Control Report – Amended 7 Nov 19

Lab IDs: 19-W3294 to 19-W	y 3302	Pr	oject: MI	DU Lewis	s & Clark		Work Or	der: 201	982-2358	3							
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix Spike Orig Result	Matrix Spike Result	Matrix Spike Rec %	Matrix Spike % Rec Limits	MSD/ Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Total Alkalinity mg/l CaCO3	410 410 410	93 95 94	90-110 90-110 90-110	410 410 410 410	19-D2739 19-W3296 19-W3300 19-W3334	769 350 393 255	1140 719 766 631	90 90 91 92	80-120 80-120 80-120 80-120	1140 719 766 631	1136 723 769 628	90 91 92 91	0.4 0.6 0.4 0.5	20 20 20 20 20	94	80-120	< 20 < 20 < 20 < 20 < 20
Total Dissolved Solids mg/l				- - -				- -		1880 1410 958	1920 1360 894		2.1 3.6 6.9	20 20 20		- - -	< 10 < 10
Total Suspended Solids mg/l	-	-	-	-	-	-	-	-	-	12	11	-	8.7	20	-	-	< 2

Samples were received in good condition on 29 Aug 2019 at 0800.

Temperature upon receipt at the Bismarck laboratory was 4.2°C. Samples were received on ice and evidence of cooling had begun.

All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.

With the exception of pH, all holding times were met

Approved methodology was followed for all sample analyses.

All acceptance criteria were met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/duplicates unless noted here.

- The recoveries for one fluoride matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was ٠ accepted based on acceptable recovery of the LCS. No further action was taken.
- The recoveries for one nitrate matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was . accepted based on acceptable recovery of the LCS. No further action was taken.

Field blank had a result at the reporting limit for total suspended solids. Due to the short hold time for TSS, no recheck was possible. Data was accepted since all QC for run was acceptable. ٠ Reporting

Per email from Barr, thallium (total) on sample 19-W3300 (MW117) was reanalyzed on 23 Oct 19 and the result was revised. ٠

Approved by: <u>C. Cantel</u> 7Nov19

# **Claudette Carroll**

From: Sent: To: Subject:	Terri A. Olson <tolson@barr.com> Monday, October 21, 2019 10:14 AM Claudette Carroll RE: Emailing: EFWEDD_201982-2358.zip, 201982-2358.csv, 201982-2358.txt, 201982-2358 MDU L&amp;C.pdf</tolson@barr.com>
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Claudette,

We would like the lab to check the total thallium result for MW117. It is quite different than previous results so want to confirm it is correct.

Thank-you,

Terri A. Olson Senior Data Quality Specialist Minneapolis, MN office: 952.842.3578 TOlson@barr.com www.barr.com

This e-mail message (including attachments, forwards, and replies) is correspondence transmitted between Barr Engineering Co. and its clients and related parties in the course of business, and is intended solely for use by the addressees. This transmission contains information which may be confidential and proprietary. If you are not the addressee, note that any disclosure, copying, distribution, or use of the contents of this message (or any attachments, replies, or forwards) is prohibited. If you have received this transmission in error, please destroy it and notify us at 952-832-2600.

If you no longer wish to receive marketing e-mails from Barr, respond to communications@barr.com and we will be happy to honor your request.

-----Original Message-----From: Claudette Carroll <ccarroll@mvtl.com> Sent: Wednesday, October 2, 2019 11:20 AM To: Barr Data Management <BarrDM@barr.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com>; 'Todd.Peterson@mdu.com' <Todd.Peterson@mdu.com>; Krebsbach, Abbie <Abbie.Krebsbach@mdu.com> Subject: Emailing: EFWEDD\_201982-2358.zip, 201982-2358.csv, 201982-2358.txt, 201982-2358 MDU L&C.pdf

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

Hello again,

Here is another data package. Again hard copies to follow to Todd/Abbie.

## Claudette

Your message is ready to be sent with the following file or link attachments:

https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD\_201982-2358.zip&c=E,1,RGIn3iiYsVEHCV\_W6xDw6tQAGe-gtOKddaaWn2opU26wj2NGdHeNc3jCx-2UGM6Xyh5qT\_SMpU8mmqCxYZsbed2PEKsjDgldg7kSHSfTEV\_SLV-3V\_&typo=1 201982-2358.csv 201982-2358.txt 201982-2358 MDU L&C.pdf

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Page: 1 of 1

Report Date: 2 Oct 19 Lab Number: 19-W3337 Work Order #: 82-2366 Account #: 002800 Date Sampled: 27 Aug 19 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

Bismarck ND 58501

Montana-Dakota Utilities Co.

Sample Description: Dup 1

Todd Peterson

400 N 4th St

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			30 Sep 19	OL
Radium 228	See Attached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC SOCT A Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1 Amended 7Nov19 (Radchem) Report Date: 2 Oct 19 Todd Peterson Lab Number: 19-W3338 Montana-Dakota Utilities Co. Work Order #: 82-2366 400 N 4th St Account #: 002800 58501 Date Sampled: 27 Aug 19 Bismarck ND Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services Project Name: MDU Lewis and Clark PO #: 175104 OP Sample Description: Field Blank (FB) Temp at Receipt: 4.2C Method As Received Method Date Analyzed Analyst Result RL Reference 30 Sep 19 OL See Attached Report Radium 226 28 Sep 19 OL See Attached Report Radium 228

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC 1119 Claudette K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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1 of 1 Page:

Report Date: 2 Oct 19 Lab Number: 19-W3339 Work Order #: 82-2366 Account #: 002800 Date Sampled: 27 Aug 19 10:15 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Montana	-Dakota	a Utilities	Co.
400 N 41			
Bismarc)	c ND	58501	

Todd Peterson

Sample Description: MW103

Project Name: MDU Lewis and Clark

As Received Method Method Date Reference Analyzed Analyst Result RL JSM 7.30 SM 4500 H+ B 27 Aug 19 10:15 units NA pH - Field JSM 27 Aug 19 10:15 Temperature - Field 13.4 Degrees C NA SM 2550B Conductivity - Field 1427 umhos/cm 1 EPA 120.1 27 Aug 19 10:15 JSM See Attached Report 30 Sep 19 OL Radium 226 28 Sep 19 OL See Attached Report Radium 228

OL = Analysis performed by an Outside Laboratory.

Approved by:

10 50 CT 19 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

# = Due to concentration of other analytes
+ = Due to internal standard response CERTIFICATION: ND # ND-00016



Todd Peterson

400 N 4th St

Bismarck ND

Sample Description: MW110

Project Name: MDU Lewis and Clark

Montana-Dakota Utilities Co.

58501

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Page: 1 of 1

Report Date: 2 Oct 19 Lab Number: 19-W3340 Work Order #: 82-2366 Account #: 002800 Date Sampled: 26 Aug 19 15:50 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.26	units	NA	SM 4500 H+ B	26 Aug 19 15:50	JSM
Temperature - Field	16.8	Degrees C	NA	SM 2550B	26 Aug 19 15:50	JSM
Conductivity - Field	1023	umhos/cm	1	EPA 120.1	26 Aug 19 15:50	JSM
Radium 226	See Atta	ached Report			30 Sep 19	OL
Radium 228		ached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte SOCTO K Canteo

! = Due to sample quantity

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below:  $\emptyset$  = Due to sample matrix # = Due to co CERTIFICATION: ND # ND-00016

# = Due to concentration of other analytes
+ = Due to internal standard response





Page: 1 of 1

Report Date: 2 Oct 19 Lab Number: 19-W3341 Work Order #: 82-2366 Account #: 002800 Date Sampled: 26 Aug 19 12:35 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis and Clark

Sample Description: MW119

	As Rece: Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.27	units	NA	SM 4500 H+ B	26 Aug 19 12:35	JSM
Cemperature - Field	15.9	Degrees C	NA	SM 2550B	26 Aug 19 12:35	JSM
Conductivity - Field	1108	umhos/cm	1	EPA 120.1	26 Aug 19 12:35	JSM
Radium 226	See Atta	ached Report			30 Sep 19	OL
Radium 228	See Atta	ached Report			28 Sep 19	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

SOCTIG Claudette K Canreo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

1L





Page: 1 of 1

Report Date: 2 Oct 19 Lab Number: 19-W3342 Work Order #: 82-2366 Account #: 002800 Date Sampled: 27 Aug 19 16:27 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

Todd Peterson Montana-Dakota Utilities Co. 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis and Clark

Sample Description: MW111

As Received Method Method Date Analyzed Analyst Result RL Reference SM 4500 H+ B JSM 27 Aug 19 16:27 7.17 NA pH - Field units 27 Aug 19 16:27 JSM Temperature - Field 15.0 Degrees C NA SM 2550B Conductivity - Field 3757 umhos/cm 1 EPA 120.1 27 Aug 19 16:27 JSM See Attached Report 30 Sep 19 OL Radium 226 28 Sep 19 OL Radium 228 See Attached Report

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes ! = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 2 Oct 19 Lab Number: 19-W3343 Work Order #: 82-2366 Account #: 002800 Date Sampled: 27 Aug 19 13:28 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

Montana-Dakota Utilities Co.

58501

Sample Description: MW117

Todd Peterson

400 N 4th St

Bismarck ND

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Rece: Result	lved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	7.10	units	NA	SM 4500 H+ B	27 Aug 19	13:28	JSM
Temperature - Field	15.4	Degrees C	NA	SM 2550B	27 Aug 19	13:28	JSM
Conductivity - Field	8108	umhos/cm	1	EPA 120.1	27 Aug 19	13:28	JSM
Radium 226	See Atta	ached Report			30 Sep 19		OL
Radium 228		ached Report			28 Sep 19		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K Campeo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to concentration of other analytes i = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 2 Oct 19 Lab Number: 19-W3344 Work Order #: 82-2366 Account #: 002800 Date Sampled: 28 Aug 19 9:10 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis and Clark

Bismarck ND 58501

Montana-Dakota Utilities Co.

Sample Description: MW118

Todd Peterson

400 N 4th St

PO #: 175104 OP

Temp at Receipt: 4.2C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	7.27	units	NA	SM 4500 H+ B	28 Aug 19	9:10	JSM
Temperature - Field	16.2	Degrees C	NA	SM 2550B	28 Aug 19	9:10	JSM
Conductivity - Field	1741	umhos/cm	1	EPA 120.1	28 Aug 19	9:10	JSM
Radium 226	See Atta	ached Report			30 Sep 19		OL
Radium 228		ached Report			28 Sep 19		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette CT19 K Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Todd Peterson

400 N 4th St

Sample Description: MW120

Bismarck ND 58501

Project Name: MDU Lewis and Clark

Montana-Dakota Utilities Co.

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Report Date: 2 Oct 19 Lab Number: 19-W3345 Work Order #: 82-2366 Account #: 002800 Date Sampled: 27 Aug 19 12:35 Date Received: 29 Aug 19 8:00 Sampled By: MVTL Field Services

PO #: 175104 OP

Temp at Receipt: 4.2C

				remp de necerpe. The						
	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst				
pH - Field	6.69	units	NA	SM 4500 H+ B	27 Aug 19 12:35	JSM				
Temperature - Field	12.9	Degrees C	NA	SM 2550B	27 Aug 19 12:35	JSM				
Conductivity - Field	7820	umhos/cm	1	EPA 120.1	27 Aug 19 12:35	JSM				
Radium 226	See Att	ached Report			30 Sep 19	OL				
Radium 228	See Att	ached Report			29 Sep 19	OL				

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC SOCTIG Clauditte K. Cunto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

ce Analytical \* Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

Date: 11/4/2019

CLIENT:	MVTL Laboratories, Inc.	CASE NARRATIVE
Project:	201982-2366	<b>Report ID:</b> S1909030002
Lab Order:	S1909030	(Replaces S1909030001)

Samples 19-W3337 Dup 1, 19-W3338 Field Blank (FB), 19-W3339 MW103, 19-W3340 MW110, 19-W3341 MW119, 19-W3342 MW111, 19-W3343 MW117, 19-W3344 MW118 and 19-W3345 MW120 were received on September 4, 2019.

All samples were received and analyzed within the EPA recommended holding times, except those noted below in this case narrative. Samples were analyzed using the methods outlined in the following references:

"Standard Methods For The Examination of Water and Wastewater", approved method versions Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, 3rd Edition 40 CFR Parts 136 and 141 40 CFR Part 50, Appendices B, J, L, and O Methods indicated in the Methods Update Rule published in the Federal Register Friday, May 18, 2012 ASTM approved and recognized standards

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Report id\_S1909030002 will replace id\_S190930001 to correct and verify Ra226 value on Sample 002.

Reviewed by:

Jama Duen

Jessica Nixon, Project Manager

Formerly Inter-Mountain Laboratories Pace Analytical<sup>°</sup>-1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

. ,	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501				Date Re Report I	•	11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName: Lab ID:	201982-2366 S1909030-001				WorkOr Collecti		S1909030 8/27/2019
ClientSample ID:	19-W3337 Dup 1				DateRed	ceived:	9/4/2019 1:30:00 PM
COC: PWS ID:					FieldSa Matrix:	mpier:	Water
Comments							
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	2.1	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1234	WN
Radium 226 Precision (±)	0.2	pCi/L		SM 7500 Ra-B	09/30/2019 1234	WN
Radium 228	0.0	pCi/L	2	Ga-Tech	09/28/2019 112	WN
Radium 228 Precision (±)	2.8	pCi/L		Ga-Tech	09/28/2019 112	WN

These results apply only to	o the samples tested.
-----------------------------	-----------------------

- Analyte detected in the associated Method Blank Qualifiers: в
  - E Value above quantitation range
  - Holding times for preparation or analysis exceeded Analyzed by another laboratory н
  - L
  - Not Detected at the Reporting Limit ND
  - s X Spike Recovery outside accepted recovery limits

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en

- Matrix Effect
- Reviewed by:

Jessica Nixon, Project Manager

- **RL Reporting Limit** 
  - С Calculated Value
  - G Analyzed at IML Gillette laboratory
  - J
  - Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М
  - Outside the Range of Dilutions 0
  - U Analysis reported under the reporting limit

Page 1 of 9

1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

. ,	MVTL Laboratories, Ind 2616 E Broadway Ave. Bismarck, ND 58501				Date F Repor	Reported t ID	11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName:	201982-2366					Order:	S1909030
Lab ID: ClientSample ID:	S1909030-002 19-W3338 Field Blan	k (FB)					8/27/2019 9/4/2019 1:30:00 PM
COC:		((,,,))				Sampler:	0/1120101.001001101
PWS ID:					Matrix	:	Water
Comments							
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.11	pCi/L	0.2	SM 7500 Ra-B	10/29/2019 911	WN
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	10/29/2019 911	WN
Radium 228	0.1	pCi/L	2	Ga-Tech	09/28/2019 415	WN
Radium 228 Precision (±)	3.4	pCi/L		Ga-Tech	09/28/2019 415	WN

These results apply only to the sam	ples tested.
-------------------------------------	--------------

#### Qualifiers:

- Analyte detected in the associated Method Blank В Value above quantitation range Holding times for preparation or analysis exceeded Analyzed by another laboratory E
- Н
- L
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits

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ion

- s X Matrix Effect
- С Calculated Value G

**RL - Reporting Limit** 

- J
- Analyzed at IML Gillette laboratory Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М
  - Outside the Range of Dilutions 0
  - U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager

Page 2 of 9

Formerly Inter-Mountain Laboratories Pace Analytical® 1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501				Date Reporte Report ID	d 11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-2366 S1909030-003 19-W3339 MW103				WorkOrder: CollectionDa DateReceived FieldSampler Matrix:	
Analyses		Result	Units	Qual	RL Meth	od Date Analyzed/Init

0.3	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1234	WN
0.1	pCi/L		SM 7500 Ra-B	09/30/2019 1234	WN
0.7	pCi/L	2	Ga-Tech	09/28/2019 718	WN
2.9	pCi/L		Ga-Tech	09/28/2019 718	WN
	0.1 0.7	0.1 pCi/L 0.7 pCi/L	0.1 pCi/L 0.7 pCi/L 2	0.1         pCi/L         SM 7500 Ra-B           0.7         pCi/L         2         Ga-Tech	0.1         pCi/L         SM 7500 Ra-B         09/30/2019 1234           0.7         pCi/L         2         Ga-Tech         09/28/2019 718

These results apply only to the samples tested.

#### в Qualifiers:

- Analyte detected in the associated Method Blank Е Value above quantitation range
- Holding times for preparation or analysis exceeded Н
- Analyzed by another laboratory L
- Not Detected at the Reporting Limit ND
- s x Spike Recovery outside accepted recovery limits

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- Matrix Effect

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- **RL Reporting Limit** 
  - С Calculated Value
  - G Analyzed at IML Gillette laboratory
  - J
  - Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М
  - 0 Outside the Range of Dilutions
  - U Analysis reported under the reporting limit

Reviewed by:

Jessica Nixon, Project Manager

Page 3 of 9

Formerly Inter-Mountain Laboratories Pace Analytical® 1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Date Rep Report II		11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-2366 S1909030-004 19-W3340 MW110				WorkOrd Collectic DateRec FieldSan Matrix:	onDate: eived:	S1909030 8/26/2019 3:50:00 PM 9/4/2019 1:30:00 PM Water
Analyses	· · · · ·	Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.6	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1234	WN
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	09/30/2019 1234	WN
Radium 228	-8.8	pCi/L	2	Ga-Tech	09/28/2019 1021	WN
Radium 228 Precision (±)	3.0	pCi/L		Ga-Tech	09/28/2019 1021	WN

#### These results apply only to the samples tested.

- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Holding times for preparation or analysis exceeded Н
- Analyzed by another laboratory L
- Not Detected at the Reporting Limit ND
- s X Spike Recovery outside accepted recovery limits
- Matrix Effect

Juan

- ト
- Reviewed by:

**Qualifiers:** 

Jessica Nixon, Project Manager

- **RL Reporting Limit** 
  - С Calculated Value
  - G Analyzed at IML Gillette laboratory
  - J
  - Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М
  - 0 Outside the Range of Dilutions
  - U Analysis reported under the reporting limit

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Pace Analytical<sup>®</sup> Formerly Inter-Mountain Laboratories 1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

ProjectName:	2616 E Broadway Ave. Bismarck, ND 58501 201982-2366				Repo	rt ID Order:	S1909030002 (Replaces S1909030001) S1909030
Lab ID: ClientSample ID: COC:	S1909030-005				Colle Datel		8/26/2019 12:35:00 PM 9/4/2019 1:30:00 PM
PWS ID: Comments					Matri		Water
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.16	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1440	WN
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	09/30/2019 1440	WN
Radium 228	-0.5	pCi/L	2	Ga-Tech	09/28/2019 1324	WN
Radium 228 Precision (±)	2.9	pCi/L		Ga-Tech	09/28/2019 1324	WN

These results apply only to the samples tested.

- В Analyte detected in the associated Method Blank
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded Н
- L Analyzed by another laboratory
- ND
- Not Detected at the Reporting Limit Spike Recovery outside accepted recovery limits S X

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Sum

- Matrix Effect
- С Calculated Value G

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory J
  - Analyte detected below quantitation limits М Value exceeds Monthly Ave or MCL or is less than LCL
  - 0
  - Outside the Range of Dilutions Analysis reported under the reporting limit U

Reviewed by:

Qualifiers:

Jessica Nixon, Project Manager

Page 5 of 9

Formerly Inter-Mountain Laboratories Pace Analytical® 1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

. ,	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501				Date Repo	Reported rt ID	11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-2366 S1909030-006 19-W3342 MW111				Colle DateF	Received: Sampler:	S1909030 8/27/2019 4:27:00 PM 9/4/2019 1:30:00 PM Water
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.4	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1440	WN
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	09/30/2019 1440	WN
Radium 228	-1.5	pCi/L	2	Ga-Tech	09/28/2019 1627	WN
Radium 228 Precision (±)	2.5	pCi/L		Ga-Tech	09/28/2019 1627	WN

These results apply only to the samples tested.

- В Analyte detected in the associated Method Blank
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded н
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- s Spike Recovery outside accepted recovery limits
- Х Matrix Effect
- r
- - >

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Reviewed by:

Qualifiers:

- **RL Reporting Limit** 
  - С Calculated Value
  - G Analyzed at IML Gillette laboratory
  - Analyte detected below quantitation limits J
  - Value exceeds Monthly Ave or MCL or is less than LCL М
  - 0 Outside the Range of Dilutions
  - Ú Analysis reported under the reporting limit

Page 6 of 9

Jessica Nixon, Project Manager

Formerly Inter-Mountain Laboratories Pace Analytical<sup>®</sup>. 1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

, ,	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Date Repo	Reported rt ID	11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName: Lab ID: ClientSample ID: COC: PWS ID: Comments	201982-2366 S1909030-007 19-W3343 MW117				Colle Date	Received: Sampler:	S1909030 8/27/2019 1:28:00 PM 9/4/2019 1:30:00 PM Water
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.4	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1440	WN
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	09/30/2019 1440	WN
Radium 228	-0.7	pCi/L	2	Ga-Tech	09/28/2019 1930	WN
Radium 228 Precision (±)	2.6	pCi/L		Ga-Tech	09/28/2019 1930	WN

These results apply only to the samples tested.

- В Analyte detected in the associated Method Blank
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded Н
- L Analyzed by another laboratory
- ND
- Not Detected at the Reporting Limit Spike Recovery outside accepted recovery limits

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- s X Matrix Effect
- Reviewed by:

Qualifiers:

Jessica Nixon, Project Manager

- **RL Reporting Limit** 
  - С Calculated Value
  - G
  - Analyzed at IML Gillette laboratory Analyte detected below quantitation limits J
  - Value exceeds Monthly Ave or MCL or is less than LCL М
  - 0 Outside the Range of Dilutions
  - U Analysis reported under the reporting limit

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Sum

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#### Sample Analysis Report

Comments Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init
PWS ID:					Matri	ix:	Water
COC:					Field	Sampler:	
ClientSample ID:	19-W3344 MW118				Date	Received:	9/4/2019 1:30:00 PM
Lab ID:	S1909030-008				Colle	ectionDate:	8/28/2019 9:10:00 AM
ProjectName:	201982-2366				Work	Order:	S1909030
	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Date Repo	Reported ort ID	11/4/2019 S1909030002 (Replaces S1909030001)

Radionuclides - Total						
Radium 226	0.3	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1440	WN
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	09/30/2019 1440	WN
Radium 228	0.5	pCi/L	2	Ga-Tech	09/28/2019 2233	WN
Radium 228 Precision (±)	2.8	pCi/L		Ga-Tech	09/28/2019 2233	WN

These result	s apply	only to	the	samples	tested.
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- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Holding times for preparation or analysis exceeded Н
- Analyzed by another laboratory L
- ND Not Detected at the Reporting Limit
- s X Spike Recovery outside accepted recovery limits

  - Matrix Effect

Reviewed by:

Qualifiers:

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**RL - Reporting Limit** 

- Calculated Value
- G Analyzed at IML Gillette laboratory
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL М
- 0 Outside the Range of Dilutions U
- Analysis reported under the reporting limit

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Jessica Nixon, Project Manager

Page 8 of 9

Formerly Inter-Mountain Laboratories Pace Analytical<sup>®</sup>-1673 Terra Avenue Sheridan, WY 82801 ph: (307) 672-8945

#### Sample Analysis Report

	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Date I Repo	Reported rt ID	11/4/2019 S1909030002 (Replaces S1909030001)
ProjectName: Lab ID: ClientSample ID: COC: PWS ID:	201982-2366 S1909030-009 19-W3345 MW120				Collec DateF	Received: Sampler:	S1909030 8/27/2019 12:38:00 PM 9/4/2019 1:30:00 PM Water
Comments Analyses	10110-1101 - 1011	Result	Units	Qual	RL	Method	d Date Analyzed/Init

Radionuclides - Total						
Radium 226	7.0	pCi/L	0.2	SM 7500 Ra-B	09/30/2019 1440	WN
Radium 226 Precision (±)	0.3	pCi/L		SM 7500 Ra-B	09/30/2019 1440	WN
Radium 228	-7.0	pCi/L	2	Ga-Tech	09/29/2019 136	WN
Radium 228 Precision (±)	2.7	pCi/L		Ga-Tech	09/29/2019 136	WN

These results apply only to	o the samples tested.
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- В Analyte detected in the associated Method Blank
- Е Value above quantitation range
- Holding times for preparation or analysis exceeded Н
- L Analyzed by another laboratory
- ND Not Detected at the Reporting Limit
- s X Spike Recovery outside accepted recovery limits Matrix Effect

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- С Calculated Value G

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory Analyte detected below quantitation limits J
  - Value exceeds Monthly Ave or MCL or is less than LCL М
  - 0 Outside the Range of Dilutions
  - U Analysis reported under the reporting limit

Reviewed by:

Qualifiers:

Jessica Nixon, Project Manager

Page 9 of 9

Pace Analytical<sup>®</sup> Formerly Inter-Mountain Laboratories

1673 Terra Avenue Sheridan, WY 82801

ph: (307) 672-8945

# ANALYTICAL QC SUMMARY REPORT

ENT:	MVTL Laboratories, Inc.				Date: 1	1/4/2019	Э	
rk Order:	S1909030			Re	port ID: S	6190903	0002	
ject:	201982-2366					Replace	s S190903000	1)
Radium 2	228 by Ga/Tech	Sample Type MBLK			pCi/L			
м	B-594 (09/26/19 08:36)	RunNo: 172087	•	ate: 09/10			hID 16539	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228	ND	1					
r	228 by Ga/Tech	Sample Type LCS			pCi/L			
L	CS-594 (09/26/19 11:39)	RunNo: 172087 Result	PrepD RL	ate: 09/10			hID 16539 % Rec Limits	Qual
	Analyte				Ref Samp			Qual
	Total Radium 228	15 October 15	1	13.6		112	65.9 - 132	
	228 by Ga/Tech	Sample Type MS			pCi/L			
M	S-594 (09/26/19 17:45) Analyte	RunNo: 172087 Result	PrepD RL	ate: 09/10			hID 16539 % Rec Limits	Qual
	-							Qua
r	Total Radium 228	14	1	13.6	ND	105	50 - 139	
м	S-594 (09/26/19 17:45)	RunNo: 172087		ate: 09/10			hID 16539	Qual
	Analyte	Result	RL	Бріке	Ref Samp	%REC	% Rec Limits	Qual
	Radium 228 (Dissolved)	14	1	13.6	ND	105	50 - 139	
	228 by Ga/Tech	Sample Type MSD			pCi/L			
м	SD-594 (09/26/19 20:48)	RunNo: 172087 Result	PrepD RL	ate: 09/10 Conc	0/19 0:00 %RPD		hID 16539 % RPD Limits	Que
L	Analyte				· · ·			Qual
r	Total Radium 228	15	1	14	6.19	111	20	
м	SD-594 (09/26/19 20:48)	RunNo: 172087		ate: 09/1			hID 16539	0 1
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 228 (Dissolved)	15	1	14	6.19	111	20	
	226 in Water -	Sample Type MBLK			pCi/L			
м	B-2057 (09/30/19 12:31)	RunNo: 172138			5/19 0:00		hID 16584	0
	Analyte	Result	RL	Бріке	Ref Samp	%REG	% Rec Limits	Qua
	Radium 226	ND	0.2					
<b>I</b>	226 in Water -	Sample Type LCS			pCi/L			
L	CS-2057 (09/30/19 12:31)	RunNo: 172138	•		5/19 0:00		hID 16584 % Rec Limits	Que
	Analyte	Result	RL			MEC		Qual
	Radium 226	6.5	0.2	6.94	0.1	93.7	67.1 - 122	
	226 in Water -	Sample Type MS			pCi/L			
М	S-2057 (09/30/19 12:31)	RunNo: 172138 Result	PrepD RL		5/19 0:00 Ref Samp		hID 16584 % Rec Limits	Qua
	Analyte							Qua
	Radium 226	6.4	0.2	6.94	ND	92.8	65 - 131	
	226 in Water -	Sample Type MSD			pCi/L			
M	SD-2057 (09/30/19 12:31) Analyte	RunNo: 172138 Result	Prept RL	ate: 09/2 Conc	5/19 0:00 %RPD	Bato %REC	hID 16584 % RPD Limits	Qua
L_			0.2	6.4	5.38	88.0	20	Gud
alifiers:	B Analyte detected in the associated Method Blank	E Value above quanti						
uniter 3.	G Analyzed at IML Gillette laboratory	H Holding times for p			s exceeded			
	J Analyte detected below quantitation limits	L Analyzed by anothe		-				

Outside the Range of Dilutions 0

s Spike Recovery outside accepted recovery limits

х Matrix Effect

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ND Not Detected at the Reporting Limit

RPD outside accepted recovery limits

MVT	2616 E	RATOR/ Broadwa	y Ave		Chain	of Ci	uste	ody	/ Re	900	orc	d Page_	of	1
Toll Free: /8	Bismar Phone: (701) 279-6885					Г						201982-2366		
Company Nam	e and Address:	Fax: (701)	258-9724			l_						Phone #:		
and riddress.				Account #:								-258-9720		
		<u>IVTL</u> Broadway			Contact:	Clau	udette					Fax #:	ort check box	
Billing Address			L		Name of Sa								ccarroll@mvtl.	com
- S Addless	Bismarc (indicate if differen	t from abov	/e):			· · · · ·							ort check box	
	PO Box 249				Quote Num	ber						Date Submitted:	0-Aug-19	
		<u>50x 249</u> n, MN 56073	1		Project Nar	ne/Num	her:					Purchase Order #		
				,								BL6219		
0.100		Sample	nformation					В	ottle	Ту	be		Analysis	
	O MVTL Lab Number	Clien	t Sample ID	Sample Type	Date Sampled	Time Sample	- 1 <del>4</del>	1000 ml HNO3	VOC Vials Umpreserved	Glass Jar	Other	Ana	alysis Require	d
100	19-W3337		Dup 1	GW	27-Aug-19	NA		4				R	a226 & Ra228	
500-	19-W3338	Field	Blank (FB)	GW	27-Aug-19	NA		4				R	a226 & Ra228	1
- 203	19-W3339		MW103	GW	27-Aug-19			4					a226 & Ra228	
064	19-W3340	1	WW110	GW	26-Aug-19	1550		4	1		1	<u>+</u>	a226 & Ra228	
	19-W3341		WW119	GW	26-Aug-19	1235		4				1	a226 & Ra22	
206	19-W3342	1	MW111	GW	27-Aug-19	1627		4	1	<b>†</b>			Ra226 & Ra22	
- 007	19-W3343	1	4W117	GW	27-Aug-19	t		4	1	1	1	1 1	Ra226 & Ra22	
800	19-W3344		4W118	GW	28-Aug-19				+	1-	-		Ra226 & Ra22	
209	19-W3345		AW120	GW	27-Aug-19				1					
		A	l results mu							i alı	ue		Ra226 & Ra22	8 Zoolevs
Trans	ferred by:	Date:	Time:	Sample	Condition:	1	Rec	eive	d by:			Date:		Temp:
Nathan Buchma	ann	30-Aug-19	1700	· · · · · · · · · · · · · · · · · · ·		Ka	thy					9.4.19	13:30	21.3
2.							<u>مىرىنى</u>	<u> </u>	240					20.3





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Company:	MDU Lewis and Clark
Event:	August 2019
Sample ID:	103,
Sampling Personal:	Jerry Klyn

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Phone: (701) 258-9720

Weather Conditions:	Temp:	65 °F		Wind:	ω	0~1	2	Precip	o: Suni	ny / Partly C	loudy / Cl	oudy		
Well In	formation					-	Sa	mpling	oling Information					
Well Locked? Yes	NO	-			Purgin	ig Method:	Blad	der						
Well Labeled?	No				Samplin	ig Method:	Blad	der		Co	ntrol Settin	gs		
Casing Straight?	No				Dedicate	ed Equip?:	Yes	NO		Purge:	5	sec.		
Grout Seal Intact? Yes	No	Not Visi	ble		Duplicate	Sample?:	Tes	No		Recover:	55	sec.		
Repairs Necessary:					Duplicate S	Sample ID:	Dup 1			PSI:	15			
Casing Diamete		2"					í							
Water Level Before Purge	: /	0,40	ft		P	urge Date:	27 A.		Time Purg	ing Began:	0730	am/pm		
		•			Well Pu	irged Dry?	Yes	Í 🐼		ourged Dry:		am/pm		
					Sar	nple Date:	27 A.	19	Time of	f Sampling:	1015	m/pm		
Depth to Top of Pump	):	<u> </u>	ft				, ,							
Water Level After Sample	: 1	038	ft		Bottle	1L Raw	500mL		500mL Nit	ric (filtered)	250 S	ulfuric		
Measurement Method	Electric V	Vater Level Ind	licator		List:		4-16 R	- m						

### **Field Measurements**

Stabi	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	secutive)	(°C)	Cond.	pH	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Claritý, Color, Odor, Ect.
SEQ #	Time	`	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	0735	13,04	2913	6.08	10.06	214.9	290.0	10.39	100.0	500.0	Slightly Turbid
2	0805	13,17	1487	7.29	10.26	164.4	35.9	10.38	100.0	3000.0	Clear
3	0835	13,43	1454	7.26	5,64	148.2	19.3	10,38	100.0	3000.0	Clear
4	0905	12,59	1440	7.27	4.65	45.5	9.89	10.37	100,0	3000,0	Clear
5	0925	13.64	1437	7.26	4.66	18.0	8.58	10.38	(00.0	2000.0	Clea
6	0945	12.75	1431	7.29	4,53	3, B	5,80	10,38	100.0	2000,0	Clea
7	1005	13.36	1428	7.29	4.79	-5.6	4,70	10,38	100.0	2000.0	Clear
8	1010	13,41	1427	7.29	4,51	- 8,3	4.47	10.38	100.0	500,00	Clear
9	1015	13.39	1427	7.30	4,50	-9.1	4,53	10,37	100.0	500.0	c les
10											
Stabilized:	Yes	No	Total Volume Removed: <u>/6, SØ, 0</u> mL								

Comments:





Company:	MDU Lewis and Clark
Event:	August 2019
Sample ID:	110 ,
Sampling Personal:	Jern Mya

Weather Conditions:		Temp:	75	°F	Wind:	W	@ 10-1	5	Precip	: Suni	ny Partly C	Cloudy / Clo	udy
	Well Info	rmation						Sa	ampling I	nformatio	on		
Well Locked?	Yes	(ND)				Purgi	ng Method:	Bla	dder				
Well Labeled?	Yes	No				Sampli	ng Method:	Bla	dder		Cc	ontrol Setting	S
Casing Straight?		No ·				Dedicat	ted Equip?:	Yes	NO		Purge:		sec.
Grout Seal Intact?	,Xrēş	No	Not V	isible	:	Duplicate	Sample?:	Yes	NÒ		Recover:	<u>55</u>	sec.
Repairs Necessary:	-0-					Duplicate	Sample ID:	*			PSI:	10	
	Diameter:		2"										
Water Level Bef		E	3.87	ft		F	Purge Date:	26 Ag			ing Began:	1330	am/m
			<u> </u>			Well P	urged Dry?	Yes	No	Time F	urged Dry:		am/pm
						Sa	ample Date:	26 A-11	9	Time of	Sampling:	1950	am/pm
Depth to To	p of Pump:	Ĵ	4.21	ft									
Water Level Aft	·	(	9.01	fť		Bottle	1L Raw	500m	L Nitric	500mL Nit	ric (filtered)	250 Su	Ifuric
Measuremer		Electric	Water Level	Indicator		List:	2	1-16 Nít	vic				

#### Field Measurements

Stahil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
	ecutive)	(°C)	Cond.	pH	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1335	17,54	1056	7.31	4.90	111.4	52.5	8.93	100.0	500.0	Clear
2	1405	16.05	1028	7.19	5,51	57.6	26.7	8.93	100.0	3000.0	cles
3	1435	15,08	1022	7,19	5.55	65.5	27.8	8.91	100.0	3000.0	clear
4	1505		1026	7,23	6.03	69.9	21.3	8.92	100.0	2000.0	Clear
5	1535	16.09	1024	7.27	B,12	162.2	20.6	9.02.	120.0	3000.0	Clea
6	1540	16.28	1022	7.26	7.36	164.4	24.5	8,99	100,0	500,0	Clear
7	1545	16.52	1023	7.26	7.48	164.9	17.8	8.97	100.0	5000	Clas
1	1590	16,80	1023	7.26	7.47	166.1	19.6	8.99	102.0	500.0	clea
8	1220	10,00		T. 00			6100				
9	· · · ·										
10			I	I	l <u>-</u>	L	<del>_</del>	<u> </u>	- Romoved:	11 000 0	ml

Stabilized: (Yes) No

Total Volume Removed: <u>|4,000.0</u> mL

Turbidity wooded not decrease below SNOTU after 3 well volumes of water were remared. Continued until stabilization parameters were met. then collected sample Comments:





Company:	MDU Lewis and Clark
Event:	August 2019
Sample ID:	119
Sampling Personal:	)en thyer

Weather Conditions:		Temp:	70 °F		Wind:	ω	@ 5-1	J .	Precip	: Sunr	y/Partly	Sloudy / Cl	oudy
	Well Info	ormation						Sa	ampling	Informatio	on		
Well Locked?	Yes	No				Purgir	g Method:	Blac	lder				
Well Labeled?	JE8	No				Samplir	g Method:	Blac	lder		Co	ontrol Settin	gs
Casing Straight?	- Cos	No				Dedicat	ed Equip?:	Yes	NG		Purge:	5	sec.
Grout Seal Intact?	(Yeş	No	Not Visib	le		Duplicate	Sample?:	Yes	No		Recover:	55	sec.
Repairs Necessary:						Duplicate S	Sample ID:	~			PSI:	ίŨ	
	Diameter:		2"										
Water Level Befo		F	3.71	ft	·	P	urge Date:	26 Au	19	Time Purg	ing Began:	1055	@m)/pm
Valer Lever Der	one r arge.		<u>, .</u>				urged Dry?		NB	Time F	urged Dry:		am/pm
						Sa	mple Date:	26 A-9	19	Time of	Sampling:	1235	am/pm
Depth to Top	of Pump			ft				<del>_</del>					
Water Level After			R. Tb	ft		Bottle	1L Raw	500ml	_ Nitric	500mL Nit	ric (filtered)	250 S	ulfuric
Measuremen			Vater Level Indi	cator		List:	2	1-12 Nitric	-				
	in barrou.				_	· · · · · · · · · · · · · · · · · · ·							
				Field I	leasure	ements	Mater	Dumping	I I	<u>.</u>	Description		l

Ctobil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:	
	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid	
1	1100	16.72	1096	7.30	6.00	151.9	23.4	6.72	100.0	500.0	Class	
2	1130	18,31	1104	7.27	5.97	92.8	47.4	6.74	100.0	3000,0	Clear	
3	1200	16.09	1104	7.28	4,13	72.1		6,85	100.0	3000.0	(lear	
4	1220	15,92	1100	7.20	3,97	72.6		8.87	100.0	2000.0	Clea	
4	1230	15.87	1113	7.28	3.88	73.8	2.84	8,88	100.0	1000.0	Clean	
6	1235	10 91	1100	7.27	3.83	74.6		8.78	100.0	500.0	Clies	
7	1632	12.11	1100	4,-1	30.000							
		+										
8						<u> </u>						
9				······								
10		<u> </u>	Total Volume Removed: المربي									
Stabilized	: (Yes)	No										

4

.





Company:	MDU Lewis and Clark
Event:	August 2019
Sample ID:	, 116
Sampling Personal:	-ery dayn

2616 E.	Broadway	Ave,	Bismarck,	NI
---------	----------	------	-----------	----

Phone: (701) 258-9720

Weather Conditions:	Tem	p: 70 °F		Wind:	W@ 10-	<u>15 F</u>	Precip: Su	nny / Partly C	loudy / Ch	udy)
	I Informatio	n				Samp	ling Informat	ion		
r	Yes No				Purging Method:	Bladder				
	Yes No				Sampling Method:	Bladder		Co	ontrol Setting	<u>js</u>
	Yes No				Dedicated Equip?:	Yes / Ñ	Ó	Purge:		sec.
	Yes No	Not Visit	le		Duplicate Sample?:	Yes 🔊	D	Recover:	22	sec.
Repairs Necessary:					Duplicate Sample ID:			PSI:	10	
Casing Diar	neter:	2"								
Water Level Before F		7.74	ft		Purge Date:	27 Aug 19		ging Began:		amlom
Water Lever Berere :					Well Purged Dry?	Yes 🕺	7	Purged Dry:		am/pm
					Sample Date:	27 Aug 19	Time	of Sampling:	1627	am/pm
Depth to Top of F	Pump:		ft			- J I				
Water Level After Sa		7.72	ft		Bottle 1L Raw	500mL Nitr		itric (filtered)	250 St	ulfuric
Measurement Me		ic Water Level Indi	cator		List:	4-16 Ni	tre			

#### **Field Measurements**

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time	( )	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1437	15.99	4824	6,98	9,50	159.6	34.6	7.73	1.00.00	500.0	Clear
2	1507	14.74	3816	7.08	9,28	142.0	28,8	7.80	100.0	3000.0	Clear
3	1537	15.21	3731	7.11	9.82	89.9	11.7	7.78	100.0	3000.0	Clear
_	1607	15,29	3734	7.14	\$1,20	63,8	4.19	7.79	100.0	3000,0	Clear
4			3737	7.16	11,43	64.6	3.06	7.79	100,0	1000.0	Clear
5	1617	15,07	3751	7.16	11,52	64.7	2.91	7.79	100.0	500.0	Class
6	1622	15.29	3757	7.17	11.71	65.B	2.87	7.79	100.0	500.0	Clear
7	1627	14.96	747	1.1+		\$7.0	- 2.07	<u>-1, 7 [</u>			
8											
9											
10								<u> </u>	L	11 5-0 2	
Stabilized:	Yes	No					Т	otal Volume	e Removed:	11,500.0	

...

(Yes Stabilized:

Comments:

74

2616 E. Broadway Ave, Bis Phone: (701) 258-9	smarck, ND		Field D Groundwat				Company: Event: Sample ID: Sampling F			29	t 2019	
Weather Conditions:		Temp:	70 °F	Wind:	w	@ [0.	-15	Precip:	Sunr	ny / Partly C	loudy	y Duc
	Well Info	ormation					Sa	ampling l	nformatio	on		1
Well Locked?	Yes	< NO			Purgir	ng Method:	Blac	dder				
Well Labeled?	Tes	No			Samplir	ng Method:	Blac	dder	~	Co	ntrol Settin	gs
Casing Straight?	Tes	No			Dedicat	ed Equip?:	Yes	No		Purge:	5	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate	Sample?:	Yes	No		Recover:	55	sec.
Repairs Necessary:					Duplicate S	Sample ID:				PSI:	10	
	Diameter:		2"					<u>.</u>	<b></b>	/		
Water Level Befo	ore Purge:	5	38	ft	P	urge Date:				ing Began:	0921	am/pm
					Well P	urged Dry?		- (No>		Purged Dry:	1036	am/pm
					Sa	mple Date:	27 Au	19	Time of	f Sampling:	1328	am/pm
Depth to Top of Pump:		9,-	47-	ft			د	) (				
Water Level After Sample:		0	1.10	ft	Bottle	1L Raw	500m	L Nitric	500mL Nit	ric (filtered)	250 S	ulfuric
												1

List:

4-12 Nitric

#### **Field Measurements**

Electric Water Level Indicator

с<sup>чь</sup>

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
1	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time	(-)	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	6926	15.07	7792	6.40	12.05	215.6	75.1	5,89	150.0	750,0	Clear
2	0946	15,31	7717-	704	14.37	195.3	44.9	7.30	150.0	3000.0	Cless
3	0956	15,44	7741	7.06	13.78	118.1	29.7	8,00	150.0	1500.0	Clear
4	1006	15.6B	7720	7.05	14,19	110.4	21,5	B.35	150,0	1500.0	cles
5	1016	15.80	7693	7.04	16.49	10313	30,(	8,94	150.0	1500.0	Clear
6		15.95	7671	7.06	14.39	81.5	22.7	9,3Z	150.0	1500.0	Clean
7	1026	16:05	7637	7.07	13.97	71.2	147.0	Below Pung		1500.0	Clean
	1036				1 1	(1 1.	i		,		
	R132327	Purgeol	well for	5 min	to les	r me u		5.81	100.0	500.0	-
9	1323	15.36	8108	7.10	10,69	138.9	7.06	-			Cles
10	1328	L		1 4.10	1010	1,70.1	1	iotal Valum	e Removed:	11 200	χηL
Stabilized	Yes	NO	-				1	otar volum	E IXCHIOVEU.	4230.0	- \\'

Comments:

Measurement Method:





Company:	MDU Lewis and Clark
Event:	August 2019
Sample ID:	118 . "
Sampling Personal:	Jens Har-
Sampling Personal:	Jen May-

Phone: (701) 258-9720

Weather Conditions:		Temp:	65 °F		Wind:	5 @	5-	10	Precip	: Sunny / R	artly C	loudy / Clo	oudy
	Well Info	rmation				Sampling Information							
Well Locked?	Yes	No				Purging	Method:	Bla	dder				
Well Labeled?	(Jos)	No				Sampling	Method:	Bla	dder		Co	ntrol Setting	gs
Casing Straight?	Ves	No				Dedicated	Equip?:	Yes	No		Purge:	S	· sec.
Grout Seal Intact?	Yes	No	Not Visible			Duplicate Sa	mple?:	Yes	- (No	Re	cover:	55	sec.
Repairs Necessary:						Duplicate Sa	mple ID:		-		PSI:	10	
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		8,32	ft		Pur	ge Date:	28 A.	,19	Time Purging B	egan:	0745	am/pm
	¥					Well Purg	ed Dry?	I >	NO	Time Purge	d Dry:		am/pm
						Samp	le Date:	28 Au	19	Time of Sam	pling:	0910	am/pm
Depth to Top	of Pump:			ft				~					
Water Level Afte		Į.	3, 39.	ft		Bottle	L Raw		L Nitric	500mL Nitric (fil	tered)	250 St	ulfuric
Measurement	t Method:	Electric V	Vater Level Indicat	or		List:		4-11	- Nitic				

Field Measurements

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	0750	13,37	1867	7.39	8.44	182.9	278.0	6.38	120.0	500	Slightly Turbid
2	6820	15.06	1746	7.31	10,50	106.6	59.7	8,40	100.0	30000	Clez
3	0850	15.76	1741	7.26	8.12	63.1	4.27	8,35	100.0	3000.0	Clear
4	0900	15.99	1741	7.28	7.85	58.3	2.95	8,40	100.0	1000.0	Clea
5	0905	15.97	1741	7.28	8,03	62.9	2.94	8,39	100.0	500.0	Clear
6	0910	16,22	1741	7.27	8.11	61.2	2.90	8,40	100.0	500.0	Clas
7											
8											
9											
10											
Stabilized: (Yes) No Total Volume Removed: <u>BS00.0</u> mL											

3

(Yes/ Stabilized:





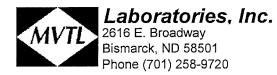
Company:	MDU Lewis and Clark
Event:	August 2019
Sample ID:	120 ,
Sampling Personal:	Jeren Veger

Weather Conditions:		Temp:		Wind:	W	@ 10-1	5	Precip:	Sunn	y / Partly C	loudy / Clo	udy
١	Well Info	rmation				-	Sam	pling l	nformatic	n		
Well Locked?	Yes	No		]	Purgin	g Method:	Bladde	er				
Well Labeled?	Yes	No			Samplin	g Method:	Bladde	ər		Co	ntrol Setting	s
Casing Straight?	Yes	No			Dedicate	ed Equip?:	Yes	Nð		Purge:	5	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate S	Sample?:	Yes (	No		Recover:	22	sec.
Repairs Necessary:				1	Duplicate S	ample ID:				PSI:	20	
and the second	Diameter:		2"	1								
Water Level Befo		jc	5,35 f	t	Pu	urge Date:	27 Ag	19	Time Purgi	ng Began:	1150	@m/pm
					Well Pu	rged Dry?	Yes <	No	Time P	urged Dry:		am/pm
				1	San	nple Date:	27 Aug 1	9	Time of	Sampling:	1235	am/pm
Depth to Top	of Pump:	~	f	t			<u></u>					
Water Level Afte			15,80 f	ti -	Bottle	1L Raw	500mL N	litric	500mL Nitr	ic (filtered)	250 Su	furic
Measurement		Electric V	Vater Level Indicator		List:		4-ILN	iture				
	I											

#### Field Measurements

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	Pumping	mL	Description:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Rate	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time	1	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	ml/min		Clear, Slightly Turbid, Turbid
1	1155	13,23	7938	6.70	8,78	237.5	6.91	15,48	100.0	500.0	Elez
2	1225	12.81	7748	6,68	7.98	12.9	0.96	15,75	100,0	3000,0	Clear
3	1230	12.69	7774	6.69	8.23	11.0	0.94	15.BT	10000	500.0	Clear
4	1235	12.90	7820	6.69	8.56	7.1	1.05	15,78	100.0	500.0	Clea
5							-				
6											
7											
8											
9											
10											
Stabilized:	Yes	No	Total Volume Removed: <u>4500,0</u> mL								

.



# **Chain of Custody Record**

Report To:MDLAttn:AbbieAddress:400 MBism	e Krebsbach N. 4th St. narck, ND 58501 222-7844		Attn: Address:		gust 2019			Name	of Sa	mpler(s)	<u> </u>	<u>JSC</u> D		
Attn: Abbie Address: 400 M Bism	e Krebsbach N. 4th St. narck, ND 58501 222-7844	e Informatio	Attn: Address:	ору:			1	Name	of Sa	mpler(s):	ſ	0		
		e Informatio	Abbie KrebsbachAttn:400 N. 4th St.Address:Bismarck, ND 58501701-222-7844					Name of Sampler(s):						
		Sample Information						Bottle Type Field Parameters					Analysis	
Lab Number	Sample ID	Date	Time	Sample Type		1 liter Nitric				Temp (°C)	Spec. Cond	Hd	Analysis Required	
W3337	Dup 1	27Az 19	NA	GW	,	4				NA	NA	NA		
1.3333 F	ield Blank (FB)	27Aug19	NA	GW		4				NA	NA	NA		
W3339	MW103	27Au 19	tois	GW		4	_			13.39	1427	7,30		
W3340	MW110	26 Aug 19	1550	GW		4				16,80	1023	7.26		
W3341	MW119	26Aug 19	(235	GW		4				(5.91	108	7.27	Rad 226 and 228	
W3342	MW111	27 Aug 19	1627	GW		4				14.96		7.17		
W3343	MW117	ZZASig	1328	GW		4				15.36		7,[0		
W3344	MW118	28Ag19	0910	GW		4				16,22		7.27		
W3345	MW120	ZFAGIG	1235	GW		4				12.90	7820	6.69		
								·	+					

Relinquished By:		Sar	nple Condition:		Received by:			
Name:	Date/Time	Location:	Temp (°C)		/ Name:	<u> </u> Date/Time		
1 - Hy	28 Ag 19 19-10	Log In Walk 117#2	Ber 4, 2 (M562 / TM805	] -[	Terd ALL	29 Aug 2019 OROU		
1		$\sim$	NH2 ac 1 2019					

And Brederich

# **Claudette Carroll**

From: Sent: To: Subject:	Terri A. Olson <tolson@barr.com> Tuesday, October 15, 2019 2:11 PM Claudette Carroll RE: Emailing: 201982-2366 MDU.pdf, EFWEDD_201982-2366.zip, 201982-2366.csv, 201882-2366.txt</tolson@barr.com>
Follow Up Flag:	Follow up
Flag Status:	Flagged

Hi Claudette,

For report 201982-2366, we would like you to have IML check the result for the field blank. It has the second highest result of all the samples in this report which is odd.

Thank-you,

Terri A. Olson Senior Data Quality Specialist Minneapolis, MN office: 952.842.3578 TOlson@barr.com www.barr.com

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-----Original Message-----From: Claudette Carroll <ccarroll@mvtl.com> Sent: Monday, October 7, 2019 12:23 PM To: Barr Data Management <BarrDM@barr.com>; 'Todd.Peterson@mdu.com' <Todd.Peterson@mdu.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com>; Krebsbach, Abbie <Abbie.Krebsbach@mdu.com> Subject: Emailing: 201982-2366 MDU.pdf, EFWEDD\_201982-2366.zip, 201982-2366.csv, 201882-2366.txt

CAUTION: This email originated from outside your organization. Exercise caution when opening attachments or clicking links, especially from unknown senders.

### Good morning,

Attached is a data package for the recent sampling done at MDU Lewis & Clark. Hard copies to follow in the mail.

Let me know if you have any questions.

Have a good rest of your day,

Claudette

ccarroll@mvtl.com 701-258-9720 2616 E. Broadway Ave/Bismarck, ND 58501

Your message is ready to be sent with the following file or link attachments:

201982-2366 MDU.pdf https://linkprotect.cudasvc.com/url?a=https%3a%2f%2fEFWEDD\_201982-2366.zip&c=E,1,j68zK-ZfraG0i6-0u57ZGRuTV-YG-b6O0gB7rRo43aq6-qmJYsH1ylCBsiPk\_uCdgGC7hYtYmj3YozGB7iEbhARRDPjpZQ6ic5ewmXsA6nChCTy&typo=1 201982-2366.csv 201882-2366.txt

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# Appendix B

# Montana-Dakota Utilities Co., Lewis & Clark Station, Assessment of Corrective Action Extension

Appendix B Montana-Dakota Utilities Co., Lewis & Clark Station, Assessment of Corrective Action Extension





# Memorandum

To:Sam Davies, Environmental ScientistFrom:Paul SwensonSubject:Montana-Dakota Utilities Co., Lewis & Clark Station,<br/>Assessment of Corrective Action ExtensionDate:June 28, 2019Project:26411007

An assessment of corrective measures (ACM) is in progress at Lewis & Clark Station, owned by Montana-Dakota Utilities Company (MDU), located near Sidney, Montana. The ACM is being developed in compliance with 40 CFR § 257 Subpart D, Standards for Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments (CCR Rule).

An alternative source demonstration (ASD) was undertaken after lithium and selenium were detected at statistically significant concentrations above applicable ground water protection standards (GWPS) in the initial and resample assessment monitoring events. The ACM was initiated on April 1, 2019, following an unsuccessful conclusion of the ASD effort. According to § 257.96 of the CCR Rule, the ACM may be extended by up to 60 days based on a demonstration of need for additional time to complete the assessment due to site-specific conditions or circumstances.

As the qualified professional engineer (QPE) preparing the ACM, I have determined that additional investigation is needed to better understand plume flow direction in the vicinity of Irrigation Ditch 12 and the north property line to provide an adequate, complete basis for the ACM. Recent work at the facility indicated a need to refine our understanding of the water table in this area. Groundwater flow direction, which is largely driven by the water table piezometric surface, governs the direction of plume migration. The area where the water table is not adequately understood is identified on Figure 1 (attached). Proper definition and assessment of potential corrective measures relies on a thorough understanding of plume migration direction downgradient of the facility, including in this area.

Additionally, understanding whether the ditch is gaining flow from groundwater or losing flow to groundwater in the eastern portion of the site also may affect assessment of corrective measures. A remedy that may be suitable for conditions assuming the ditch is gaining (i.e., groundwater from the site is discharging into the ditch) may not be suitable for conditions assuming the ditch is losing (i.e., water is seeping from the bottom of the ditch and combining with groundwater from the site that is flowing below the ditch).

Piezometers will be installed in the area where definition of the water table needs to be improved to gather more data. Additional time beyond the time allowed to complete the ACM is needed to

accommodate driller availability and to collect several rounds of water levels to better understand hydrogeologic conditions in this area. The schedule to install the piezometers and incorporate the findings into the ACM is estimated in the following milestone dates:

1.	Install piezometers complete	June 28, 2019
2.	Collect three sets of water levels	July 19, 2019
3.	Incorporate findings into groundwater modeling and finalize the ACM	August 29, 2019

It is my opinion that a 60-day extension is needed to collect additional data, and to understand impacts of the new data in context of other site information, to complete the ACM.

I hereby certify that the demonstration for a 60-day extension for completion of the assessment of corrective actions as specified in paragraph 40 CFR § 257.96(a) is accurate, and that I am a duly licensed professional engineer under the laws of the State of Montana.



Sun

Paul T. Swenson Barr Engineering Co. MT License Number 12805PE

Dated this 28<sup>th</sup> day of June, 2019

Barr Footer: ArcGIS 10.6.1, 2019-06-27 13:22 File: I:\Projects\26\41\1007\Maps\Reports\Geoprobe\_Investigation\_2019\Figure01 Investigation Area.mxd User: jrv

