

Groundwater Assessment

Ng

Wind:

Weather Conditions:

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	110
Sampling Personal:	Damanarcina
Prec	ip: Sunny / Partly Cloudy / Cloudy
Sampling	g Information

	Well Info	rmation		
Well Locked?	1 Sest	No		
Well Labeled?	Ves	No	· · · · · · · · · · · · · · · · · · ·	
Casing Straight?	Tes	No		
Grout Seal Intact?	Ves	No	Not Vis	ible
Repairs Necessary:				
Casing	Diameter:		2"	
Water Level Bef	ore Purge:	(	8,74	ft
Total V	Vell Depth:	10	.91	ft
We	ell Volume:		5.1	liters
Depth to To	p of Pump:	1	3,50	ft
Water Level Aft	er Sample:		8.89	ft
Measuremer	nt Method:	Electric V	Nater Level Ir	dicator

Temp:

32

٩F

		Sa	mpling I	nformatio	on		
Purgir	ng Method:	Blad	der		Co	ontrol Setting	us
Samplir	ng Method:	Blad	der		Purae:	5	ser
Dedicat	ed Equip?:	Yes	No		Recover:	55	
Duplicate	Sample?:	Yes	No		PSI:		
Duplicate \$	Sample ID:			]	Pumping R	ate: 100	mL/min
P	urge Date:	110ct	-16	Time Purg	ing Began:	0837	am/pm
Well Pu	urged Dry?	Yes	(Ng	Time F	urged Dry:		am/pm
Sa	Sample Date: 11 Oct 16				f Sampling:	1002	/ami/pm
		-	/				
Bottle	500 m	L Nitric	1 Lite	er Raw			
List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription:
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0842	10.38	1105	778	5,83	177.6	33.6	8.89	500	
2	0857	9.38	1068	7.28	96.28	174.8	25.3	8.98	1500	d.
3	0912	9,63	1061	7,28	5,57	173,7	18.8	8.83	1500	66-
4	0927	10.30	1057	7,28	5.24	173,4	10.0	8188	1500	ch -
5	0942	9,37	1058	7,29	5.15	172.3	7.56	8184	1500	cGr
6	6952	2,48	1059	7,29	5.18	1726	4.52	8.84	1500	dia
7	0957	9.52	1060	7.28	5,22	172.6	4.73	8.88	500	
8 🍂	092002	9,74	10.58.	7,27	5.47	172.1	4.69	8.85	COD	
9							V			
10					•				· · · ·	
Stabilized:	Yes )	No				Tc	tal Volume	Removed:	9,000	mL
Comments	St .									

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EXAMPLE 2616 E. Broadway Ave, Bismarck, ND Phone: (701) 258-9720						neet	-	Company: Event: Sample ID: Sampling Pe	) ( ersonal:	MDU Lewis 2016 9 <i>D X / L</i>	s and Clark	SUAG	
Weather Conditions:		Temp:	3	°F	Wind:	Arg.			Precip:	Sunn	y / Partly C	loudy I Clo	udy
	Well Info	rmation	C.			ν ι		Sa	mpling l	nformatic	n		
Well Locked?	Yes	Ng.			]	Purgir	ng Method:	Blad	der		Co	ntrol Setting	IS
Well Labeled?	(tes)	No			].	Samplir	ng Method:	Blad	der	] [	Purge:	5	sec.
Casing Straight?	(Yes)	No				Dedicat	ed Equip?:	Yes	NO	] [	Recover:	55	sec.
Grout Seal Intact?	Ves	No	N	ot Visible		Duplicate	Sample?:	Yes	- BBB		· PSI:	~~~	
Repairs Necessary:						Duplicate \$	Sample ID:		-	1	Pumping R	ate: 100	mL/min
Casing	Diameter:		2''									2	
Water Level Bef	ore Purge:		Sib	2	ft	P	urge Date:	11007	16	Time Purg	ing Began:	1105	am/pm
Total V	Vell Depth:		" que	\$16,65	ft	Well P	urged Dry?	Yes	No	Time P	urged Dry:	~	am/pm
We	ell Volume:		5.1	) liter	s	Sa	mple Date:	11 00+1	6	Time of	Sampling:	1145	am)pm
Depth to To	p of Pump:	h	1f	12.10	ft			• •	,,,,,,,				
Water Level After	er Sample:				ft	Bottle	500 m	nL Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Water L	evel Indicator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

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Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	\$110	13,39	1125	7,27	2.11	69.1	12.5	8,63	500	C.C.
2	1120	13,15	1125	7,28	2,10	60,7	9.49	8.64	1000	de
3	1130	13,34	1129	7,27	2.03	47,1	3,70	8-64	1000	Clar
4	1135	13.35	1131	7,27	2,00	47.5	3.38	8-64	#500	de
5	1170	13.34	1(30	7.27	2.01	49,1	3.21	8.64	580	de
6	1145	13,44	1130	7,27	2.02	48.7	3.60	844	500	d-
7										
8										
9										
10										
Stabilized Comment	: (Yes) s: (	No	-			То	otal Volume	e Removed:	4000	_mL



Groundwater Assessment

Phone: (701) 258-9720

Company:	MDU Lev	wis and Clark
Event:	2016	······································
Sample ID:	210	
Sampling Perso	nal: Darren	Niesmaa

Weather Conditions:       Temp:       Image: Second	We the end of the				/
Well Information       Sampling Information         Well Locked?       Yes       No         Well Labeled?       Yes       No         Casing Straight?       Yes       No         Grout Seal Intact?       Yes       No         Repairs Necessary:       Optime Diameter       Optime Diameter	weather Conditions:	Temp: 56 °F	Wind: N/Y	Precip:	Sunny / Partly Cloudy / Cloudy
Well Locked?       Yes       No         Well Labeled?       Yes       No         Casing Straight?       Yes       No         Grout Seal Intact?       Yes       No         Repairs Necessary:       Outplicate Sample ID:       Purging Method:       Bladder         Purging Method:       Bladder       Purgie:       5       s         Purging Method:       Bladder       Purgie:       5       s         Dedicated Equip?:       Yes       No       Pourgie:       5       s         Repairs Necessary:       Outplicate Sample ID:       Purging Rate: //O       Purging Rate: //O       Purging Rate: //O	Well Inf	ormation		Sampling Infor	mation
Well Labeled?       Yes       No       Sampling Method:       Bladder       Control Settings         Casing Straight?       Yes       No       Dedicated Equip?:       Yes       No         Grout Seal Intact?       Yes       No       Not Visible       Duplicate Sample?:       Yes       No.         Repairs Necessary:       Outplicate Sample ID:       Outplicate Sample ID:       Outplicate Sample ID:       Pumping Rate: //O       mL/r	Well Locked? Yes	(Ng)	Purging Method:	Bladder	
Casing Straight?       Yes       No       Dedicated Equip?:       Yes       No         Grout Seal Intact?       Yes       No       Not Visible       Duplicate Sample?:       Yes       No         Repairs Necessary:       Outplicate Sample ID:       Outplicate Sample ID:       Outplicate Sample ID:       Purge:       5       s	Well Labeled? Yes	No No	Sampling Method:	Diadder	Control Settings
Grout Seal Intact?     Yes     No     Not Visible       Repairs Necessary:     Image: Consistent of the sector of the secto	Casing Straight? / Yes	No	Dedicated Faring	Bladder	Purge: <u>sec.</u>
Repairs Necessary:     Yes       Cosing Diameter     Out Visible         Duplicate Sample ID:     Psi:       Image: Diameter     Out Visible	Grout Seal Intact?	No Not Visible	Dedicated Equip?	Yes (Nd	Recover: 55 sec.
Duplicate Sample ID: Pumping Rate: /// Pumping Rate: // Pumping Rate	Renairs Necessanr		Duplicate Sample?:	Yes No	PSI: 10-15
	Repairs Necessary.		Duplicate Sample ID:		Pumping Rate: 100 ml /min
Casing Diameter. 2"	Casing Diameter	2"			
Water Level Before Purge: S.77 ft Purge Date: 1/ 6/ F// Time Purging Regent / 2//2	Water Level Before Purge	5.77 ft	Purge Date:	1/ BCF// Time	Purging Pagant (2//2
Total Well Depth: SS, 43 ft Well Purged Dr. Vac No. Time Purged Dr. 1297 am/	Total Well Depth	: 35,4'3 ft	Well Purged Dav2		in a Burned B
Well Volume: // _ liters Semala Data 1/ a _// A _ Time Purged Dry: _ am/	Well Volume		Semple Deter		ime Purged Dry: am/pm
Depth to Top of Pump: 20, 40, # Sample Date: 11, 007 16 Time of Sampling: 342 and	Depth to Top of Pump	20.40	Sample Date:	11.00716	me of Sampling: 342 ampm
Water Level After Sample: ( a Fit )	Water Level After Sample			·····	
Water Lever Aner Sample. 10,5 4 tt Bottle 500 mL Nitric 1 Liter Raw	Water Lever Aiter Sample.	tt	Bottle 500 m	L Nitric 1 Liter Raw	/
Measurement Method: Electric Water Level Indicator List: 500 mL Nitric (filtered) 4 - 1 Liter Nitric	ivieasurement Method:	Electric Water Level Indicator	List: 500 mL Nit	tric (filtered) 4 - 1 Liter Nit	ric

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
. 1	1252	10.63	1409	7,55	0.18	50,7	78.8	9,62-	Con	Slightly to los
2	1307	1.0266	1485	NO7,53	0,36	22.6	25.9	10.52	1580	
3	1322	18,34	1408	7,54	0,35	18-8.9	4.60	1052	1500	Clar
4	1327	10,34	1409	7.54	0.32	Q. 1	4.13	10.5)	500	
5	1332	10,35	1411	7,55	0,20	7.4	2.11	10.52	- 500	- CG-
6	1337	10.39	1410	7.55	0.28	-n.l	2 42	10 57	~DD	
7	1342	10.60	1411	7.00	0.7.8	-10	·> 110	10,50	500	- Uz
8	17	1 0 0 0 0	1	-737-	0100	-1.8	2170	10230	509	
9										
10										
Stabilized	Yes	No				To	tal Volume	Removed:	5500	
Comments	i l	)							<u></u>	



Groundwater Assessment

Event:	2016
Sample ID:	102
Sampling Personal:	PARREN NTESWAR

Weather Conditions:		Temp:	<u>37°F</u>		Wind:	NWG			Precip:	Sunr	ny / Partly C	loudy //Clo	udy
	Well Info	rmation	- (			•		Sa	mpling li	nformatio	on	$\subset$	$\supset$
Well Locked?	Yes	No.				Purgi	ng Method:	Blad	der		Co	ntrol Setting	js
Well Labeled?	(Yes	No				Sampli	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visib	e		Duplicate	Sample?:	Yes	No		PSI:	10-15	
Repairs Necessary:		.~				Duplicate	Sample ID:				Pumping R	ate: 100	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:		18.93	ft		F	Purge Date:	louti	6	Time Purg	ing Began:	1451	am/pm
Total V	Vell Depth:	۴	14.70	ft		Well P	urged Dry?	Yes	(AP)	Time F	urged Dry:	<u> </u>	am/pm
We	ell Volume:			liters		Sa	mple Date:	NOCT	11	Time of	f Sampling:	1611	am/pm
Depth to Top	o of Pump:	<i>c</i>	20,42	ft				•	2				
Water Level After	er Sample:	-		ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremer	nt Method:	Electric \	Nater Level Indi	cator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1456	11,21	6500	191	1.68	31.3	98.7	19,19	500	Slightly tubid
2	1511	10.89	\$492	6,91	1.22	25.4	38.7	19.21	1500	dez
3	1526	10,83	6519	6.92	0.99	22.5	29.5	19,24	1500	der
4 154	HHETP	10,66	6499	6.91	0.40	21.9	13,1	19,28	1500	dy
5195	44564	10,78	6496	6.91	1,10	21.2	6.31	19,28	1500	ch
6	1501	10.69	6514	6.92	1.89	21.0	4,97	19,28	500	ch
7	1606	10.68	6513	6,92	1.77	20,9	4.71	19.31	500	Ch-
8	1611	10.68	6518	6.92	1090	20.6	4,71	19,30	500	ch
9										
10				· ·						
Stabilized:	( Yes	\ No				Te	otal Volume	Removed:	8100	mL
Comments	s:	]							-	



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	118
Sampling Personal:	Marcan Alizanta
	- a car e f a s the day

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

Weather Conditions:		Temn	1-7	°E	Wind:	6.1-	7				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
		remp.		1	vvinu.	2~/	/		Precip	Sun	ny /)Partly (	Cloudy / Clo	udy
	Well Info	ormation	T					Sa	mpling I	nformatio	on		
Well Locked?	Yes	No				Purg	ing Method:	Blad	lder		Cc	ontrol Setting	IS
Well Labeled?	<u>(Yes</u>	No				Sampl	ing Method:	Blad	lder		Purge:	/	50C
Casing Straight?	(Yes	No				Dedica	ated Equip?:	Yes	No>		Recover	~~~	<u> </u>
Grout Seal Intact?	Yes	No	Not \	/isible		Duplicate	e Sample?:	Yes	<nio></nio>	1	PSI	<u> </u>	
Repairs Necessary:						Duplicate	Sample ID:		_		Pumping R	ater van	ml /min
Casing	Diameter:		2"							1	. uniping t	ate. 700	
Water Level Bet	fore Purge:	8	,39	ft		1	Purge Date:	12 OUT	-16	Time Purg	ing Began.	NGEU	<u>A</u>
Total V	Vell Depth:		1.90	ft		Well F	Purged Drv?	Yes	No	Time F	Purged Dry:	0037	(anu/pm
We	ell Volume:		2,2	liters		Sa	ample Date:	12-2.4	-11:	Time of	f Sampling:	Aquin	am/pm
Depth to To	p of Pump:		9.05	ft			inplo bato.	1000	<u></u>		Camping.	0 199	_am/pm
Water Level Aft	er Sample:			ft		Bottle	500 m	I Nitrio	11:+-	- Davi	l	T	
Measuremer	nt Method:	Electric	Water Level	Indicator		List:	500 ml Nit	ric (filterod)					
· · · · · · · · · · · · · · · · · · ·						l	1000 112 141	ne (intered)	<u>4 - 1 L</u>				
				Field	Measure	ements							
					·····	1							

Stabil		Temp (°C)	Spec.	ъЦ	DO (mg/l )	ORP	Turbidity	Water	mL	Discription:
		(0)	Conu.	hu	(mg/L)	(mv)		Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0859	12.58	1771	7,38.	3,84	153,3	74.8	8.48	500	Statty to 1
2	0914	13,28	1697	7,39	3,26	147,2	25.2	8.55	1500	Charles 19/10/12
3	0929	13,29	1699	7,40	2.98	139.5	11.8	8,48	1500	l,
4	0934	13.53	1698	7,40	2.96	136.4	4,25	8,45	500.	
5	0939	13.57	1697	7.40	2,97	134.9	3,00	8.45	500	12
6	09.44	13,59	1699	7,41	2091	134,1	2.91	8,45	500	China and the second se
7	0949	13.64	1699	7,41	2:91	133.7	2,78	8.45	500	il -
8						, , ,				
9				······································						
10	E									
Stabilized	( Yes )	No				Τ.	tal Volume	Removed	-50N	
Comment	s:					10		i temoveu.	5.500	, III <b>L</b>



Weather Conditions:

# **Field Datasheet**

Groundwater Assessment

Wind: NWIN

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	Company:	MDU Lewi	s and Clari	(	
	Event:	2016			
-	Sample ID:	. /			
	Sampling Personal:	Darren	NTESA	INAC,	
-	v				
-					1
	Precip:	Suni	ny / Partly C	Cloudy / Clou	idý
	Sampling I	nformatio	on	$\cup$	
od:	Bladder		Co	ontrol Settings	s
od:	Bladder	]	Purge:	5	sec.
				the second s	the second s

			/ /	
	Well Info	ormation	ı	
Well Locked?	Yes	(No)		
Well Labeled?	Yes	No		
Casing Straight?	(Jes	No		
Grout Seal Intact?	Yes	No	Not Visib	le
Repairs Necessary:	-			
Casing	Diameter:		2''	
Water Level Bet	fore Purge:		7.20	ft
Total V	Vell Depth:		17.81	ft
We	ell Volume:		6,2	liters
Depth to To	p of Pump:		14,30	ft
Water Level Aft	er Sample:		7.92	ft
Measureme	nt Method:	Electric	Water Level Ind	icator

Temp: 😙

		Ja	mpiing i	mormatic	211		
Purging	Method:	Blad	der		Co	ntrol Setting	s
Sampling	Method:	Blad	der		Purge:	5	sec.
Dedicated	Equip?:	Yes	N7		Recover:	55	sec.
Duplicate Sa	ample?:	Y6S>	No		PSI:		
Duplicate Sa	mple ID:	Aug-	. [		Pumping R	late: / 0 0	mL/min
		<b>y</b> .		-			
Pur	ge Date:	lloct	1	Time Purg	ing Began:	1715	am/pm
Well Purg	jed Dry?	Yes	(No)	Time F	Purged Dry:		am/pm
Samp	ole Date:	11  oct	6	Time of	Sampling:	1800	am/pm
		· e				70	
Bottle	500 m	L Nitric	1 Lite	er Raw			
List: 50	00 mL Ni	tric (filtered)	4 - 1 L	ter Nitric			

**Field Measurements** 

Stabili (3 cons	ization ecutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	_±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1720	11.44	3894	6.97	1.65	52.6	34,4	7.92	500	chi.
2	1735	11.72	335-4	6.7.12	2,76	58.4	9.02	7.92	1500	da
3	1740	11.64	3230	7,13	3,23	60,7	5,24	7.92	500	de
4	1745	11.86	34031	70 7.14	3.21	62.2	4.88	7.97	500	l'
5	1750	11.83	3168	7,15	3128	67.6	3.6.8	7.92	500	de
6	1755	11.64	3170	Tilb	3,30	6415	3.4.7	7.92	500	c.l_
7	1800	11.38	3159	7,16	3.60	65.6	3,57	7.92	500	a
8	·									, , , , , , , , , , , , , , , , , , ,
9								•		
10									L	
Stabilized:	Yes/	No	-			Т	otal Volume	e Removed:	4500	_mL

Comments:



2616 E. Broadway Ave, Bismarck, ND	

Measurement Method:

			Groui	uwater	Assessi	ment		Sample ID:		11	-/		
2616 E. Broadway Ave, Bi	smarck, ND							Sampling P	ersonal:		Niel	1.0	
Phone: (701) 258-9	9720								12	AATAV	111-21	the and	
Weether Conditioner			45-								- and the second se	· · · · · · · · · · · · · · · · · · ·	
weather conditions.		Temp:	-52-1	-	VVind:	wb			Precip:	Sunr	ny / (Partly C	loudy / Clo	udy
	Well Info	rmation	25					Sa	mpling l	nformatio	on	and the second se	
Well Locked?	Yes	No				Purgi	ng Method:	Blad	der		Co	ntrol Setting	ıs
Well Labeled?	Yeş	No				Sampli	ng Method:	Blad	der		Purae:	2-6	sec
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	MO)		Recover:	55	sec.
Grout Seal Intact?	Xes	No	Not Vis	ible		Duplicate	Sample?:	Yes	NO		PSI		
Repairs Necessary:	<u>~</u>					Duplicate	Sample ID:				Pumpina R	ate: 100	ml /min
Casing	Diameter:		2"				· · · · · · · · · · · · · · · · · · ·	- A <u>anaa</u>			<u>p</u>		
Water Level Bef	ore Purge:		-96	ft		F	Purge Date:	II DC.	F16	Time Purg	ing Began:	13755	200/nm
· Total V	Vell Depth:		1,51	ft		Well P	urged Dry?	Tes	No	Time P	Purged Dry:	19830	aminm
We	ell Volume:		3,5	liters		Sa	mple Date:	12.0.11	12	Time of	Sampling:	177-3	-578/pm
Depth to Top	p of Pump:	- S.	09	ft					<u>, , , , , , , , , , , , , , , , , , , </u>			0172	"aunpin
Water Level Afte	er Sample:	9.	09	ft		Bottle	500 n	nL Nitric	1 Lite	r Raw	·····		
•													

500 mL Nitric (filtered)

Company:

Event:

MDU Lewis and Clark

2016

4 - 1 Liter Nitric

#### **Field Measurements**

List:

Electric Water Level Indicator

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0800	12,59	7514	7.01	7.28	1915	6.87	6.88	500	cher
2	0810	12,29	7781	7.09	8.20	189.0	6046	7.22	\$000	d _
3	0820	12,69	7343	7.04	8109	18813	9.66	7.82	1000	ch
4	0830	12.87	7382	7.00	8.84	187.6	11.9	8,09	1000	ch
5										
6	0748	STAN	722 +	D A Ledis	- line			- 120	ctlla	
7	0753	13,21	8017	7.03	7.23	168,2	4.92	7,24	500	clea
8							1			
9	·									
· 10					<u>.</u>				rehard	
Stabilized: Comment	: Yes s:	<u>(</u> <u>N</u> b <u></u> )				Тс	otal Volume	Removed:	3500	mL



Groundwater Assessment

Phone: (701) 258-9720

Event:	2016	
Sample ID:	10-	$\geq$
Sampling Personal	: DAllar	Nilcuras

Weather Conditions:		Temp:	40 °F	Win	d:	510			Precip:	Sunr	ny / Partly C	Cloudy / Clou	udy
· /	Well Info	rmation				Sampling Information					and the second second		
Well Locked?	Yes	(No)				Purgir	ng Method:	Blad	der		Co	ontrol Setting	s
Well Labeled?	Yes)	No				Samplir	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	fes	No		2		Dedicat	ed Equip?:	Yes	(NO)		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visible			Duplicate	Sample?:	Yes	No		PSI:	·····	
Repairs Necessary:						Duplicate S	Sample ID:	_	,		Pumping F	late: / <i>DD</i>	mL/min
Casing	Diameter:	-	2"							-		, <u>,</u>	
Water Level Befo	ore Purge:	1	0,26	ft		P	urge Date:	1200	+16	Time Purg	ing Began:	1225	am/pm
Total W	ell Depth:	2	1,15	ft		Well P	urged Dry?	Yes	(NO)	Time F	Purged Dry:	·	am/pm
Wel	Il Volume:	7	7-2-1-6,8	iters		Sa	mple Date:	12oct	1L	Time of	f Sampling:	1315	am/pm
Depth to Top	of Pump:	]	7.2)	ft					<u> </u>				
Water Level Afte	r Sample:	j	0.21	ft		Bottie	500 m	L Nitric	1 Lite	er Raw			
Measurement	t Method:	Electric	Water Level Indica	tor		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рH	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1230	10,03	4389	7,22	3,54	19.4	89.1	-10,27	500	Slightly typid
2	1245	11.40	141614	7,27	2,40	117.2	32.4	10,27	1500	ST
3	1300	11,74	1587	7,26	1.84	116-5	8,93	10.27	1500	cler
4	1305	11.45	15-77	7,26	1.74	116:0	2.65	10,27	4500	ca
5	1310	11,90	1570	7,26	1.63	115,4	2.53	10,27	500	Cly-
6	1315	11.87	1562	7,26	1158	1150	2.41	10.77	500	Clar.
7		~	-		5					
8										
9										
10	$\square$									
Stabilized Comment	: <u>/Yes/</u> s:	No				T	otal Volume	Removed:	5000	_mL



Groundwater Assessment

Company:	MDU Lewis and Clark								
Event:	2016								
Sample ID:	109								
Sampling Personal:	Darren Alinswage								

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Weather Conditions:		Temp:	35 °F		Wind:	\$25 5	59		Precip:	Sunn	y / Partly C	loudy / Clo	oudy
	Well Info	rmation				Sampling Information							
Well Locked?	Yes	North				Purgi	ing Method:	Blad	der		Со	ntrol Setting	as
Well Labeled?	Kes	No				Sampli	ing Method:	Blad	der	ľ	Purge:	5	sec.
Casing Straight?	Vos.	No				Dedica	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visib	ite 🛛		Duplicate	e Sample?:	Yes	No	ľ	PSI:		
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: In 2	> mL/min
Casing	Diameter:		2"							L	<u>`</u>		
Water Level Befo	ore Purge:	1	0.26	ft		F	Purge Date:	12 000	L/G Ti	me Purgi	ng Began:	1053	amiom
Total W	eli Depth:	j	7.04	ft		Well F	Purged Dry?	Yes	No	Time P	urged Dry:	- <u>F</u>	am/pm
Wel	I Volume:		4,2	liters		Sa	ample Date:	12 Oct [		Time of	Sampling:	1123	amion
Depth to Top	of Pump:	13	.2)	ft				,					
Water Level Afte	r Sample:	/	0,28	ft		Bottle	500 m	L Nitric	1 Liter R	Raw			
Measurement	t Method:	Electric \	Nater Level Indi	icator		List:	500 mL Nit	ric (filtered)	4 - 1 Liter	Nitric			
· · · · · · · · · · · · · · · · · · ·					I	L	1	( )/					

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pH	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1058	10.69	1614	7,25	3,21	125.8	4.62	10,28	500	de-
2	1103	10,25	160	7.25	2.67	126,7	3,05	10,28	500	cly
3	1108	10,30	1598	7,24	2.39	127,0	1019	10.28	500	Cle
4	1113	10,09	1602	7,25	2.26	127.0	0,95	10,28	500	dea
5	1118	10,04	1602	7,24	2,15	127.0	0,92	10.28	500	a
6 /12	3423	10,20	1203	7.24	2.08	126,7	0,86	10.28	500	Clar
7										
8										
9										
10										
Stabilized: Comments	: 《Yes s: (	No	-			To	otal Volume	Removed	3000	mL



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



January 18, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4<sup>th</sup> St. Bismarck, ND 58501

RE: Groundwater Sampling Event - 2016 at MDU Lewis & Clark Site

Dear Ms. Marshall:

It was brought to MVTL's attention that some of the summary data in the Field Data Report did not match the Raw Data collected in the field. Attached to this letter is the correct Field Data Report and a list of the corrections that BARR brought to our attention.

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



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List of corrections for the August 2016 sampling event at Lewis and Clark.

- 1. On the field data report, MW110 lists EC = 1119 but the COC EC and lab report = 1114.
- On the field data report, MW102 lists 9,000 mL for the volume removed but the raw data volumes add up to 10,500 mL.
- On the field data report, MW117 has a sample date and time of 12/13/16 at 2233 but the raw data and COC list 12/14/16 at 0840.
- 4. On the field data report, MW117 has a starting water level at 5.96' but the raw data lists 4.94'.
- 5. On the field data report, MW109 lists 6,500 mL for the volume removed but the raw data volumes add up to 5,500 mL.

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.



WO# 82-4070 82-4047

### MDU Lewis and Clark

CCR Sampling

Attn: Samantha Marshall 400 North 4th St Bismarck, ND 58501

	BUBOE	SIARI		TIME	WATER		WATER	]				FIELD READINGS			
ID	DATE	TIME	DATE	SAMPLE	LEVEL START (FT)	TOTAL DEPTH (FT)	LEVEL END (FT)	VOLUME IN WELL (Liters)	VOLUME REMOVED (mL)	SAMPLE METHOD	TEMP (°C)	EC	рН	Turb. NTU	SAMPLE APPEARANCE
MW110	12-Dec-16	13:10	12-Dec-16	15:10	9.31	16.95	9.44	4.8	12000.0	Bladder	10.20	1114*	7.33	4.78	clear
MW119	12-Dec-16	17:00	12-Dec-16	18:00	8.56	16.65	9.21	4.8	6500.0	Bladder	8.89	1168	7.34	2.95	clear
MW210	13-Dec-16	9:15	13-Dec-16	10:35	9.34	35.43	11.65	16.1	8000.0	Bladder	9.27	1430	7.56	3.24	clear
MW102	13-Dec-16	11:45	13-Dec-16	13:30	18.80	24.70	19.18	3.7	10500.0*	Bladder	10.14	6948	6.93	4.51	clear
MW118	13-Dec-16	16:45	13-Dec-16	18:15	8.67	11.90	8.75	2.0	9000.0	Bladder	9.75	1695	7.50	4.77	clear
MW111	13-Dec-16	14:40	13-Dec-16	15:35	8.05	17.81	8.10	6.1	5500.0	Bladder	9.80	3230	7.22	1.35	clear
MW117	12-Dec-16	12:10	12/14/2016*	8:40*	4.94*	11.51	8.09	4.1	5500.0	Bladder	8.30	7879	6.99	67.50	slightly turbid
MVV103	14-Dec-16	11:20	14-Dec-16	12:40	10.73	21.15	10.76	6.5	8000.0	Bladder	10.54	1537	7.27	4.45	clear
MW109	14-Dec-16	9:15	14-Dec-16	10:10	10.68	17.04	10.77	4.0	5500.0*	Bladder	10.12	1614	7.24	1.80	clear
MW101	NA	NA	12-Dec-16	11:33	9.28	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW105	NA	NA	12-Dec-16	11:55	8.99	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW106	NA	NA	12-Dec-16	11:53	9.67	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW107	NA	NA	12-Dec-16	11:31	4.41	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW108	NA	NA	12-Dec-16	11:50	16.72	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW116	NA	NA	12-Dec-16	11:45	10.68	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
	*corrections made on 18 Jan 2017														



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January 3, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4<sup>th</sup> St. Bismarck, ND 58501

RE: Groundwater Sampling Event - 2016 at MDU Lewis & Clark Site

Dear Ms. Marshall:

From December 12-14, 2016, MVTL Laboratories' Field Services division collected ground water samples at the MDU Lewis & Clark Station near Sidney, MT. The wells were sampled for CCR analysis, dissolved metals, and TSS. Samples were collected from 9 wells. A duplicate sample was also collected at well MW119. The wells were located, and were found to be in generally good condition. 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,

C

Jeremy Meyer MVTL Field Services



WO# 82-4070 82-4047

### MDU Lewis and Clark

CCR Sampling

Attn: Samantha Marshall 400 North 4th St Bismarck, ND 58501

		START		TIME	WATER		WATER					FIELD R	EADINGS		
WELL	PURGE	PURGE	SAMPLE	OF	LEVEL	TOTAL		VOLUME IN		SAMPLE	TEMO	FC		Turk	SAMPLE
	DATE		DATE	SAMFLE	(FT)	(FT)	(FT)	(Liters)	(mL)	METHOD	(°C)	EC	μu	NTU	AFFEAMANCE
MW110	12-Dec-16	13:10	12-Dec-16	15:10	9.31	16.95	9.44	4.8	12000.0	Bladder	10.20	1119	7.33	4.78	clear
MW119	12-Dec-16	17:00	12-Dec-16	18:00	8.56	16.65	9.21	4.8	6500.0	Bladder	8.89	1168	7.34	2.95	clear
MW210	13-Dec-16	9:15	13-Dec-16	10:35	9.34	35.43	11.65	16.1	8000.0	Bladder	9.27	1430	7.56	3.24	clear
MW102	13-Dec-16	11:45	13-Dec-16	13:30	18.80	24.70	19.18	3.7	9000.0	Bladder	10.14	6948	6.93	4.51	clear
MW118	13-Dec-16	16:45	13-Dec-16	18:15	8.67	11.90	8.75	2.0	9000.0	Bladder	9.75	1695	7.50	4.77	clear
MW111	13-Dec-16	14:40	13-Dec-16	15:35	8.05	17.81	8.10	6.1	5500.0	Bladder	9.80	3230	7.22	1.35	clear
MW117	12-Dec-16	12:10	13-Dec-16	22:33	5.96	11.51	8.09	4.1	5500.0	Bladder	8.30	7879	6.99	67.50	slightly turbid
MW103	14-Dec-16	11:20	14-Dec-16	12:40	10.73	21.15	10.76	6.5	8000.0	Bladder	10.54	1537	7.27	4.45	clear
MW109	14-Dec-16	9:15	14-Dec-16	10:10	10.68	17.04	10.77	4.0	6500.0	Bladder	10.12	1614	7.24	1.80	clear
MW101	NA	NA	12-Dec-16	11:33	9.28	NA	NA	NA	NA	WL.	NA	NA	NA	NA	Water Level
MW105	NA	NA	12-Dec-16	11:55	8.99	NA	NA	NA	NA	WL.	NA	NA	NA	NA	Water Level
MW106	NA	NA	12-Dec-16	11:53	9.67	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW107	NA	NA	12-Dec-16	11:31	4.41	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW108	NA	NA	12-Dec-16	11:50	16.72	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW116	NA	NA	12-Dec-16	11:45	10,68	NA	NA	NA	NA	WL.	NA	NA	NA	NA	Water Level

### MVTL Calibration Worksheet

Site: MDU Lew	vis and Clark	Technician: Paris Nisnay							
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056						
Date: 12 02	Pre Site Calibr	ation	Post Site Check Time: 2010						
pH Buffer 7 Buffer 10 Conductivity Buffer 1413	Temp °C       Pre Cal       Post Cal $17.51$ $6.90$ $7.00$ $17.28$ $10.04$ $10.00$ $17.05$ $1426$ $1413$	mv Range       mv Range +/-         Post Cal Range       mv       50 $6.95-7.05$ $-48.47$ 0 +/- 50 $9.95-10.05$ $-226.7$ -180 +/- 50         Check $\pm 10\%$ Buffer 5000 $49.70$	pHTemp °CReadingBuffer 7 $7.05$ $7.05$ $\delta_1 2 2$ $\delta_2 2$ ConductivityBuffer 1413 $10.15$ $1423$						
ORP 231 mV @ 25C DO	17,70 2408 231.0 8,08 13,25 11.00	±10 mV Barometric Pressure (mm Hg) mg/L							
Date: 130 pH Buffer 7 Buffer 10 Conductivity Buffer 1413	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	mv       Range       mv       50         6.95-7.05 $-50$ , $3$ 0 +/- 50         9.95-10.05 $-227$ , $1$ -180 +/- 50         Check         ±10%       Buffer 5000 $5011$	Time:       1935         pH       Temp °C       Reading         Buffer 7       13.53       7.04         Conductivity       Buffer 1413       14.34       14.22						
ORP 231 mV @ 25C DO	17.60 228,5 231,1 17.58 8,70 8,88	±10 mV Barometric Pressure (mm Hg) mg/L							

MVTL Calibration Worksheet										
Site: MDU Lew	is and Clark	Technician:	avren Wiedward							
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056							
Date: LARcc pH Buffer 7 Buffer 10 Conductivity Buffer 1413	Pre Site Calibra           I $f$ Time: $0.700$ Temp °C         Pre Cal         Post Cal $[8, 50]$ $7.05$ $6.99$ $18.64$ $9.47$ $10.00$ $[9, 47]$ $10.00$ $[9, 69]$ $1398$ $[9.13]$	mv Range +/-         Post Cal Range       mv       50 $6.95-7.05$ $53.6$ $0$ +/- 50 $9.95-10.05$ $-228.6$ $-180$ +/- 50 $\pm 10\%$ Buffer 5000 $4974$	Post Site Check Time: $2.50$ pH Temp °C Reading Buffer 7 $0.16$ $7.02$ Conductivity Buffer 1413 $0.20$ $1.415$							
231 mV @ 25C	[892 229, ] 231, ] [9,33] 9153 81-12	±10 mV Barometric Pressure (mm Hg) mg/L								
Date: pH Buffer 7 Buffer 10	Time: Temp °C Pre Cal Post Cal	mv Range       mv Range +/-         Post Cal Range       mv       50         6.95-7.05       0 +/- 50         9.95-10.05       -180 +/- 50	Time: pH Temp °C Reading Buffer 7							
Conductivity Buffer 1413 ORP 231 mV @ 25C		±10% Buffer 5000	Buffer 1413							
		mg/L								

# MVTL Calibration Worksheet

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

Water Level

Sampling Personnel:

Darren Nieswaag

Company:

MDU Lewis and Clark

P					
Well ID	, Date	Time	Gauge Reading	Comments	
East Scrubber Pond Gauge	1 TDec/	1115	Drx		
West Scrubber Pond Gauge	HDeck	1114	6.30		
Stream behind Sewage Lagoon	140ec/6	13:45	0.51		



Water Level

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

Sampling Personnel:

Parren Niesmang

Company: MDU Lewis and Clark

Well ID	Date	Time	Depth to Water		Comments	
MW101	12Decl6	1133	9,28			
MW105	12Decil	1155	8.99			
MW106	12A-ects	1153	9=67	·		
MW107	1212016	113	4.41			
MW108	12 Dec16	1150	16,72			
MW116	12Decl6	1145	10.68			······
1						

2616 E. Broadway Ave, Bismarck, ND

Groundwater Assessment

Event:     2016       Sample ID:     M       Sampling Personal:     A	Company:	MDU Lewis an	nd Clark	_
Sample ID: MWIIC Sampling Personal: DACCER AVE SUMME	Event:	2016		
Sampling Personal: DA ((4) () (25 M/Am	Sample ID: //	2w110		_
Sampling Cisonal. 1721 17 19 12 3000	Sampling Personal:	DAVIEN	Nizsway	_

Phone: (701) 258-9720

Thene: (701) 200 0120		1			-						<u></u>
Weather Conditions:	Temp:	6 °F		Wind: W/V	//		Precip	: Sun	ny/Partly C	loudy / Stor	m
Well Info	ormation				•	Sa	mpling l	nformatio	on	$\sim$	
Well Locked? Yes	No			Pu	ging Method:	Blad	der		Co	ntrol Settings	3
Well Labeled? Yes	No			Sam	oling Method:	Blad	der		Purge:	5	sec.
Casing Straight? Yes	No			Dedi	ated Equip?:	Yes	.No		Recover:	55	sec.
Grout Seal Intact? Yes	No	Not Visib	le	Duplica	te Sample?:	Yes	<b>€</b> €		PSI:		
Repairs Necessary:				Duplica	e Sample ID:	· <u></u>			Pumping R	ate: 100	mL/min
Casing Diameter:		2"								/	
Water Level Before Purge:	9.	31	ft		Purge Date:	120e	-16	Time Purg	ging Began:	<u>1310</u>	am/pm
Total Well Depth:	16.	95	ft	Wel	Purged Dry?	Yes	No	Time I	Purged Dry:		am/pm
Well Volume:	4	<u>R</u>	liters		Sample Date:	12 Pec.	/(	Time c	of Sampling:	1510	am/pm
Depth to Top of Pump:	1	3,52	ft				/			- ·	
Water Level After Sample	9,	44	ft	Bottle	500 m	L Nitric	1 Lit	er Raw			
Measurement Method:	Electric Wate	er Level Indi	cator	List:	500 mL Ni	tric (filtered)	4-1L	iter Nitric			

Field Measurements

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1315	2.32	1114	7.36	3,28	168.3	1.52	9.51	500	Forfind slightly turk
2	1330	10.10	1112	7.33	2,44	164.5	76,1	9.39	1500	Slightly Tyubid
3	1345	10.63	1113	7,32	2,33	157.7	35.8	9,46	1500	ST
4	1400	11,25	1114-	7,32	2,23	152,1	12,2	9,41	1500	clear
5	1415	10.94	1119	7.32	2,23	151.8	8.95	9,41	1500	con
6	1430	10.85	1113	7.32	2.21	145.6	6.88	9.44	1500	d
7	1445	10,13	1111	7.32	2.24	138.0	5.53	9,42	1500	Ch
8	1500	9,94	1113	7,33	2.22	-134.3	4.98	9,41	1500	ch
9	1505	1007	1113	737	2,20	133.5	14.85	9.48	500	a
10	1510	10,20	1119	7,33	2,20	133.0	4.78	9.48	500	a
Stabilized	: Yes	No				Т	otal Volume	e Removed	12,000	mL

Comments:



Groundwater Assessment

Company:	MDU Lewis and Clark	
Event:	2016	
Sample ID:	MW 119	
Sampling Pers	onal: Darren Nissinang	

Phone: (701) 258-9720

													~	$\sim$
Weather Conditions:		Temp:	4	۴F		Wind:	NW ID	)		Precip:	Suni	ny / Partly C	loudy / Élou	idy
v	Vell Info	rmation	•						Sa	ampling l	nformatio	on	$\bigcirc$	-
Well Locked?	Yes	No					Purging N	Aethod:	Bla	dder		Co	ntrol Settings	5
Well Labeled?	Yes	No					Sampling N	/lethod:	Bla	dder		Purge:	5	sec.
Casing Straight?	Fes	No					Dedicated	Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	N	ot Visibl	е		Duplicate Sa	mple?:	Yes	No	]	PSI:	~	-
Repairs Necessary:	500						Duplicate Sar	nple ID:	DUDI			Pumping R	ate: 100	mL/min
Casing I	Diameter:		2''						<i>p</i> • • • • •				,	
Water Level Befo	re Purge:	<u>بر</u>	28		ft		Purg	e Date:	120e	cl(	Time Purg	ging Began:	1700	am/pm
Total W	ell Depth:		16.8	-	ft		Well Purg	ed Dry?	Yes	IND	Time F	Purged Dry:		am/pm
Wel	l Volume:	14.9	540	148	liters		Samp	le Date:	12De-	1p	Time o	f Sampling:	1800	am/om
Depth to Top	of Pump:	1	13	31	ft				,				70	
Water Level Afte	r Sample:	-9	,21		ft		Bottle Z -	500 ml	_ Nitric	2-1 Lite	er Raw			
Measurement	Method:	Electric \	Nater L	evel India	ator		List: 2-50	0 mL Nit	ric (filtered	) 🖌 🕂 - 1 Li	ter Nitric			

Stabili (3 cons	ization	Temp (°C)	Spec.	ъH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water	mL Removed	Discription:
SEQ #	Time	( 0)	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Removed	clear, slightly turbid, turbid
1	1705	19 9,80	1148	7.30	3,18	142.5	-19,9	9,2]	500	de
2	1720	8.80	1159	7,32	2.16	104,4	10,7	9,21	1500	ch
3	1735	8.95	1166	7,32	1.65	43.4	6.10	9,21	1500	ch
4	1745	8,92	1170	7,33	1,53	27,8	4.06	9,21	1500	ch
5	1750	9,01	11 69	7,31	1,50	25.8	3.21	9.21	0500	a
6	1755	8.92	1170	7.34	153	240	3.04	9.21	\$500	un
7	1800	8:89	1118	770	1.51	23,3	2,95	9,21	750-501	de
8										
9										
10	(t)								Ican	
Stabilized	Stabilized: Yes/ No Total Volume Removed: <u>b &gt; <sup>b</sup></u> mL									



Groundwater Assessment

Company:	MDU Lewis	and Clark
Event:	2016	
Sample ID:	MW21	<u>0</u>
Sampling Perso	onal: Nation	NELSWAR

Phone: (701) 258-9720

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Weather Conditions:		Temp:	5	°F	Wind:	SW 10			Precip:	Sunn	y / Partly C	oudy / Clo	udy
	Well Infor	mation						Sa	mpling l	nformatic	n <u> </u>		
Well Locked?	mo	(No)				Purging	g Method:	Blac	der		Cor	ntrol Setting	s
Well Labeled?	Nes	No				Samplin	g Method:	Blac	lder		Purge:	Ś	sec.
Casing Straight?	(es	No				Dedicate	ed Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Tes	No	Not	Visible		Duplicate \$	Sample?:	Yes	_N∂		PSI:		
Repairs Necessary:	<u> </u>					Duplicate S	Sample ID:				Pumping Ra	ate:/ <i>80</i>	mL/min
Casing	Diameter:		2"									<u> </u>	
Water Level Bef	ore Purge:	ζ	7.31	/ ft		Pu	urge Date:	13Occ	6	Time Purg	ing Began:	0915	(am/pm
Total V	Vell Depth:	3	5.47	ft		Well Pu	irged Dry?	Yes	<u>(10)</u>	Time P	urged Dry:		-am/pm
We	ell Volume:		Ţ.	liters		Sar	mple Date:	130ec	16	Time of	Sampling:	1035	amypm
Depth to To	p of Pump:	2	9.91	ft					, <u> </u>				
Water Level Aft	er Sample:	11	1.65	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric V	Nater Lev	el Indicator		List:	500 mL Nit	ric (filtered	4-1L	iter Nitric	<u> </u>		

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0920	8.59	1505	7.72	5.32	73.6	179	10.48	500	5/ightly Turbid
2	0935	9.14	1767	7,51	1.72	-27,4	461	11,26	1500	diar
3	0950	9.47	1471	7057	1.28	-5108	19.2	11.57	1500	dia
4	1005	9.45	1473	7.58	1.07	-55,4	5.52	11.57	1500	u
5	1015	9.78	1473	7,57	P.97	-57.0	4.84	11.6	1000	dr
6	1020	9.76	1472	7.57	0.96	-58.7	4.78	11.59	500	ch
7	1025	9.69	1472	7,57	0.95	-60.P	3,50	11.59	500	da
8	1030	9,60	1468	7.56	0.94	-63.0	3.31	11.61	500	di
9	1035	9.27	1430	7.56	0,94	-63.8	3.24	11.61	500	ch
10								<u> </u>		
Stabilized Commen	ts: Yes	No	_			Т	otal Volum	e Removed	: 4,000	2 mL

2616 E. Broadway Ave, Bismarck, ND Phone: (701) 258-9720		Field D <sub>Groundwat</sub>	atasheet er Assessment	Company: Event: Sample ID: Sampling Person	MDU Lew 2016 MWU nal: Parn	is and Clark D Million
Weather Conditions:	Temp:	1D °F	Wind: 10	F	Precip: Sur	iny / Fartly Cloudy / Cloudy
Woll Info	rmation	v		Samp	ling Informati	

vvei information										
Well Locked?	Yes	S								
Well Labeled?	(es	No								
Casing Straight?	Tes	No								
Grout Seal Intact?	Kes	No	Not Visibl	e						
Repairs Necessary:		<u> </u>								
Casing	Diameter:		2"							
Water Level Be	fore Purge:		18-80	ft						
Total V	Vell Depth:		24,70	ft						
W	ell Volume:		3.7	liters						
Depth to To	p of Pump:	20	37	ft						
Water Level Aft	er Sample:	1	a.18	ft						
Measureme	nt Method:	Electric	Water Level India	ator						

		Sa	mpling li	nformatio	on U			
Purgin	ig Method:	Blad	der		Co	ntrol Settings	5	
Samplir	ig Method:	Blad	der		Purge:	5	sec.	
Dedicate	ed Equip?:	Yes	No		Recover:	55	sec.	
Duplicate	Sample?:	Yes	No		PSI:			
Duplicate S	Sample ID:			]	Pumping R	late: / 00	mL/min	
			i	1	145	Å.		
P	urge Date:	13 Dec	16	Time Purg	ing Began:	7940	6m/pm	A start
Well Pu	urged Dry?	Yes	64	Time F	Purged Dry:	c	-am/pm	TT -
Sa	mple Date:	130er	16	Time of	f Sampling:	1330	am/pm	
Bottle	500 m	L Nitric	1 Lite	er Raw				]
List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric				1

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Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1150	10,27	6835	6,91	2.46	28.9	19.8	19.18	500	der
2	1205	10.46	6864	6.93	0.99	0.0	34,7	19.18	1500	cen
3	1220	10,39	68.50	6,93	0.82	-7.0	23.1	19.18	1500	ch
4	1235	10,54	6862	6,92	0.69	-12.3	11.3	19,18	1500	Chin
5	1250	10,43	6888	6.93	2068	-123	8.72	19,18	1500	dr
6	1305	10 c 4/	6895	693	0.66	-13,9	5,33	19.18	1.500	4
7	1320	10.15	1930	6.93	0,65	-15.1	4.89	19,18	1.500	a
8	1325	10,26	6943	6.93	0.64	-15.4	4.67	15.18	500	d
9	1330	10.14	6948	602	0.61	-15%	4.51	1718	500	a
10		1	1.00		•	1.200		-0	6	
Stabilized	res)	No				T	otal Volume	e Removed	1,000	_mL
Comment	ts: 🗸		_						1	



Phone: (701) 258-9720

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Company:	MDU Le	wis an	d Clark
Event:	2016		
Sample ID:	MV118	- (j.	
Sampling Pers	sonal: Dar	ion	Necudas

Weather Conditions:		Temp:	<u>9 °F</u>	Wind:	W16			Precip:	Sunr	ny / Partly C	loudy / Cloι	y
	Well Info	rmation	l		•		Sa	mpling Ir	formatio	on		
Well Locked?	Yes	Nor			Purgi	ng Method:	Blad	der		Co	ntrol Settings	s
Well Labeled?	Xes	No			Sampli	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Xes	No			Dedicat	ted Equip?:	Yes	No		Recover:	.55	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate	Sample?:	Yes	NO		PSI:	<u> </u>	
Repairs Necessary:		<u> </u>			Duplicate	Sample ID:				Pumping R	ate: / <u>0</u> Ø	mL/min
Casing	Diameter:		2"									
Water Level Befo	ore Purge:	8.	67 f		11-c. F	Purge Date:	13 Dec	16	Time Purg	ing Began:	1645	am/ord
Total W	ell Depth:	<u> </u>	11,90 f		Well P	urged Dry?	Yes	(N)	Time P	Purged Dry:		-am/pm
We	ll Volume:	2,0	liters		Sa	ample Date:	13Dec.	16	Time of	f Sampling:	1815	am/pm/
Depth to Top	of Pump:		155 f	t							·	
Water Level After Sample: 8, 75 ft		t	Bottle	500 m	L Nitric	1 Lite	r Raw					
Measurement Method: Electric Water Level Indicator			List:	500 mL Ni	tric (filtered)	4 - 1 Lit	er Nitric					

**Field Measurements** 

**Field Datasheet** 

Groundwater Assessment

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1550	9:48	1691	7,50	5,28	86.9	62.0	8.73	500	Slightly Twid
2 176	160m	19.58	1693	7.50	3.85	81.5	33.4	8,75	1500	Clear
3	1720	931	1695	7.51	3.83	79,9	19.1	8.75	1500	der
4	1735	9.68	1693	7.50	3.48	78.5	10.9	8.75	1500	A.
5	1750	9,72	1693	7.50	3.23	76,7	5.74	8.75	1500.	a
6	1805	9,73	1.694	7,50	3.18	75,8	4.91	8.75	1500	ch
7	1810	9,78	1694	7.50	3.16	75.8	4.97	8,75	500	ch_
× 8	B15	9.45	1695	7.50	3,19	75.7	4,77	8,75	500	un
9										
10	$\left  \right $									
Stabilized	: /( Yes /	No				Т	otal Volume	e Removed	$(1)\omega$	_mL
Comment	·4/ /		a dia mandri dia mandri Managera dia mandri dia m							



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	nwill
Sampling Personal:	Darren Nicsulag

Weather Conditions:		Temp:	13 °F		Wind:	NWU	2		Precip:	Sunn	y) Partly C	loudy / Clo	oudy
	Well Info	rmation				·····,	<b>**</b> **********************************	Sa	mpling In	formatio	n		
Well Locked?	Yes	NG				Purgi	ng Method:	Blad	der		Co	ntrol Setting	js
Well Labeled?	Kas?	No				Sampli	ng Method:	Blad	der		Purge:	5	sec
Casing Straight?	Jes-	No				Dedicat	ted Equip?:	Yes	No		Recover:	515	sec
Grout Seal Intact?	Yes	No	Not Visi	ible		Duplicate	e Sample?:	Yes	هل		PSI:		
Repairs Necessary:						Duplicate	Sample ID:	·	,		Pumping R	ate: /@@	⊃ mL/mir
Casing	Diameter:		2"										
Water Level Bef	ore Purge:		8.05	ft		F	Purge Date:	130e	: 16	Time Purgi	ing Began:	1440	) am/pr
Total V	Veli Depth:	1-	7.81	ft		Well P	urged Dry?	Yes	<u>No</u>	Time P	urged Dry:		am/pn
We	ell Volume:		6.1	liters		Sa	ample Date:	13000	16	Time of	Sampling:	1535	amton
Depth to Top	p of Pump:		13.38	ft									
Water Level After	er Sample:	S.	10	ft		Bottle	500 ml	_ Nitric	1 Liter	Raw			
Measuremer	nt Method:	Electric	Water Level In	dicator		List:	500 mL Nite	ric (filtered)	4 - 1 Lite	er Nitric			L

Stabili	ization	Temp (°C)	Spec. Cond.	На	DO (ma/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time	(-)	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1445	12,201	3403	7,14	1,34	24.6	25,7	8,08	500	cha
2	1500	10,02	3249	7,19	2,22	45.2	14,3	8.10	1500	de
3	1515	9.87	3240	7,21	zil	56.1	7.01	8:10	1500	du
4	1520	9.93	3239	7,22	2.27	61.4	2,22	8,10	500	dr
5	1525	9.89	3239	7,22	2.28	61.8	1.45	8.10	500	de
6	1530	9,89	3230	7,22	2,28	63.4	1.41	8110	500	ch
7	1535	9.80	3230	7.22	2,26	64.9	1,35	8110	590	an
8			1.							
9										
10										
Stabilized Comment	nments: No Total Volume Removed: <u>5.500</u> mL									

Field	Datas	heet
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Groundwater Assessment

7

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	mw117
Sampling Personal:	Darren Niesmans
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2616 E. Broadway Ave, Bismarck, ND

MVTL

Phone: (701) 258-9720

Weather Conditions:		Temp:	5	°F	Wind:	NW 5			Precip:	Sunr	ny / Partly C	Cloudy / Clo	udy
Well Information								Sa	mpling li	nformatio	on 🦳		
Well Locked?	Yes	alla	No l			Purgi	ng Method:	Bladder			Co	ontrol Setting	js
Well Labeled?	Xes	No				Sampli	ng Method:	Blad	der		Purge:	3	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	No.		Recover:	57	sec.
Grout Seal Intact?	Tes	No	N	ot Visible		Duplicate	Sample?:	Yes	MD .	NP .			
Repairs Necessary:			Duplicate	Sample ID:	_	<u>à</u>		Pumping F	Rate: 100	mL/min			
Casing	Diameter:		2''							-			
Water Level Befo	ore Purge:	Ĺ	1.94	ft		F	Purge Date:	12000	16	Time Purg	ing Began:	1210	<b>E</b> Hpm
Total W	ell Depth:		11.5	ft</td <td></td> <td>Well P</td> <td>urged Dry?</td> <td>Ves</td> <td>No</td> <td>Time F</td> <td>Purged Dry:</td> <td>+3-45</td> <td>am/om</td>		Well P	urged Dry?	Ves	No	Time F	Purged Dry:	+3-45	am/om
We	ll Volume:	2	1.1	liters		Sa	ample Date:	13Pecl	6	Time o	f Sampling:	0820	am/pm
Depth to Top of Pump: $\$_{+}09$ ft					140200	16			<u>0840(</u>	Ga			
Water Level Afte	Water Level After Sample: 7.09 Top of Dump, ft			Bottle	500 m	L Nitric	1 Lite	er Raw					
Measurement Method: Electric Water Level Indicator		]	List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric						

**Field Measurements** 

Stabil	ization	Temp (°C)	Spec. Cond	На	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1215	7.69	2857	7.14	8.6	216.9	154	6.40	500	stight, turbid
2	1225	8.05	7858	7.17	7.57	210.7	126	7,15	1000	57
3	1235	7,73	7814	7.13	7,20	204,9	85.6	7.62	1000	ST
4	1245	8214	7846	7.13	6.99	200.8	214.0	8.00	1000	ST
5	1250	8:07	7841	7.11	6.6	193.0	204	8:09	1000	ST
6	1	134	ec 16	Starte	to a	a fil				
7	0815	Pro	e for	151	nia, to	clay	+	6.10		
8	0820	8.20	8134	7.16	8.01	93:7	101	6.82	500	51
9	UF35	-Pu,	ge line	14 DEL	16 -		<u> </u>	6,22		
10	0840	830	7879	6.99	9.10	188.6	67.5	6,72	500	51
Stabilized	: Yes	No			-	Т	otāl Volume	e Removed	2500	_mL
Comment	s:						-	-	45=0	

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Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	RW103
Sampling Personal:	DarrenNiernang

							_						
Weather Conditions:		Temp:	~2 °F		Wind:	NNG	/		Precip:	Sunr	y) Partly C	loudy / Clo	udy
١	Well Info	rmation				V		Sa	mpling l	nformatio	on		
Well Locked?	Yes	No				Purgir	ng Method:	Blac	lder		Co	ntrol Setting	IS
Well Labeled?	Yes	No				Samplir	ng Method:	Blac	ider		Purge:	_5	sec.
Casing Straight?	Nes	No				Dedicat	ed Equip?:	Yes	NO)		Recover:	22	sec.
Grout Seal Intact?	Yes	No	Not Visible	e		Duplicate	Sample?:	Yes	< N9		PSI:		
Repairs Necessary:						Duplicate :	Sample ID:				Pumping R	ate:   Q7	mL/min
Casing	Diameter:		2"									1120	
Water Level Befo	ore Purge:		10.73	ft		F	urge Date:	HDee	-16	Time Purg	ing Began	+0-20	>Tam/pm
Total W	/ell Depth:		1.15	ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:	<u> </u>	am/pm
We	I Volume:		6.5	liters		Sa	mple Date:	14 Peri	14	Time o	f Sampling:	1240	am/pm
Depth to Top	o of Pump:		+7 18	ft				•					
Water Level After	er Sample:	e	10,76	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	nt Method:	Electric	Water Level India	ator		List:	500 mL Nit	ric (filtered	) 4 - 1 Li	ter Nitric			

Stabiliz	zation ecutive)	Temp (°C)	Spec. Cond.	На	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time 🎢		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1 //2	5/025	1432	2270	7,24	1,50	78.0	925	10,76	500	slightly todaid
2 114	010-10	11,35	1660	7.25	1.00	76.5	47.1	10,76	1500	cley
3 /15	1055	10,76	1592	7.26	0.93	77.9	21.3	12.76	1500	ch
4	12 10	10,74	1548	7,26	0.83	77.6	12.6	10,76	1500	4
5	121225	1061	1544	7,29	0.77	76.3	5,43	10,76	1500	en
6	1230	10.46	1551	レンシン	0.78	76,0	4,47	10.76	500	dr
7	1235	10,41	1541	07.27	0,73	75,4	4.80	10,76	500	an
8	1240	10,54	1537	7,27	0,72	75:0	4,45	10,76	500	du
9										
10									1 no	
Stabilized:	Yes	No	-			Т	otal Volume	e Removed	: <u>X 100</u>	_mL
Comments	#								-	



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	m w 109
Sampling Perso	al: Darren Nierway

Weather Conditions:		Temp:	- <b>5</b> °F	W	/ind:	W7			Precip:	Sunn	<u>y Ì)</u> Partly C	loudy / Clou	ıdy
	Well Info	rmation						Sar	nformatio	'n			
Well Locked?	Yes	₩₽				Purgir	ng Method:	Blade	ler		Co	ntrol Settings	5
	Yes	No				Samplin	ng Method:	Blade	der		Purge:	_5	sec.
Casing Straight?	Xes	No				Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	ntes	No	Not Visibl	e		Duplicate	Sample?:	Yes	(No)		PSI:		
Repairs Necessary:	-		L			Duplicate	Sample ID:	·			Pumping R	ate: 100	mL/min
Casing	Diameter:		2"										
Water Level Bet	fore Purge:		10.68	ft		F	Purge Date:	14000	16	Time Purg	ing Began:	0915	am/pm
Total V	Nell Depth:		17.04	ft		Well P	urged Dry?	Yes	No	Time F	urged Dry:	<u> </u>	-am/pm
W	ell Volume:	4.	D	liters		Sa	imple Date:	14Decl	6	Time of	Sampling:		am/pm
Depth to To	p of Pump:		13.31	ft				·					
Water Level Aft	ter Sample:	,	10:77	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measureme	nt Method:	Electric	Water Level India	cator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			
L													

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### 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



#### CASE NARRATIVE - AMENDED 21 FEB 17

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201682-4047 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – December 2016 Event 16-W5953 through 16-W5963

MDU Sample Identification	MVTL Laboratory #
MW110	16-W5953
MW119	16-W5954
MW210	16-W5955
MW102	16-W5956
MW118	16-W5957
MW111	16-W5958
MW117	16-W5959
MW103	16-W5960
MW109	16-W5961
Dup 1	16-W5962
Field Blank (FB)	16-W5963

#### I. RECEIPT

- All samples were received at the laboratory on 15 December 2016 at 0800.
- 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 0.7°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

#### II. HOLDING TIMES

• With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

#### III. METHODS

- Approved methodology was followed for all sample analyses.
  - o Methods 6010D and Method 6020B were used to analyze the metals.

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#### CASE NARRATIVE - AMENDED 21 FEB 17

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

201682-4047 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – December 2016 Event 16-W5953 through 16-W5963

#### IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory . fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
  - o For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
  - o For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
  - Recovery for one selenium matrix spike was outside of the acceptable limits. Recovery of the 0 matrix spike duplicate was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
  - o The recoveries for one alkalinity 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.

#### v. REPORTING

Per email dated 9 Feb 2017 from Terri Olson at Barr, the data package was amended to remove extraneous QC samples from the QC report. In addition, the event name was changed from November 2016 to December 2016.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

DATE: ZIFEBIT

Claudette Carroll - MVTL Bismarck Laboratory Manager

### MINNESOTA VALLEY TESTING LABORATORIES, INC.

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MEMBER ACIL

### Quality Control Report – Amended 22 Feb 2017

Lab IDs: 16-W5953 to 16-V	<u>₩5963</u>	Pro	oject: MI	DU Lewis	& Clark CCF	<u> </u>	<u>Vork Or</u>	der: 201	682-4047	7							
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	0.1000	106	80-120	0.100 0.100	16-W5961 16-W5963	0.0052 < 0.001	0.1108 0.1036	106 104	75-125 75-125	0.1108 0.1036	0.1124 0.1037	107 104	1.4 0.1	20 20		-	< 0.001
Antimony - Total mg/l	0.1000 0.1000	104 106	80-120 80-120	0.400 0.400	16-W5953 16-W5963	<0.001 <0.001	0.4274 0.4384	107 110	75-125 75-125	0.4274 0.4384	0.4212 0.4308	105 108	1.5 1.7	20 20	-	-	< 0.001 < 0.001
Arsenic - Dissolved mg/l	0.1000	105	80-120	0.100 0.100	16-W5961 16-W5963	0.0027 < 0.002	0.1070 0.1002	104 100	75-125 75-125	0.1070 0.1002	0.1049 0.1017	102 102	2.0 1.5	20 20	-		< 0.002
Arsenic - Total mg/l	0.1000 0.1000	108 105	80-120 80-120	0.400 0.400	16-W5953 16-W5963	<0.002 <0.002	0.4418 0.4386	110 110	75-125 75-125	0.4418 0.4386	0.4368 0.4262	109 107	1.1 2.9	20 20	-	-	< 0.002 < 0.002
Barium - Dissolved mg/l	0.1000	102	80-120	0.100 0.100	16-W5961 16-W5963	0.0224 < 0.002	0.1196 0.0990	97 99	75-125 75-125	0.1196 0.0990	0.1214 0.0999	99 100	1.5 0.9	20 20	-		< 0.002
Barium - Total mg/l	0.1000 0.1000	102 102	80-120 80-120	0.400 0.400	16-W5953 16-W5963	0.0339 < 0.002	0.4420 0.4102	102 103	75-125 75-125	0.4420 0.4102	0.4384 0.4032	101 101	0.8 1.7	20 20	-	-	< 0.002 < 0.002
Beryllium - Dissolved mg/l	0.1000	105	80-120	0.100 0.100	16-W5961 16-W5963	< 0.0005 < 0.0005	0.1050 0.1056	105 106	75-125 75-125	0.1050 0.1056	0.1040 0.1042	104 104	1.0 1.3	20 20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000 0.1000	107 105	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.0005 < 0.0005	0.4258 0.4312	106 108	75-125 75-125	0.4258 0.4312	0.4254 0.4170	106 104	0.1 3.3	20 20			< 0.0005 < 0.0005
Boron - Dissolved mg/l	0.40 0.40	115 115	80-120 80-120	0.400 0.400	16-W5953 16-W5963	0.22 < 0.1	0.58 0.45	90 112	75-125 75-125	0.58 0.45	0.59 0.46	93 115	1.7 2.2	20 20	-		< 0.1 < 0.1
Boron - Total mg/l	0.40 0.40 0.40 0.40 0.40 0.40	100 120 115 115 110 115	80-120 80-120 80-120 80-120 80-120 80-120	2.00 0.400 0.400 0.400 0.400 0.400	16-D5016 16-W5953 16-W5963 16-W5963 17-D2 16-W6027	1.04 0.30 0.12 < 0.1 1.01 0.39	3.00 0.68 0.51 0.44 1.40 0.74	98 95 97 110 97 88	75-125 75-125 75-125 75-125 75-125 75-125 75-125	3.00 0.68 0.51 0.44 1.40 0.74	2.96 0.69 0.51 0.44 1.39 0.73	96 97 97 110 95 85	1.3 1.5 0.0 0.0 0.7 1.4	20 20 20 20 20 20 20			$ \begin{array}{c} < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \\ < 0.1 \end{array} $

### MINNESOTA VALLEY TESTING LABORATORIES, INC.

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MEMBER ACIL

### **Quality Control Report**

Lab IDs: 16-W5953 to 16-W	V5963	Pr	oject: MI	DU Lewis	& Clark CCR	t 1	Vork Or	der: 201	682-4043	7							
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
Cadmium - Dissolved mg/l	0.1000	113	80-120	0.100 0.100	16-W5961 16-W5963	< 0.0005 < 0.0005	0.1036 0.1049	104 105	75-125 75-125	0.1036 0.1049	0.1072 0.1078	107 108	3.4 2.7	20 20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000 0.1000	107 113	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.0005 < 0.0005	0.4252 0.4514	106 113	75-125 75-125	0.4252 0.4514	0.4184 0.4486	105 112	1.6 0.6	20 20	-	-	< 0.0005 < 0.0005
Calcium - Dissolved mg/l	20.0	98	80-120	100 100	16W5953q 16W5963q	79.8 < 1	164 93.7	84 94	75-125 75-125	164 93.7	164 92.6	84 93	0.0 1.2	20 20	-	-	<1 <1
Calcium - Total mg/l	20.0 20.0	98 98	80-120 80-120	100 100	16W5953q 16W5963q	83.9 < 1	171 91.4	87 91	75-125 75-125	171 91.4	169 91.2	85 91	1.2 0.2	20 20		-	<1 <1 <1 <1 <1
Chloride mg/l	30.0	88	80-120	60.0	16-W5953	21.0	75.6	91	80-120	75.6	74.3	89	1.7	20	-	-	< 1
Chromium - Dissolved mg/l	0.1000	97	80-120	0.100 0.100	16-W5961 16-W5963	<0.002 <0.002	0.0944 0.0948	94 95	75-125 75-125	0.0944 0.0948	0.0936 0.0948	94 95	0.9 0.0	20 20	-		< 0.002
Chromium - Total mg/l	0.1000 0.1000	101 97	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.002 < 0.002	0.3976 0.3918	99 98	75-125 75-125	0.3976 0.3918	0.3936 0.3828	98 96	1.0 2.3	20 20	-	-	< 0.002 < 0.002
Cobalt - Dissolved mg/l	0.1000	97	80-120	0.100 0.100	16-W5961 16-W5963	< 0.002 < 0.002	· 0.0960 0.0945	96 94	75-125 75-125	0.0960 0.0945	0.0957 0.0951	96 95	0.3 0.6	20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000 0.1000	101 97	80-120 80-120	0.400 0.400	16-W5953 16-W5963	<0.002 <0.002	0.3914 0.3958	98 99	75-125 75-125	0.3914 0.3958	0.3870 0.3830	97 96	1.1 3.3	20 20	-		< 0.002 < 0.002
Fluoride mg/l	0.50	100	90-110	0.500 0.500	16-W5958 16-W5963	2.14 < 0.1	2.54 0.51	80 102	80-120 80-120	2.54 0.51	2.59 0.52	90 104	1.9 1.9	20 20	-	-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.1000	102	80-120	0.100 0.100	16-W5961 16-W5963	< 0.0005 < 0.0005	0.0922 0.0964	92 96	75-125 75-125	0.0922 0.0964	0.0918 0.0962	92 96	0.4 0.2	20 20	-		< 0.0005
Lead - Total mg/l	0.1000 0.1000	101 102	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.0005 < 0.0005	0.3988 0.4004	100 100	75-125 75-125	0.3988 0.4004	0.3936 0.3920	98 98	1.3 2.1	20 20	-	-	< 0.0005 < 0.0005
Lithium - Dissolved mg/l	0.40 0.40	105 105	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.1 < 0.1	0.42 0.38	105 95	75-125 75-125	0.42 0.38	0.42 0.37	105 92	0.0 2.7	20 20	-	-	< 0.1 < 0.1

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### **Quality Control Report**

Lab IDs: 16-W5953 to 16-W	75963	Pr	oject: MI	DU Lewis	& Clark CCI	2 1	Work Or	<b>der:</b> 201	682-404	7							
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
Lithium - Total mg/l	0.40 0.40	105 105	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.1 < 0.1	0.47 0.42	118 105	75-125 75-125	0.47 0.42	0.46 0.43	115 108	2.2 2.4	20 20	- - -		< 0.1 < 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	101	80-120	100 100	16W5953q 16W5963q	49.7 < 1	138 95.5	88 96	75-125 75-125	138 95.5	138 94.4	88 94	0.0	20 20	-	-	< 1 < 1
Magnesium - Total mg/l	20.0 20.0	100 101	80-120 80-120	100 100	16W5953q 16W5963q	52.2 < 1	143 93.5	91 94	75-125 75-125	143 93.5	142 93.0	90 93	0.7 0.5	20 20			<1 <1 <1 <1 <1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002	16-W5961 16-W6025	< 0.0002 < 0.0002	0.0019 0.0019	95 95	70-130 70-130	0.0019 0.0019	0.0018	90 95	5.4 0.0	20 20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	105	85-115	0.002 0.002	16-W5960 16-W5976	< 0.0002 < 0.0002	0.0019 0.0019	95 95	70-130 70-130	0.0019 0.0019	0.0020 0.0020	100 100	5.1 5.1	20 20	-	-	< 0.0002
Molybdenum - Dissolved mg/l	0.1000	100	80-120	0.100 0.100	16-W5961 16-W5963	0.0250 < 0.002	0.1245 0.0945	100 94	75-125 75-125	0.1245 0.0945	0.1314	106 97	5.4 2.6	20 20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000 0.1000	101 100	80-120 80-120	0.400 0.400	16-W5953 16-W5963	0.0045 < 0.002	0.4050 0.4072	100 102	75-125 75-125	0.4050	0.4092	101 100	1.0	20 20 20	-	-	< 0.002
pH units	-	-	-	-	-	-	-	-	-	7.6 7.7	7.6 7.8		0.0	20 20 20	-	-	-
Potassium - Dissolved mg/l	10.0	88	80-120	20.0 20.0	16W5953q 16W5963q	6.1 < 1	23.8 17.6	88 88	75-125 75-125	23.8 17.6	23.8 17.5	88 88	0.0	20 20	-	-	<1
Potassium - Total mg/l	10.0 10.0	88 88	80-120 80-120	20.0 20.0	16W5953q 16W5963q	6.6 < 1	24.9 17.3	92 86	75-125 75-125	24.9 17.3	24.7 17.1	91 86	0.8 1.2	20 20			<1 <1 <1 <1 <1
Selenium - Dissolved mg/l	0.1000	116	80-120	0.100 0.100	16-W5961 16-W5963	0.0696 < 0.005	0.1842 0.1152	115 115	75-125 75-125	0.1842 0.1152	0.1821 0.1102	112 110	1.1 4.4	20 20	-	-	< 0.002

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### **Quality Control Report**

Lab IDs: 16-W5953 to 16-W	5963	<u>Pr</u>	oject: MI	DU Lewis	3 & Clark CCF	۲ Y	Work Or	der: 201	682-4047	7							
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
Selenium - Total mg/l	0.1000 0.1000	116 116	80-120 80-120	0.400 0.400	16-W5953 16-W5963	< 0.01 < 0.005	0.4764 0.5246	119 131	75-125 75-125	0.4764 0.5246	0.4618 0.5000	115 125	3.1 4.8	20 20	-	-	< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0	96	80-120	100 100	16W5953q 16W5963q	78.6 < 1	164 91.9	85 92	75-125 75-125	164 91.9	164 91.6	85 92	0.0 0.3	20 20	-	- -	< 1 < 1
Sodium - Total mg/l	20.0 20.0	95 96	80-120 80-120	100 100	16W5953q 16W5963q	82.9 < 1	172 90.5	89 90	75-125 75-125	172 90.5	171 91.2	88 91	0.6 0.8	20 20			<1 <1 <1 <1
Sulfate mg/l	100 100 100	92 95 91	80-120 80-120 80-120	1000 100 100	16-W5908 16-W5953 16-W5970	1570 172 137	2740 267 232	117 95 95	80-120 80-120 80-120	2740 267 232	2740 271 230	117 99 93	0.0 1.5 0.9	20 20 20	-		< 5 < 5 < 5
Thallium - Dissolved mg/l	0.1000	99	80-120	0.100 0.100	16-W5961 16-W5963	<0.001 <0.001	0.0933 0.0969	93 97	75-125 75-125	0.0933 0.0969	0.0944 0.0985	94 98	1.2 1.6	20 20	-		< 0.0005
Thallium - Total mg/l	0.1000 0.1000	99 99	80-120 80-120	0.400 0.400	16-W5953 16-W5963	0.0006 < 0.001	0.3944 0.4024	98 101	75-125 75-125	0.3944 0.4024	0.3922 0.3970	98 99	0.6 1.4	20 20	-	-	< 0.0005 < 0.0005
Total Alkalinity mg/l CaCO3	410 410	91 91	90-110 90-110	410 410 410	16-D5025 16-W5961 16-W5971	663 295 301	1021 655 614	87 88 76	80-120 80-120 80-120	1021 655 614	1024 656 613	88 88 76	0.3 0.2 0.2	20 20 20	90 90	80-120 80-120	< 20 < 20 < 20 < 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	-			-		984 < 5	1010 < 5		2.6 0.0	20 *	-	-	< 5
Total Suspended Solids mg/l	-	-	-		-	-	-		-	35 88	36 83		2.8 5.8	20 20	-	-	< 1

\* Due to result < 10 mg/L, data reported based on acceptanencriteria of Relative % Difference of +/- 3 mg/L. Approved by:

22 Geb17



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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW110

Event and Year: December 2016

1 of 2 Page:

Report Date: 11 Jan 17 Lab Number: 16-W5953 Work Order #:82-4047 Account #: 002800 Date Sampled: 12 Dec 16 15:10 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Receive	a	Method	Method	Date	Analyst
	Result		RL	Reference	Anaryzed	Analyse
Metal Digestion		100	1840000	EPA 200.2	15 Dec 16	SVS
Hq	* 7.6	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	5	mg/l	2	13765-85	15 Dec 16 14:27	SVS
pH - Field	7.33	units	NA	SM 4500 H+ B	12 Dec 16 15:10	NLD
Temperature - Field	10.2	Degrees C	NA	SM 2550B	12 Dec 16 15:10	DJN
Total Alkalinity	337	mg/l CaCO3	20	SM2320-B	15 Dec 16 17:00	svs
Conductivity - Field	1114	umhos/cm	1	EPA 120.1	12 Dec 16 15:10	NLC
Fluoride	0.49	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	svs
Sulfate	172	mg/1	5.00	ASTM D516-07	20 Dec 16 16:25	KMD
Chloride	21.0	mg/l	1.0	SM4500-Cl-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/1	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/1	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	618	mg/1	10	I1750-85	16 Dec 16 14:43	SVS
Calcium - Total	83.9	mg/1	1.0	6010	16 Dec 16 10:07	SZ
Magnesium - Total	52.2	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Sodium - Total	82.9	mg/1	1.0	6010	16 Dec 16 10:07	SZ
Potassium - Total	6.6	mg/1	1.0	6010	16 Dec 16 10:07	SZ
Lithium - Total	< 0.1	mg/1	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	0.30	mg/l	0.10	6010	20 Dec 16 12:54	SZ
Calcium - Dissolved	79.8	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	49.7	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	78.6	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	6.1	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	0.22	mg/1	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0339	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Bervllium - Total	< 0.0005	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	< 0.002	$m\alpha/1$	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Molybdenum - Total	0.0045	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Folonium - Total	< 0.01 ^	$m\alpha/1$	0.0020	6020	28 Dec 16 18:11	CC
Thallium - Total	< 0.001 ^	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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Samantha Marshall Montana Dakota Utilities Report Date: 11 Jan 17 Lab Number: 16-W5953 Work Order #:82-4047 Account #: 002800 Date Sampled: 12 Dec 16 15:10 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW110

Event and Year: December 2016

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
	5077777		32.53			<sup>8</sup> .
Arsenic - Dissolved	< 0.002 m	1g/1	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	0.0313 m	ng/1	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005 m	ng/l	0.0005	6020	29 Dec 16 10:48	CC
Cadmium - Dissolved	< 0.0005 m	ng/1	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002 m	1g/1	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002 m	1g/1	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005 m	ng/1	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Dissolved	0.0040 m	ng/1	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	< 0.005 ^ m	ng/1	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^ m	1g/1	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

IJAN17 Claudite K. Canrep

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 regarding our reports is reserved pending our written approval.



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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW119

Event and Year: December 2016

Page: 1 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5954 Work Order #:82-4047 Account #: 002800 Date Sampled: 12 Dec 16 18:00 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Received		Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	15 Dec 16	SVS
Hq	* 7.6	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	3	mg/l	2	I3765-85	15 Dec 16 14:27	SVS
pH - Field	7.34	units	NA	SM 4500 H+ B	12 Dec 16 18:00	DJN
Temperature - Field	8.89	Degrees C	NA	SM 2550B	12 Dec 16 18:00	DJN
Total Alkalinity	364	mg/l CaCO3	20	SM2320-B	15 Dec 16 17:00	SVS
Conductivity - Field	1168	umhos/cm	1	EPA 120.1	12 Dec 16 18:00	DJN
Fluoride	0.45	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	SVS
Sulfate	175	mg/l	5.00	ASTM D516-07	20 Dec 16 16:25	KMD
Chloride	22.1	mg/1	1.0	SM4500-Cl-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/1	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	679	mg/l	10	I1750-85	16 Dec 16 14:43	SVS
Calcium - Total	93.6	mg/1	1.0	6010	16 Dec 16 10:07	SZ
Magnesium - Total	58.5	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Sodium - Total	88.7	mg/1	1.0	6010	16 Dec 16 10:07	SZ
Potassium - Total	8.0	mg/1	1.0	6010	16 Dec 16 10:07	SZ
Lithium - Total	< 0.1	mg/1	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	0.31	mg/1	0.10	6010	20 Dec 16 12:54	SZ
Calcium - Dissolved	83.7	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	52.9	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	79.6	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	7.1	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/1	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	0.24	mg/1	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	< 0.001	mg/1	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0375	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Molybdenum - Total	0.0053	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Selenium - Total	< 0.01 ^	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	cc

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW119

Event and Year: December 2016

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Report Date: 11 Jan 17 Lab Number: 16-W5954 Work Order #:82-4047 Account #: 002800 Date Sampled: 12 Dec 16 18:00 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Received		Method	Method	Date	
	No B G L G		KL3	Reference	Analyzed	Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	0.0342	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Cadmium - Dissolved	0.0005	mg/1	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Dissolved	0.0043	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

11 JANIT Approved by: Claudette K. Canreo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW210

Event and Year: December 2016

Page: 1 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5955 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 10:35 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

## Temp at Receipt: 0.7C

	As Receive Result	:d	Method RL	Method Reference	Date Analyzed	Analyst
						0110
Metal Digestion	1 2 2	100		EPA 200.2	15 Dec 16	SVS
pH	* 7.5	units	N/A	SM4500 H+ B	15 Dec 16 17:00	575
Total Suspended Solids	2	mg/1	2	13765-85	15 Dec 16 14:27	SVS
pH - Field	7.56	units	NA	SM 4500 H+ B	13 Dec 16 10:35	DJN
Temperature - Field	9.27	Degrees C	NA	SM 2550B	13 Dec 16 10:35	DJN
Total Alkalinity	372	mg/l CaCO3	20	SM2320-B	15 Dec 16 17:00	SVS
Conductivity - Field	1430	umhos/cm	1	EPA 120.1	13 Dec 16 10:35	DJN
Fluoride	0.96	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	svs
Sulfate	359	mg/l	5.00	ASTM D516-07	20 Dec 16 17:00	KMD
Chloride	4.5	mg/l	1.0	SM4500-C1-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	873	mg/l	10	<b>I1750-85</b>	16 Dec 16 14:43	SVS
Calcium - Total	42.3	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Magnesium - Total	23.6	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Sodium - Total	248	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Potassium - Total	8.7	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	0.25	mg/l	0.10	6010	20 Dec 16 12:54	SZ
Calcium - Dissolved	39.4	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	22.2	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	234	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	8.0	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	0.19	mg/l	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0260	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Bervllium - Total	< 0.0005	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	$m\sigma/1$	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Melubdenum - Total	0 0047	mg/1	0.0020	6020	28 Dec 16 18:11	cc
Colonium - Total	< 0.01 ^	mg/1	0 0020	6020	28 Dec 16 18.11	CC
Thellium - Total	- 0.001 ^	mg/1	0 0005	6020	28 Dec 16 18:11	ĈĈ
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW210

Event and Year: December 2016

Report Date: 11 Jan 17 Lab Number: 16-W5955 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 10:35 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

## Temp at Receipt: 0.7C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	0.0246	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Dissolved	0.0041	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

10 11JANT Claudite K. Canrep Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit



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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW102

Event and Year: December 2016

Page: 1 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5956 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 13:30 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

## Temp at Receipt: 0.7C

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			- 2 AU2	EPA 200.2	15 Dec 16	SVS
рН	* 7.3	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	12	mg/l	2	13765-85	15 Dec 16 14:27	SVS
pH - Field	6.93	units	NA	SM 4500 H+ B	13 Dec 16 13:30	DJN
Temperature - Field	10.1	Degrees C	NA	SM 2550B	13 Dec 16 13:30	DJN
Total Alkalinity	362	mg/l CaCO3	20	SM2320-B	15 Dec 16 17:00	SVS
Conductivity - Field	6948	umhos/cm	1	EPA 120.1	13 Dec 16 13:30	DJN
Fluoride	1.68	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	SVS
Sulfate	5070	mg/l	5.00	ASTM D516-07	20 Dec 16 17:00	KMD
Chloride	53.5	mg/l	1.0	SM4500-C1-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245,1	28 Dec 16 12:13	EV
Total Dissolved Solids	7310	mg/l	10	I1750-85	16 Dec 16 14:43	SVS
Calcium - Total	284	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Magnesium - Total	1060	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Sodium - Total	194	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Potassium - Total	22.2	mg/l	1.0	6010	16 Dec 16 10:07	SZ
Lithium - Total	< 0.5 @	mg/l	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	26.3	mg/l	0.10	6010	20 Dec 16 12:54	SZ
Calcium - Dissolved	264	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	995	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	180	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	20.3	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.5 @	mg/l	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	24.6	mg/l	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	0.0022	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0182	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	0.0068	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Molybdenum - Total	0.1180	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Selenium - Total	< 0.01 ^	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Thallium - Total	< 0.001 ^	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	cc

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





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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW102

Event and Year: December 2016

Report Date: 11 Jan 17 Lab Number: 16-W5956 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 13:30 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

Method Method As Received Date Analyst Result RL Reference Analyzed Arsenic - Dissolved Barium - Dissolved 0.0020 6020 29 Dec 16 10:48 CC < 0.002 mg/l 0.0168 mg/l 0.0020 6020 29 Dec 16 10:48 CC Beryllium - Dissolved < 0.0005 mg/l 0.0005 6020 29 Dec 16 10:48 CC 29 Dec 16 10:48 CC 0.0005 6020 mg/l < 0.0005 Cadmium - Dissolved 0.0020 6020 29 Dec 16 10:48 CC < 0.002 mg/l Chromium - Dissolved 29 Dec 16 10:48 CC 0.0020 6020 Cobalt - Dissolved 0.0066 mg/l 29 Dec 16 10:48 CC Lead - Dissolved < 0.0005 mg/l 0.0005 6020 29 Dec 16 10:48 CC mg/l Molybdenum - Dissolved 0.1142 0.0020 6020 < 0.005 ^ Selenium - Dissolved Thallium - Dissolved 29 Dec 16 10:48 CC mg/l 0.0020 6020 CC 29 Dec 16 10:48 < 0.001 0.0005 6020 mg/l

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Claudite K. Cantes Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

11 JANIT





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW118

Event and Year: December 2016

Page: 1 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5957 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 18:15 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

### Temp at Receipt: 0.7C

	As Receive Result	as Received Result		Method Reference	Date Analyzed	Analyst
Metal Digestion	8 - 24 - 48	202	2016/2014	EPA 200.2	15 Dec 16	SVS
рН	* 7.6	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	4	mg/l	2	13765-85	15 Dec 16 14:27	SVS
pH - Field	7.50	units	NA	SM 4500 H+ B	13 Dec 16 18:15	DJN
Temperature - Field	9.75	Degrees C	NA	SM 2550B	13 Dec 16 18:15	DJN
Total Alkalinity	315	mg/l CaCO3	20	SM2320-B	15 Dec 16 17:00	SVS
Conductivity - Field	1695	umhos/cm	1	EPA 120.1	13 Dec 16 18:15	DJN
Fluoride	1.28	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	SVS
Sulfate	578	mg/l	5.00	ASTM D516-07	20 Dec 16 17:00	KMD
Chloride	19.7	mg/l	1.0	SM4500-C1-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	1140	mg/l	10	11750-85	16 Dec 16 14:43	SVS
Calcium - Total	75.9	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Magnesium - Total	160	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Sodium - Total	84.6	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Potassium - Total	7.5	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	2.31	mg/l	0.10	6010	20 Dec 16 12:54	SZ
Calcium - Dissolved	67.2	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	143	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	75.6	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	6.5	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	2.13	mg/l	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	0.0023	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0321	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Molybdenum - Total	0.0636	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Selenium - Total	0.0745	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW118

Event and Year: December 2016

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Report Date: 11 Jan 17 Lab Number: 16-W5957 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 18:15 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 0.7C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	0.0022	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	0.0254	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Cadmium - Dissolved	< 0.0005	mg/1	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002	mg/1	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Dissolved	0.0584	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	0.0746	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

1c Claudette K. Cantle 11 JANT

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Samantha Marshall

Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

400 N. 4th

Sample Description: MW111

Event and Year: December 2016

Montana Dakota Utilities

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: 11 Jan 17 Lab Number: 16-W5958 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 15:35 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

Method Method As Received Date Result RL Reference Analyzed Analyst EPA 200.2 15 Dec 16 SVS Metal Digestion 15 Dec 16 17:00 SVS \* 7.6 N/A SM4500 H+ B units pH 15 Dec 16 14:27 SVS Total Suspended Solids 2 mg/l 2 13765-85 SM 4500 H+ B 13 Dec 16 15:35 DJN pH - Field 7.22 units NA Temperature - Field 13 Dec 16 15:35 DJN 9,80 Degrees C NA SM 2550B SVS mg/l CaCO3 20 SM2320-B 15 Dec 16 17:00 Total Alkalinity 367 umhos/cm EPA 120.1 13 Dec 16 15:35 DJN Conductivity - Field 3230 1 0.10 SM4500-F-C 15 Dec 16 17:00 SVS Fluoride 2.14 mg/l ASTM D516-07 20 Dec 16 17:00 KMD Sulfate 1530 mg/l5.00 SM4500-C1-E 16 Dec 16 10:37 KMD Chloride 28.9 mg/1 1.0 Mercury - Total Mercury - Dissolved < 0.0002 mg/l 0.0002 EPA 245.1 20 Dec 16 11:21 EV 0.0002 EPA 245.1 28 Dec 16 12:13 EV < 0.0002 mg/l I1750-85 16 Dec 16 14:43 SVS 10 Total Dissolved Solids 2640 mg/16010 16 Dec 16 11:07 SZ 1.0 Calcium - Total 138 mg/l 16 Dec 16 11:07 SZ Magnesium - Total 379 mg/l 1.0 6010 16 Dec 16 11:07 Sodium - Total 115 1.0 6010 SZ mg/l16 Dec 16 11:07 SZ Potassium - Total 9.6 mg/l 1.0 6010 Lithium - Total 0.16 0.10 6010 20 Dec 16 10:09 SZ mg/l Boron - Total 0.10 6010 20 Dec 16 12:54 SZ 7.91 mg/l Calcium - Dissolved 125 mg/l 1.0 6010 16 Dec 16 11:49 SZ Magnesium - Dissolved mg/1 6010 16 Dec 16 11:49 \$7. 348 1.0 Sodium - Dissolved 107 mq/11.0 6010 16 Dec 16 11:49 SZ 1.0 6010 16 Dec 16 11:49 SZ 8.7 mg/l Potassium - Dissolved Lithium - Dissolved 20 Dec 16 11:11 0.10 6010 SZ 0.16 mg/l 20 Dec 16 14:45 SZ 6010 0.10 Boron - Dissolved 7.38 mg/l < 0.001 28 Dec 16 18:11 CC Antimony - Total Arsenic - Total Barium - Total 0.0010 mg/l 6020 28 Dec 16 18:11 CC 0.0020 < 0.002 mg/l 6020 28 Dec 16 18:11 CC 0.0202 mg/l 0.0020 6020 28 Dec 16 18:11 CC < 0.0005 0.0005 6020 Beryllium - Total mg/1CC Cadmium - Total < 0.001 0.0005 6020 28 Dec 16 18:11 mg/l Chromium - Total 0.0020 6020 28 Dec 16 18:11 CC < 0.002 mg/l mg/l 0.0020 6020 28 Dec 16 18:11 CC Cobalt - Total < 0.002 0.0005 6020 28 Dec 16 18:11 CC Lead - Total < 0.0005 mg/l Molybdenum - Total 0.0738 0.0020 6020 28 Dec 16 18:11 CC mg/lSelenium - Total Thallium - Total 0.0020 6020 28 Dec 16 18:11 CC 0.0875 mg/l 28 Dec 16 18:11 CC < 0.001 ^ 0.0005 6020 mg/l29 Dec 16 10:48 CC 0.0010 6020 Antimony - Dissolved < 0.001 mg/l

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 2 of 2

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW111

Event and Year: December 2016

Report Date: 11 Jan 17 Lab Number: 16-W5958 Work Order #:82-4047 Account #: 002800 Date Sampled: 13 Dec 16 15:35 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

## Temp at Receipt: 0.7C

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
	0.000		0 0020	6020	20 Do	- 16 10.49	00
Arsenic - Dissolved	< 0.002	mg/1	0.0020	6020	29 De	C TP TO:40	CC .
Barium - Dissolved	0.0199	mg/l	0.0020	6020	29 De	c 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 De	c 16 10:48	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 De	c 16 10:48	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	29 De	c 16 10:48	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	29 De	c 16 10:48	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	29 De	c 16 10:48	CC
Molybdenum - Dissolved	0.0740	mg/l	0.0020	6020	29 De	c 16 10:48	CC
Selenium - Dissolved	0.0908	mg/l	0.0020	6020	29 De	c 16 10:48	CC
Thallium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	29 De	c 16 10:48	CC

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

CC 11 Jann Claudite K Cantle Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW117

Event and Year: December 2016

1 of 2 Page:

Report Date: 11 Jan 17 Lab Number: 16-W5959 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 8:40 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Received		Method	Method	Date			
	Result		RL	Reference	Analy	zed	Analyst	
Metal Digestion				EPA 200.2	15 D(	ac 16	SVS	
pH	* 7.7	units	N/A	SM4500 H+ B	15 De	C 16 17:00	SVS	
Total Suspended Solids	88	mg/l	2	13765-85	15 De	C 16 14:27	SVS	
pH - Field	6.99	units	NA	SM 4500 H+ B	14 De	C 16 8:40	DJN	
Temperature - Field	8.30	Degrees C	NA	SM 2550B	14 De	c 16 8:40	DJN	
Total Alkalinity	380	mg/l CaCO3	20	SM2320-B	16 De	c 16 17:00	SVS	
Conductivity - Field	7879	umhos/cm	1	EPA 120.1	14 De	C 16 8:40	DJN	
Fluoride	0.26	mg/l	0.10	SM4500-F-C	15 De	c 16 17:00	SVS	
Sulfate	6110	mg/l	5.00	ASTM D516-07	20 De	C 16 17:00	KMD	
Chloride	44.0	mg/l	1.0	SM4500-C1-E	16 De	C 16 10:37	KMD	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 De	c 16 11:21	EV	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 De	c 16 12:13	EV	
Total Dissolved Solids	8550	mg/l	10	I1750-85	16 De	C 16 14:43	SVS	
Calcium - Total	392	mg/l	1.0	6010	16 De	C 16 11:07	SZ	
Magnesium - Total	1060	mg/l	1.0	6010	16 De	c 16 11:07	SZ	
Sodium - Total	535	mg/l	1.0	6010	16 De	c 16 11:07	SZ	
Potassium - Total	27.8	mg/l	1.0	6010	16 De	C 16 11:07	SZ	
Lithium - Total	< 0.5 @	mg/l	0.10	6010	20 De	c 16 10:09	SZ	
Boron - Total	9.85	mg/l	0.10	6010	20 De	c 16 12:54	SZ	
Calcium - Dissolved	386	mg/l	1.0	6010	16 De	c 16 11:49	SZ	
Magnesium - Dissolved	1040	mg/l	1.0	6010	16 De	c 16 11:49	SZ	
Sodium - Dissolved	540	mg/l	1.0	6010	16 De	c 16 11:49	SZ	
Potassium - Dissolved	27.4	mg/l	1.0	6010	16 De	c 16 11:49	SZ	
Lithium - Dissolved	< 0.5 @	mg/l	0.10	6010	20 De	c 16 11:11	SZ	
Boron - Dissolved	10.0	mg/l	0.10	6010	20 De	c 16 14:45	SZ	
Antimony - Total	< 0.001	mg/l	0.0010	6020	28 De	c 16 18:11	CC	
Arsenic - Total	0.0024	mg/l	0.0020	6020	28 De	c 16 18:11	CC	
Barium - Total	0.0897	mg/l	0.0020	6020	28 De	c 16 18:11	CC	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	28 De	c 16 18:11	CC	
Cadmium - Total	< 0.001 ^	mg/l	0.0005	6020	28 De	c 16 18:11	CC	
Chromium - Total	0.0037	mg/1	0.0020	6020	28 De	c 16 18:11	CC	
Cobalt - Total	< 0.002	mg/1	0.0020	6020	28 De	c 16 18:11	CC	
Lead - Total	0.0018	mg/1	0.0005	6020	28 De	c 16 18:11	CC	
Molybdenum - Total	0.0045	mg/l	0.0020	6020	28 De	c 16 18:11	CC	
Selenium - Total	0.0267	mg/l	0.0020	6020	28 De	c 16 18:11	CC	
Thallium - Total	< 0.001 ^	mg/1	0.0005	6020	28 De	c 16 18:11	CC	
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 De	c 16 10:48	CC	

RL = Method Reporting Limit

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

CERTIFICATION: ND # ND-00016





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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 11 Jan 17 Lab Number: 16-W5959 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 8:40 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 0.7C

Project	Name:	MDU	Lewis	&	Clark	CCR	
Sample I	Descri	otion	a: MW13	17			

Event and Year: December 2016

As Received Method Method Date Result RL Reference Analyst Analyzed Arsenic - Dissolved < 0.002 mq/10.0020 6020 29 Dec 16 10:48 CC Barium - Dissolved 0.0559 mg/l 0.0020 29 Dec 16 10:48 6020 CC Beryllium - Dissolved < 0.0005 0.0005 mg/l 6020 29 Dec 16 10:48 CC Cadmium - Dissolved < 0.0005 0.0005 mg/l 6020 29 Dec 16 10:48 CC Chromium - Dissolved 0.0026 0.0020 mg/l6020 29 Dec 16 10:48 CC Cobalt - Dissolved < 0.002 mg/l 0.0020 6020 29 Dec 16 10:48 CC Lead - Dissolved 0.0010 mg/1 0.0005 6020 29 Dec 16 10:48 CC Molybdenum - Dissolved 0.0048 mg/l 0.0020 6020 29 Dec 16 10:48 CC Selenium - Dissolved Thallium - Dissolved 0.0274 mg/1 0.0020 6020 29 Dec 16 10:48 CC < 0.001 ^ 0.0005 mg/l 6020 29 Dec 16 10:48 CC

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

65 11 Jani7 Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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



Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW103

Event and Year: December 2016

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Report Date: 11 Jan 17 Lab Number: 16-W5960 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 12:40 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Receive Result	d	Method RL	Method Reference	Date Analyze	Analyst	
Metal Digestion			4444544	EPA 200.2	15 Dec	16	SVS
pH	* 7.6	units	N/A	SM4500 H+ B	15 Dec	16 17:00	SVS
Total Suspended Solids	4	mg/l	2	13765-85	15 Dec	16 14:27	SVS
pH - Field	7.27	units	NA	SM 4500 H+ B	14 Dec	16 12:40	DJN
Temperature - Field	10.5	Degrees C	NA	SM 2550B	14 Dec	16 12:40	DJN
Total Alkalinity	292	mg/l CaCO3	20	SM2320-B	16 Dec	16 17:00	SVS
Conductivity - Field	1537	umhos/cm	1	EPA 120.1	14 Dec	16 12:40	DJN
Fluoride	0.82	mg/l	0.10	SM4500-F-C	15 Dec	16 17:00	SVS
Sulfate	479	mg/l	5.00	ASTM D516-07	20 Dec	16 17:00	KMD
Chloride	18.8	mg/l	1.0	SM4500-C1-E	16 Dec	16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec	16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec	16 12:13	EV
Total Dissolved Solids	984	mg/l	10	<b>I1750-85</b>	16 Dec	16 14:43	SVS
Calcium - Total	86.0	mg/l	1.0	6010	16 Dec	16 11:07	SZ
Magnesium - Total	124	mg/1	1.0	6010	16 Dec	16 11:07	SZ
Sodium - Total	81.0	mg/l	1.0	6010	16 Dec	16 11:07	SZ
Potassium - Total	8.2	mg/l	1.0	6010	16 Dec	16 11:07	SZ
Lithium - Total	< 0.1	mg/1	0.10	6010	20 Dec	16 10:09	SZ
Boron - Total	2.40	mg/l	0.10	6010	20 Dec	16 12:54	SZ
Calcium - Dissolved	74.6	mg/1	1.0	6010	16 Dec	16 11:49	SZ
Magnesium - Dissolved	110	mg/l	1.0	6010	16 Dec	16 11:49	SZ
Sodium - Dissolved	70.8	mg/l	1.0	6010	16 Dec	16 11:49	SZ
Potassium - Dissolved	7.0	mg/l	1.0	6010	16 Dec	16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec	16 11:11	SZ
Boron - Dissolved	2.25	mg/l	0.10	6010	20 Dec	16 14:45	SZ
Antimony - Total	0.0054	mg/l	0.0010	6020	28 Dec	16 18:11	CC
Arsenic - Total	0.0033	mg/l	0.0020	6020	28 Dec	16 18:11	CC
Barium - Total	0.0277	mg/l	0.0020	6020	28 Dec	16 18:11	CC
Beryllium - Total	< 0.0005	mg/1	0.0005	6020	28 Dec	16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/1	0.0005	6020	28 Dec	16 18:11	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020	28 Dec	16 18:11	CC
Cobalt - Total	< 0.002	mg/1	0.0020	6020	28 Dec	16 18:11	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	28 Dec	16 18:11	CC
Molybdenum - Total	0.0271	mg/l	0.0020	6020	28 Dec	16 18:11	CC
Selenium - Total	0.0585	mg/l	0.0020	6020	28 Dec	16 18:11	CC
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec	16 18:11	CC
Antimony - Dissolved	0.0050	mg/l	0.0010	6020	29 Dec	16 10:48	CC

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW103

Event and Year: December 2016

Page: 2 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5960 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 12:40 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	0.0031	mg/1	0.0020	6020	29 Dec 16 10	48 CC
Barium - Dissolved	0.0240	mg/l	0.0020	6020	29 Dec 16 10	48 CC
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10	48 CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10	48 CC
Chromium - Dissolved	< 0.002	mg/1	0.0020	6020	29 Dec 16 10	48 CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10	48 CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10	48 CC
Molybdenum - Dissolved	0.0267	mg/l	0.0020	6020	29 Dec 16 10	48 CC
Selenium - Dissolved	0.0598	mg/l	0.0020	6020	29 Dec 16 10	48 CC
Thallium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	29 Dec 16 10	48 CC

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

11 JANIT Claudite K. Canto Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

1c





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW109

Event and Year: December 2016

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Report Date: 11 Jan 17 Lab Number: 16-W5961 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 10:10 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

## Temp at Receipt: 0.7C

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			8	EPA 200.2	15 Dec 16	SVS
Ч	* 7.6	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	15 Dec 16 14:27	SVS
pH - Field	7.24	units	NA	SM 4500 H+ B	14 Dec 16 10:10	DJN
Temperature - Field	10.1	Degrees C	NA	SM 2550B	14 Dec 16 10:10	DJN
Total Alkalinity	295	mg/l CaCO3	20	SM2320-B	16 Dec 16 17:00	SVS
Conductivity - Field	1614	umhos/cm	1	EPA 120.1	14 Dec 16 10:10	DJN
Fluoride	0.82	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	SVS
Sulfate	536	mg/l	5.00	ASTM D516-07	20 Dec 16 17:00	KMD
Chloride	19.1	mg/l	1.0	SM4500-C1-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	1100	mg/l	10	<b>I1750-85</b>	16 Dec 16 14:43	SVS
Calcium - Total	93.1	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Magnesium - Total	135	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Sodium - Total	76.2	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Potassium - Total	8.0	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	2.48	mg/l	0.10	6010	20 Dec 16 13:54	SZ
Calcium - Dissolved	86.7	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	127	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	71.2	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	7.5	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	2.35	mg/l	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	0.0052	mg/l	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	0.0032	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0230	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	0.0021	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Molybdenum - Total	0.0271	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Selenium - Total	0.0680	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Thallium - Total	< 0.001 ^	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Antimony - Dissolved	0.0052	mg/l	0.0010	6020	29 Dec 16 10:48	cc

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: MW109

Event and Year: December 2016

Page: 2 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5961 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 10:10 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Arsenic - Dissolved	0.0027	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	0.0224	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Dissolved	0.0250	mg/1	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	0.0696	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^	mg/l	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

11 Jan 17 Claudette K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CL

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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: DUP 1

Event and Year: December 2016

MVTI

Page: 1 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5962 Work Order #:82-4047 Account #: 002800 Date Sampled: 12 Dec 16 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

#### Temp at Receipt: 0.7C

	As Receive	d	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	15 Dec 16	SVS
Hq	* 7.7	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	5	mg/l	2	I3765-85	15 Dec 16 14:27	SVS
Total Alkalinity	364	mg/l CaCO3	20	SM2320-B	16 Dec 16 17:00	SVS
Fluoride	0.45	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	SVS
Sulfate	177	mg/l	5.00	ASTM D516-07	20 Dec 16 17:00	KMD
Chloride	22.4	mg/l	1.0	SM4500-Cl-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	691	mg/1	10	<b>I1750-85</b>	16 Dec 16 14:43	SVS
Calcium - Total	88.9	mg/1	1.0	6010	16 Dec 16 11:07	SZ
Magnesium - Total	55.4	mg/1	1.0	6010	16 Dec 16 11:07	SZ
Sodium - Total	83.8	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Potassium - Total	7.4	mg/1	1.0	6010	16 Dec 16 11:07	SZ
Lithium - Total	< 0.1	mg/1	0.10	6010	20 Dec 16 10:09	SZ
Boron - Total	0.29	mg/1	0.10	6010	20 Dec 16 13:54	SZ
Calcium - Dissolved	81.5	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Magnesium - Dissolved	51.6	mg/l	1.0	6010	16 Dec 16 11:49	SZ
Sodium - Dissolved	79.5	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Potassium - Dissolved	6.9	mg/1	1.0	6010	16 Dec 16 11:49	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec 16 11:11	SZ
Boron - Dissolved	0.24	mg/1	0.10	6010	20 Dec 16 14:45	SZ
Antimony - Total	< 0.001	mg/1	0.0010	6020	28 Dec 16 18:11	CC
Arsenic - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Barium - Total	0.0369	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Beryllium - Total	< 0.0005	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Cadmium - Total	< 0.001 ^	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Chromium - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Cobalt - Total	< 0.002	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Lead - Total	< 0.0005	mg/1	0.0005	6020	28 Dec 16 18:11	CC
Molybdenum - Total	0.0045	mg/l	0.0020	6020	28 Dec 16 18:11	CC
Selenium - Total	< 0.01 ^	mg/1	0.0020	6020	28 Dec 16 18:11	CC
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	28 Dec 16 18:11	CC
Antimony - Dissolved	< 0.001	mg/1	0.0010	6020	29 Dec 16 10:48	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	0.0341	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC

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-00015



Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 11 Jan 17 Lab Number: 16-W5962 Work Order #:82-4047 Account #: 002800 Date Sampled: 12 Dec 16 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Temp at Receipt: 0.7C

2 of 2

Page:

Project Name: MDU Lewis & Clark CCR Sample Description: DUP 1

Event and Year: December 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	0.0006 mg/l	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Dissolved	0.0046 mg/l	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^ mg/l	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

<sup>^</sup> Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

11JAn17 Claudithe K. Canrel

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

le

CERTIFICATION: ND # ND-00016

## MINNESOTA VALLEY TESTING LABORATORIES, INC.



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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Sample Description: Field Blank

Event and Year: December 2016

Page: 1 of 2

Report Date: 11 Jan 17 Lab Number: 16-W5963 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

## Temp at Receipt: 0.7C

	As Receiv	ed	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	15 Dec 16	SVS
Hq	* 6.3	units	N/A	SM4500 H+ B	15 Dec 16 17:00	SVS
Total Suspended Solids	< 2	mg/1	2	13765-85	15 Dec 16 14:27	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	16 Dec 16 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	15 Dec 16 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	20 Dec 16 17:00	KMD
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	16 Dec 16 10:37	KMD
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	20 Dec 16 11:21	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	< 5	mg/l	10	11750-85	16 Dec 16 14:43	SVS
Calcium - Total	< 1	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Sodium - Total	< 1	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Potassium - Total	< 1	mg/l	1.0	6010	16 Dec 16 11:07	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	20 Dec 16 11:09	SZ
Boron - Total	< 0.1	mg/l	0.10	6010	5 Jan 17 12:35	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	16 Dec 16 12:49	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	16 Dec 16 12:49	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	16 Dec 16 12:49	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	16 Dec 16 12:49	SZ
Lithium - Dissolved	< 0.1	mg/1	0.10	6010	20 Dec 16 12:11	SZ
Boron - Dissolved	< 0.1	mg/l	0.10	6010	20 Dec 16 15:45	SZ
Antimony - Total	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	CC
Arsenic - Total	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Total	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Total	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Total	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Lead - Total	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	29 Dec 16 10:48	CC
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	29 Dec 16 10:48	CC
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	29 Dec 16 10:48	CC
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	29 Dec 16 10:48	cc

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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2 of 2 Page:

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 11 Jan 17 Lab Number: 16-W5963 Work Order #:82-4047 Account #: 002800 Date Sampled: 14 Dec 16 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Sample Description: Field Blank

Event and Year: December 2016

Temp at Receipt: 0.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	29 Dec 16 10:48	CC
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	29 Dec 16 10:48	CC
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	29 Dec 16 10:48	CC
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	29 Dec 16 10:48	CC
Molvbdenum - Dissolved	< 0.002 mg/l	0.0020	6020	29 Dec 16 10:48	CC
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	29 Dec 16 10:48	CC
Thallium - Dissolved	< 0.001 ^ mg/l	0.0005	6020	29 Dec 16 10:48	CC

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

1c 11 Jan 17 Claudette K. Canrep

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



Laboratories, Inc.

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

# **Chain of Custody Record**

						-		_					22 6	3.7.27			
Project	Name:				Dec	B	æ		N	lame	of	Sam	pler(	<u>s)</u> :	<u>^.</u>		
MDU	Lewis and Clark	CCR Groun	dwater	9	ctober 20	16	14))ec	ib			6	a	rre	n	Nies	Swaa	5
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501		Carbon Co <u>Attn</u> : Address:	<u>py</u> :					M	Vork	Ord	ler N	lumb	ber:	87	-40	47
Phone:	701-222-7829																
	Samp	le Informatio	on					В	ottl	е Тур	pe			Fie	Id Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type		Gradient	500 ml HNG	1 liter	500 ml HNO	(IIIIered)			Field Tom	emperature °C	Field Spec. Cond.	Field pH	Analysis Required
W5953	MW110	12 Deullo	1510	GW	L	Jp	x	х	х				10,	20	1114	7,33	
WEASH	MW119	1200016	1800	GW	U	Jp	X	X	X				8.	89	1168	7,34	9
W5955	MW210	13Pecl6	1035	GW	L	Jp	X	X	X				9,	27	1430	756	
W5956	MW102	13Dec16	1330	GW	Do	own	X	х	х				10	14	6948	6.93	
W5957	MW118	13Dello	1815	GW	Do	own	X	х	х				91	75	1695	7,50	MDU CCR List with TSS and
WSGER	MW111	130pello	1535	GW	Do	own	X	х	Х				9	180	3230	7.22	Dissolved CCR Metals. No
W5959	MW117	HARch	0840	GW	Do	own	X	X	X				8.	30	7879	6.99	RadChem.
115910	MW103	14Declb	1240	GW			X	X	X				10	0.54	1537	7.27	
11159101	MW109	14pecto	1610	GW			X	X	X				10	212	1614	7,24	
W5912	Dup 1	12 Declb	NA	W			X	Х	X					NA	NA	NA	1 m
W5967	Field Blank (FB)	140/016	NA	W			X	Х	X					NA	NA	NA	
														_			

Comments:

	Iransferred by:	Sample Condition	Date/Time	1	Received by:	Sample Condition	Date/Time	°C
1	Jan N'es	mallcin 2	19pecil	-/ }	Ingel Fronz	mm	15 Dec 16	0.7
2	a the off			-	- y			TM588
2				-		5		17 Dailon
3		· · · · · · · · · · · · · · · · · · ·		-				17560

## MINNESOTA VALLEY TESTING LABORATORIES, INC.



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## CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201682-4070 S1612256 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – December 2016 Event 16-W5991 through 16-W6001

MDU Sample Identification	IML Sample Identification	MVTL Laboratory #
MW110	S1612256-001	16-W5991
MW119	S1612256-002	16-W5992
MW210	S1612256-003	16-W5993
MW102	S1612256-004	16-W5994
MW118	S1612256-005	16-W5995
MW111	S1612256-006	16-W5996
MW117	S1612256-007	16-W5997
MW103	S1612256-008	16-W5998
MW109	S1612256-009	16-W5999
Dup 1	S1612256-010	16-W6000
Field Blank (FB)	S1612256-011	16-W6001

## I. RECEIPT

- All samples were received at the laboratory on 15 Dec 2016 at 0800.
- 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 0.7°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 21 Dec 2016.
  - 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.



ACIL

## CASE NARRATIVE

www.mvtl.com

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201682-4070 S1612256 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – December 2016 Event 16-W5991 through 16-W6001

## 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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

auditte

DATE: 23 Jan M

Claudette Carroll - MVTL Bismarck Laboratory Manager





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5991 Work Order #:82-4070 Account #: 002800 Date Sampled: 12 Dec 16 15:10 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Sample Description: MW110

Project Name: MDU Lewis & Clark CCR Radiochem

Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.33	units	NA	SM 4500 H+ B	12 Dec 16 15:10	DJN
Temperature - Field	10.2	Degrees C	NA	SM 2550B	12 Dec 16 15:10	DJN
Conductivity - Field	1114	umhos/cm	1	EPA 120.1	12 Dec 16 15:10	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			12 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

1C 23 JAN17 Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5992 Work Order #:82-4070 Account #: 002800 Date Sampled: 12 Dec 16 18:00 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW119

## Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.34	units	NA	SM 4500 H+ B	12 Dec 16 18:00	DJN
Temperature - Field	8.89	Degrees C	NA	SM 2550B	12 Dec 16 18:00	DJN
Conductivity - Field	1168	umhos/cm	1	EPA 120.1	12 Dec 16 18:00	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			12 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

10 23JIN17 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5993 Work Order #:82-4070 Account #: 002800 Date Sampled: 13 Dec 16 10:35 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW210

#### Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.56	units	NA	SM 4500 H+ B	13 Dec 16 10:35	DJN
Temperature - Field	9.27	Degrees C	NA	SM 2550B	13 Dec 16 10:35	DJN
Conductivity - Field	1430	umhos/cm	1	EPA 120.1	13 Dec 16 10:35	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			12 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

10 23 JANT Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5994 Work Order #:82-4070 Account #: 002800 Date Sampled: 13 Dec 16 13:30 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW102

Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.93	units	NA	SM 4500 H+ B	13 Dec 16 13:30	DJN
Temperature - Field	10.1	Degrees C	NA	SM 2550B	13 Dec 16 13:30	DJN
Conductivity - Field	6948	umhos/cm	1	EPA 120.1	13 Dec 16 13:30	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			12 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

23 Jann Clauditte K. Cantle

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.

1c





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5995 Work Order #:82-4070 Account #: 002800 Date Sampled: 13 Dec 16 18:15 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW118

## Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.50	units	NA	SM 4500 H+ B	13 Dec 16 18:15	DJN
Temperature - Field	9.75	Degrees C	NA	SM 2550B	13 Dec 16 18:15	DJN
Conductivity - Field	1695	umhos/cm	1	EPA 120.1	13 Dec 16 18:15	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			13 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

1c 03 Jan17

Clauditte

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

K. Cantep

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5996 Work Order #:82-4070 Account #: 002800 Date Sampled: 13 Dec 16 15:35 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW111

## Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.22	units	NA	SM 4500 H+ B	13 Dec 16 15:35	DJN
Temperature - Field	9.80	Degrees C	NA	SM 2550B	13 Dec 16 15:35	DJN
Conductivity - Field	3230	umhos/cm	1	EPA 120.1	13 Dec 16 15:35	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			13 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

2350-17 Clauditte K. Canilo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5997 Work Order #:82-4070 Account #: 002800 Date Sampled: 14 Dec 16 8:40 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW117

Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.99	units	NA	SM 4500 H+ B	14 Dec 16	8:40	DJN
Temperature - Field	8.30	Degrees C	NA	SM 2550B	14 Dec 16	8:40	DJN
Conductivity - Field	7879	umhos/cm	1	EPA 120.1	14 Dec 16	8:40	DJN
Radium 226	See Atta	ached Report			4 Jan 17		OL
Radium 228	See Atta	ached Report			13 Jan 17		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

23 Jann Claudette K. Cantlo

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.

Cc





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5998 Work Order #:82-4070 Account #: 002800 Date Sampled: 14 Dec 16 12:40 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW103

### Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.27	units	NA	SM 4500 H+ B	14 Dec 16 12:40	DJN
Temperature - Field	10.5	Degrees C	NA	SM 2550B	14 Dec 16 12:40	DJN
Conductivity - Field	1537	umhos/cm	1	EPA 120.1	14 Dec 16 12:40	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			13 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

23 Jann Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

1c





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W5999 Work Order #:82-4070 Account #: 002800 Date Sampled: 14 Dec 16 10:10 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW109

Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.24	units	NA	SM 4500 H+ B	14 Dec 16 10:10	DJN
Temperature - Field	10.1	Degrees C	NA	SM 2550B	14 Dec 16 10:10	DJN
Conductivity - Field	1614	umhos/cm	1	EPA 120.1	14 Dec 16 10:10	DJN
Radium 226	See Atta	ached Report			4 Jan 17	OL
Radium 228	See Atta	ached Report			13 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

23 Janin Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

1c

CERTIFICATION: ND # ND-00016





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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 23 Jan 17 Lab Number: 16-W6000 Work Order #:82-4070 Account #: 002800 Date Sampled: 12 Dec 16 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: DUP1

Event and Year: December 2016

Temp at Receipt: 0.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			4 Jan 17	OL
Radium 228	See Attached Report			13 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

1C 23 JANT Claudette K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 23 Jan 17 Lab Number: 16-W6001 Work Order #:82-4070 Account #: 002800 Date Sampled: 14 Dec 16 Date Received: 15 Dec 16 8:00 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: FIELD BLANK

Event and Year: December 2016

Samantha Marshall

Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Temp at Receipt: 0.7C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			4 Jan 17	OL
Radium 228	See Attached Report			13 Jan 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

CC 23 Jan17 Clauditte K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Your Environmental Monitoring Partner

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

Date: 1/18/2017

CLIENT: MVTL Laboratories, Inc. **Project:** 201682-4070 Lab Order: S1612256

**CASE NARRATIVE** 

Report ID: S1612256001

Samples 16-W5991 MW110, 16-W5992 MW119, 16-W5993 MW210, 16-W5994 MW102, 16-W5995 MW118, 16-W5996 MW111, 16-W5997 MW117, 16-W5998 MW103, 16-W5999 MW109, 16-W6000 Dup 1, and 16-W6001 Field Blank were received on December 21, 2016.

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:  $\mathcal{A}$ 

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	1/18/2017 S1612256001
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-001	CollectionDate:	12/12/2016 3:10:00 PM
ClientSample ID:	16-W5991 MW110	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

## Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1416	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1416	MB
Radium 228	2.3	pCi/L		1	Ga-Tech	01/12/2017 701	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	01/12/2017 701	MB

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

## **RL - Reporting Limit**

- в Analyte detected in the associated Method Blank Qualifiers:
  - Value above quantitation range Е
  - Analyte detected below quantitation limits J
  - М Value exceeds Monthly Ave or MCL or is less than LCL
  - o X Outside the Range of Dilutions
  - Matrix Effect

С Calculated Value

- 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

Wade Nieuwsma, Assistant Laboratory Manager

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Reviewed by: A



Your Environmental Monitoring Partner

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

## Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	1/18/2017
	2616 E Broadway Ave.	Report ID	S1612256001
	Bismarck, ND 58501		
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-002	CollectionDate:	12/12/2016 6:00:00 PM
ClientSample ID:	16-W5992 MW119	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

## Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1416	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1416	MB
Radium 228	2.0	pCi/L		1	Ga-Tech	01/12/2017 1627	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	01/12/2017 1627	MB

## These results apply only to the samples tested.

## RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - M Value exceeds Monthly Ave or MCL or is less than LCL
  - O Outside the Range of Dilutions
  - X Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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

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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	1/18/2017 S1612256001
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-003	CollectionDate:	12/13/2016 10:35:00 AM
ClientSample ID:	16-W5993 MW210	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1416	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1416	MB
Radium 228	-0.9	pCi/L		1	Ga-Tech	01/12/2017 1928	MB
Radium 228 Precision (±)	1.7	pCi/L			Ga-Tech	01/12/2017 1928	MB

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

### **RL - Reporting Limit**

Qualifiers:

8

- Е
- Value above quantitation range Analyte detected below quantitation limits J
- М Value exceeds Monthly Ave or MCL or is less than LCL

Analyte detected in the associated Method Blank

- Outside the Range of Dilutions 0
- Matrix Effect Х

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- 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

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Inter-Mountain Labs

Your Environmental Monitoring Partner

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

### Sample Analysis Report

Company:	MVTL Laboratories, Inc <i>.</i> 2616 E Broadway Ave <i>.</i> Bismarck, ND 58501	Date Reported Report ID	1/18/2017 S1612256001
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-004	CollectionDate:	12/13/2016 1:30:00 PM
ClientSample ID:	16-W5994 MW102	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.7	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1417	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1417	MB
Radium 228	-0.6	pCi/L		1	Ga-Tech	01/12/2017 2229	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/12/2017 2229	MB

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

### **RL - Reporting Limit**

- Qualifiers: В Analyte detected in the associated Method Blank
  - Value above quantitation range Е
  - J Analyte detected below quantitation limits
  - М Value exceeds Monthly Ave or MCL or is less than LCL
  - o X Outside the Range of Dilutions
  - Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- 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

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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	1/18/2017 S1612256001
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-005	CollectionDate:	12/13/2016 6:15:00 PM
ClientSample ID:	16-W5995 MW118	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1417	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1417	MB
Radium 228	-0.8	pCi/L		1	Ga-Tech	01/13/2017 130	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/13/2017 130	MB

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

### **RL - Reporting Limit**

- Qualifiers: В Analyte detected in the associated Method Blank
  - Value above quantitation range Е
  - Analyte detected below quantitation limits J
  - М Value exceeds Monthly Ave or MCL or is less than LCL
  - 0 X Outside the Range of Dilutions
  - Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- 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

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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	1/18/2017 S1612256001
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-006	CollectionDate:	12/13/2016 3:35:00 PM
ClientSample ID:	16-W5996 MW111	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1417	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1417	MB
Radium 228	0.8	pCi/L		1	Ga-Tech	01/13/2017 432	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/13/2017 432	MB

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

### **RL - Reporting Limit**

- Qualifiers: в Analyte detected in the associated Method Blank
  - Value above quantitation range Е
  - Analyte detected below quantitation limits J
  - М Value exceeds Monthly Ave or MCL or is less than LCL
  - o X Outside the Range of Dilutions
    - Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- 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

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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	1/18/2017 S1612256001
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-007	CollectionDate:	12/14/2016 8:40:00 AM
ClientSample ID:	16-W5997 MW117	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water

### Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.4	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 1417	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 1417	MB
Radium 228	0.6	pCi/L		1	Ga-Tech	01/13/2017 733	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/13/2017 733	MB

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

### **RL - Reporting Limit**

- Qualifiers: в
- Analyte detected in the associated Method Blank Е Value above quantitation range
  - J Analyte detected below quantitation limits
  - М Value exceeds Monthly Ave or MCL or is less than LCL
  - o X Outside the Range of Dilutions
  - Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- 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

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Inter-Mountain Labs

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

### Sample Analysis Report

Company:	MVTL Laboratories, Inc.	Date Reported	1/18/2017
	2616 E Broadway Ave.	Report ID	S1612256001
	Bismarck, ND 58501		
ProjectName:	201682-4070	WorkOrder:	S1612256
Lab ID:	S1612256-008	CollectionDate:	12/14/2016 12:40:00 PM
ClientSample ID:	16-W5998 MW103	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 2219	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 2219	MB
Radium 228	0.3	pCi/L		1	Ga-Tech	01/13/2017 1034	MB
Radium 228 Precision (±)	1.7	pCi/L			Ga-Tech	01/13/2017 1034	MB

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

### **RL - Reporting Limit**

- Qualifiers: В
  - Value above quantitation range Е
  - Analyte detected below quantitation limits J
  - М Value exceeds Monthly Ave or MCL or is less than LCL.

Analyte detected in the associated Method Blank

- 0 X Outside the Range of Dilutions
- Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- С Calculated Value
- 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

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S Inter-Mountain Labs – Your Environmental Monitoring Partner

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	1/18/2017 S1612256001
ProjectName: Lab ID:	201682-4070 S1612256-009	WorkOrder: CollectionDate:	S1612256 12/14/2016 10:10:00 AM
ClientSample ID:	16-W5999 MW109	DateReceived:	12/21/2016 1:12:00 PM
COC:	201682-4070	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 2219	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 2219	MB	
Radium 228	0.1	pCi/L		1	Ga-Tech	01/13/2017 1336	MB	
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/13/2017 1336	MB	

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

### RL - Reporting Limit

- Qualifiers: B Analyte detected in the associated Method Blank
  - E Value above quantitation range
  - J Analyte detected below quantitation limits
  - M Value exceeds Monthly Ave or MCL or is less than LCL
  - O Outside the Range of Dilutions
  - X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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

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Your Environmental Monitoring Partner



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

Sample Analysis Report

<b>COC:</b> 201682	-4070		Fleidoampier:	Mator
			FieldCommism	
ClientSample ID: 16-W60	000 Dup 1		DateReceived:	12/21/2016 1:12:00 PM
Lab ID: S16122	256-010		CollectionDate	12/12/2016
ProjectName: 201682	-4070		WorkOrder:	S1612256
Company: MVTL La 2616 E B Bismarck	boratories, Inc. Broadway Ave. K, ND 58501		Date Reported Report ID	1/18/2017 S1612256001

		Units			Methou	Dute Analyzedanit		
Radionuclides - Total								
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 2219	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 2219	MB	
Radium 228	0.6	pCi/L		1	Ga-Tech	01/13/2017 1637	MB	
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/13/2017 1637	MB	

These results apply only to the samples tested.

### Qualifiers:

- E Value above quantitation range
- J Analyte detected below quantitation limits
- М Value exceeds Monthly Ave or MCL or is less than LCL

Analyte detected in the associated Method Blank

- 0 X Outside the Range of Dilutions
- Matrix Effect

в

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- н Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- Not Detected at the Reporting Limit ND
- S Spike Recovery outside accepted recovery limits

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Your Environmental Monitoring Partner

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	1/18/2017 S1612256001
ProjectName: Lab ID: ClientSample ID: COC:	201682-4070 S1612256-011 16-W6001 Field Blank 201682-4070	WorkOrder: CollectionDate: DateReceived: FieldSampler:	S1612256 12/14/2016 12/21/2016 1:12:00 PM
Comments		watrix:	vvater

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total	· · · · · · · · · · · · · · · · · · ·							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	01/04/2017 2219	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/04/2017 2219	MB	
Radium 228	-1.2	pCi/L		1	Ga-Tech	01/13/2017 1939	MB	
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/13/2017 1939	MB	

These results apply only to the samples tested.

### RL - Reporting Limit

- Qualifiers: B
- B Analyte detected in the associated Method BlankE Value above quantitation range
  - J Analyte detected below quantitation limits
  - M Value exceeds Monthly Ave or MCL or is less than LCL
  - O Outside the Range of Dilutions
  - X Matrix Effect

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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

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#### 1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945 ANALYTICAL QC SUMMARY REPORT CLIENT: MVTL Laboratories, Inc. Date: 1/18/2017 Work Order: S1612256 Report ID: \$1612256001 Project: 201682-4070 Radium 228 by Ga/Tech Sample Type MBLK Units: pCi/L MB-409 (01/11/17 15:55) RunNo: 142463 PrepDate: 12/21/16 14:00 BatchID 12745 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Total Radium 228 ND 1 Radium 228 by Ga/Tech Sample Type LCS Units: pCi/L LCS-409 (01/11/17 12:53) RunNo: 142463 PrepDate: 12/21/16 14:00 BatchID 12745 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Total Radium 228 36 1 39.1 65.9 - 132 92.7 Radium 228 by Ga/Tech Sample Type MS Units: pCi/L MS-409 (01/11/17 18:56) RunNo: 142463 PrepDate: 12/21/16 14:00 BatchID 12745 Analyte Result Spike Ref Samp %REC RI. % Rec Limits Qual Total Radium 228 2 36 1 39.1 87.5 50 - 139 Radium 228 by Ga/Tech Sample Type MSD Units: pCi/L MSD-409 (01/11/17 21:58) RunNo: 142463 PrepDate: 12/21/16 14:00 BatchID 12745 Analyte Result RI. Conc %RPD %REC % RPD Limits Qual Total Radium 228 36 1 36 0.887 86.7 20 Radium 226 in Water -Sample Type MBLK Units: pCi/L MB-1704 (01/04/17 14:16) RunNo: 142291 PrepDate: 12/21/16 0:00 BatchID 12723 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 ND 0.2 Radium 226 in Water -Sample Type LCS Units: pCi/L LCS-1704 (01/04/17 14:16) RunNo: 142291 PrepDate: 12/21/16 0:00 BatchID 12723 Analyte Result Spike Ref Samp %REC RL % Rec Limits Qual Radium 226 5.8 0.2 5.89 97.6 67.1 - 122 Radium 226 in Water -Sample Type MS Units: pCi/L MS-1704 (01/04/17 14:16) RunNo: 142291 PrepDate: 12/21/16 0:00 BatchID 12723 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 6.0 0.2 5.89 ND 101 65 - 131 Radium 226 in Water -Sample Type MSD Units: pCi/L MSD-1704 (01/04/17 14:16) RunNo: 142291 PrepDate: 12/21/16 0:00 BatchID 12723 Analyte Result RL Conc %RPD % RPD Limits Qual %REC Radium 226 6.0 0.2 6.0 0.167 101 20

Qualifiers:	в	Analyte detected in the associated Method Blank	E	Value above quantitation range
	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	Х	Matrix Effect

Page 1 of 1



LABORATORIES, Inc. 2616 E Broadway Ave Bismarck, ND 58501

## Chain of Custody Record

Page 1\_of 1\_.

	DLamas (704) (											
Toll Free: (8	Toll Free: (800) 279-6885         Fax: (701) 258-9724						201682-4070					
Company Nam	e and Address:			Account #:					Phone #:			
	К <i>Л</i> \									701-258-9720		
	<u>2616 E Broadway</u> Bismarck, ND 58501						_		Fa	x #:		
							e			····	F	For faxed report check box
Billing Address	s (indicate if different	t from above):			ampier.							For e-mail report check box
				Quote Nu	nber						Da	te Submitted:
	PO B	<u>ox 249</u>									<u> </u>	
	New Ulm,	WIN 56073		Project Na	ime/Numbe	er:					Pu	rchase Order #:
		Sample Information				1		ottlo	Τ		L	BL5/48
-				1	<u> </u>				<u>י א</u>	16	1	Analysis
616122	54											
							N N	S				
IMI Lab			Sample	Data	<b>T</b> :	atec	Ē	Vial	Jar			
Number	MVTL Lab Number	Client Sample ID	Type	Sampled	Sampled	ntre	00		lass	ther		Applyois Deguined
001	16_W/5001				d E 4 0	17	+=		0	0	<u> </u>	
	10-00001		GW	12-Dec-16	1010	4						Ra226 & Ra228
002	16-005992	MW119	IGW	12-Dec-16	1800 🗠	4	ļ	ļ				Ra226 & Ra228
	16-W5993	MW210	GW	13-Dec-16	1035	4		ļ				Ra226 & Ra228
004	16-W5994	MW102 🔹	GW	13-Dec-16	1330 💩	4						Ra226 & Ra228
005	16-W5995	Mw118 👒	GW	13-Dec-16	1815 -	4						Ra226 & Ra228
206	16-W5996	MW111	GW	13-Dec-16	1535 -	4						Ra226 & Ra228
007	16-W5997	MW117 🐰	GW	14-Dec-16	840 -	4						Ra226 & Ra228
500	16-W5998	MW103	GW	14-Dec-16	1240	4						Ra226 & Ra228
009	16-W5999	MW109	GW	14-Dec-16	1010	4						Ra226 & Ra228
010	16-W6000	Dup 1 👒	GW	12-Dec-16		4						Ra226 & Ra228
01]	16-W6001	Field Blank	GW	14-Dec-16		4						Ra226 & Ra228

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

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:	1	Temp:
T. Olson	19-Dec-16	1700		Kothy Bain	12.21.110	13:12	11.6
				<u> </u>	I		

11.4 · Z

Site: MDU Lev	vis and Clark		Technician: Parran Niesman									
Instrument (Circle One):	#1 650	0 MDS 08F100	203	#2 650 MDS 04H14736				#3 556 MPS 12E102056				
370		Pre	Site Calibra	ation			Γ	Po	st Site Chec	k		
Date:	ecib.	Time: 0 E	, 50				ŀ	Time: 201	0			
pH-	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50		Нq	ے Temp °C	Reading		
Buffer 7	17,51	6.90	7.00	6.95-7.05	-48.4	0 +/- 50		Buffer 7	7.05	7.05		
Buffer 10	17,28	10.04	10.00	9.95-10.05	-226.7	-180 +/- 50			8.22			
Conductivity	[] [				-	Check		Conductivity				
Buffer 1413	17.05	1426	1413	±10%	Buffer 5000	4970		Buffer 1413	10,15	1423		
ORP												
231 mV @ 25C	17,70	240.8	231,0	±10 mV								
DO				Barometi	ric Pressure (m	ım Hg)						
	8,08	13,25	11.00	ṁg/L	711.5							
Date: 130	necl	Time: D	700			_		Time: 193	5			
рН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50		pН	Temp °C	Reading		
Buffer 7	17,92	7:05	7.00	6.95-7.05	-50.8	0 +/- 50		Buffer 7	13.58	7.04		
Buffer 10	17:32	9,96	10.00	9.95-10.05	-227,1	-180 +/- 50				<u> </u>		
Conductivity	<u> </u>					Check		Conductivity				
Buffer 1413	17.47	1385	1414	±10%	Buffer 5000	5011		Buffer 1413	14.34	1422		
ORP												
231 mV @ 25C	17.60	228.5	231,1	±10 mV								
DO			at the	Baromet	ric Pressure (r	nm Hg)						
	17,58	8.70	8188	mg/L	710,	4						

## **MVTL Calibration Worksheet**

## **MVTL Calibration Worksheet**

Site: MDU Lev	vis and Clark							
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056					
Date: LYPec pH Buffer 7 Buffer 10 Conductivity Buffer 1413	Pre Site Cal         I       Time: $0700$ Temp °C       Pre Cal       Post Cal $\overline{18.50}$ $7.55$ $\overline{6.9}$ $\overline{18.64}$ $\overline{9.47}$ $\overline{10.0}$ $\overline{19.69}$ $\overline{1398}$ $\overline{1900}$	ibration       mv Range         al       Post Cal Range       mv       50 $1$ 6.95-7.05 $53.6$ 0 +/- 50 $0$ 9.95-10.05 $-228.6$ -180 +/- 5 $2$ ±10%       Buffer 5000 $4974$	Post Site Check Time: $250$ pH Temp °C Reading Buffer 7 $2,02$ 0 Conductivity Buffer 1413 $0,20$ $1.4/5$					
ORP 231 mV @ 25C DO	[892 229,1 231,] [9,33 9153 8,12	±10 mV Barometric Pressure (mm Hg) mg/L						
Date: pH Buffer 7 Buffer 10 Conductivity Buffer 1413	Time:         Temp °C       Pre Cal       Post Ca         Image: Imag	al Post Cal Range mv 50 6.95-7.05 0 +/- 50 9.95-10.05 -180 +/- 5 Check ±10% Buffer 5000	+/-   Time:   pH   Temp °C   Buffer 7     60   Conductivity   Buffer 1413					
ORP 231 mV @ 25C DO		±10 mV Barometric Pressure (mm Hg) mg/L						



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

Sampling Personnel:

Darren Nieswaag

Water Level

Company:

MDU Lewis and Clark

Well ID	, Date	Time	Gauge Reading	Comments	
East Scrubber Pond Gauge	17Dec/1	1115	Orx.		
West Scrubber Pond Gauge	HDeck	1114	6.30		
Stream behind Sewage Lagoon	1402116	13:45	0.51		



Phone: (701) 258-9720

# **Field Datasheet**

Water Level

D

Sampling Personnel:

- "|

Nieswaag PATTER

Company:

MDU Lewis and Clark

		T		
Well ID	Date	Time	Depth to Water	Comments
MW101	12Declb	11:33	9,28	
MW105	12Decil	1155	8,99	
MW106	12A-ects	1153	9=67	
MW107	12 Aecilo	113	4.41	
MW108	1200016	1150	16,72	
MW116	12Decl6	1145	10.68	
		•		
		1		



Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Event: 2016 Sample ID: MWIID Sampling Personal: DAVIEN WITSWA

MDU Lewis and Clark

Company:

Phone: (701) 258-9720

			^										
Weather Conditions:		Temp:	6 °F		Wind:	WNNI	1		Precip	Sunr	ny/ Partly C	Cloudy / Gio	Idy
/	Well Info	rmation				•		Sa	mpling l	nformatio	on		
Well Locked?	Yes	No>				Purgi	ng Method:	Blad	der		Co	ntrol Settina	S
Well Labeled?	Yes	No				Sampli	ng Method:	Blad	der	1	Purae:	E	sec
Casing Straight?	Xes	No				Dedica	ted Equip?:	Yes	No	1	Recover:	55	sec
Grout Seal Intact?	<u>Y</u> es	No	Not Visi	ble		Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:						Duplicate	Sample ID:	·		-	Pumping R	late: In A	ml /min
Casing	Diameter:		2"							4		100	
Water Level Bef	ore Purge:		9.31	ft		F	ourge Date:	12000	16	Time Purg	ing Began:	1310	am/om
Total V	Vell Depth:	/	6.95	ft		Well P	urged Dry?	Yes	No	Time F	urged Dry:		am/ore
We	Il Volume:		4.8	liters		Sa	mple Date:	12 Deci	1	Time of	f Sampling:	1510	am/om
Depth to Top	o of Pump:		13,52	ft					<del></del>				
Water Level Afte	er Sample:		9,44	ft		Bottle	500 m	L Nitric	1 Lite	er Raw	1	ľ	·····
Measuremen	t Method:	Electric	Water Level Ind	dicator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			
						L					I		

### Field Measurements

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	ml	Discription:
(3 cons	secutive)	(°C)	Cond.	рH	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1315	9.32	1114	7.36	3,28	168.3	1.52	9.51	500	Fraching Sightly tack
2	13.30	10,10	1112	7,33	2,44	164.5	76,1	9.39	1500	Slichtly to his
3	1345	10.63	1113	7,32	12,33	157.7	35.8	9,46	1500	ST
4	1400	11,25	1114.	7,32	2,23	152,1	12,2	9,41	1500	clear
5	1415	10.94	1114	7.32	2,23	151.8	8,95	9.41	1500	(lan
6	1430	10.85	1113	7,32	-2,21	145.6	6.88	9.44	1500	ch
• 7	1445	10,13	11)1	7,32	2.24	138.0	5.53	9,42	1500	66-
8	1500	9,94	1113	7,33	2,22	134.3	4.98	9,41	1500	
9	1505	1007	1113	737	2,20	133.5	4.85	9.48	500	a
10	1510	10,20	1119	7,33	2,20	132.0	4.78	9.48	500	UL_
Stabilized	: Yes	No	-	Total Volume Removed: 17 cm c mL						

Comments: 2

...

MV

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

**Groundwater Assessment** 

	Company:	MDU Lewis	vis and Clark
	Event:	2016	
	Sample ID:	n w / l	119
	Sampling Personal:	DAME	en Niesman -
		Į	
	Preci	p: Sunr	nny / Partly Cloudy / Cloudy
	Sampling	Informatio	ion
od:	Bladder		Control Settings

.,

sec. sec.

mL/min

am/pm -am/pm

am/om

00

100

00

Weather Conditions:	Temp: //	∘⊏	Wind: Alia 15	Drogin	Suppy / Bartly Class
Weather Conditions.	remp.	1.			Sunny / Party Cloud
Well Info	rmation			Sampling I	nformation
Well Locked? Yes	NO		Purging Method:	Bladder	Control
Well Labeled? Yes	No		Sampling Method:	Bladder	Purge:
Casing Straight?	No		Dedicated Equip?:	Yes No	Recover:
Grout Seal Intact? Yes	No N	lot Visible	Duplicate Sample?:	(Yes) No	PSI:
Repairs Necessary:			Duplicate Sample ID:	DUD 1	Pumping Rate:
Casing Diameter:	2'	•		D yp (	
Water Level Before Purge:	-987	ft	Purge Date:	120ec16	Time Purging Began:
Total Well Depth:	16.8	جُب ft	Well Purged Dry?	Yes No	Time Purged Dry:
Well Volume:	14.954	y 4,8 liters	Sample Date:	12De-lo	Time of Sampling:
Depth to Top of Pump:	13	.3) ft			
Water Level After Sample:	9.2	ft	Bottle 2 ~ 500 m	L Nitric 2-1 Lite	er Raw
Measurement Method:	Electric Water	_evel Indicator	List: 2- 500 mL Nit	tric (filtered) 🖉 🖨 - 1 Li	ter Nitric

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1705	100.9.90	1148	7,30	3,18	142.5	19,9	9.21	500	de
2	1720	8.80	1159	7,32	2.16	104,4	10,7	9,21	1500	ch
3	1735	8.95	1166	7,32	1.65	43,4	6,10	9,21	1500	de
4	1745	8,92	1170	7.33	1,53	27,8	4.06	9.21	1500	ch
5	1750	9,01	11 69	7,31	1050	25.8	3.21	9.21	0500	a
6	1755	8.92	1170	7.34	153	24.0	3.04	9.21	\$500	un
7	1800	8.89	1118	770	1.51	23,3	2,95	9,21	458-50	) clz
8			1.00							
9	$\square$									
10	f								1200	
Stabilized	Stabilized: Yes/ No Total Volume Removed: 65 00 mL									
Comment	s: 🗸								-	



# **Field Datasheet**

Groundwater Assessment

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Temp:

ot	Company:		MDU Lewis and Clark						
GL	Event:		2016						
t	Sample ID:		hwa	10					
	Sampling P	ersonal: /	10/1en	Nils	6/2	az			
		مريق 							
-10		Precip:	Sun	ny / Partly C	loudy	/ Clou	ıdy		
Sampling Information									
Purging Method:	Blac	lder		Co	ntrol S	ettings	3		
Sampling Method:	Blac	lder		Purge:	Š	`	sec.		
edicated Equip?:	Yes	No		Recover:	5	5	sec.		
plicate Sample?:	Yes	Nð		PSI:					
licate Sample ID:				Pumping R	tate:/ 2	$\delta O$	m∐min		
			-						
Purge Date:	13Deci	16	Time Purg	ing Began:	ØII	51	am/pm		

	Well Information									
Well Locked?	ME	(No)								
Well Labeled?	Tes	No								
Casing Straight?	(es	No								
Grout Seal Intact?	Jes	No	Not Visible	e						
Repairs Necessary:	Ĵ									
Casing	Diameter:		2"							
Water Level Bel	fore Purge:	9.34								
Total V	Vell Depth:	35.47								
We	ell Volume:		Ibr	liters						
Depth to To	p of Pump:	2	9.91	ft						
Water Level Aft	er Sample:	1	1.6.5	ft						
Measureme	nt Method:	Electric	Water Level Indic	ator						

Samplir	ng Method:	Blad	Bladder		Purge:	5	sec.			
Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.			
Duplicate	Sample?:	Yes	No		PSI:					
Duplicate \$	Sample ID:	~			Pumping F	Rate: / DO	m∐/min			
P	Bocch	6	Time Purg	ing Began:	0915	(am/pm				
Well Pu	urged Dry?	Yes	(Ng)	Time P	urged Dry:		-am/pm			
Sa	mple Date:	13DRU	Time of Sampling: 193			1035	amypm			
		Pot	~			<u> </u>				
Bottle	500 m	L Nitric	1 Lite	er Raw	[					
List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric						

## Field Measurements

Wind: 5W 10

Stabili (3 cons	ization	Temp (°C)	Spec. Cond	рH	DO (mg/l.)	ORP (m)()	Turbidity	Water	mL	Discription:
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Kentoved	clear, slightly turbid, turbid
1	0920	8.59	1505	7.72	5.32	-73.6	179	10.48	500	Stightly Turkind
2	0935	9.14	1767	7.57	1.72	-27,4	461	11,26	1500	CLAR
3	0950	9.47	1471	7.57	1.28	-5708	19.2	11.57	1500	clas
4	1005	9.45	1473	7,58	1.07	-55,4	5.52	11.57	1500	a
5	1015	9.78	1473	7,57	D.97	- 57.0	4.84	11.6	1000	dr
6	1020	9.76	1472	7.57	0.96	-58.7	4.78	11.59	500	ch-
7	1025	9.69	1472	757	0.95	-60.8	3,50	11.59	500	de
8	1030	9.60	1468	7.56	0.94	-63.0	3.31	1.61	500	ds_
9	1035	9,27	1430	7,56	0,94	-63.8	3.24	11.61	500	an
10	L	l					<u> </u>			
Stabilized:	(Yes) No Total Volume Removed: 4,000 mL									

Comments:

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

# **Field Datasheet**

**Groundwater Assessment** 

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	MW102
Sampling Persor	ral: DAMAN PIEStrag
	P P
P	Precip: Sunny / Partly Cloudy / Cloudy
Sampl	ing Information

Weather Conditions:		Temp	<u> 10</u> ·	F	Wind: ,	EN 10
	Well Info	rmation	ν			
Well Locked?	Yes	No				Purgi
Well Labeled?	হৈ জ	No				Sampli
Casing Straight?	Tes	No				Dedica
Grout Seal Intact?	Kes	No	Not Vi	sible		Duplicate
Repairs Necessary:						Duplicate
Casing	g Diameter:		2''			
Water Level Bet	fore Purge:		18080	ft		F
Total V	Vell Depth:		24.70	ft		Well P
W	ell Volume:	-	3.7	liters		Sa
Depth to To	p of Pump:	20	37	ft		
Water Level Aft	er Sample:	ĺ	9.18	ft		Bottle
Measureme	nt Method:	Electric	Water Level I	ndicator		List:

Temp:

1D

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		Ua	inping i	mormatic	л <u> </u>			
Purgir	ng Method:	Bladder			Co	ontrol Settings	6	
Samplir	ng Method:	Bladder			Purge:	5	sec.	
Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.	
Duplicate	Sample?:	Yes	No		PSI:			
Duplicate \$	Sample ID:				Pumping R	ate: 100	mL/min	
			;	1	145	à		
P	Purge Date: 13 Recto			Time Purg	ing Began:	7940	am/pm	Alter
Well Pi	urged Dry?	Yes	ہ	Time P	urged Dry:	·	-am/pm	TH D
Sample Date: 30			16	Time of	Sampling:	1330	amipm	
Bottle	Bottle 500 mL Nitric 1 Lite		er Raw					
List:	500 mL Ni	tric (filtered)	4 - 1 Li <sup>.</sup>	ter Nitric				

•

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	11.50	10,27	6835	6,91	2,46	28.9	19.8	19.18	500	der
2	1205	10.46	6864	6.93	0.99	0.0	34.7	19218	1500	Cen-
3	1220	10,39	68.50	6,93	0.82	-7.0	23.1	19,18	1500	de
4	1235	10,54	6862	6,92	0.69	-10,3	11.3	19.18	1500	Clar
5	1250	10,43	6888	6.93	2068	-12,3	8.72	19,18	1500	du
6	1305	10c 41	6895	693	0.66	-13,9	5,33	19.18	1500	u_
7	1320	10.15	6930	6.93	0,65	-15.1	4.89	19,18	1.500	a
8	1325	10,26	6943	6.93	0.64	-15.4	4.67	15,18	500	d
9	1330	12.14	6948	6.012	0.61	-15%	4.51	1918	500	a
10	IA								0	
Stabilized	<u>(tes)</u>	No	-			Te	otal Volume	Removed:	1,000	mL
Comment	s: ( )								J.	



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## **Field Datasheet**

Groundwater Assessment

Wind: N

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	<u>Company.</u>		WIDO LEWIS and Clark								
	Event:		2016								
•	Sample ID: MV/18										
	Sampling F	Personal:	Darre	n Ne	i Cindas						
		Des sie	0								
		Precip:	Suni	iy / Partiy C	Joudy / Clou	<u>ay</u>					
	S	ampling li	nformatio	on							
Method	Bla	dder		Co	ontrol Settings						
Method	Bla	dder		Purge:	5	sec.					
I Equip?	Yes	No		Recover:	.55	sec.					
ample?	Vaa	(AD)		DOL	·						

1.01

REDIT

Well Locked?	Yes	No				
Well Labeled?	Yes	No				
Casing Straight?	Xes	No				
Grout Seal Intact?	Yes	No Not Visible				
Repairs Necessary:		<u> </u>				
Casing	Diameter:		2"			
Water Level Bef	ore Purge:	K.	67 ft			
Total V	Vell Depth:		11,90 ft			
We	ell Volume:	2,0	liters			
Depth to To	p of Pump:	C	1.55 ft			
Water Level Aft	er Sample:	8:4	ft ft			
Measuremei	nt Method:	Electric	Water Level Indicator			

Well Information

Temp:

Purgir	ig ivietnoa:	Blad	aer			ntrol Setting	gs
Samplin	ng Method:	Blad	der		Purge:	5	sec.
Dedicat	ed Equip?:	Yes	NO		Recover:	.55	sec.
Duplicate	Sample?:	Yes <sup>(</sup>	No		PSI:	<u> </u>	
Duplicate \$	Sample ID:				Pumping R	late: / Ø Ø	mL/min
				-		•	
P	Purge Date: 13 Dectb				ing Began:	1645	am/ord
Well P	urged Dry?	Yes	No	Time F	Purged Dry:	77	am <del>/pm</del>
Sa	mple Date:	13Deci	16	Time of	f Sampling:	1815	am/pm/
		9				,	
Bottle	500 m	L Nitric	1 Lite	er Raw			
List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

**^** 

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1550	9:48	1691	7,50	5,28	86.4	62.0	8.73	500	Slightly Twid
2 170	760m	9.58	1693	7.50	3.85	81.5	33.4	8175	1500	cleg-
3	1720	٩Ĵ١	1695	7.51	3.83	79,9	19.1	8,75-	1500	der
4	1735	9,68	1693	7.50	3.48	78.5	10.9	8.75	1500	A.
5	1750	9,72	1693	7.50	3.23	76,7	5.74	8.75	1500.	d
6	1805	9,73	1694	7,50	3,18	75.8	491	8:75	1500	ch
7	1810	9,78	1694	7.50	3.16	75.8	4.97	8.75	500	Ch-
8	1815	9:15	1295	7.50	3,19	75.7	4,77	8,75	500	an
9	<u> </u>		- <u>1</u> 22 - ,							
10	In		144) 14							
Stabilized:	Stabilized: // Yes No Total Volume Removed: Of OU mL									_mL
Comments	\$\J									



Groundwater Assessment

Company:	MDU Lewis and Clark							
Event:	2016							
Sample ID:	MWILL							
Sampling Persor	al: DAMAN No USudag							

Weather Conditions:		Temp:	<u>    13    °F</u>		Wind:	NNN	2		Precip	: (Sunr	v) Partly C	loudy / Clou	dv
	Well Info	rmation	.,			······		Sampling Information					
Well Locked?	Yes	NO				Purgi	na Method:	Bla	dder		Co	ntrol Settings	
Well Labeled?	Kes	No				Sampli	ng Method:	Bla	dder	-	Purce:		, 
Casing Straight?	Tes-	No				Dedicat	ted Equip?:	Yes	Ne		Recover:		500
Grout Seal Intact?	Yes	No	Not Visib	le		Duplicate	Sample?:	Yes	Na	1	PSI		<u> </u>
Repairs Necessary:						Duplicate	Sample ID:			-	Pumping R	ate: 100	ml /min
Casing	Diameter:		2"							1	r uniping r		
Water Level Bef	ore Purge:		8.05	ft		F	Purge Date:	130	ectt.	Time Pura	ing Began	10 Un	amini
Total W	Vell Depth:	1-7	.81	ft		Well P	uraed Drv?	Yes		Time P	urged Drv:	1110	am/pm
We	ell Volume:		6.1	liters		Sa	mple Date:	13000	11	Time of	Sampling:	1020	ampin
Depth to Top	o of Pump:		13.38	ft				1,1000		1		10,15	ampur
Water Level After	er Sample:	S.	10	ft		Bottle	500 ml	Nitric	1 l ite	er Raw			
Measuremen	nt Method:	Electric	Water Level Indi	cator		List:	500 ml Nit	ric (filtered	4-11	ter Nitric			
e renninger in statut de la comme						L	//				L		

Stabil	ization	Temp (°C)	Spec.	nH	DO (mg/L)	ORP	Turbidity	Water	mL	Discription:
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Removed	clear, slightly turbid, turbid
1	1445	12,29	3403	7.14	1,34	24.6	25,7	8,08	500	close
2	1500	10,02	3249	7,19	2,22	45.2	14,3	8.10	1500	dr
3	1515	9.87	3240	7,21	z.L	56.1	7.01	8:10	1500	de
4	1520	9.93	3239	7,22	2,27	61.4	2,22	8.10	500	de
5	1525	9.89	3239	7,22	2.28	61.8	1.45	8.10	500	de
6	1530	9,89	3230	7,22	2,28	63.4	1.41	810	500	ch
7	135	9.80	3230	7.22	2,26	64.9	1.35	8110	590	an
8										
9										
10		l	L						1	
Comment	s: (Yes)	No	-			T	otal Volume	Removed:	5500	mL



Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	mw117
Sampling Personal:	Darren Niesmans

							-						
Weather Conditions:		Temp:	5°F		Wind:	NW 5			Precip:	Sunr	ıy / Partly C	loudy / Clo	udy
	Well Info	rmation						Sa	mpling l	nformatio	on Con		
Well Locked?	Yes	No				Purgir	ng Method:	Blad	der		Co	ntrol Setting	IS
Well Labeled?	Xes	No				Samplin	ng Method:	Blad	der		Purge:	3	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No.		Recover:	57	sec.
Grout Seal Intact?	Yes	No	Not Vis	ble		Duplicate	Sample?:	Yes	No.		PSI:		
Repairs Necessary:		<u> </u>				Duplicate	Sample ID:	_			Pumping R	ate:/00	mL/min
Casing	Diameter:		2"							-			
Water Level Befo	ore Purge:	L	1.94	ft		F	urge Date:	12000	16	Time Purg	ing Began:	1210	and pro
Total W	/ell Depth:		11.51	ft		Well P	urged Dry?	Ces	No	Time F	urged Dry:	+3-451	mam/m
We	ell Volume:	4	1.7	liters		Sa	mple Date:	13Decl	6	Time of	Sampling:	0820	am/pm
Depth to Top	o of Pump:		8-09	ft				14226	16			08401	6
Water Level After	er Sample:	8.0	19 TOD OF	um, ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	nt Method:	Electric	Water Level In	dicator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil	ization	Temp (°C)	Spec.	nH	DO (mg/l.)	ORP (mV)	Turbidity	Water	mL	Discription:
SEQ #	Time	( 0)	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Removed	clear, slightly turbid, turbid
1	1215	7.69	7857	7.14	8.6	216.9	154	6.40	500	stightly turbid
2	1225	8:05	7858	7.17	7.57	210.7	126	7,15	1000	ST
3	1235	7,73	7814	7.13	7,20	204,9	85.6	7.62	1000	ST
4	1245	8214	7846	7.13	6.99	200.8	214.0	8.00	1000	ST
5	1250	8:07	7841	7.11	6.6	193.0	204	8:09	1000	ST
6		134	ec 16	State	it to	we				-
7	0815	Pra	e for	1 51	nia, to	cleap	+	6.10		
8	0820	8.20	8134	7.46	8.01	93.7	101	6.82	500	51
9	JF35	- Pu	se line	14 DEL	16 -			- AG, 22		
10	8840	8.30	7879	6.99	9:10	188.6	67.5	6,72	500	51
Stabilized	: Yes	NO	_			Т	otāl Volume	e Removed	2500	_mL
Comment	s:						2	<b>a</b>	4500	

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Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	MW103
Sampling Person	al: NatrenNietnan

Phone: (701) 258-9720

					A	1						
Weather Conditions:		Temp	: ~ ノ °F	Wind:	NNG	/		Precip	sun:	ny / Partly C	loudy / Clou	udy
	Well Info	rmation	1		¥		Sa	ampling I	nformatio	, on		
Well Locked?	Yes	No			Purgir	ng Method:	Bla	dder		Co	ntrol Setting	s
Well Labeled?	Xés>	No			Samplir	ng Method:	Bla	dder		Purge:	5	sec.
Casing Straight?	Yes	No			Dedicat	ed Equip?:	Yes	NO)		Recover:	- NE	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate	Sample?:	Yes	< Ng		PSI:		
Repairs Necessary:					Duplicate \$	Sample ID:			]	Pumping R	ate: / 077	mL/min
Casing	Diameter:		2''					. ,	-		1120	
Water Level Befo	ore Purge:		10.73 ft		P	urge Date:	He	16	Time Purg	ing Began	\$4.20	>/am/pm
Total W	/ell Depth:		Ź.).'/5 ft		Well P	urged Dry?	' Yes	(No/	Time F	Purged Dry:	-	am/pm
We	II Volume:		6, 5 liters		Sa	mple Date:	14 Peri	14	Time o	f Sampling:	1240	am/pm
Depth to Top	of Pump:		177 18 ft									
Water Level Afte	er Sample:		10,76 ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level Indicator		List:	500 mL Nit	ric (filtered	) 4-1Li	ter Nitric			

Stabil	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	utive) (°C)		рН	(mg/L)	· (mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time 🎢		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1 //2	5-10-25	11.32	.2270	7,24	1,50	78.0	925	10,86	500	slightly tudid
2 //4	01040	11,35	1660	7.25	1.00	76.5	47.1	10,71	1500	der
3 115	1055	10,26	1592	7.26	0.93	77.9	21.3	10.76	1500	ch
4	12 10	10,74	1548	7,26	0.83	77.6	12.6	10,76	1500	4
5	1225	10.61	1544	7,29	0.77	76.3	5,43	10,76	1500	dr
6	1230	10.46	1551	リフィンフ	0.78	76.0	4.47	10.76	500	dr
7	1235	10,41	1541	07.27	0,73	75,4	4.80	10,76	500	an
8	1240	10,54	1537	7,27	0,72	75.0	4,45	10,76	500	du
9	,									
10									000	
Stabilized	Yes	No	_		• • • • • • • • • • • • • • • • •	T	otal Volume	Removed	X 000	mL
Comment	4. /								~	-



Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

MVT

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2016
Sample ID:	mw109
Sampling Persor	ral: Darren Mieringa
	Denting (Denting (Clauder / Clauder

Weather Conditions:		Temp:	- 5 °F		Wind:	wy			Precip:	Sunn	y))Partly C	loudy / Clou	Jdy
	Well Info	rmation				Sampling Information							
Well Locked?	Yes	<b>€</b>				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	Aes	No	2000			Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Mass	No	Not Visib	le		Duplicate	Sample?:	Yes	No		PSI:	<u> </u>	
Repairs Necessary:	4					Duplicate	Sample ID:		and the state of t		Pumping R	ate: 100	mL/min
Casing	Diameter:	•	2"										
Water Level Bef	ore Purge:		10.68	ft		F	Purge Date:	140e	16	Time Purgi	ng Began:	0915	am/pm
Total V	Vell Depth:		17.04	ft		Well P	urged Dry?	Yes	No	Time P	urged Dry:		-a <del>m/pm</del> -
We	ell Volume:	4.	6	liters		Sa	imple Date:	14Dec	16	Time of	Sampling:		am/pm
Depth to To	p of Pump:		13:31	ft				· .					
Water Level Aft	er Sample:		10:77	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Nater Level Indi	cator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

Stabilization (3 consecutive)		Temp	Spec.		DO (mm/l)		Turbidity	Water	mL	Discription:
(3 cons	secutive)	(-C)	Cona.	рн	(mg/L)	(mv)	(NIU)	Level (IT)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0920	8.75	163	7,26	1.72	200,6	23.2	10,78	500	di-
2	0935	9,73	1611	7.24	1.08	1741	14.0	10,74	1500	chi
3	0950	9.89	1610	7,24	0.91	150.0	6.11	10.77	1500	ch
4	0955	10,11	1614	7.24	0.91	142.9	3.70	10.76	\$500	ch
5	1000	10,21	1615	7,24	DIAN	138.3	1.71	10,75	500	9
6	1005	1020	1613	7,24	0.89	135.0	1,75	10.76	500	ch
7	1010	10,12	1614	7124	0,87	130,5	1.80	10,77	500	$\mathcal{C}$
8				ł					•	
9	1							·		
10	H									
Stabilized Comment	:\\Yes s:	No				T	otal Volume	e Removed	6500	_mL

# **Chain of Custody Record**



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

Project N	lame:			0	nc Ba	1412-11	Name o	f Samp	oler(s):	1		
MDU	Lewis and Clark	CCR Radi	ochem	2	tober 2016	Jac lu	0	arre	n N	ism	Gaz	
Report To:MAttn:SAddress:40BBPhone:7	1DU amantha Marshall 00 N. 4th St ismarck, ND 58501 01-222-7829		Carbon Copy: Attn: Address:				Work O	order Nu Bo	<u>umber:</u> 2 - 40	10		
	Sampl	le Informati	on			Bot	tle Type	9	Fie	ld Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type	Gradie <sub>nt</sub>	1000 mi HNO <sub>3</sub>			Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
INS991	MW110	12Decto	1510	GW	Up	4			10.20	1114	7,33	MDU CCR combined
W5992	MW119	12 April6	1800	GW	Up	4			8.89	1168	7,34	RadChem
IN5993	MW210	13Dec16	1035	GW	Up	4			9,27	1430	7,56	
W5994	MW102	13Decl6	1330	GW	Down	4			10.14	6948	6.93	
W5995	MW118	Beell	1815	GW	Down	4			9,75	1695	7,50	
W5996	MW111	130pc/6	1535	GW	Down	4			9.80	3230	7.22	-
W5997	MW117	14Rec.16	0840	GW	Down	4			8,30	7879	6.99	
WS998	MW103	14Decl6	1240	GW		4			10,54	1537	7,27	
DW5999	MW109	Mello	1010	GW		4			10,12	1614	7,24	
ASCILLATS9 WHOLE	Dup 1	12Dedb	NA	W	26	4			NA	NA	NA	
W6021	Field Blank (FB)		NA	W		4			NA	NA	NA	
Hoto	Le la											

Comments:

	Transferred by:	Sample Condition	Date/Time	∧ Received-by:	Sample Condition	Date/Time	°C
1	Jan.C.	Walkin 2	14 peche 1755	(Inceltimon	1200	15 Decile Balan	0.7
2							- TM588
3				-			- MAeulle



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



March 17, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4<sup>th</sup> St. Bismarck, ND 58501

RE: Groundwater Sampling Event - 2017 at MDU Lewis & Clark Site

Dear Ms. Marshall:

It was brought to MVTL's attention that some of the summary data in the Field Data Report did not match the Raw Data collected in the field. Attached to this letter is the corrected Field Data Report.

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



WO# 82-0309

82-0310

## **MDU Lewis and Clark**

CCR Sampling

Attn: Samantha Marshall 400 North 4th St Bismarck, ND 58501

		START		TIME	WATER		WATER					FIELD R	EADINGS		
WELL ID	PURGE DATE	PURGE TIME	SAMPLE DATE	OF SAMPLE	LEVEL START (FT)	TOTAL DEPTH (FT)	LEVEL END (FT)	VOLUME IN WELL (Liters)	VOLUME REMOVED (mL)	SAMPLE METHOD	TEMP (°C)	EC	pН	Turb. NTU	SAMPLE APPEARANCE
MW110	6-Feb-17	12:52	6-Feb-17	14:57	9.42	16.95	9.71	4.6	12500.0	Bladder	6.69	1118	7.37	4.51	clear
MW119	6-Feb-17	15:49	6-Feb-17	16:54	9.42	16.65	9.45	4.5	6500.0	Bladder	6.38	1204	7.36	4.57	clear
MW210	6-Feb-17	17:50	6-Feb-17	18:40	9.66	35.43	NR	15.9	5000.0	Bladder	6.46	1465	7.65	4.12	clear
MW102	7-Feb-17	10:20	7-Feb-17	12:45	18.32	24.70	19.28	3.9	14500.0	Bladder	10.06	6912	6.81	4.88	clear
MW118	7-Feb-17	16:10	7-Feb-17	17:25	8.82	11.90	8.90	1.9	7500.00*	Bladder	5.34	1672	7.45	4.87	clear
MW111	7-Feb-17	14:00	7-Feb-17	14:55	8.07	17.81	8.27	6.0	6000.0	Bladder	7.62	3178	7.13	2.83	clear
MW117	6-Feb-17	11:58	7-Feb-17	8:40	6.30	11.51	8.09	3.2	4500.0	Bladder	4.52	8425	6.97	33.80	clear
MW103	8-Feb-17	10:40	8-Feb-17	11:45	10.78	21.15	10.99	6.4	6500.0	Bladder	9.16	1560	7.30*	3.38	clear
MW109	8-Feb-17	8:40	8-Feb-17	9:30	10.82	17.04	10.91	3.8	5000.0	Bladder	7.80	1663	7.29	1.32	clear
MW101	NA	NA	6-Feb-17	11:34	9.50	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW105	NA	NA	6-Feb-17	11:46	9,13	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW106	NA	NA	6-Feb-17	11:44	9.74	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW107	NA	NA	6-Feb-17	11:32	4.53	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW108	NA	NA	6-Feb-17	11:42	17.06	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
MW116	NA	NA	6-Feb-17	11:37	11.29	NA	NA	NA	NA	WL	NA	NA	NA	NA	Water Level
	1	A			L	NR= N	ot Recorded	I NA = Not App	licable	•	• • • • • • • • • • • • • • • • • • • •	A	•		
						*ammen	ded due to t	yping or calculati	ion error						



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



February 10, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4<sup>th</sup> St. Bismarck, ND 58501

RE: Groundwater Sampling Event - 2017 at MDU Lewis & Clark Site

Dear Ms. Marshall:

From February 6-8, 2017, MVTL Laboratories' Field Services division collected ground water samples at the MDU Lewis & Clark Station near Sidney, MT. The wells were sampled for CCR analysis, dissolved metals, and TSS. Samples were collected from 9 wells. A duplicate sample was also collected at well MW103. The wells were located, and were found to be in generally good condition. 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

#### MenN Site: MDU Lewis and Clark Technician: Instrument #1 650 MDS 08F100203 #2 650 MDS 04H14736 #3 556 MPS 12E102056 (Circle One): Pre Site Calibration Post Site Check 6Feb17 0712 Date: Time: Time: / 🕅 mv Range +/pН Temp °C Pre Cal Post Cal Post Cal Range 50 mv pН Temp °C Reading 6,92 59.0 Buffer 7 7.00 6.95-7.05 0 +/- 50 Buffer 7 70 19.2 10.00 10,0 -210.7 Buffer 10 9.95-10.05 -180 +/- 50 15,24 Conductivity Check Conductivity 14 18. $\mathcal{O}$ 5741 1423 Buffer 1413 15,20 ±10% Buffer 5000 Buffer 1413 ORP Rigy 235 231. 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) IA . 0.97 1.08 10,16 7047 mg/L 7Feb17 $\mathcal{O}$ 1705 Date: Time: Time: mv Range +/pН Temp °C Post Cal Range Pre Cal Post Cal mv pН Temp °C 50 Reading 20,17 6,97 7.00 1,58 -63, 9 Buffer 7 6.95-7.05 0 +/- 50 Buffer 7 9,99 19.70 10,00 Buffer 10 235. 9.95-10.05 -180 +/- 50 Conductivity Conductivity Check 20.09 9,58 1424 Buffer 1413 ±10% Buffer 5000 Buffer 1413 ORP 2310 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) 6,87 8,20 71,55 707.3 mg/L

## **MVTL Calibration Worksheet**

## **MVTL Calibration Worksheet**

Site: MDU Lev	vis and Clark	Technician: Darren Nieswaag								
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056							
Date: Fr pH Buffer 7 Buffer 10 Conductivity Buffer 1413 ORP	Pre Site Calib Time: $0700$ Temp °C Pre Cal Post Cal 19.46 19.26 10.04 9.49 19.24 10.04 19.26 19.26 1326 1413	mv Range +/-         Post Cal Range       mv       50         6.95-7.05 $\overline{53}$ 0 +/- 50         9.95-10.05 $\overline{-222}$ -180 +/- 50         L       L       Check         ±10%       Buffer 5000 $\mathcal{U}235$	Post Site Check         Time:       1230         pH       Temp °C       Reading         Buffer 7       0,13       7,02         Conductivity         Buffer 1413       9,70       19,99							
231 mV @ 25C DO	237.1 $231.120.82$ $9.18$ $8.35$	±10 mV Barometric Pressure (mm Hg) mg/L								
Date: pH Buffer 7 Buffer 10 Conductivity	Time:       Temp °C     Pre Cal     Post Cal	- mv Range +/- Post Cal Range mv 50 6.95-7.05 0 +/- 50 9.95-10.05 -180 +/- 50 Check	Time: pH Temp °C Reading Buffer 7							
Buffer 1413 <b>ORP</b> 231 mV @ 25C		±10% Buffer 5000	Buffer 1413							
DO		Barometric Pressure (mm Hg) mg/L								



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

Sampling Personnel: Vils whay (en

Water Level

Company:

MDU Lewis and Clark

Well ID	Date	Time	Depth to Water	Comments
MW101	6FE617	1134	9.50	
MW105	6F-1517	IIU6	9,13	
MW106	6 Feb/7	1144	9,74	
MW107	6FC617	113.2	4153	
MW108	6Feb 19	1142	17:06	
MW116	6 Feb 19	1137	11.29	



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

Sampling Personnel:

Parren Niesmaag

Water Level

Company:

MDU Lewis and Clark

Well ID	Date	Time	Gauge Reading	Comments	
East Scrubber Pond Gauge	18 Feb17	1051	Dry	~	
West Scrubber Pond Gauge	8F1517	1052	5.58		<u></u>
Stream behind Sewage Lagoon	8FE517	0818	0.35		• • • • • • • • • • • • • • • • • • •

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Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MWICO
Sampling Personal:	Darron Niesmon

Weather Conditions:		Temp:	<u> </u>	°F	Wind:	Nel	5		Precip:	Sunr	ny / Partly C	Cloudy //Clou	udy
	rmation	/ -			-	Sampling Information							
Well Locked?	Yes	No				Purgi	ng Method:	Blad	der		Co	ontrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Blad	lder		Purge:	5	sec.
Casing Straight?	tes	No				Dedica	ted Equip?:	Yes	NO)		Recover:	15-5-	sec.
Grout Seal Intact?	Aes	No	Not V	isible		Duplicate	e Sample?:	Yes	NO		PSI:		
Repairs Necessary:		•				Duplicate	Sample ID:		Ð		Pumping F	Rate: 100	mL/min
Casing	Diameter:		2"							•	· · · · · ·		
Water Level Bef	ore Purge:	0	1, 42	ft		F	Purge Date:	6 Fell	7	Time Purg	ing Began:	7252	am/pm
Total V	Vell Depth:			ft		Well P	urged Dry?	Yes	NO	Time P	urged Dry:		-am/pm
We	ell Volume:		·	liters		Sa	ample Date:	6 Fc5	17	Time of	Sampling:	1457	am/om
Depth to Top	o of Pump:		14.19	ft								<u>-</u> <u>-</u>	
Water Level After	er Sample:	9	,7/1	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremer	nt Method:	Electric	Nater Level	Indicator		List:	500 mL Ni	tric (filtered)	4 - 1 Lit	er Nitric			

**Field Measurements** 

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рH	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1257	628	1146	7.40	6.21	130.6	179	7.71	500	Tubid
2	13-17	6.69	1119	7,38	3,60	120,3	49.4	9,71	\$2000	Ste der
3	1337	6.69	147	7,35	3,24	112,4	26,3	9.71	2000	den
4	1357	6.69	1119	7.36	3,09	107,1	19,5	9.71	2000	Cla
5	1417	6.70	1119	7,35	2.96	104,4	13.4	2,71	2000	a
6	1437	6,78	1128	7.36	2.86	102,6	6.31	9.77	2000	eli
7	1442	6.85	ing	7,37	2.95	101.7	5.03	9.71	34500	dr
8	1447	6.86	1090	7.37	2.93	101.4	4,72	9.71	500	a
9	1452	6,71	1118	7,37	2.90	100.7.	4.68	avil	00	ci
10	1457	6.69	1118	1.31	2.86	100,6	4.51	19071	500	d
Stabilized	: 🗸 Yes	No	-	,		Ť	otal Volume	Removed:	12,500	mL
Comments	s:\/									

/

Comments:

2616 E. Broadway Ave, Bis	marck, ND	<b>Field Datasheet</b> Groundwater Assessment						Company: Event: Sample ID: Sampling Pe	ersonal:	MDU Lewi 2017 MWA	s and Clark J Niesw	k	
Phone: (701) 258-97	720		d										
Weather Conditions:		Temp:	( °F		Wind:	NEIS			Precip:	Sunr	ny / Partly C	Cloudy / Clo	oudy/
	Well Info	rmation	6					Sa	mpling l	nformatio	on		
Well Locked?	Yes	Ńø				Purgir	ng Method:	Blad	der		Co	ontrol Setting	js –
Well Labeled?	Yeş	No				Samplir	ng Method:	Biad	der		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visit	ole		Duplicate	Sample?:	Yes	No		PSI:	· · ·	-
Repairs Necessary:		<u> </u>	•			Duplicate :	Sample ID:				Pumping R	late:/ 07	mL/min
Casing	Diameter:		2''					_					
Water Level Befo	ore Purge:		2.42	ft		ㅋ	urge Date:	6726	17	Time Purg	ing Began:	1549	am/pm
Total W	/ell Depth:		°	ft		Well P	urged Dry?	Yes	Nø	Time F	ourged Dry:		am/pm
We	ll Volume:		-	liters		Sa	mple Date:	6 Feb 1.	1	Time of	f Sampling:	1651	amlon
Depth to Top	o of Pump:	İ	339	ft				,	1				
Water Level Afte	er Sample:		9.45	ft		Bottle	500 n	nL Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level Ind	icator		List:	500 mL N	itric (filtered)	4 - 1 Li	ter Nitric			

Stabil	ization	Temp	Spec.		DO (mg/l.)	ORP	Turbidity	Water	mL	Discription:
SFO #	Time	(0)	±5%	±0.1	(119/L) ±10%	±20 mV	±10%	0.25 ft	Kentoved	clear, slightly turbid, turbid
1	1554	8.35	1190	7,27	5.26	11804	577	9.47	500	Slighthe twoid
2	1514	6n34	1201	233	2.23	81.0	13.4	9.49	150020	" clear
3	1634	6,25	1202	7.35	1.29	45.6	6.05	9,49	2000	dr
4	1644	6,37	1203	7,35	1,95	29.8	4,90	2019	1000.	de
5	1649	6.39	1203	7,35	1.95	28.2	478	9.49	500	d
6	1654	6,38	1204	7.36	1.94	24,2	4.57	9.29	500	ch
7	,				'					
8										
9										
10	F	1			1					
Stabilized Comment	1 Yes	No	-			T	otal Volume	e Removed:	-6300	_mL



## **Field Datasheet**

Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

-	Sami	oling Infor	mation
5		Precip:	Sunny / Partly Cloudy / Cloudy
	Sampling Pers	onal: <u>) a</u>	en Nieswarz
	Sample ID:	Mh	* 210
L	Event:	2017	
F	Company:	MDL	Lewis and Clark

			A		
Weather Conditions:		Temp:	<u> </u>	'F	
	Well Info	ormation	0		
Well Locked?	Yes	No			
Well Labeled?	Xes	No			
Casing Straight?	Yes	No			
Grout Seal Intact?	Yes	No	Not Vi	sible	
Repairs Necessary:	) _				
Casing	Diameter:		2"		
Water Level Bef	ore Purge:		9.66	ft	
Total V	Vell Depth:				
We	ell Volume:		÷	liters	
Depth to To	p of Pump:		28,33	ft	
Water Level Aft	er Sample:			ft	
Measuremer	nt Method:	Electric	Water Level I	ndicator	

		Sa	mpling l	nformatic	on					
Purgir	ng Method:	Blad	der		Control Settings					
Samplir	Sampling Method: Bladder				Purge:	5		sec.		
Dedicat	ed Equip?:	Yes	NO		Recover:	5	5	sec.		
Duplicate	Sample?:	Yes	NO		PSI:	-				
Duplicate \$	Sample ID:				Pumping F	Rate: /	00	mL/min		
		_						_		
P	urge Date:	6 Feb	17_	Time Purg	ing Began:	17	50	am/pm		
Well Pu	urged Dry?	Yes No		Time P	urged Dry:	`		am/pm-		
Sample Date:		6 Febi	17	Time of	Sampling:	18	40	am/pm		
Bottle	500 m	L Nitric	1 Lit∈	er Raw						
List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric						

## **Field Measurements**

Wind: NE

Stabili (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1755	4.65	1450	7,75	7.28	103,8	20,2	10,62	500	rlea
2	1810	6.00	M73	7,71	2.35	8806	9.22	11.38	1500	ch
3	1820	6.41	1465	7.67	1059	61.9	6.74	1456	1000.	dr
4	1825	6.44	1463	7.66	1.48	36.7	4,78	11.61	500	d
5	1830	6.24	1462	7.65	1.39	6.0	4.42	11.63	500	1
6	1835	6,45	1461	7.65	1.37	204	4.40	11,65	500	a
7	1840	6.46	1465	7.65	1,30	-2.4	YUN	11064	500	da
8										
9										
10										
Stabilized:	Yes	No	-			T	otal Volume	Removed:	5000	mL
Comments	s:\\ /									-



Well Locked?

Well Labeled?

## **Field Datasheet**

**Groundwater Assessment** 

°F

Temp:

(NO)

No

Well Information

Yes

Ses

asheet		Company:		MDU Lewis and Clark					
		Event:		2017					
ssessment		Sample ID: MIN 102							
		Sampling Personal: Darren Nieswan							
						~			
Wind: (	NWS	Precip: Sunny// Partly Cloudy / Cloudy							
		Sampling Information							
	Purging Method:	Bladder		}	Control Settings				
	Sampling Method:	Bladder			Purge:	5	sec.		
	Dedicated Equip?:	Yes	No		Recover:	55	sec.		
	Duplicate Sample?:	Yes	No		PSI:				
	Duplicate Sample ID:				Pumping R	ate: / D D	mL/min		

Time Purging Began:

Time Purged Dry:

Time of Sampling:

n1D

ampm

am/pm

am/pm

	No	Yes	ed Equip?:	Dedicat			No	tes	Casing Straight?
	No	Yes	Sample?:	Duplicate	ole	Not Visible		Xes	Grout Seal Intact?
			Sample ID:	Duplicate			······	<u>ب</u>	Repairs Necessary:
_						2"		Diameter:	Casing
Time Pu	17	7 Feb	ourge Date:	F	ft	18.32		re Purge:	Water Level Befo
Time	NO	Yes	urged Dry?	Well P	ft	· · _		ell Depth:	Total W
Time	17	77051	mple Date:	Sa	liters	i		Volume:	We
					ft	0.68	بر <sup>.</sup> ب	of Pump:	Depth to Top
ter Raw	1 Lit	L Nitric	500 m	Bottle	ft	19,28		Water Level After Sample:	
4 - 1 Liter Nitric		ric (filtered)	List: 500 mL Nitric (filtere		icator	Water Level Indicat	Electric	Method:	Measuremen

**Field Measurements** 

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1025	7.43	6829	6.81	512	117.4	635	19,18	500	Tubid
2	1055	9.80	6825	6,81	2,58	48,0	120	19,22	25700	· Turbid,
3	1/25	10.05	6810	6,81	2263	377	19,7	19.22	3000:	clea
4	1740	10,07	1855	6.81	2.40	324.8	23,4	19.28	R1580.	den
5	1210	10,05	6882	6.81	2,63	335	19,8	19.28	3000.	cler
6	1225	10,01	6903	681	2,28	3IM	7.97	1228	1500	di
7	12-35	19,07	6913	6,81	2,47	31.3	4,20	19,28	1000	d
8	1240	10,09	6912	6.8	2.48	31.2	4,71	19,28	1500	ch
9	1245	10,06	6912	6,81	2.44	31.0	4,88	19,28	508	ch
10	$\square$								11	
Stabilized: Yes No Total Volume Removed: /T, O mL								mL		

Comments: Had fumpin overnight and next morning pump wasn't walking so changed, t. That is why turbidity started so high.


**Groundwater Assessment** 

°F

 $\bigcirc$ 

Weather Conditions:

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2017
Sample ID: MW	- 118
Sampling Personal:	arrent Elsmans
Precip:	Sunny / Partly Cloudy / Cloudy

	Well Info	rmatior	ı	
Well Locked?	Yes	Nø		
Well Labeled?	Yes	No		
Casing Straight?	Yes	No		
Grout Seal Intact?	Xes	No	Not Visi	ible
Repairs Necessary:				
Casing	Diameter:		2"	
Water Level Bef	ore Purge:		8.82	ft
Total V	Vell Depth:			ft
We	ell Volume:			liters
Depth to To	p of Pump:		9,89	ft
Water Level Aft	er Sample:		8.90	ft
Measuremer	nt Method:	Electric	Water Level In	dicator

Temp:

		Sa	mpling l	nformatio	on 🔪			
Purgi	ng Method:	Blad	der		Co	ontrol Settings		
Sampli	ng Method:	Blad	der		Purge:	4	sec.	
Dedicat	ed Equip?:	Yes	No		Recover:	56	sec.	
Duplicate	Sample?:	Yes	No.		PSI:	·		
Duplicate	Sample ID:		-		Pumping R	ate: / 0 o	mL/min	
F	ourge Date:	7Feb17		Time Purg	ing Began:	1610	am/pm	
Well P	urged Dry?	Yes	No	Time F	urged Dry:		am/pm	
. Sa	mple Date:	Ting	17	Time of	f Sampling:	1725	am/pm	
Bottle	ottle 500 mL Nitric			er Raw				
List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric				

### **Field Measurements**

Wind: A/S

Stabilization (3 consecutive)		Spec.		DO	ORP	Turbidity	Water	mL	Discription:	
ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	
Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1615	529	1652	bitor	6,10	85,9	71000	8,87	560	Tubod	
1645	51.45	1661	7,43	4,71	83,1	24,5	8,90	86300	clear	
1700	5,35	1661	7.44	4,27	83.4	11.5	8.90	1500.	cha	
1710	5,30	1667	7,44	4,15	83, Í	7.03	8.90	1000.	di	
1715	5.35	1673	7,45	4.63	82.5	4.83	8290	500	a	
1720	538	1667	7.45	4.00	82.2	4:24	8290	500	<u> </u>	
1725	534	1672	7.45	4.02	82,5	487	8.50	500	da	
1430					0					
Stabilized: (Yes) No Total Volume Removed: 6500 mL										
	ization ecutive) Time 1615 1648 1700 1710 1715 1725 1725 1725 1725	zation     Temp (°C)       Time       1615       5745       1700       5,35       1715       5,35       1720       5,38       1725       5,34       14500	zation'       Temp (°C)       Spec. Cond.         Time       ±5%         1615       5729       1652         1615       5745       1661         1700       5735       1661         1700       5735       1673         1715       5735       1673         1725       5634       1667         1725       5734       1672         1725       5734       1672         1725       5734       1672         1725       5734       1672         1725       5734       1672         1725       5734       1672         1725       5734       1672         1725       5734       1672         1725       5734       1672	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	

Comments: Ad trouble with the pump at the beginning and changed at it, check ball was stincting, That is why it is suchid at the beginning

2616 E. Broadway Ave, Biss	marck, ND		Field Ground	Da water	tash Assessr	neet ment		Company: Event: Sample ID: Sampling Pe	M V ersonal: //	MDU Lewi 2017 V [l]	s and Clark	ra<	
Phone: (701) 258-97	720		N									ノ 	
Weather Conditions:		Temp:	2 °F		Wind:	NS			Precip:	Sunr	ny / Partly C	loudy / Clo	udy
, I	Well Info	ormation	6					Sa	mpling Ir	nformatio	on		
Well Locked?	Yes	No				Purging Me	ethod:	Blad	der		Cor	ntrol Setting	s
Well Labeled?	Étés	No				Sampling Me	ethod:	Blad	der		Purge:	4	sec.
Casing Straight?	Yes	No				Dedicated E	quip?:	Yes	(No)		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Visib	le		Duplicate Sam	ple?:	Yes	₩ <b>∂</b>		PSI:		
Repairs Necessary:	/	,	-			Duplicate Samp	ole ID:				Pumping Ra	ate: / o v	mL/min
Casing	Diameter:		2''								hannan (1997)		
Water Level Befo	ore Purge:	l d	107	ft		Purge	Date:	TFOG	17	Time Purg	ing Began:	1400	am/pm)
Total W	ell Depth:			ft		Well Purgeo	i Dry?	Yes	ALC?	Time F	ourged Dry:	/	_am/pm
We	II Volume:		7	liters		Sample	Tiebi	7	Time of	f Sampling:	14555	am/pm	
Depth to Top	of Pump:	Ę,	13.38	ft				C	7				
Water Level Afte	r Sample:	8,1	27	ft		Bottle	nL Nitric	1 Lite	r Raw				
Measurement Method: Electric Water Level Indicator List: 500 mL				mL Ni	itric (filtered)	4 - 1 Lit	er Nitric						

Field Measurements

Stabili (3 cons	ization ecutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1405	204	3983	6.86	4.59	73.4	72.5	8,27	500	51,34th tubid
2	1425	7,39	3282	\$ 7.08	2.67	81.0	10,2	8,27	2500	der
3	1435	7,47	3206	7,11	2.98	82.5	5.44	8.27	1000.	ch
4	1440	7,35	3190	7,12	3,11	83.2	3.56	8,27	590	du
5	1445	7.56	3177	7,13	3,25	84.1	2090	8,27	500	ce
6	1450	7,58	3178	7,13	7,27	84.3	2,80	8,27	500	u
7	1455	7,62	3178	7.13	3,29	84,6	2.83	8,27	1500	U
8										
9										
10	$\square$								1000	h h
Stabilized:     Yes     No       Comments:										

ر



Groundwater Assessment

Company:	MDU Lewis and Clark	
Event:	2017	
Sample ID:	MW 117	
Sampling Perso	onal: DallenNillway	

تنتعب

Weather Conditions: Temp: - 6 °F Wind: MW									Precip	: Suni	ny / Partly C	Cloudy / Clo	udy
	Well Info	ormation						Sa	mpling I	nformatio	on 🦳		
Well Locked?	Yes	No				Purgi	ng Method:	Blac	lder		Co	ontrol Setting	s
Well Labeled?	Xes	No				Sampli	ng.Method:	Blac	lder		Purge:	21	sec.
Casing Straight?	Jes	No				Dedica	ted Equip?:	Yes	10	]	Recover:	56	sec.
Grout Seal Intact?	X@s	No	Not Visi	ble		Duplicate	Sample?:	Yes	No		PSI:	~	
Repairs Necessary:	(					Duplicate	Sample ID:				Pumping F	Rate: / 20	mL/min
Casing	Diameter:		2"										_
Water Level Befe	ore Purge:	6	,30	ft		F	Purge Date:	68051	フ	Time Purg	jing Began:	1158	and/pm
Total W	/ell Depth:		~	ft		Well P	urged Dry?	Ves	No	Time F	Purged Dry:	1238	am/pm
We	II Volume:			liters		Sa	mple Date:	7Fobl	7	Time o	f Sampling:	0840	am/pm
Depth to Top	o of Pump:	4	8:09	ft									
Water Level After	er Sample:		8:09 TOP	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	t Method:	Electric	Water Level Ind	dicator		List: 500 mL Nitric		ric (filtered) 4 - 1 L		iter Nitric			

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec.	nH	DO (mg/L)	ORP (m\/)	Turbidity	Water	mL Removed	Discription:
(3 0018	Time	(0)	+5%	+0.1	+10%	+20 m\/	+10%	0.25 ft	Removed	clear clightly turbid turbid
3EQ#	i inne	201	1717	202	0.0(	1000				clear, signify turbid, turbid
1	12.03	5.95	8011	1.02	8.76	19942	160	630	500	Tubil
2	1213	5.14	8130	7.07	8.37	185.7	121	6,91	1000	Turb. J
3	1223	4.90	5046	7.08	7.93	164.7	715	781	1000	Slightly turbid
4	1238	5009	7931	7,10	1,99	154,9	84,9	8.09	1500	ST
5				7Febr	7			652		
6	0835	Pur	Fel L.	he Si	pula, .			6.52	ļ —	
7	0840	4.52	8425	6:97	9,65	217,4	37,8	6.81	500	clear
8										
9										
10		$\left  \right\rangle$								
Stabilized	Yes	/ No /				T	otal Volume	Removed:	4000	mL
Comments:										



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MW 103
Sampling Person	nal: Darren Viesman

Weather Conditions:		Temp:	°F	: (')	Wind:	w	1		Precip	Sun	ay / Partly C	Cloudy / Clo	oudy
	Well Info	rmation		•				Sampling Information					
Well Locked?	Yes	NO				Purgi	ng Method:	Blad	dder		Co	ntrol Setting	us
Well Labeled?	Yés	No				Sampli	ng Method:	Bla	dder		Purge:	-f-Q- L	J sec.
Casing Straight?	Y@s	No				Dedica	ted Equip?:	Yes	No	1.	Recover:	GOR	sec.
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate	e Sample?:	Yes	No	1	PSI:	Dranan	An
Repairs Necessary:		~				Duplicate	Sample ID:	Dinn-	- (	1	Pumping R	ate: (00	mL/min
Casing	Diameter:		2''					Parp	\	-			
Water Level Befo	ore Purge:		10,-78	ft		F	Purge Date:	8 Feb	17	Time Purg	ing Began:	1040	am/pm
Total W	/ell Depth:		<u> </u>	ft		Well F	urged Dry?	Yes	NO	Time F	Purged Dry:	$\sim$	am/pm
We	ll Volume:		·	liters		Sa	ample Date:	8 Feb	17	Time o	f Sampling:	1145	/am/pm
Depth to Top	o of Pump:	1	7.86	ft				·/					
Water Level After Sample:			A 10,90	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measurement Method:		Electric Water Level Indicator			List: 500 mL Nitric		ic (filtered) 4 - 1 Liter N		ter Nitric				
								·····			·		

**Field Measurements** 

Stabilization (3 consecutive)		Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:	
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1	1045	7,93	35-46	7,26	471	102.2	9215	10.98	500	Slightly turbed	
2	1105	8.21	1720	7:31	1,66	89.6	14.9	10.99	2000	Clear	
3	1(20	8.52	1643	7,31	1,38	86.2	8.56	10,99	1500	Clerk	
4	1125	8,48	1604	7,31	1,21	84,3	5.74	10,99	500	clear	
5	1130	8.59	1595	7,31	1,17	8414	4,24	10,99	500	Cler	
6	1135	9,09	1572	7.30	1106	83,5	3.40	10,29	500	cher	
7	1140	9.06	1564	7,30	1,02	83,4	3.62	10,99	500	aka	
8	1145	2116	1560	7,30	1.04	83,0	3.38	10,99	500	dur	
9											
10											
Stabilized:	: Kes	No	Total Volume Removed: COD mL								
Comments	s' uv								0-		

Comments:



Groundwater Assessment

Company:	MDU Lewis	s and Clark
Event:	2017	
Sample ID:	MW109	
Sampling Pe	rsonal: Darren	Niconn
		7

Phone: (701) 258-9720

······· - · ······ ··· · · ·····													
Weather Conditions:		Temp:	<u> </u>		Wind:	SW	S		Precip:	Sunr	ny / Partly C	loudy / Clo	udy
	Well Info	ormation	U			-		Sa	mpling l	nformatio	on		
Well Locked?	Yes	(N)				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	IS
Well Labeled?	Xes	No				Sampli	ng Method:	Blac	lder		Purge:	Ц	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	No		Recover:	56	sec.
Grout Seal Intact?	Yes	No	(Not Visib	le		Duplicate	e Sample?:	Yes	NO		PSI:		
Repairs Necessary:		<u> </u>				Duplicate	Sample ID:		•••*		Pumping R	ate: / ^ /	mL/min
Casing	Diameter:		2"							-	•		
Water Level Bef	ore Purge:		10.82	ft		F	Purge Date:	8 Fes	17	Time Purg	ing Began:	0840	(am/pm
Total V	Vell Depth:		·	ft		Well P	urged Dry?	Yes	No	Time F	urged Dry:		am/pm
We	ell Volume:			liters		Sa	ample Date:	8 Feb 1	7	Time of	Sampling:	1930	am/pm
Depth to Top	o of Pump:		13.92	ft				<i>v</i>					
Water Level Afte	er Sample:		10:91	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Water Level Indi	icator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			

## **Field Measurements**

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0845	5,77	1712	7118	4,38	121.4	1708	10,91	500	ch
2 -	\$6910	7.02	1667	7,26	2.68	101,3	4,60	10,89	2500	da
3	0915	7:51	1664	7,27	2.06	960	2,25	10291	500	ch
4	0920	7.74	1668	7,29	1.61	90.8	1,26	10.91	580	dr
5	0925	7,72	1665	7,29	1,60	90,6	1.31	10.91	500	th
6	0930	7.80	1663	7,29	1058	7.01	1.32	10.91	500	a
7				1						
8										
9										
10										
Stabilized Comment	: (Yes) s: ()	No	-			T	otal Volume	Removed:	5000	mL

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### CASE NARRATIVE

-MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-0310 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – February 2017 Event 17-W298 through 17-W308

MDU Sample Identification	MVTL Laboratory #
MW110	17-W298
MW119	17-W299
MW210	17-W300
MW102	17-W301
MW118	17-W302
MW111	17-W303
MW117	17-W304
MW103	17-W305
MW109	17-W306
Dup 1	17-W307
Field Blank (FB)	17-W308

### I. RECEIPT

- All samples were received at the laboratory on 9 Feb 2017 at 0800.
- 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.
  - Temperature of samples upon receipt was 0.2°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

### II. HOLDING TIMES

 With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

### III. METHODS

- Approved methodology was followed for all sample analyses.
  - Methods 6010D and Method 6020B were used to analyze the metals.

### IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
  - For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).

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### CASE NARRATIVE

-MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-0310 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – February 2017 Event 17-W298 through 17-W308

- For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
- One alkalinity matrix spike duplicate recovery was outside the acceptable limits. Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.
- One selenium total matrix spike duplicate recovery was outside the acceptable limits.
   Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.
- The recoveries for three selenium total matrix spikes/matrix spike duplicates 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.
- One selenium dissolved matrix spike duplicate recovery was outside the acceptable limits.
   Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.
- The recoveries for one selenium dissolved 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.
- One lead dissolved matrix spike duplicate recovery was outside the acceptable limits.
   Recovery for the matrix spike was acceptable. RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits. No further action was taken.
- The recoveries for one lithium total 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.
- Recovery for one fluoride matrix spike was outside of the acceptable limits. Recovery of the matrix spike duplicate was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.

All laboratory data has been approved by MVTL Laboratories.

Claudette Cant SIGNED:

DATE: 28FEB17

Claudette Carroll - MVTL Bismarck Laboratory Manager



Bismarck ND 58501

400 N. 4th

Sample Description: MW110

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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Page: 1 of 2

Report Date: 22 Feb 17 Lab Number: 17-W298 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 14:57 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Receive	d	Method	Method	Dat	te		Analyst
	Result		RL	Reference	And	aryzed		Anaryse
Metal Digestion				EPA 200.2	9	Feb 17		SVS
nH	* 7.4	units	N/A	SM4500 H+ B	9	Feb 17	17:00	SVS
Total Suspended Solids	4	mg/l	2	I3765-85	9	Feb 17	15:44	SVS
pH - Field	7.37	units	NA	SM 4500 H+ B	6	Feb 17	14:57	DJN
Temperature - Field	6.69	Degrees C	NA	SM 2550B	6	Feb 17	14:57	DJN
Total Alkalinity	332	mg/l CaCO3	20	SM2320-B	9	Feb 17	17:00	SVS
Conductivity - Field	1118	umhos/cm	1	EPA 120.1	6	Feb 17	14:57	DJN
Fluoride	0.47	mg/l	0.10	SM4500-F-C	9	Feb 17	17:00	SVS
Sulfate	214	mg/l	5.00	ASTM D516-07	10	Feb 17	8:53	EMS
Chloride	21.2	mg/l	1.0	SM4500-Cl-E	9	Feb 17	11:56	EMS
Mercury - Total	< 0.0002	mg/1	0.0002	EPA 245.1	15	Feb 17	11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 17	12:42	EV
Total Dissolved Solids	636	mg/l	10	I1750-85	10	Feb 17	10:45	SVS
Calcium - Total	92.6	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Magnesium - Total	57.3	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Sodium - Total	88.3	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Potassium - Total	6.7	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	15	Feb 17	14:15	KMD
Boron - Total	0.20	mg/l	0.10	6010	14	Feb 17	10:31	KMD
Calcium - Dissolved	88.2	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Magnesium - Dissolved	54.6	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Sodium - Dissolved	84.3	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Potassium - Dissolved	6.4	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15	Feb 17	16:15	KMD
Boron - Dissolved	0.19	mg/l	0.10	6010	14	Feb 17	11:31	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14	Feb 17	9:50	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	15	Feb 17	17:45	KMD
Barium - Total	0.0304	mg/l	0.0020	6020	15	Feb 17	17:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 17	9:50	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 17	9:50	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	14	Feb 17	9:50	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14	Feb 17	9:50	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	15	Feb 17	17:45	KMD
Molybdenum - Total	0.0039	mg/l	0.0020	6020	14	Feb 17	9:50	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	15	Feb 17	10:50	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	15	Feb 17	17:45	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14	Feb 17	15:05	KMD

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

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Page: 2 of 2

Report Date: 22 Feb 17 Lab Number: 17-W298 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 14:57 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW110 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Receive Result	d	Method RL         Method Reference           rg/1         0.0020         6020           rg/1         0.0005         6020           rg/1         0.0005         6020           rg/1         0.0005         6020           rg/1         0.0005         6020           rg/1         0.0020         6020           rg/1         0.0020         6020           rg/1         0.0020         6020           rg/1         0.0005         6020           rg/1         0.0020         6020	Method Reference	Dat Ana	e lyzed		Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Barium - Dissolved	0.0307	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD
Molybdenum - Dissolved	0.0040	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	15	Feb 1	7 12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Page: 1 of 2

Report Date: 22 Feb 17 Lab Number: 17-W299 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 16:54 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW119 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Receive	As Received		Method	Dat			
	Result		RL	Reference	Ana	alyzed		Analyst
Metal Digestion				EPA 200.2	9	Feb 1	7	SVS
PH	* 7.6	units	N/A	SM4500 H+ B	9	Feb 1	7 17:00	SVS
Total Suspended Solids	4	mg/l	2	13765-85	9	Feb 1'	7 15:44	SVS
pH - Field	7.36	units	NA	SM 4500 H+ B	6	Feb 1	7 16:54	DJN
Temperature - Field	6.38	Degrees C	NA	SM 2550B	6	Feb 1'	7 16:54	DJN
Total Alkalinity	361	mg/l CaCO3	20	SM2320-B	9	Feb 1'	7 17:00	SVS
Conductivity - Field	1204	umhos/cm	1	EPA 120.1	6	Feb 1'	7 16:54	DJN
Fluoride	0.44	mg/l	0.10	SM4500-F-C	9	Feb 1'	7 17:00	SVS
Sulfate	207	mg/l	5.00	ASTM D516-07	10	Feb 1	7 8:53	EMS
Chloride	24.0	mg/l	1.0	SM4500-Cl-E	9	Feb 1'	7 11:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 1'	7 11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 1	7 12:42	EV
Total Dissolved Solids	676	mg/l	10	I1750-85	10	Feb 1'	7 10:45	SVS
Calcium - Total	98.9	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Magnesium - Total	61.8	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Sodium - Total	92.2	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Potassium - Total	7.5	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	15	Feb 1	7 14:15	KMD
Boron - Total	0.21	mg/l	0.10	6010	14	Feb 1	7 10:31	KMD
Calcium - Dissolved	95.3	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Magnesium - Dissolved	59.6	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Sodium - Dissolved	89.6	mg/l	1.0	6010	20	Feb 1'	7 11:33	KMD
Potassium - Dissolved	7.3	mg/l	1.0	6010	20	Feb 1'	7 11:33	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15	Feb 1	7 16:15	KMD
Boron - Dissolved	0.20	mg/l	0.10	6010	14	Feb 1	7 11:31	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14	Feb 1	7 9:50	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	15	Feb 1'	7 17:45	KMD
Barium - Total	0.0328	mg/l	0.0020	6020	15	Feb 1	7 17:45	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 9:50	KMD
Cadmium - Total	0.0006	mg/l	0.0005	6020	14	Feb 1'	7 9:50	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 9:50	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14	Feb 1'	7 9:50	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	15	Feb 1	7 17:45	KMD
Molybdenum - Total	0.0046	mg/l	0.0020	6020	14	Feb 1	7 9:50	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	15	Feb 1	7 12:15	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	15	Feb 1	7 17:45	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14	Feb 1	7 15:05	KMD

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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Page: 2 of 2

Report Date: 22 Feb 17 Lab Number: 17-W299 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 16:54 Date Received: 9 Feb 17 8:00 Sampled By: Client

Date

Temp at Receipt: 0.2C ROI

Sample Description: MW119 Sample Site: MDU Lewis & Clark Temp at Event and Year: February 2017 As Received Method Method

	Result		RL	Reference	Analyzed	Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14 Feb 17 15:05	KMD
Barium - Dissolved	0.0331	mg/l	0.0020	6020	14 Feb 17 15:05	KMD
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Feb 17 15:05	KMD
Cadmium - Dissolved	0.0007	mg/l	0.0005	6020	14 Feb 17 15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14 Feb 17 15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14 Feb 17 15:05	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Feb 17 15:05	KMD
Molybdenum - Dissolved	0.0041	mg/l	0.0020	6020	14 Feb 17 15:05	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	15 Feb 17 12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Feb 17 15:05	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

28 FB)7 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CC

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW210

Sample Site: MDU Lewis & Clark

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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9:50

14 Feb 17

15 Feb 17 12:15

15 Feb 17 17:45

14 Feb 17 15:05

KMD

KMD

KMD

KMD

Page: 1 of 2

Report Date: 22 Feb 17 Lab Number: 17-W300 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 18:40 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

Event and Year: February 2017 Method Method Date As Received Analyst Analyzed Result RL Reference SVS EPA 200.2 9 Feb 17 Metal Digestion 9 Feb 17 17:00 SVS 7.8 units N/A SM4500 H+ B pH 13765-85 9 Feb 17 15:44 SVS Total Suspended Solids mg/l 2 6 6 Feb 17 18:40 D.TN NA SM 4500 H+ B pH - Field 7.65 units 6 Feb 17 18:40 Temperature - Field DJN 6.46 Degrees C NA SM 2550B Total Alkalinity 374 mg/l CaCO3 20 SM2320-B 9 Feb 17 17:00 SVS 6 Feb 17 18:40 DJN 1465 umhos/cm 1 EPA 120.1 Conductivity - Field SM4500-F-C 9 Feb 17 17:00 SVS 0.10 Fluoride 0.98 mg/l10 Feb 17 EMS 5.00 ASTM D516-07 9:09 Sulfate 349 mg/l 9 Feb 17 11:56 1.0 SM4500-C1-E EMS Chloride 3.8 mg/l Mercury - Total 0.0002 EPA 245.1 15 Feb 17 11:56 EV < 0.0002 mg/l Mercury - Dissolved EV Feb 17 12:42 0.0002 EPA 245.1 15 < 0.0002 mg/l 10 Feb 17 10:45 SVS I1750-85 Total Dissolved Solids 893 mg/l 10 20 Feb 17 11:33 KMD 46.5 mg/l 1.0 6010 Calcium - Total 20 Feb 17 11:33 KMD 1.0 6010 Magnesium - Total 25.7 mg/l mg/l Sodium - Total 6010 20 Feb 17 11:33 KMD 276 1.0 Feb 17 11:33 KMD 6010 20 9.2 mg/l 1.0 Potassium - Total 6010 15 Feb 17 14:15 KMD Lithium - Total < 0.1 mg/l 0.10 KMD mg/l 14 Feb 17 10:31 Boron - Total 0.17 0.10 6010 20 Feb 17 11:33 43.1 mg/l 1.0 6010 KMD Calcium - Dissolved mg/l 20 Feb 17 11:33 KMD Magnesium - Dissolved 24.0 1.0 6010 1.0 6010 20 Feb 17 11:33 KMD mg/l Sodium - Dissolved 256 20 Feb 17 11:33 KMD 6010 Potassium - Dissolved 8.5 mg/l 1.0 15 Feb 17 16:15 KMD Lithium - Dissolved < 0.1 mg/l 0.10 6010 Boron - Dissolved 0.17 mg/10.10 6010 14 Feb 17 12:31 KMD KMD < 0.001 mg/l 0.0010 6020 14 Feb 17 9:50 Antimony - Total Arsenic - Total 15 Feb 17 17:45 0.0020 6020 KMD mg/l < 0.002 15 Feb 17 17:45 KMD 0.0020 Barium - Total 6020 0.0230 mg/l 9:50 KMD Beryllium - Total < 0.0005 mg/l 0.0005 6020 14 Feb 17 0.0005 6020 14 Feb 17 9:50 KMD Cadmium - Total < 0.0005 mg/l KMD Chromium - Total mg/l 14 Feb 17 9:50 < 0.002 0.0020 6020 < 0.002 14 Feb 17 9:50 KMD Cobalt - Total 0.0020 6020 mg/l 15 Feb 17 17:45 KMD

0.0005

0.0020

0.0020

0.0005

0.0010

6020

6020

6020

6020

6020

RL = Method Reporting Limit

Lead - Total

Molybdenum - Total Selenium - Total Thallium - Total

Antimony - Dissolved

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

< 0.0005

< 0.005 ^

< 0.0005

< 0.001

0.0043

mg/l

mg/l

mg/l

mg/l

mg/l

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Page: 2 of 2

Report Date: 22 Feb 17 Lab Number: 17-W300 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 18:40 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW210 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Receive Result	d	Method RL	Method Reference	Dat Ana	e lyzed		Analyst
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Barium - Dissolved	0.0256	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD
Lead - Dissolved	< 0.0005	$m\alpha/1$	0.0005	6020	14	Feb 1	7 15:05	KMD
Melybdorum - Dissolved	0 0038	mg/1	0.0020	6020	14	Feb 1	7 15:05	KMD
Releasium Dissolved	< 0.005 ^	mg/1	0.0020	6020	15	Feb 1	7 12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

10 28/2017 Claudette K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Report Date: 22 Feb 17 Lab Number: 17-W301 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 12:45 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

Date

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW102 Sample Site: MDU Lewis & Clark Temp Event and Year: February 2017

	As Receive	i ci	Mechod Mechod						
	Result		RL	Reference	Ana	alyze	d	Analyst	2
Metal Digestion				EPA 200.2	9	Feb	17	SVS	
H	* 7.4	units	N/A	SM4500 H+ B	9	Feb	17 17:00	SVS	
Total Suspended Solids	11	mg/l	2	13765-85	9	Feb	17 15:44	SVS	
pH - Field	6.81	units	NA	SM 4500 H+ B	7	Feb	17 12:49	DJN	
Temperature - Field	10.1	Degrees C	NA	SM 2550B	7	Feb	17 12:45	DJN	
Total Alkalinity	365	mg/l CaCO3	20	SM2320-B	9	Feb	17 17:00	SVS	
Conductivity - Field	6912	umhos/cm	1	EPA 120.1	7	Feb	17 12:49	DJN	
Fluoride	1.73	mg/l	0.10	SM4500-F-C	9	Feb	17 17:00	SVS	
Sulfate	4700	mg/l	5.00	ASTM D516-07	10	Feb	17 9:09	EMS	
Chloride	56.2	mg/l	1.0	SM4500-Cl-E	9	Feb	17 11:50	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb	17 11:50	EV	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb	17 12:43	EV	
Total Dissolved Solids	7340	mg/l	10	11750-85	10	Feb	17 10:49	SVS	
Calcium - Total	324	mg/l	1.0	6010	20	Feb	17 12:33	KMD	
Magnesium - Total	1190	mg/l	1.0	6010	20	Feb	17 12:33	KMD	
Sodium - Total	216	mg/l	1.0	6010	20	Feb	17 12:33	KMD	
Potassium - Total	24.4	mg/l	1.0	6010	20	Feb	17 12:33	KMD	
Lithium - Total	< 0.5 @	mg/l	0.10	6010	15	Feb	17 14:1!	KMD	
Boron - Total	25.3	mg/l	0.10	6010	14	Feb	17 11:33	. KMD	
Calcium - Dissolved	304	mg/l	1.0	6010	20	Feb	17 11:33	KMD	
Magnesium - Dissolved	1120	mg/l	1.0	6010	20	Feb	17 11:33	KMD	
Sodium - Dissolved	203	mg/l	1.0	6010	20	Feb	17 11:3	KMD	
Potassium - Dissolved	23.1	mg/l	1.0	6010	20	Feb	17 11:3	KMD	
Lithium - Dissolved	< 0.5 @	mg/l	0.10	6010	15	Feb	17 16:1	5 KMD	
Boron - Dissolved	25.5	mg/l	0.10	6010	14	Feb	17 12:3	. KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	14	Feb	17 9:50	) KMD	
Arsenic - Total	0.0026	mg/l	0.0020	6020	15	Feb	17 17:4	5 KMD	
Barium - Total	0.0270	mg/l	0.0020	6020	15	Feb	17 17:4	5 KMD	
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb	17 9:50	) KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb	17 9:50	) KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	14	Feb	17 9:50	) KMD	
Cobalt - Total	0.0062	mg/l	0.0020	6020	14	Feb	17 9:50	) KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	15	Feb	17 17:4	5 KMD	
Molvbdenum - Total	0.1156	mg/l	0.0020	6020	14	Feb	17 9:5	) KMD	
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	15	Feb	17 12:1	5 KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	15	Feb	17 17:4	5 KMD	
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14	Feb	17 15:0	5 KMD	

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Page: 2 of 2

Report Date: 22 Feb 17 Lab Number: 17-W301 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 12:45 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW102 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Receive Result	d	Method RL	Method Reference	thod     Date       ference     Analyzed       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     14       20     15       20     14       20     14		Analyst		
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD	1
Barium - Dissolved	0.0195	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD	
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD	
Cadmium - Dissolved	< 0.0005	mg/1	0.0005	6020	14	Feb 1	7 15:05	KMD	
Chromium - Dissolved	< 0.002	mg/1	0.0020	6020	14	Feb 1	7 15:05	KMD	
Cobalt - Dissolved	0.0065	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD	
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD	
Molybdenum - Dissolved	0.1094	mg/l	0.0020	6020	14	Feb 1	7 15:05	KMD	
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	15	Feb 1	7 12:15	KMD	
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 15:05	KMD	

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

(c Claudette K Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

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Page: 1 of 2

Report Date: 22 Feb 17 Lab Number: 17-W302 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 17:25 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW118 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Receive	ed .	Method RL	Method Reference	Da t Ana	ce alvzed		Analyst
	Result			nerstende	0.010.0			5.77557912 <b>-</b> 597750
Metal Digestion	11.42 - 42.90 - 10.43		Card States	EPA 200.2	9	Feb 1	7	SVS
pH	* 7.8	units	N/A	SM4500 H+ B	9	Feb 1	7 17:00	SVS
Total Suspended Solids	9	mg/l	2	I3765-85	9	Feb 1	7 15:44	SVS
pH - Field	7.45	units	NA	SM 4500 H+ B	7	Feb 1	7 17:25	DJN
Temperature - Field	5,34	Degrees C	NA	SM 2550B	7	Feb 1	7 17:25	DJN
Total Alkalinity	310	mg/l CaCO3	20	SM2320-B	9	Feb 1	7 17:00	SVS
Conductivity - Field	1672	umhos/cm	1	EPA 120.1	7	Feb 1	7 17:25	DJN
Fluoride	1.25	mg/l	0.10	SM4500-F-C	9	Feb 1	7 17:00	SVS
Sulfate	545	mg/l	5.00	ASTM D516-07	10	Feb 1	7 9:09	EMS
Chloride	19.0	mg/l	1.0	SM4500-Cl-E	9	Feb 1	7 11:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 1	7 11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 1	7 12:42	EV
Total Dissolved Solids	1100	mg/l	10	I1750-85	10	Feb 1	7 10:45	SVS
Calcium - Total	80.0	mg/l	1.0	6010	20	Feb 1	7 12:33	KMD
Magnesium - Total	164	mg/l	1.0	6010	20	Feb 1	7 12:33	KMD
Sodium - Total	83.8	mg/l	1.0	6010	20	Feb 1	7 12:33	KMD
Potassium - Total	6.8	mg/l	1.0	6010	20	Feb 1	7 12:33	KMD
Lithium - Total	0.10	mg/l	0.10	6010	15	Feb 1	7 14:15	KMD
Boron - Total	1.71	mg/l	0.10	6010	14	Feb 1	7 11:31	KMD
Calcium - Dissolved	81.1	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Magnesium - Dissolved	164	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Sodium - Dissolved	84.1	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Potassium - Dissolved	6.8	mg/l	1.0	6010	20	Feb 1	7 11:33	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15	Feb 1	7 16:15	KMD
Boron - Dissolved	1.76	mg/l	0.10	6010	14	Feb 1	7 12:31	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14	Feb 1	7 9:50	KMD
Arsenic - Total	0.0022	mg/l	0.0020	6020	15	Feb 1	7 17:45	KMD
Barium - Total	0.0263	mg/l	0.0020	6020	15	Feb 1	7 17:45	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 1	7 9:50	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 1	.7 9:50	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 9:50	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14	Feb 1	7 9:50	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	15	Feb 1	7 17:45	KMD
Molybdenum - Total	0.0546	mg/l	0.0020	6020	14	Feb 1	7 9:50	KMD
Selenium - Total	0.0839	mg/l	0.0020	6020	15	Feb 1	7 12:15	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	15	Feb 1	7 17:45	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14	Feb 1	7 15:05	KMD

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

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Report Date: 22 Feb 17 Lab Number: 17-W302 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 17:25 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW118 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Received		Method	Method	Date				Descluse
	Result		RL	Reference	An	Analyst			
Arsenic - Dissolved	0.0021	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Barium - Dissolved	0.0238	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Molybdenum - Dissolved	0.0568	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Selenium - Dissolved	0.0903	mg/l	0.0020	6020	15	Feb	17	12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17	15:05	KMD

\* Holding time exceeded

Approved by:

10 28 FEB17 Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

400 N. 4th

Sample Description: MW111

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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Report Date: 22 Feb 17 Lab Number: 17-W303 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 14:55 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Received Result		Method	Method	Date Analvzed	Analyst	
	Result		<b>N</b> L	Not of one o			
Metal Digestion	(C2 - 826 (2027	LA DA TRANSPORTA	(945 S.2013)	EPA 200.2	9 Feb 17		SVS
рН	* 7.7	units	N/A	SM4500 H+ B	9 Feb 17	17:00	SVS
Total Suspended Solids	3	mg/l	2	13765-85	9 Feb 17	15:44	SVS
pH - Field	7.13	units	NA	SM 4500 H+ B	7 Feb 17	14:55	DJN
Temperature - Field	7.62	Degrees C	NA	SM 2550B	7 Feb 17	14:55	DJN
Total Alkalinity	366	mg/l CaCO3	20	SM2320-B	9 Feb 17	17:00	SVS
Conductivity - Field	3178	umhos/cm	1	EPA 120.1	7 Feb 17	14:55	DUN
Fluoride	2.17	mg/l	0.10	SM4500-F-C	9 Feb 17	17:00	SVS
Sulfate	1530	mg/l	5.00	ASTM D516-07	10 Feb 17	9:09	EMS
Chloride	28.6	mg/l	1.0	SM4500-Cl-E	9 Feb 17	11:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15 Feb 17	11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15 Feb 17	12:42	EV
Total Dissolved Solids	2640	mg/l	10	I1750-85	10 Feb 17	10:45	SVS
Calcium - Total	150	mg/l	1.0	6010	20 Feb 17	12:33	KMD
Magnesium - Total	418	mg/l	1.0	6010	20 Feb 17	12:33	KMD
Sodium - Total	123	mg/l	1.0	6010	20 Feb 17	12:33	KMD
Potassium - Total	9.5	mg/l	1.0	6010	20 Feb 17	12:33	KMD
Lithium - Total	0.18	mg/l	0.10	6010	15 Feb 17	14:15	KMD
Boron - Total	7.10	mg/l	0.10	6010	14 Feb 17	11:31	KMD
Calcium - Dissolved	145	mg/l	1.0	6010	20 Feb 17	11:33	KMD
Magnesium - Dissolved	404	mg/l	1.0	6010	20 Feb 17	11:33	KMD
Sodium - Dissolved	116	mg/l	1.0	6010	20 Feb 17	11:33	KMD
Potassium - Dissolved	9.2	mg/l	1.0	6010	20 Feb 17	11:33	KMD
Lithium - Dissolved	0.18	mg/l	0.10	6010	15 Feb 17	16:15	KMD
Boron - Dissolved	7.09	mg/l	0.10	6010	14 Feb 17	12:31	KMD
Aptimony - Total	< 0.001	mg/l	0.0010	6020	14 Feb 17	15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	14 Feb 17	15:05	KMD
Barium - Total	0.0193	mg/l	0.0020	6020	14 Feb 17	15:05	KMD
Baryllium - Total	< 0.0005	mg/l	0.0005	6020	14 Feb 17	15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14 Feb 17	15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	14 Feb 17	15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14 Feb 17	15:05	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	14 Feb 17	15:05	KMD
Molybdenum - Total	0.0659	mg/l	0.0020	6020	14 Feb 17	15:05	KMD
Selenium - Total	0.1027	mg/l	0.0020	6020	15 Feb 17	12:15	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	14 Feb 17	15:05	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	14 Feb 17	15:05	KMD

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Report Date: 22 Feb 17 Lab Number: 17-W303 Work Order #:82-0310 Account #: 002800 Date Sampled: 6 Feb 17 14:55 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW111 Sample Site: MDU Lewis & Clark Event and Year: February 2017 . .....

	As Receive Result	ed	Method RL	Method Reference	Da An	Analyst			
Argenia - Dissolved	< 0.002	mcr/1	0.0020	6020	14	Feb	17	15:05	KMD
Barium - Dissolved	0.0198	mg/l	0.0020	6020	14	Feb	17 :	15:05	KMD
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17 3	15:05	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17 :	15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb	17 :	15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb	17 3	15:05	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17 :	15:05	KMD
Molvbdenum - Dissolved	0.0768	mg/l	0.0020	6020	14	Feb	17 :	15:05	KMD
Selenium - Dissolved	0.1019	mg/l	0.0020	6020	15	Feb	17 :	12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb	17 :	15:05	KMD

\* Holding time exceeded

Approved by:

Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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



Bismarck ND 58501

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Report Date: 22 Feb 17 Lab Number: 17-W304 Work Order #:82-0310 Account #: 002800 Date Sampled: 7 Feb 17 8:40 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW117 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Received			Method	Method	Da	and Frank			
		Result		RL	Reference	An	alyze	be		Analyst
Metal Digestion					EPA 200.2	9	Feb	17		SVS
nH	*	7.6	units	N/A	SM4500 H+ B	9	Feb	17	17:00	SVS
Total Suspended Solids		39	mg/l	2	I3765-85	9	Feb	17	15:44	SVS
pH - Field		6.97	units	NA	SM 4500 H+ B	7	Feb	17	8:40	DJN
Temperature - Field		4.52	Degrees C	NA	SM 2550B	7	Feb	17	8:40	DJN
Total Alkalinity		385	mg/l CaCO3	20	SM2320-B	9	Feb	17	17:00	SVS
Conductivity - Field		8425	umhos/cm	1	EPA 120.1	7	Feb	17	8:40	DJN
Fluoride		0.23	mg/l	0.10	SM4500-F-C	9	Feb	17	17:00	SVS
Sulfate		5670	mg/l	5.00	ASTM D516-07	10	Feb	17	9:09	EMS
Chloride		45.4	mg/l	1.0	SM4500-C1-E	9	Feb	17	11:56	EMS
Mercury - Total		< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb	17	11:56	EV
Mercury - Dissolved		< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb	17	12:42	EV
Total Dissolved Solids		8730	mg/l	10	11750-85	10	Feb	17	10:45	SVS
Calcium - Total		453	mg/l	1.0	6010	20	Feb	17	12:33	KMD
Magnesium - Total		1220	mg/l	1.0	6010	20	Feb	17	12:33	KMD
Sodium - Total		605	mg/l	1.0	6010	20	Feb	17	12:33	KMD
Potassium - Total		28.4	mg/l	1.0	6010	20	Feb	17	12:33	KMD
Lithium - Total		< 0.5 @	mg/l	0.10	6010	15	Feb	17	14:15	KMD
Boron - Total		8.75	mg/l	0.10	6010	14	Feb	17	11:31	KMD
Calcium - Dissolved		430	mg/l	1.0	6010	20	Feb	17	11:33	KMD
Magnesium - Dissolved		1160	mg/l	1.0	6010	20	Feb	17	11:33	KMD
Sodium - Dissolved		570	mg/l	1.0	6010	20	Feb	17	11:33	KMD
Potassium - Dissolved		26.9	mg/l	1.0	6010	20	Feb	17	11:33	KMD
Lithium - Dissolved		< 0.5 @	mg/l	0.10	6010	15	Feb	17	16:15	KMD
Boron - Dissolved		8.96	mg/l	0.10	6010	14	Feb	17	12:31	KMD
Antimony - Total		< 0.001	mg/l	0.0010	6020	14	Feb	17	15:05	KMD
Arsenic - Total		0.0051	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Barium - Total		0.2388	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Bervllium - Total		0.0006	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Cadmium - Total		< 0.0005	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Chromium - Total		0.0110	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Cobalt - Total		0.0048	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Lead - Total		0.0063	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Molvbdenum - Total		0.0040	mg/l	0.0020	6020	14	Feb	17	15:05	KMD
Selenium - Total		0.0321	mg/l	0.0020	6020	15	Feb	17	12:15	KMD
Thallium - Total		< 0.0005	mg/l	0.0005	6020	14	Feb	17	15:05	KMD
Antimony - Dissolved		< 0.001	mg/l	0.0010	6020	14	Feb	17	15:05	KMD

#### RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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Report Date: 22 Feb 17 Lab Number: 17-W304 Work Order #:82-0310 Account #: 002800 Date Sampled: 7 Feb 17 8:40 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW117 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Receive Result	ed	Method RL	Method Reference	Dat Ana	Analyst		
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Barium - Dissolved	0.0182	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Molybdenum - Dissolved	0.0040	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Selenium - Dissolved	0.0340	mg/l	0.0020	6020	15	Feb 17	12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD

\* Holding time exceeded

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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Sample Description: MW103

Sample Site: MDU Lewis & Clark

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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Report Date: 22 Feb 17 Lab Number: 17-W305 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 11:45 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

14 Feb 17 15:05

15 Feb 17 12:15

14 Feb 17 15:05

14 Feb 17 15:05

KMD

KMD

KMD

KMD

Event and Year: February 2017 Method Date Method As Received Analyst Analyzed Result RL Reference SVS EPA 200.2 9 Feb 17 Metal Digestion 9 Feb 17 17:00 SVS 7.7 units N/A SM4500 H+ B pH 13765-85 9 Feb 17 15:44 SVS Total Suspended Solids 5 mg/l 2 8 Feb 17 11:45 DJN SM 4500 H+ B 7.40 units NA pH - Field 8 Feb 17 11:45 DJN Temperature - Field 9.16 Degrees C NA SM 2550B mg/l CaCO3 20 SM2320-B 9 Feb 17 17:00 SVS 302 Total Alkalinity 8 Feb 17 11:45 DJN EPA 120.1 umhos/cm Conductivity - Field 1560 1 9 Feb 17 17:00 SM4500-F-C SVS 0.10 Fluoride 0.80 mg/l 10 Feb 17 9:09 EMS ASTM D516-07 Sulfate 484 mg/l 5.00 9 Feb 17 11:56 EMS 1.0 SM4500-C1-E 18.8 mg/l Chloride mg/l 0.0002 EPA 245.1 15 Feb 17 11:56 EV < 0.0002 Mercury - Total EPA 245.1 15 Feb 17 12:42 EV 0.0002 Mercury - Dissolved mg/l < 0.0002 I1750-85 10 Feb 17 10:45 SVS Total Dissolved Solids 1060 mg/l 10 Feb 17 12:33 KMD 20 1.0 6010 Calcium - Total 92.5 mg/l 20 Feb 17 12:33 KMD 1.0 6010 138 mg/l Magnesium - Total KMD mg/l 6010 20 Feb 17 12:33 1.0 Sodium - Total 85.6 20 Feb 17 12:33 KMD 6010 1.0 Potassium - Total 8.1 mg/l 6010 15 Feb 17 16:15 KMD Lithium - Total < 0.1 mg/l 0.10 14 Feb 17 11:31 KMD 0.10 6010 Boron - Total 1.60 mg/l 20 Feb 17 11:33 KMD mg/l 1.0 6010 Calcium - Dissolved 89.2 6010 20 Feb 17 11:33 KMD mg/l 1.0 Magnesium - Dissolved 133 1.0 6010 20 Feb 17 11:33 KMD Sodium - Dissolved 83.0 mg/l 20 Feb 17 11:33 KMD 6010 mg/l 7.9 1.0 Potassium - Dissolved KMD 15 Feb 17 16:15 0.10 6010 Lithium - Dissolved < 0.1 mg/l 14 Feb 17 12:31 KMD Boron - Dissolved 1.70 mg/l 0.10 6010 0.0010 6020 14 Feb 17 15:05 KMD 0.0050 mg/l Antimony - Total 14 Feb 17 15:05 KMD 0.0020 6020 Arsenic - Total 0.0032 mg/l 14 Feb 17 15:05 KMD 6020 Barium - Total 0.0270 mg/l 0.0020 KMD 14 Feb 17 < 0.0005 mg/1 0.0005 6020 15:05 Beryllium - Total Cadmium - Total 0.0005 6020 14 Feb 17 15:05 KMD < 0.0005 mg/l14 Feb 17 15:05 KMD 0.0020 6020 mg/l Chromium - Total < 0.002 14 Feb 17 15:05 KMD 0.0020 6020 Cobalt - Total < 0.002 mg/l 14 Feb 17 15:05 KMD Lead - Total < 0.0005 0.0005 6020 mg/l

0.0020

0.0020

0.0005

0.0010

6020

6020

6020

6020

RL = Method Reporting Limit

Molybdenum - Total

Antimony - Dissolved

Selenium - Total

Thallium - Total

mg/1

mq/1

mg/l

mg/l

0.0262

0.0705

0.0050

< 0.0005

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Sample Description: MW103

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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Page: 2 of 2

Report Date: 22 Feb 17 Lab Number: 17-W305 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 11:45 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Receive Result	ed	Method RL	Method Reference	Dat Ana	Analyst		
Argenic - Dissolved	0.0034	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Barium - Dissolved	0.0237	mg/1	0.0020	6020	14	Feb 17	15:05	KMD
Baryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Cadmium - Dissolved	< 0.0005	mg/1	0.0005	6020	14	Feb 1	15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14	Feb 1	15:05	KMD
Cabalt _ Dissolved	< 0.002	mg/1	0.0020	6020	14	Feb 1'	15:05	KMD
Lond Dissolved	< 0.0005	mg/1	0.0005	6020	14	Feb 1'	15:05	KMD
Melubdonum Discolved	0 0277	$m_{\rm cr}/1$	0.0020	6020	14	Feb 1'	15:05	KMD
Releasing - Dissorved	0.0721	mg/1	0.0020	6020	15	Feb 1'	12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 1'	15:05	KMD

\* Holding time exceeded

Approved by:

Cr. 28FEBIT Claudette K Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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Page: 1 of 2

Report Date: 22 Feb 17 Lab Number: 17-W306 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 9:30 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: MW109 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Receiv	red	Method	Method	Date		
	Result		RL	Reference	Anal	yzed	Analyst
Metal Digestion				EPA 200.2	9 F	'eb 17	SVS
H	* 7.6	units	N/A	SM4500 H+ B	9 F	'eb 17 17:00	SVS
Total Suspended Solids	2	mg/l	2	13765-85	9 F	eb 17 15:44	SVS
pH - Field	7.29	units	NA	SM 4500 H+ B	8 F	eb 17 9:30	DJN
Temperature - Field	7.80	Degrees C	NA	SM 2550B	8 F	'eb 17 9:30	DJN
Total Alkalinity	296	mg/l CaCO3	20	SM2320-B	9 F	eb 17 17:00	SVS
Conductivity - Field	1663	umhos/cm	1	EPA 120.1	8 F	eb 17 9:30	DJN
Fluoride	0.83	mg/l	0.10	SM4500-F-C	9 F	eb 17 17:00	SVS
Sulfate	604	mg/l	5.00	ASTM D516-07	10 F	eb 17 9:09	EMS
Chloride	19.1	mg/l	1.0	SM4500-Cl-E	9 F	eb 17 11:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15 F	eb 17 11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15 F	eb 17 12:42	EV
Total Dissolved Solids	1180	mg/l	10	I1750-85	10 F	eb 17 10:45	SVS
Calcium - Total	106	mg/l	1.0	6010	20 F	Feb 17 12:33	KMD
Magnesium - Total	153	mg/l	1.0	6010	20 F	eb 17 12:33	KMD
Sodium - Total	82.0	mg/l	1.0	6010	20 F	eb 17 12:33	KMD
Potassium - Total	8.2	mg/l	1.0	6010	20 F	Feb 17 12:33	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	15 F	eb 17 16:15?	KMD
Boron - Total	1.85	mg/l	0.10	6010	14 F	7eb 17 11:31	KMD
Calcium - Dissolved	105	mg/l	1.0	6010	20 F	7eb 17 11:33	KMD
Magnesium - Dissolved	153	mg/l	1.0	6010	20 F	eb 17 11:33?	KMD
Sodium - Dissolved	79.9	mg/l	1.0	6010	20 F	7eb 17 11:33	KMD
Potassium - Dissolved	8.1	mg/l	1.0	6010	20 F	eb 17 11:33?	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15 F	eb 17 16:15	KMD
Boron - Dissolved	1.96	mg/l	0.10	6010	14 F	Feb 17 12:31	KMD
Antimony - Total	0.0047	mg/l	0.0010	6020	14 F	Feb 17 15:05	KMD
Arsenic - Total	0.0027	mg/l	0.0020	6020	14 H	reb 17 15:05	KMD
Barium - Total	0.0226	mg/l	0.0020	6020	14 H	Feb 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	14 H	Feb 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14 E	Feb 17 15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	14 E	Feb 17 15:05	KMD
Cobalt - Total	0.0021	mg/l	0.0020	6020	14 F	Feb 17 15:05	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	14 H	Feb 17 15:05	KMD
Molybdenum - Total	0.0265	mg/l	0.0020	6020	14 H	Feb 17 15:05	KMD
Selenium - Total	0.0786	mg/l	0.0020	6020	15 I	reb 17 12:15	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	14 H	eb 17 15:05	KMD
Antimony - Dissolved	0.0050	mg/l	0.0010	6020	14 H	eb 17 15:05?	KMD

#### RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Sample Description: MW109

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Montana Dakota Utilities

Project Name: MDU Lewis & Clark CCR Groundwater

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Report Date: 22 Feb 17 Lab Number: 17-W306 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 9:30 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

Date Method Method As Received Analyst Reference Analyzed Result RL 14 Feb 17 15:05 KMD 0.0020 6020 Arsenic - Dissolved 0.0030 mg/l 0.0020 6020 14 Feb 17 15:05 KMD mg/l Barium - Dissolved 0.0243 14 Feb 17 15:05 KMD mg/l 0.0005 6020 Beryllium - Dissolved < 0.0005 KMD 14 Feb 17 15:05 0.0005 6020 Cadmium - Dissolved < 0.0005 mg/l 0.0020 6020 14 Feb 17 15:05 KMD < 0.002 mg/l Chromium - Dissolved 6020 14 Feb 17 15:05 KMD 0.0020 Cobalt - Dissolved 0.0021 mg/l KMD 0.0005 14 Feb 17 15:05 6020 Lead - Dissolved < 0.0005 mg/l 14 Feb 17 15:05 KMD Molybdenum - Dissolved 0.0287 mg/l 0.0020 6020 KMD 15 Feb 17 12:15 mg/l 0.0020 6020 Selenium - Dissolved 0.0829 6020 14 Feb 17 15:05 KMD < 0.0005 0.0005 Thallium - Dissolved mg/l

\* Holding time exceeded

Approved by:

Claudette K Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Report Date: 22 Feb 17 Lab Number: 17-W307 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: DUP 1 Sample Site: MDU Lewis & Clark Event and Year: February 2017

	As Receive	ed	Method	Method	Dat	е		
	Result		RL	Reference	Ana		Analyst	
Metal Digestion				EPA 200.2	9	Feb 17		SVS
рН	* 7.7	units	N/A	SM4500 H+ B	9	Feb 17	17:00	SVS
Total Suspended Solids	7	mg/l	2	I3765-85	9	Feb 17	15:44	SVS
Total Alkalinity	302	mg/l CaCO3	20	SM2320-B	9	Feb 17	17:00	SVS
Fluoride	0.81	mg/l	0.10	SM4500-F-C	9	Feb 17	17:00	SVS
Sulfate	489	mg/l	5.00	ASTM D516-07	10	Feb 17	9:09	EMS
Chloride	18.6	mg/l	1.0	SM4500-Cl-E	9	Feb 17	11:55	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 17	11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15	Feb 17	12:42	EV
Total Dissolved Solids	1060	mg/l	10	I1750-85	10	Feb 17	10:45	SVS
Calcium - Total	92.9	mg/l	1.0	6010	20	Feb 17	12:33	KMD
Magnesium - Total	140	mg/l	1.0	6010	20	Feb 17	12:33	KMD
Sodium - Total	85.2	mg/l	1.0	6010	20	Feb 17	12:33	KMD
Potassium - Total	8.1	mg/l	1.0	6010	20	Feb 17	12:33	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	15	Feb 17	16:15	KMD
Boron - Total	1.47	mg/l	0.10	6010	14	Feb 17	11:31	KMD
Calcium - Dissolved	92.2	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Magnesium - Dissolved	137	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Sodium - Dissolved	85.4	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Potassium - Dissolved	8.1	mg/l	1.0	6010	20	Feb 17	11:33	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15	Feb 17	16:15	KMD
Boron - Dissolved	1.62	mg/l	0.10	6010	14	Feb 17	12:31	KMD
Antimony - Total	0.0048	mg/l	0.0010	6020	14	Feb 17	15:05	KMD
Arsenic - Total	0.0031	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Barium - Total	0.0239	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Molvbdenum - Total	0.0258	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Selenium - Total	0.0670	mg/l	0.0020	6020	15	Feb 17	12:15	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD
Antimony - Dissolved	0.0054	mg/l	0.0010	6020	14	Feb 17	15:05	KMD
Arsenic - Dissolved	0.0030	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Barium - Dissolved	0.0272	mg/l	0.0020	6020	14	Feb 17	15:05	KMD
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	14	Feb 17	15:05	KMD

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Report Date: 22 Feb 17 Lab Number: 17-W307 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: DUP 1 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
< 0.0005 mg/	0.0005	6020	14 Feb 17 15:05	KMD
< 0.002 mg/	L 0.0020	6020	14 Feb 17 15:05	KMD
< 0.002 mg/	0.0020	6020	14 Feb 17 15:05	KMD
< 0.0005 mg/	0.0005	6020	14 Feb 17 15:05	KMD
0 0315 mg/	0.0020	6020	14 Feb 17 15:05	KMD
0.0610 mg/	0.0020	6020	15 Feb 17 12:15	KMD
< 0.0005 mg/	0.0005	6020	14 Feb 17 15:05	KMD
	As Received Result < 0.0005 mg/3 < 0.002 mg/3 < 0.002 mg/3 < 0.0005 mg/3 0.0315 mg/3 0.0610 mg/3 < 0.0005 mg/3	As Received Result         Method RL           < 0.0005	As Received Result         Method RL         Method Reference           < 0.0005 mg/l	As Received Result         Method RL         Method Reference         Date Analyzed           < 0.0005 mg/l

\* Holding time exceeded

Approved by:

28FB17 Claudette K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Page: 1 of 2

Report Date: 22 Feb 17 Lab Number: 17-W308 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 Date Received: 9 Feb 17 8:00 Sampled By: Client

Sample Description: Field Blank (FB) Sample Site: MDU Lewis & Clark Event and Year: February 2017

Project Name: MDU Lewis & Clark CCR Groundwater

Temp at Receipt: 0.2C ROI

	As Received		Method	Method	Date	<u>_</u>
	Result		RL	Reference	Analyzed	Analyst
Metal Digestion				EPA 200.2	9 Feb 17	SVS
Н	* 6.0	units	N/A	SM4500 H+ B	9 Feb 17 17:00	SVS
Total Suspended Solids	< 2	mg/l	2	I3765-85	9 Feb 17 15:44	SVS
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	9 Feb 17 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	9 Feb 17 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	10 Feb 17 9:09	EMS
Chloride	< 1	mg/l	1.0	SM4500-C1-E	9 Feb 17 11:55	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	15 Feb 17 11:56	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	15 Feb 17 12:42	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	10 Feb 17 10:45	SVS
Calcium - Total	< 1	mg/l	1.0	6010	20 Feb 17 12:33	KMD
Magnesium - Total	< 1	mg/l	1.0	6010	20 Feb 17 12:33	KMD
Sodium - Total	< 1	mg/l	1.0	6010	20 Feb 17 12:33	KMD
Potassium - Total	< 1	mg/l	1.0	6010	20 Feb 17 12:33	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	15 Feb 17 16:15	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	14 Feb 17 11:31	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	20 Feb 17 11:33	KMD
Magnesium - Dissolved	< 1	mg/l	1.0	6010	20 Feb 17 11:33	KMD
Sodium - Dissolved	< 1	mg/l	1.0	6010	20 Feb 17 11:33	KMD
Potaggium - Dissolved	< 1	mg/l	1.0	6010	20 Feb 17 11:33	KMD
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	15 Feb 17 16:15	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	14 Feb 17 12:31	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	14 Feb 17 15:05	KMD
Argenic - Total	< 0.002	mg/l	0.0020	6020	14 Feb 17 15:05	KMD
Rarium - Total	< 0.004	mg/1	0.0020	6020	14 Feb 17 15:05	KMD
Barryllium - Total	< 0.0005	mg/l	0.0005	6020	14 Feb 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/1	0.0005	6020	14 Feb 17 15:05	KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	14 Feb 17 15:05	KMD
Cobalt - Total	< 0.002	mg/1	0.0020	6020	14 Feb 17 15:05	KMD
Load - Total	< 0.0005	$m\sigma/1$	0.0005	6020	14 Feb 17 15:05	KMD
Melubderum - Total	< 0.002	mg/1	0.0020	6020	14 Feb 17 15:05	KMD
Releasium - Total	< 0.005 ^	mg/1	0.0020	6020	15 Feb 17 12:15	KMD
Thallium - Total	< 0.0005	mg/1	0.0005	6020	14 Feb 17 15:05	KMD
Inallium - Total	< 0.0005	mg/1	0.0010	6020	14 Feb 17 15:05	KMD
Ancimony - Dissolved	< 0.001	mg/1	0.0020	6020	14 Feb 17 15:05	KMD
Parium Dissolved	< 0.002	mg/1	0.0020	6020	14 Feb 17 15:05	KMD
Barium - Dissolved	< 0.002	mg/1	0.0005	6020	14 Feb 17 15:05	KMD
Beryllium - Dissolved	< 0.0005	mal T	0.0005	0000	the state of the state of the	and the state of

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



Bismarck ND 58501

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Page: 2 of 2

Report Date: 22 Feb 17 Lab Number: 17-W308 Work Order #:82-0310 Account #: 002800 Date Sampled: 8 Feb 17 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Groundwater Sample Description: Field Blank (FB) Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analy	Analyst	
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Fe	b 17 15:05	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	14 Fe	b 17 15:05	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	14 Fe	b 17 15:05	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Fe	b 17 15:05	KMD
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	14 Fe	b 17 15:05	KMD
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	15 Fe	b 17 12:15	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	14 Fe	b 17 15:05	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

817 Claudette K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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## **Quality Control Report**

Lab IDs: 17-W298 to 17-W	308	Pr Gr	oject: MI oundwate	DU Lewis r	s & Clark CCI	<b>ι</b> Ν	Work Or	der: 201	782-0310	)							
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	0.1000	104	80-120	0.100 0.100	17W307Q 17W308q	0.0054 < 0.001	0.1088 0.1056	103 106	75-125 75-125	0.1088 0.1056	0.0942 0.1076	89 108	14.4 1.9	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000 0.1000	110 104	80-120 80-120	0.400 0.400 0.400 0.400	17W261q 17W265q 17W298q 17W308q	<0.001 <0.001 <0.001 <0.001	0.4432 0.4194 0.4172 0.4202	111 105 104 105	75-125 75-125 75-125 75-125	0.4432 0.4194 0.4172 0.4202	0.4308 0.4158 0.4186 0.4230	108 104 105 106	2.8 0.9 0.3 0.7	20 20 20 20 20		- - - -	< 0.001 < 0.001 < 0.001
Arsenic - Dissolved mg/l	0.1000	105	80-120	0.100 0.100	17W307Q 17W308q	0.0030 < 0.002	0.1094 0.1074	106 107	75-125 75-125	0.1094 0.1074	0.0936 0.1104	91 110	15.6 2.8	20 20	-	-	< 0.002
Arsenic - Total mg/l	0.1000 0.1000	108 105	80-120 80-120	$\begin{array}{c} 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \end{array}$	17W308q 17W261q 17W265q 17-W298	<0.002 <0.002 0.0061 <0.002	0.4230 0.4578 0.4774 0.4674	106 114 118 117	75-125 75-125 75-125 75-125	0.4230 0.4578 0.4774 0.4674	0.4406 0.4644 0.4728 0.4688	110 116 117 117	4.1 1.4 1.0 0.3	20 20 20 20 20			< 0.002 < 0.002
Barium - Dissolved mg/l	0.1000	97	80-120	0.100 0.100	17W307Q 17W308q	0.0272 < 0.002	0.1204 0.0993	93 99	75-125 75-125	0.1204 0.0993	0.1108 0.1041	84 104	8.3 4.7	20 20	-	-	< 0.002
Barium - Total mg/l	0.1000 0.1000	96 97	80-120 80-120	$\begin{array}{c} 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \end{array}$	17W308q 17W261q 17W265q 17-W298	< 0.002 0.0397 0.0754 0.0304	0.3968 0.4280 0.4944 0.4218	99 97 105 98	75-125 75-125 75-125 75-125	0.3968 0.4280 0.4944 0.4218	0.3938 0.4304 0.4852 0.4390	98 98 102 102	0.8 0.6 1.9 4.0	20 20 20 20			< 0.002 < 0.002
Beryllium - Dissolved mg/l	0.1000	102	80-120	0.100 0.100	17W307Q 17W308q	< 0.0005 < 0.0005	0.0974 0.1044	97 104	75-125 75-125	0.0974 0.1044	0.0799 0.1072	80 107	19.7 2.6	20 20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000 0.1000	115 102	80-120 80-120	$\begin{array}{c} 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \end{array}$	17W261q 17W265q 17W298q 17W308q	< 0.0005 < 0.0005 < 0.0005 < 0.0005	0.4584 0.4506 0.4756 0.4354	115 113 119 109	75-125 75-125 75-125 75-125	0.4584 0.4506 0.4756 0.4354	0.4454 0.4492 0.4778 0.4250	111 112 119 106	2.9 0.3 0.5 2.4	20 20 20 20			< 0.0005 < 0.0005 < 0.0005
Boron - Dissolved mg/l	0.40 0.40	100 100	80-120 80-120	0.300 0.300	17-W299 17-W308	0.20 < 0.1	0.49 0.28	97 93	75-125 75-125	0.49 0.28	0.50 0.28	100 93	2.0 0.0	20 20			< 0.1 < 0.1 < 0.1 < 0.1

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## **Quality Control Report**

Lab IDs: 17-W298 to 17-W3	308	Pro Gro	o <b>ject:</b> MI oundwate	DU Lewis r	s & Clark CCF	ξ Ν	Work Or	der: 201	782-0310	0							
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
Boron - Total mg/l	0.40 0.40 0.40	100 100 100	80-120 80-120 80-120	$\begin{array}{c} 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \end{array}$	17-W261 17-W265 17-W298 17-W308	0.35 0.36 0.20 < 0.1	0.77 0.78 0.61 0.38	105 105 102 95	75-125 75-125 75-125 75-125 75-125	0.77 0.78 0.61 0.38	0.76 0.78 0.63 0.39	102 105 108 98	1.3 0.0 3.2 2.6	20 20 20 20 20	-	-	< 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.1000	107	80-120	0.100 0.100	17W307Q 17W308q	< 0.0005 < 0.0005	0.1042 0.1089	104 109	75-125 75-125	0.1042 0.1089	0.0883 0.1109	88 111	16.5 1.8	20 20	-	-	< 0.0005
Cadmium - Total mg/l	0.1000 0.1000	111 107	80-120 80-120	0.400 0.400 0.400 0.400	17W261q 17W265q 17W298q 17W308q	< 0.0005 < 0.0005 < 0.0005 < 0.0005	0.4442 0.4220 0.4126 0.4268	111 106 103 107	75-125 75-125 75-125 75-125	0.4442 0.4220 0.4126 0.4268	0.4384 0.4144 0.4240 0.4340	110 104 106 108	1.3 1.8 2.7 1.7	20 20 20 20 20	- - -		< 0.0005 < 0.0005 < 0.0005
Calcium - Dissolved mg/l	20.0	107	80-120	500 100	17-W301 17-W308	304 < 1	840 99.1	107 99	75-125 75-125	840 99.1	775 106	94 106	8.0 6.7	20 20			<1 <1 <1
Calcium - Total mg/l	20.0 20.0 20.0	107 108 107	80-120 80-120 80-120	500 100 500	17-D388 17-W300 17W323q	152 46.5 463	685 149 990	107 102 105	75-125 75-125 75-125	685 149 990	635 150 960	97 104 99	7.6 0.7 3.1	20 20 20			<1 <1 <1 <1 <1 <1 <1 <1
Chloride mg/l	30.0 30.0 30.0 30.0 30.0	84 83 83 86	80-120 80-120 80-120 80-120	30.0	17-W265	8.1	35.7	92	80-120	35.7	37.5	98	4.9	20			< 1 < 1
Chromium - Dissolved mg/l	0.1000	95	80-120	0.100 0.100	17W307Q 17W308q	<0.002 <0.002	0.0908 0.0973	91 97	75-125. 75-125	0.0908 0.0973	0.0771 0.0994	77 99	16.3 2.1	20 20	-	-	< 0.002

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## **Quality Control Report**

Lab IDs: 17-W298 to 17-W308 Project: MDU Lewis & Clark CCR Groundwater							Work Order: 201782-0310												
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		
Chromium - Total mg/l	0.1000 0.1000	100 95	80-120 80-120	$\begin{array}{c} 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \end{array}$	17W261q 17W265q 17W298q 17W308q	<0.002 0.0039 <0.002 <0.002	0.3930 0.3728 0.3724 0.3762	98 92 93 94	75-125 75-125 75-125 75-125	0.3930 0.3728 0.3724 0.3762	0.3812 0.3756 0.3728 0.3798	95 93 93 95	3.0 0.7 0.1 1.0	20 20 20 20 20	-	-	<0.002 <0.002 <0.002		
Cobalt - Dissolved mg/l	0.1000	96	80-120	0.100 0.100	17W307Q 17W308q	<0.002 <0.002	0.0922 0.0989	92 99	75-125 75-125	0.0922 0.0989	0.0784 0.1012	78 101	16.2 2.3	20 20	-	-	< 0.002		
Cobalt - Total mg/l	0.1000 0.1000	102 96	80-120 80-120	$\begin{array}{c} 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \\ 0.400 \end{array}$	17W261q 17W265q 17W298q 17W308q	<0.002 <0.002 <0.002 <0.002 <0.002	0.3978 0.3806 0.3802 0.3864	99 95 95 97	75-125 75-125 75-125 75-125	0.3978 0.3806 0.3802 0.3864	0.3882 0.3836 0.3802 0.3890	97 96 95 97	2.4 0.8 0.0 0.7	20 20 20 20 20			<0.002 <0.002 <0.002		
Fluoride mg/l	0.50	104	90-110	0.500 0.500	17-W298 17-W301	0.47 1.73	0.96 2.12	98 78	80-120 80-120	0.96 2.12	0.97 2.14	100 82	1.0 0.9	20 20	-	-	< 0.1 < 0.1		
Lead - Dissolved mg/l	0.1000	95	80-120	0.100 0.100	17W307Q 17W308q	< 0.0005 < 0.0005	0.0878 0.0988	88 99	75-125 75-125	0.0878 0.0988	0.0740 0.1038	74 104	17.1 4.9	20 20	-	-	< 0.0005		
Lead - Total mg/l	0.1000 0.1000	96 95	80-120 80-120	0.400 0.400 0.400 0.400	17W308q 17-W261 17-W265 17-W298	<0.0005 <0.0005 0.0009 <0.0005	0.3772 0.3708 0.3776 0.3734	94 93 94 93	75-125 75-125 75-125 75-125	0.3772 0.3708 0.3776 0.3734	0.3816 0.3724 0.3730 0.3964	95 93 93 99	1.2 0.4 1.2 6.0	20 20 20 20 20	- - -		< 0.0005 < 0.0005		
Lithium - Dissolved mg/l	0.40 0.40	100 100	80-120 80-120	0.200 0.200	17-W300 17-W308	0.04 < 0.1	0.27 0.17	115 85	75-125 75-125	0.27 0.17	0.28 0.18	120 90	3.6 5.7	20 20	- - -		<0.1 <0.1 <0.1 <0.1		
Lithium - Total mg/l	0.40 0.40	102 100	80-120 80-120	$\begin{array}{c} 0.200 \\ 0.400 \\ 0.400 \\ 0.200 \\ 0.400 \end{array}$	17-W261 17-W265 17-W298 17-W265 17-W308	0.12 0.14 0.04 0.14 < 0.1	0.37 0.71 0.54 0.39 0.38	125 142 125 125 95	75-125 75-125 75-125 75-125 75-125 75-125	0.37 0.71 0.54 0.39 0.38 0.30	0.36 0.72 0.54 0.39 0.39 0.28	120 145 125 125 98	2.7 1.4 0.0 0.0 2.6 6.9	20 20 20 20 20 20 20 20		-	<0.1 <0.1 <0.1 <0.1 <0.1 <0.1		

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## **Quality Control Report**

Lab IDs: 17-W298 to 17-W3	08	Pro Gre	o <b>ject:</b> MI oundwate	DU Lewis r	& Clark CCI	R V	Work Or	der: 201	782-0310	)							
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 - Dissolved mg/l	20.0	108	80-120	500 100	17-W301 17-W308	1120 < 1	1670 100	110 100	75-125 75-125	1670 100	1540 107	84 107	8.1 6.8	20 20			< 1 < 1 < 1
Magnesium - Total mg/l	20.0 20.0 20.0	108 110 108	80-120 80-120 80-120	500 100 500	17-D388 17-W300 17W323q	68.5 25.7 610	605 131 1140	107 105 106	75-125 75-125 75-125	605 131 1140	565 132 1100	99 106 98	6.8 0.8 3.6	20 20 20			<1 <1 <1 <1 <1 <1 <1 <1
Mercury - Dissolved mg/l	0.0020	105	85-115	0.002 0.002	17-W307 17-W308	<0.0002 <0.0002	0.0019 0.0020	95 100	70-130 70-130	0.0019 0.0020	0.0020 0.0020	100 100	5.1 0.0	20 20			< 0.0002
Mercury - Total mg/l	0.0020	100	85-115	0.002 0.002	17-W304 17-W308	<0.0002 <0.0002	0.0020 0.0020	100 100	70-130 70-130	0.0020 0.0020	0.0019 0.0021	95 105	5.1 4.9	20 20	-	-	< 0.0002
Molybdenum - Dissolved mg/l	0.1000	93	80-120	0.100 0.100	17W307Q 17W308q	0.0315 < 0.002	0.1302 0.0978	99 98	75-125 75-125	0.1302 0.0978	0.1170 0.0990	86 99	10.7 1.2	20 20	-	-	< 0.002
Molybdenum - Total mg/l	0.1000 0.1000	109 93	80-120 80-120	0.400 0.400 0.400 0.400	17W261q 17W265q 17W298q 17W308q	< 0.002 < 0.002 0.0039 < 0.002	0.4340 0.4292 0.4404 0.3940	108 107 109 98	75-125 75-125 75-125 75-125 75-125	0.4340 0.4292 0.4404 0.3940	0.4358 0.4278 0.4546 0.3898	109 107 113 97	0.4 0.3 3.2 1.1	20 20 20 20		- - -	< 0.002 < 0.002 < 0.002
pH units	-	-	-	-	-	-	-	-	-	7.1 7.6	7.3 7.7	-	2.8 1.3	20 20	-	-	-
Potassium - Dissolved mg/l	10.0	99	80-120	100 20.0	17-W301 17-W308	23.1 < 1	128 18.6	105 93	75-125 75-125	128 18.6	117 19.9	94 100	9.0 6.8	20 20		-	<1 <1 <1

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## **Quality Control Report**

Lab IDs: 17-W298 to 17-W	308	Pro Gro	o <b>ject:</b> MI oundwate	DU Lewis r	s & Clark CCI	2	Work Or	<b>der:</b> 201	782-0310	0							
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
Potassium - Total mg/l	10.0 10.0 10.0	99 99 98	80-120 80-120 80-120	100 20.0 100	17-D388 17-W300 17W323q	53.0 9.2 25.4	160 29.6 132	107 102 107	75-125 75-125 75-125	160 29.6 132	148 29.9 128	95 104 103	7.8 1.0 3.1	20 20 20		-	<1 <1 <1 <1 <1 <1 <1 <1
Selenium - Dissolved mg/l	0.1000	111	80-120	0.100 0.100	17-W307 17-W308	0.0610 < 0.002	0.1848 0.1312	124 131	75-125 75-125	0.1848 0.1312	0.1906 0.1354	130 135	3.1 3.2	20 20	-	-	< 0.002
Selenium - Total mg/l	0.1000 0.1000 0.1000	109 111 110	80-120 80-120 80-120	0.400 0.400 0.400 0.100 0.400	17-W261 17-W265 17-W298 17-W307Q 17-W308	<0.002 <0.002 0.0025 0.0610 <0.002	0.4762 0.5202 0.5122 0.1848 0.5362	119 130 127 124 134	75-125 75-125 75-125 75-125 75-125 75-125	0.4762 0.5202 0.5122 0.1848 0.5362	0.4884 0.5302 0.5498 0.1906 0.5344	122 133 137 130 134	2.5 1.9 7.1 3.1 0.3	20 20 20 20 20 20			< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0	104	80-120	500 100	17-W301 17-W308	203 < 1	740 98.0	107 98	75-125 75-125	740 98.0	675 104	94 104	9.2 5.9	20 20	-	92 	<1 <1 <1
Sodium - Total mg/l	20.0 20.0 20.0	104 106 104	80-120 80-120 80-120	500 100 500	17-D388 17-W300 17W323q	750 276 735	1280 360 1240	106 84 101	75-125 75-125 75-125	1280 360 1240	1200 358 1220	90 82 97	6.5 0.6 1.6	20 20 20			<1 <1 <1 <1 <1 <1 <1 <1
Sulfate mg/l	100 100	108 99	80-120 80-120	1000 100 500	17-W261 17-W308 17-W282	875 < 5 239	1750 95.7 684	88 96 89	80-120 80-120 80-120	1750 95.7 684	1750 97.5 697	88 98 92	0.0 1.9 1.9	20 20 20	- - -		< 5 < 5
Thallium - Dissolved mg/l	0.1000	97	80-120	0.100 0.100	17W307Q 17W308q	< 0.0005 < 0.0005	0.0904 0.1014	90 101	75-125 75-125	0.0904 0.1014	0.0758 0.1066	76 107	17.6 5.0	20 20	-	-	< 0.0005

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## MINNESOTA VALLEY TESTING LABORATORIES, INC.

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## **Quality Control Report**

ab IDs: 17-W298 to 17-W308 Project: MDU Lewis & Clark CCR Groundwater								Work Order: 201782-0310												
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			
Thallium - Total mg/l	0.1000 0.1000	97 97	80-120 80-120	0.400 0.400 0.400 0.400	17W308q 17-W261 17-W265 17-W298	< 0.0005 < 0.0005 < 0.0005 < 0.0005	0.3934 0.3796 0.3796 0.3826	98 95 95 96	75-125 75-125 75-125 75-125	0.3934 0.3796 0.3796 0.3826	0.3958 0.3812 0.3826 0.4000	99 95 96 100	0.6 0.4 0.8 4.4	20 20 20 20 20			< 0.0005 < 0.0005			
Total Alkalinity mg/l CaCO3	410	91	90-110	410 410	17-D387 17-W300	566 374	924 700	87 80	80-120 80-120	924 700	927 699	88 79	0.3 0.1	20 20	91	80-120	< 20 < 20			
Total Dissolved Solids mg/l	-	-	-	15 34	а 2	-	•	-	-	1060 < 10	1060 <10	-	0.0 0.0	20 *	-	-	< 10 < 10			
Total Suspended Solids mg/l	-	2	-		-	1	180 120	-	-	131 7	128 6	-	2.3 15.4	20 *	5 <b>0</b> 0 1270	-	<2			

\* Due to result < 10 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 3 mg/L.

Approved by: \_\_\_\_\_\_ ZSFE617



Laboratories, Inc.

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

# **Chain of Custody Record**

Project Name:								N	Name of Sampler(s):							
MDU	Lewis and Clark	CCR Grou	ndwater		2017					K	Da	Mon	Niesu	mas		
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701 222 7829		<u>Carbon C</u> <u>Attn</u> : <u>Address</u> :	ору:				Work Order Number:								
Filone.	Samp	le Informati	on				B	ottle	a Tvp	е		Fie	eld Para	meters	Analysis	
Hanger Wagg Wagg Wagg Wagg Wagg Wagg Wagg Wag	Q 90 90 90 90 90 90 90 90 90 90	е 6 Feb17 6 Feb17 6 Feb17 7 Feb17 7 Feb17 7 Feb17 7 Feb17 8 Feb17 8 Feb17 8 Feb17 8 Feb17 8 Feb17	Щ 1457 1457 1654 1840 1245 1725 1455 0840 1145 0930 NA		Up Up Up Down Down Down	x x x x x x x x x x x x x x x x x x x	$\times \times 1^{1/1}$	x x x x x x x x x x x x x x x x x x x				Карание ос. Карание ос. Ст. Ст. Ст. Ст. Ст.	118 118 1204 1465 1672 1672 1672 1663 NA	Happing 7,37 7,36 7,65 6,81 7,45 7,45 7,40 7,29 NA	Analysis Required MDU CCR List with TSS and Dissolved CCR Metals. No RadChem.	
10300		010511	INA	VV		+	<u> </u>	^	-	+		INA	11/4			

Comments:

	Transferred by:	Sample Condition	Date/Time	A Received by:	Sample Condition	Date/Time	°C
1	Dan Nun	Walkin 2	8 Peb 17 1778	(Ingel Smons	an	09 FEB 17 800	ROJ 0.2
2					<i>V</i>		- TM 562
3							8Feb17pm


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#### CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IM Laboratory Identifications: Page 1 of 2 201782-0309 S1702125 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – February 2017 Event 17-W287 through 17-W297 S1702125-001 through S1702125-011

MDU Sample Identification	IML Sample Identification	MVTL Laboratory #
MW110	S1702125-001	17-W287
MW119	S1702125-002	17-W288
MW210	S1702125-003	17-W289
MW102	S1702125-004	17-W290
MW118	S1702125-005	17-W291
MW111	S1702125-006	17-W292
MW117	S1702125-007	17-W293
MW103	S1702125-008	17-W294
MW109	S1702125-009	17-W295
Dup 1	S1702125-010	17-W296
Field Blank (FB)	S1702125-011	17-W297

#### I. RECEIPT

- All samples were received at the laboratory on 9 Feb 17 at 0800.
- 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 0.2°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 13 Feb 17.
  - 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.



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#### CASE NARRATIVE

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

201782-0309 S1702125 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – February 2017 Event 17-W287 through 17-W297 S1702125-001 through S1702125-011

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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

DATE: 8Mar

Claudette Carroll - MVTL Bismarck Laboratory Manager





1 of 1 Page:

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Sample Description: MW110

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Project Name: MDU Lewis & Clark CCR Radiochem

Report Date: 7 Mar 17 Lab Number: 17-W287 Work Order #:82-0309 Account #: 002800 Date Sampled: 6 Feb 17 14:57 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed			Analyst
pH - Field	7.37	units	NA	SM 4500 H+ B	6	Feb 17	14:57	DJN
Temperature - Field	6.69	Degrees C	NA	SM 2550B	6	Feb 17	14:57	DJN
Conductivity - Field	1118	umhos/cm	1	EPA 120.1	6	Feb 17	14:57	DJN
Radium 226	See Att	ached Report			21	Feb 17		OL
Radium 228	See Attached Report				18	Feb 17		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

10 8Mari7 Claudite K. Canrep

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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1 of 1 Page:

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 7 Mar 17 Lab Number: 17-W288 Work Order #:82-0309 Account #: 002800 Date Sampled: 6 Feb 17 16:54 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW119 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Received Result		Method RL	Method Reference	Date Analy	Analyst	
pH - Field	7.36	units	NA	SM 4500 H+ B	6 F	b 17 16:54	DJN
Temperature - Field	6.38	Degrees C	NA	SM 2550B	6 F	b 17 16:54	DJN
Conductivity - Field	1204	umhos/cm	1	EPA 120.1	6 F	b 17 16:54	DJN
Radium 226	See Atta	ached Report			21 F	b 17	OL
Radium 228	See Atta	ached Report			18 F	b 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

MANT Claudette K Canrep

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





OL

OL

1 of 1 Page:

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Sample Description: MW210

Radium 226

Radium 228

Sample Site: MDU Lewis & Clark

Project Name: MDU Lewis & Clark CCR Radiochem

Report Date: 7 Mar 17 Lab Number: 17-W289 Work Order #:82-0309 Account #: 002800 Date Sampled: 6 Feb 17 18:40 Date Received: 9 Feb 17 8:00 Sampled By: Client

21 Feb 17

18 Feb 17

#### Temp at Receipt: 0.2C ROI

2017					
As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
7.65	units	NA	SM 4500 H+ B	6 Feb 17 18:40	DJN
6.46	Degrees C	NA	SM 2550B	6 Feb 17 18:40	DJN
1465	umhos/cm	1	EPA 120.1	6 Feb 17 18:40	DJN
	2017 As Rece: Result 7.65 6.46 1465	2017 As Received Result 7.65 units 6.46 Degrees C 1465 umhos/cm	2017 As Received Method Result RL 7.65 units NA 6.46 Degrees C NA 1465 umhos/cm 1	2017 As Received Method Reference 7.65 units NA SM 4500 H+ B 6.46 Degrees C NA SM 2550B 1465 umbos/cm 1 EPA 120.1	2017         As Received Result       Method RL       Method Reference       Date Analyzed         7.65       units       NA       SM 4500 H+ B       6 Feb 17 18:40         6.46       Degrees C       NA       SM 2550B       6 Feb 17 18:40         1465       umbos/cm       1       EPA 120.1       6 Feb 17 18:40

See Attached Report

See Attached Report

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudithe K. Canto 8MART7

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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Page: 1 of 1

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Sample Description: MW102 Sample Site: MDU Lewis & Clark

Event and Year: February 2017

Project Name: MDU Lewis & Clark CCR Radiochem

Report Date: 7 Mar 17 Lab Number: 17-W290 Work Order #:82-0309 Account #: 002800 Date Sampled: 7 Feb 17 12:45 Date Received: 9 Feb 17 8:00 Sampled By: Client

#### Temp at Receipt: 0.2C ROI

	As Received Result		Method RL	Method Reference	Date Ana	Analyst	
pH - Field	6.81	units	NA	SM 4500 H+ B	7 1	Feb 17 12:45	DJN
Temperature - Field	10.1	Degrees C	NA	SM 2550B	7 1	Feb 17 12:45	DJN
Conductivity - Field	6912	umhos/cm	1	EPA 120.1	7 1	Feb 17 12:45	DJN
Radium 226	See Atta	ached Report			21 1	Feb 17	OL
Radium 228	See Atta	ached Report			18 1	Feb 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

(C 8Mar 17 Claudette K Canreo

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 sample quantity CERTIFICATION: ND # ND-00016 CERTIFICATION: ND # ND-00016



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#### Page: 1 of 1

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 7 Mar 17 Lab Number: 17-W291 Work Order #:82-0309 Account #: 002800 Date Sampled: 7 Feb 17 17:25 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW118 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Received Result		Method RL	Method Reference	Date Analy	Analyst	
pH - Field	7.45	units	NA	SM 4500 H+ B	7 Fe	o 17 17:25	DJN
Temperature - Field	5.34	Degrees C	NA	SM 2550B	7 Fe	0 17 17:25	DJN
Conductivity - Field	1672	umhos/cm	1	EPA 120.1	7 Fe	0 17 17:25	DJN
Radium 226	See Att	ached Report			21 Fe	o 17	OL
Radium 228	See Attached Report				18 Fe	b 17	OL

OL = Analysis performed by an Outside Laboratory.

16 8 MAR-17 Claudette K. Cantle 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 quantity + = Due to internal standard response

CERTIFICATION: ND # ND-00016



MEMBER

1 of 1 Page:

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Sample Description: MW111

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Project Name: MDU Lewis & Clark CCR Radiochem

Report Date: 7 Mar 17 Lab Number: 17-W292 Work Order #:82-0309 Account #: 002800 Date Sampled: 7 Feb 17 14:55 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Received Result		Method RL	Method Reference	Date Anal	Analyst	
pH - Field	7.13	units	NA	SM 4500 H+ B	7 F	'eb 17 14:55	DJN
Temperature - Field	7.62	Degrees C	NA	SM 2550B	7 F	eb 17 14:55	DJN
Conductivity - Field	3178	umhos/cm	1	EPA 120.1	7 F	'eb 17 14:55	DJN
Radium 226	See Atta	ached Report			21 F	'eb 17	OL
Radium 228	See Atta	ached Report			18 F	'eb 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

a Claudithe K. Canrep 8 Mar 17

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



Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Sample Description: MW117

Sample Site: MDU Lewis & Clark Event and Year: February 2017

Project Name: MDU Lewis & Clark CCR Radiochem

Page: 1 of 1

Report Date: 7 Mar 17 Lab Number: 17-W293 Work Order #:82-0309 Account #: 002800 Date Sampled: 7 Feb 17 8:40 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Received Result			Method Reference	Date Analyzed			Analyst
pH - Field	6.97	units	NA	SM 4500 H+ B	7	Feb 17	8:40	DJN
Temperature - Field	4.52	Degrees C	NA	SM 2550B	7	Feb 17	8:40	DJN
Conductivity - Field	8425	umbos/cm	1	EPA 120.1	7	Feb 17	8:40	DJN
Radium 226	See Atta	ached Report			21	Feb 17		OL
Radium 228	See Atta	ached Report			18	Feb 17		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

12 Claudette K. Canter 8 Mar 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





1 of 1 Page:

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Sample Description: MW103 Sample Site: MDU Lewis & Clark

Event and Year: February 2017

Project Name: MDU Lewis & Clark CCR Radiochem

Report Date: 7 Mar 17 Lab Number: 17-W294 Work Order #:82-0309 Account #: 002800 Date Sampled: 8 Feb 17 11:45 Date Received: 9 Feb 17 8:00 Sampled By: Client

Temp at Receipt: 0.2C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed			Analyst
pH - Field	7.40	units	NA	SM 4500 H+ B	8	Feb :	7 11:45	DJN
Temperature - Field	9.16	Degrees C	NA	SM 2550B	8	Feb :	17 11:45	DJN
Conductivity - Field	1560	umhos/cm	1	EPA 120.1	8	Feb :	17 11:45	DJN
Radium 226	See Atta	ached Report			19	Feb :	.7	OL
Radium 228	See Atta	ached Report			19	Feb :	17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

8MA-17 Clauditte K Canreo

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

1c



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Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 7 Mar 17 Lab Number: 17-W295 Work Order #:82-0309 Account #: 002800 Date Sampled: 8 Feb 17 9:30 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW109 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

As Received Result		Method RL	Method Reference	Date Analyzed	Analyst	
7.29	units	NA	SM 4500 H+ B	8 Feb 1	7 9:30	DJN
7.80	Degrees C	NA	SM 2550B	8 Feb 1	7 9:30	DJN
1663	umhos/cm	1	EPA 120.1	8 Feb 1	7 9:30	DJN
See Atta	ached Report			19 Feb 1	7	OL
See Atta	ached Report			19 Feb 1	7	OL
	As Rece: Result 7.29 7.80 1663 See Atta See Atta	As Received Result 7.29 units 7.80 Degrees C 1663 umhos/cm See Attached Report See Attached Report	As Received Method Result RL 7.29 units NA 7.80 Degrees C NA 1663 umhos/cm 1 See Attached Report See Attached Report	As Received Method RL Method Result NA SM 4500 H+ B 7.29 units NA SM 4500 H+ B 7.80 Degrees C NA SM 2550B 1663 umhos/cm 1 EPA 120.1 See Attached Report See Attached Report	As Received ResultMethod RLMethod ReferenceDate Analyzed7.29unitsNASM 4500 H+ B8 Feb 17.80Degrees CNASM 2550B8 Feb 11663umhos/cm1EPA 120.18 Feb 1See Attached Report19 Feb 119 Feb 1	As Received ResultMethod RLMethod ReferenceDate Analyzed7.29unitsNASM 4500 H+ B8 Feb 179:307.80Degrees CNASM 2550B8 Feb 179:301663umhos/cm1EPA 120.18 Feb 179:30See Attached Report11111See Attached Report111

OL = Analysis performed by an Outside Laboratory.

Approved by:

T 8M1-17 Claudithe K Canteo

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 Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 7 Mar 17 Lab Number: 17-W296 Work Order #:82-0309 Account #: 002800 Date Sampled: 8 Feb 17 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: Dup 1 Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

	As Received Result		Method Reference	Date Analyzed	Analyst	
Padium 226	See Attached Report			19 Feb 17	OL	
Radium 228	See Attached Report			19 Feb 17	OL	

OL = Analysis performed by an Outside Laboratory.

10 K Cunrep 8MAr17 Approved by: Clauditte

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 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 Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 7 Mar 17 Lab Number: 17-W297 Work Order #:82-0309 Account #: 002800 Date Sampled: 8 Feb 17 Date Received: 9 Feb 17 8:00 Sampled By: Client

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: Field Blank (FB) Sample Site: MDU Lewis & Clark Event and Year: February 2017

Temp at Receipt: 0.2C ROI

As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report	See Attached Report			OL
Radium 228	See Attached Report			19 Feb 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

8M117 Claudette K Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CC

CERTIFICATION: ND # ND-00016



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

Date: 2/24/2017

CLIENT:	MVTL Laboratories, Inc.
Project:	201782-0309
Lab Order:	S1702125

**CASE NARRATIVE** 

Report ID: S1702125001

Samples 17-W287 MW110, 17-W288 MW119, 17-W289 MW210, 17-W290 MW102, 17-W291 MW118, 17-W292 MW111, 17-W293 MW117, 17-W294 MW103, 17-W295 MW109, 17-W296 Dup 1, and 17-W297 Field Blank were received on February 13, 2017.

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 Matheda indicated in the Methode Undete Pule published in the Federal Decister Friday. May 18

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:

Wade Nieuwsma, Assistant Laboratory Manager

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

Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bísmarck, ND 58501	Date Reported Report ID	2/24/2017 S1702125001
ProjectName: Lab ID: ClientSample ID:	201782-0309 S1702125-001 17-W287 MW110 201782-0309	WorkOrder: CollectionDate: DateReceived: FieldSamplor:	S1702125 2/6/2017 2:57:00 PM 2/13/2017 10:03:00 AM
Comments	201102-0009	Matrix:	Water

Analyses	Result		Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1030	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1030	MB
Radium 228	2.1	pCi/L		1	Ga-Tech	02/18/2017 255	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	02/18/2017 255	MB

These results apply only to the samples tested.

в Analyte detected in the associated Method Blank Qualifiers:

- Ε
- 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 Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory 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
  - Х Matrix Effect

Page 1 of 11



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	2/24/2017 S1702125001
ProjectName:	201782-0309	WorkOrder:	S1702125
Lab ID:	S1702125-002	CollectionDate:	2/6/2017 4:54:00 PM
ClientSample ID:	17-W288 MW119	DateReceived:	2/13/2017 10:03:00 AM
COC:	201782-0309	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1030	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1030	MB
Radium 228	-5.5	pCi/L		1	Ga-Tech	02/18/2017 600	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	02/18/2017 600	MB

These results apply only to the samples tested.

#### Qualifiers: B

- E Analyte detected in the associated Method Blank E Value above quantitation range
  - E Value above quantitation rangeH 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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- RL Reporting Limit C Calculated Value
  - 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
  - X Matrix Effect

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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	2/24/2017 S1702125001
ProjectName:	201782-0309	WorkOrder:	S1702125
Lab ID:	S1702125-003	CollectionDate:	2/6/2017 6:40:00 PM
ClientSample ID:	17-W289 MW210	DateReceived:	2/13/2017 10:03:00 AM
COC:	201782-0309	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total		· · · · · · · · · · · · · · · · · · ·					
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1030	МВ
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1030	MB
Radium 228	-0.9	pCi/L		1	Ga-Tech	02/18/2017 904	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	02/18/2017 904	MB

These results apply only to the samples tested.

- Qualifiers:

в

- Ε 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 Spike Recovery outside accepted recovery limits

Analyte detected in the associated Method Blank

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- **RL Reporting Limit** Calculated Value С
  - G
  - Analyzed at IML Giliette 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
  - х Matrix Effect

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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	2/24/2017 S1702125001
ProjectName:	201782-0309	WorkOrder:	S1702125
Lab ID:	S1702125-004	CollectionDate:	2/7/2017 12:45:00 PM
ClientSample ID:	17-W290 MW102	DateReceived:	2/13/2017 10:03:00 AM
COC:	201782-0309	FieldSampler:	
		Matrix:	Water
<b>•</b> •			

Analyses	Result	Units	Qual	Jual RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.9	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	2.1	pCi/L		1	Ga-Tech	02/18/2017 1208	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	02/18/2017 1208	MB

These results apply only to the samples tested.

В Qualifiers:

- Value above quantilation range Holding times for preparation or analysis exceeded Е н
- L

Analyte detected in the associated Method Blank

- Analyzed by another laboratory Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits S

Reviewed by: A X

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
- o X Matrix Effect

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Inter-Mountain Labs

Your Environmental Monitoring Partner

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Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	2/24/2017 S1702125001
ProjectName: Lab ID: ClientSample ID: COC:	201782-0309 S1702125-005 17-W291 MW118 201782-0309	WorkOrder: CollectionDate: DateReceived: FieldSampler:	S1702125 2/7/2017 5:25:00 PM 2/13/2017 10:03:00 AM
Comments		Matrix:	Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.04	pCi/L			SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	1.1	pCi/L		1	Ga-Tech	02/18/2017 1512	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	02/18/2017 1512	MB

These results apply only to the samples tested.

#### Analyte detected in the associated Method Blank Qualifiers: в

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL** - Reporting Limit

- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL М
- 0 Outside the Range of Dilutions
- х Matrix Effect

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

#### Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	5.			Date Repo	Reported ort ID	2/24/2017 S1702125001
ProjectName:	201782-0309				Wor	kOrder:	S1702125
Lab ID:	S1702125-006				Colle	ectionDate:	2/7/2017 2:55:00 PM
<b>ClientSample ID:</b>	17-W292 MW111				Date	Received:	2/13/2017 10:03:00 AM
COC:	201782-0309				Field	iSampler:	
					Matr	ix:	Water
Comments							
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.4	pCi/L	0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	-1.9	pCi/L	1	Ga-Tech	02/18/2017 1816	MB
Radium 228 Precision (±)	1.4	pCI/L		Ga-Tech	02/18/2017 1816	MB

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

Reviewed by: <u>A</u>

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- G
- J
- Analyzed at IML Gillette laboratory Analyze detected below quantilation limits Value exceeds Monthly Ave or MCL or is less than LCL Μ
- Outside the Range of Dilutions 0
- Х Matrix Effect

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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	2/24/2017 S1702125001
ProjectName: Lab ID: ClientSample ID: COC:	201782-0309 S1702125-007 17-W293 MW117 201782-0309	WorkOrder: CollectionDate: DateReceived: FieldSampler: Moteive	S1702125 2/7/2017 8:40:00 AM 2/13/2017 10:03:00 AM
Comments		Wattra	Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	1.0	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	-2.1	pCi/L		1	Ga-Tech	02/18/2017 2121	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	02/18/2017 2121	MB

These results apply only to the samples tested.

#### Qualifiers:

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

Analyte detected in the associated Method Blank

- Analyzed by another laboratory L
- Not Detected at the Reporting Limit 'ND
- S Spike Recovery outside accepted recovery limits

Reviewed by:

В

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL** - Reporting Limit

- Analyzed at IML Gillette laboratory G
- J
- Analyte detected below quantitation limits Value exceeds Monthly Ave or MCL or is less than LCL М
- Outside the Range of Dilutions 0
- Х Matrix Effect

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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	2/24/2017 S1702125001
ProjectName:	201782-0309	WorkOrder:	S1702125
Lab ID:	S1702125-008	CollectionDate:	2/8/2017 11:45:00 AM
ClientSample ID:	17-W294 MW103	DateReceived:	2/13/2017 10:03:00 AM
COC:	201782-0309	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.18	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1657	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1657	MB	
Radium 228	-2.6	pCi/L		1	Ga-Tech	02/19/2017 027	MB	
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	02/19/2017 027	MB	

These results apply only to the samples tested.

#### **RL - Reporting Limit**

- Calculated Value С
- Analyte detected in the associated Method Blank 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
- Spike Recovery outside accepted recovery limits S

Reviewed by: All

В

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- 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
- o X Matrix Effect

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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	2/24/2017 S1702125001
ProjectName: Lab ID: ClientSample ID: COC:	201782-0309 S1702125-009 17-W295 MW109 201782-0309	WorkOrder: CollectionDate: DateReceived: FieldSampler:	S1702125 2/8/2017 9:30:00 AM 2/13/2017 10:03:00 AM
Comments		Matrix:	Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	-1.5	pCi/L		1	Ga-Tech	02/19/2017 332	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	02/19/2017 332	MB

These results apply only to the samples tested.

в

#### **RL - Reporting Limit**

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

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- Calculated Value
- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL М
- Outside the Range of Dilutions 0
- Х Matrix Effect

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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	2/24/2017 S1702125001
ProjectName:	201782-0309	WorkOrder:	S1702125
Lab ID:	S1702125-010	CollectionDate:	2/8/2017
ClientSample ID:	17-W296 Dup 1	DateReceived:	2/13/2017 10:03:00 AM
COC:	201782-0309	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	0.1	pCi/L		1	Ga-Tech	02/19/2017 638	MB
Radium 228 Precision (±)	1.4	pCi/L			Ga-Tech	02/19/2017 638	MB

These results apply only to the samples tested.

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- **RL Reporting Limit** С
  - Calculated Value G
  - J
  - Analyzed at IML Gillette laboratory Analyte detected below quantifation limits Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions М
  - 0
  - Х Matrix Effect

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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 Repo	Reported ort ID	2/24/2017 S1702125001
ProjectName: Lab ID: ClientSample ID: COC:	201782-0309 S1702125-011 17-W297 Field Blank 201782-0309				Worl Colle Date Field Matri	(Order: ectionDate: Received: Sampler: x:	S1702125 2/8/2017 2/13/2017 10:03:00 AM Water
Comments							
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.04	pCi/L	0.2	SM 7500 Ra-B	02/21/2017 1657	MB
Radium 226 Precision (±)	0.04	pCi/L		SM 7500 Ra-B	02/21/2017 1657	MB
Radium 228	-2.7	pCi/L	1	Ga-Tech	02/19/2017 942	MB
Radium 228 Precision (±)	1.5	pCi/L		Ga-Tech	02/19/2017 942	MB

These results apply only to the samples tested.

- Qualifiers:

В

Ε

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

Analyte detected in the associated Method Blank

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- **RL** Reporting Limit С
  - Calculated Value G
    - Analyzed at IML Gillette laboratory
  - ł Analyte detected below quantitation limits
  - М Value exceeds Monthly Ave or MCL or is less than LCL 0 Outside the Range of Dilutions
  - х Matrix Effect

Page 11 of 11

Inter-Mountain Labs

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

### ANALYTICAL QC SUMMARY REPORT

 CLIENT:
 MVTL Laboratories, Inc.
 Date: 2/24/2017

 Work Order:
 \$1702125
 Report ID: \$1702125001

 Project:
 \$1702125001
 \$1702125001

Radium 228 by Ga/Tech	Sample Type MBLK	Units: pCI/L
MB-417 (02/17/17 11:32)	RunNo: 143203	PrepDate: 02/14/17 0:00 Batch/D 12848
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qu
Total Radium 228	ND	1
Radium 228 by Ga/Tech	Sample Type LCS	' Units: pCi/L
LCS-417 (02/17/17 14:36)	RunNo: 143203	PrepDate: 02/14/17 0:00 BatchID 12848
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qua
Total Radium 228	40	1 39.1 103 65.0 122
Radium 228 by Ga/Tech	Sample Type MS	Units: pCi/L
MS-417 (02/17/17 20:45)	RunNo: 143203	PrepDate: 02/14/17 0:00 BatchID 12848
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qua
Total Radium 228	35	1 39.1 ND 88.5 50 130
Radium 228 by Ga/Tech	Sample Type MSD	Units: pCi/L
MSD-417 (02/17/17 23:50)	RunNo: 143203	PrepDate: 02/14/17 0:00 BatchID 12848
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qua
Total Radium 228	35	1 35 1.60 89.9 20
Radium 226 in Water -	Sample Type MBLK	
MB-1719 (02/21/17 10:29)	RunNo: 143285	PrepDate: 02/14/17 0:00 BatchID 12860
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	ND	0.2
Radium 226 in Water -	Sample Type LCS	Units; pCi/L
LCS-1719 (02/21/17 10:29)	RunNo: 143285	PrepDate: 02/14/17 0:00 BatchID 12860
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	5.9	0.2 5.89 100 67.1 122
Radium 226 in Water -	Sample Type LCSD	Units: pCi/L
LCSD-1719 (02/21/17 10:29)	RunNo: 143285	PrepDate: 02/14/17 0:00 BatchID 12860
Analyte	Result	RL Conc %RPD %REC % RPD Limits Qual
Radium 226	6.1	0.2 5.9 2.93 103 20
Radium 226 in Water -	Sample Type MS	Units: pCi/L
S1702125-001AMS (02/21/17 10:30)	RunNo; 143285	PrepDate: 02/14/17 0:00 BatchID 12860
Analyte	Result	RL Spike Ref Samp %REC % Rec Limits Qual
Radium 226	6.0	0.2 5.89 ND 102 65 - 131

Qualifiers:	в	Analyte detected in the associated Method Blank	Е	Value above quantitation range
	G	Analyzed at IML Gillette laboratory	н	Holding times for preparation or analysis exceeded
	J	Analyte detected below quantitation limits	Ł	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 limite
	х	Matrix Effect		

KMW	TL

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

# Chain of Custody Record

Page\_\_1\_of\_\_1\_.

Toll Free: (800) 279-6885 Fax: (701) 258-9724								201782-0309					
Company Nam	e and Address:	Account #: Phone #:						Phone #:					
	лл	VTI									701-258-9720		
	2616 E I	Broadway		Contact:	01	1-44	_				Fax #:		
	Bismarck	(, ND 58501		Name of S	Claud	lette	<u>e</u>			·,	For faxed report check box		
Billing Address	s (indicate if differen	t from above):	·		ampier.						E-mail: <u>ccarroll@mvtl.com</u>		
1				Quote Nu	mber			•			Date Submitted:		
1	PO B	<u>lox 249</u>									9-Feb-17		
	New UIII	, WIN 56073		Project Na	ame/Numb	er:					Purchase Order #:		
·		Sample Information	······································								BL5782		
				T	· · · · · · · · · · · · · · · · · · ·		В	ottle	Ty	pe	Analysis		
							NO3	/ed					
IMI Lab						ted	IH IL	ials sen	Jar				
Number	MVTL Lab Number	Client Sample ID	Sample	Date	Time	Itree	00 n	DC V	SSE	her			
KDM DE and	17 \\/297		Type	Sampled	Sampled	<u>ה</u>	10	25	Ū	đ	Analysis Required		
10218.510	17-11/207			6-Feb-17_	1457		4				Ra226 & Ra228		
	17-VV288	MW119	GW	6-Feb-17	1654		4				Ra226 & Ra228		
	17-W289	MW210	GW	6-Feb-17	1840		4				Ra226 & Ra228		
-004	17-W290	MW102	GW	7-Feb-17	1245		4				Ra226 & Ra228		
-005	17-W291	MW118	GW	7-Feb-17	1725								
-010-	17-W292	MW111	GW	7-Feb.17	1455						Razzo & Razzo		
-ta-	17-W/293				1455		4		··		Ra226 & Ra228		
	17 1/204		GVV	/-Feb-1/	840		4				Ra226 & Ra228		
	17-00294	NVV103	GW	8-Feb-17	1145		4				Ra226 & Ra228		
	1/-W295	MVV109	GW	8-Feb-17	930		4				Ra226 & Ra228		
-OLO 17-W296 Dup 1 GW 8-Feb-17											Ra226 & Ra228		
Comments: All	17-W297	GW	8-Feb-17			4				Ra226 & Ra228			

comments. All results must be reported as a numerical value.

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date		Tomp
T. Olson	9-Feb-17	1700		Lin Babted	2/13/17	16:03	Zu Yoc

		$\wedge$ /
Site: MDU Lewis and Clark	Technician:	Parren Niesnay
Instrument #1 650 MDS 08F100203 (Circle One):	#2 650 MDS 04H14736	#3 556 MPS 12E102056
Pre Site Calib	ration	Post Site Check
Date: 6 Feb/7 Time: 07/2		Time PX 10
pH Temp °C Pre Cal Post Cal	- mv Range +/- Post Cal Range mv 50	pH Temp °C Reading
Buffer 7 $10.00$ Buffer 10 $19.20$ $10.07$ $10.00$	6.95-7.05 - <u>37.0</u> 0 +/- 50 9.95-10.05 - <u>210.7</u> -180 +/- 50	Buffer 7 $7.04$ 15.24
Conductivity		Conductivity
Buffer 1413 18.83 1408 1413	$\pm 10\%$ Buffer 5000 $50.4/$	Buffer 1413 15,20 # 23
ORP	•	
231 mV@25C 8,44 235.6 231.1	±10 mV	
DO	Barometric Pressure (mm Hg)	
11.08 #10,97 10,16	mg/L 704.1	
Date: 7Feb17 Time: 0735	-	Time: 0705
pH Temp °C Pre Cal Post Cal	Post Cal Range mv 50	<b>pH</b> Temp°C Reading
Buffer 7 20,17 6,97 7.00	6.95-7.05 $-6.3,77$ $0+6.50$	Buffer 7 958 697
Buffer 10 19.70 9.99 10.00	9.95-10.05 +2.35.6 -180 +/- 50	
Conductivity		Conductivity
Buffer 1413 20.09 1429 1414	±10% Buffer 5000 4987	Buffer 1413 9,58 1424
ORP		
231 mV @ 25C [19.84] 224.8 231.0	]±10 mV	
DO	Barometric Pressure (mm Hg)	
21,55 6,87 8,20	mg/L 777, 3	

# **MVTL Calibration Worksheet**

Site: MDU Lew	vis and Clark	Technician: Da	Men Nieswary
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056
Date: pH Buffer 7 Buffer 10 Conductivity Buffer 1413 ORP	Pre Site Calibret 6.7 Time: $0.700Temp °C Pre Cal Post Cal19.46$ $6.96$ $6.9919.26$ $10.04$ $9.9919.49$ $1396$ $1413$	mv Range +/-         Post Cal Range       mv       50 $6.95-7.05$ $\overline{53}$ , $10$ $0$ $-180$ $9.95-10.05$ $\overline{-222}$ , $3$ $-180$ $-180$ $\pm 10\%$ Buffer 5000 $4985$	Post Site Check         Time:       1230         pH       Temp °C       Reading         Buffer 7       1010       702         Conductivity       Buffer 1413       970       1419
231 mV @ 25C DO	20,82 9,18 8.35	±10 mV Barometric Pressure (mm Hg) mg/L 7/2,,5	
Date: pH Buffer 7 Buffer 10 Conductivity Buffer 1413	Temp °C Pre Cal Post Cal	Model     Model     Model       Post Cal Range     mv     50       6.95-7.05     0 +/- 50       9.95-10.05     -180 +/- 50       Check       ±10%     Buffer 5000	Time: pH Temp °C Reading Buffer 7
ORP 231 mV @ 25C DO		±10 mV Barometric Pressure (mm Hg) mg/L	

# **MVTL Calibration Worksheet**



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MWICO
Sampling Personal:	Darren Niesmon

2616 E	E. Bro	badway	Ave,	Bismarck,	ND
--------	--------	--------	------	-----------	----

Phone: (701) 258-9720

							•					~	
Weather Conditions:		Temp:	-iQ	F	Wind:	Nel	3		Precip:	Sunr	ny / Partly (	Cloudy /Clo	udy
	Well Info	rmation	/ -			2		Sa	mpling I	nformatio	on		
Well Locked?	Yes	No)				Purgi	ng Method:	Blad	der		Co	ontrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	tes	No				Dedicat	ted Equip?:	Yes	NO		Recover:	155	sec.
Grout Seal Intact?	Æs	No	Not Vi	sible		Duplicate	Sample?:	Yes	TO		PSI:	~	
Repairs Necessary:						Duplicate	Sample ID:		Ð	]	Pumping F	Rate: 100	mL/min
Casing	Diameter:		2"					-				<u>.</u>	
Water Level Befo	ore Purge:	9	, 42	ft		F	<sup>p</sup> urge Date:	6 Fell	7	Time Purg	ing Began:	7252	am/pm
Total W	ell Depth:	_		ft		Well P	urged Dry?	Yes	NO	Time F	urged Dry:		-am/pm
We	II Volume:		·	liters		Sa	mple Date:	6 Feb	17	Time of	f Sampling:	1457	am/om
Depth to Top	of Pump:		14.19	ft					,				
Water Level After	er Sample:	9	,7/1	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric V	Vater Level	ndicator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

Field Measurements

Stabil	ization	Temp (°C)	Spec. Cond.	На	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water	mL Removed	Discription: Clarity Color Odor Ect
SEQ #	Time	( •)	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Renieveu	clear, slightly turbid, turbid
1	1257	628	1141	7.40	6,21	130.6	179	771	500	Tubid
2	1317	6,69	1119	7,38	3,60	120,3	49.4	9.71	\$2000	St der
3	1337	6.69	144	7,35	3,24	112,4	26.3	9.71	2000	cley
4	1357	6.69	1119	7,36	3,09	107,1	19,5	9.71	2000	Cla
5	1417	6.70	1119	7,35	2.96	104,4	13.4	2,71	2000	a
6	1427	6,78	1128	7.36	2.86	102.6	6.31	9.77	2000	eli
7	1442	6.85	1119	7.37	2.95	101.7	5.03	9.71	24500	dr_
8	1447	6.86	1090	7.37	2.93	101.4	4,72	9.71	500	d
9	1452	6,71	11.18	7,37	2.90	100 17.	4,68	9.71	500	cl
10	1457	6.69	1118	17:31	2.86	100,6	4.51	9071	500	d
Stabilized	: / Yes	Ňo	-			Ť	otal Volume	Removed:	12,500	mL
Comment	s: ( /								V	

7

6 <sup>2</sup>		Field	Nata	shoot	Comp	any:	MDU Lewis	s and Clark		
MVIL		I ICIU	Dala	311661	Event		2017			
		Ground	vater Ass	essment	Samp	le ID:	mwi	9		
2616 E. Broadway Ave, Bismarc	K, ND				Samp	ling Personal:	Parren	Vieswaa		
Phone: (701) 258-9720		$\sim$					·····			
Weather Conditions:	Temp	:. (/ °F	W	ind: NE13		Precip	: Sunn	y / Partly Clou	dy / Clo	udy
We	Il Information	1 <sup>13</sup>				Sampling	Informatic	on		/
Well Locked?	Yes Nø	T		Purging	Method:	Bladder		Contro	I Setting	s
Well Labeled?	Yes No			Sampling	Method:	Bladder		Purge:	5	sec
Casing Straight?	Yes No			Dedicated	Equip?:	les No		Recover:	55	sec
Grout Seal Intact?	Yes No	Not Visibl	e	Duplicate S	ample?:	(es Nø		PSI:		
Repairs Necessary:	<	-		Duplicate Sa	mple ID;			Pumping Rate;	100	mL/mir
Casing Diar	neter:	2"								
Water Level Before F	Purge:	9.42	ft	Pu	ge Date: 6	4617	Time Purg	ing Began: / >	-49	am/pr
Total Well [	Depth:		ft	Well Pur	ged Dry?	res Nø	Time P	urged Dry: 🤝		am/pn
Well Vo	olume:	~	liters	Sam	ole Date: 6 /	1617	Time of	Sampling: 16	57	amlen
Depth to Top of I	<sup>D</sup> ump:	1339	ft							
Water Level After Sa	ample:	9.45	ft	Bottle	500 mL Nitri	c 1 Lit	er Raw			
Measurement Me	thod: Electric	Water Level India	ator	List: 5	00 mL Nitric (fil	tered) 4-1L	iter Nitric			

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	Hq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1	1554	8.035	1190	7,27	5.26	11804	57.7	9.47	500	Slightly twoid	
2	1514	Sn34	120	2333	2.23	SLO	13.4	7.49	150000	clear	
3	1634	6,25	1202	7.35	1.29	45.6	6.05	9,49	2000	dr	
4	1644	6,37	1203	7,35	1,95	29,8	4,90	2.19	1000	da	
5	1649	6.38	1203	7.35	1.95	28.2	4.78	9.49	500	da	
6	1654	6.38	1204	7.36	1.94	24,2	4.57	9.49	500	ch	
7											
8											
9											
10	F									<u> </u>	
Stabilized	1 Yes	No	~			T	otal Volume	e Removed	6500	_mL	
Comment	Comments										



\_

Groundwater Assessment

Company:	MDU Lewis and Clark	
Event:	2017	
Sample ID:	MW 210	
Sampling Persor	al: Narren Nicsman	••••••

Weather Conditions:		Temp:			Wind:	NEIS	~		Precip:	Sun	ny / Partly C	loudy / Clou	
<u> </u>	Nell Info	rmation	U					Sampling Information					
Well Locked?	Yes	No				Purgir	ng Method:	Blac	der		Co	ntrol Setting	s
Well Labeled?	tes	No				Samplin	ng Method:	Blac	der		Purge:	5	sec.
Casing Straight?	<u>fes</u>	No				Dedicat	ed Equip?:	Yes	NO		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visi	ble		Duplicate	Sample?:	Yes	Nð		PSI:		
Repairs Necessary:	<u> </u>					Duplicate :	Sample ID:			1	Pumping R	ate: / 00	mL/min
Casing I	Diameter:		2''								L		
Water Level Befo	re Purge:		9.66	ft		F	urge Date:	GFel	17	Time Purg	ing Began:	1750	am/pm
Total W	ell Depth:			ft		Well P	urged Dry?	∕ Yes	No	Time F	urged Dry:		am/pm
Wel	l Volume:			liters		Sa	mple Date:	6 Feb	17	Time of	f Sampling:	1840	amlom
Depth to Top	of Pump:	2	28,33	ft					C	A			
Water Level After	r Sample:		~	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measurement Method:		Electric	Water Level Inc	licator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			

Stabil (3 cons	ization	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1755	4.65	1450	7,75	7.28	103,8	2.0,2	10,62	500	rlear
2	1810	6.00	1473	7,71	2.35	8806	9.22	11.38	1500	ch
3	1820	6.41	1465	7.67	1.59	61.9	6.74	11156	1000.	dr
4	1825	6.44	1463	7.6h	1.48	36.7	4.28	11.61	500	d
5	[830	6.24	1462	7.65	1.39	6.0	4.42	11.63	500	4/
6	1835	6,45	1461	7.65	1.37	204	4.40	11,65	500	a /
7	1840	6.46	1465	7.65	1,30	-2.4	412	1664	500	en
8	L .									
9										
10										
Stabilized: Comments	s:	No				To	otal Volume	Removed:	5000	mL



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MW 102
Sampling Personal:	Darren Nieswan/
<u>_</u>	

2616 E. Broadwa	y Ave,	Bismarck,	ND
-----------------	--------	-----------	----

Phone: (701) 258-9720

Phone: (701) 258-91	720						-					>	
Weather Conditions:		Temp:	3	°F	Wind: <sub>(</sub>	NW 5			Precip:	Sunr	ny / Partly C	loudy / Clo	udy
	Well Info	rmation				-		Sa	mpling l	nformatio	on		
Well Locked?	Yes	No				Purgir	ng Method:	Blad	der		Co	ntrol Setting	S
Well Labeled?	Tes	No				Samplin	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	tes	No				Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not	Visible		Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:						Duplicate :	Sample ID:				Pumping R	ate: / D D	m∐min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		18.32	ft		P	urge Date:	7 Feb	17	Time Purg	ing Began:	1020	am/pm
Total W	/ell Depth:		· ·	ft		Well P	urged Dry?	Yes	ି ଶିନ୍ଦ	Time F	Purged Dry:	·	-am/pm
We	II Volume:			liters		Sa	mple Date:	7705	17	Time of	f Sampling:	1245	am/gm
Depth to Top	of Pump:	7	0.6	8 ft									
Water Level Afte	er Sample:		19:28	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Nater Lev	el Indicator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:		
(3 cons	secutive)	(°C)	Cond.	рH	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.		
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, tu <b>r</b> bid		
1	1025	7.43	6829	6.81	512	117.4	635	19,18	500	Tubid		
2	1055	9.80	6825	6.81	2,58	48,0	120	19,22	25300	, Turbid		
3	1/25	10.05	6810	6,81	263	37.7	19,7	19.22	3000.	chear		
4	1140	10,07	1855	6.81	2.40	34.8	23,4	19,28	R/500-	deu		
5	1210	10,05	6882	6.81	2,63	335	19,8	19.28	3000.	cler		
6	1225	10,01	69.03	681	2,28	3IM	7.97	19,28	1500	du		
7	1235	10,07	6913	6,81	2,47	31,3	4,20	19,28	1000	d		
8	1240	10,09	6912	6.8	2.48	31.2	4.71	19,28	500	ch		
9	1245	10.06	6912	6.81	2.44	31,0	4,88	19,28	500	ch		
10		ŀ		0.01			·		26			
Stabilized	Stabilized: KYes No Total Volume Removed: 17, 500 mL											
Comments: Had a												
1100 pumpin overnight and next mornize pump warn't watcher so changed it.												
	That	is why	+ turbid	AF of	Retad -	. ( . /	1-0114	10.0.0	- )			
	song for brack y son ico so high.											



Groundwater Assessment

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MW 118
Sampling Pe	rsonal: DAVIENNEESmalls

Weather Conditions:		Temp:	O °F		Wind:	1/5			Precip	: Suni	ny /Partly C	loudy / Clo	udv
	Well Info	ormation	-					S	ampling	nformatio	on		
Well Locked?	Yes	No				Purgi	ng Method:	Bla	dder		Co	ntrol Setting	15
Well Labeled?	Kes	No				Sampli	ng Method:	Bla	dder	-	Purge:	4	Sec
Casing Straight?	Kes	No				Dedica	ted Equip?:	Yes	No		Recover	51	<u> </u>
Grout Seal Intact?	Xes	No	Not Vis	ible		Duplicate	Sample?:	Yes	NO	1	PSI	~ ~	300.
Repairs Necessary:	~					Duplicate	Sample ID:	·····	-	1	Pumping R	ate: / 0 0	mi /min
Casing	Diameter:		2"				i	£		1	<u>unping r</u>		
Water Level Bef	ore Purge:	X	,82	ft		F	Purge Date:	7 Feb	17	Time Purg	ing Began:	1610	aminm
Total V	Vell Depth:			ft		Well P	uraed Drv?	Yes	Ne	Time F	urged Dry:	10/0	am/nm
We	ell Volume:			liters		Sa	mple Date:	TER	.17	Time o	Sampling:	1720	am/nm
Depth to Top	p of Pump:		9,89	ft					·	1		1123	annhu
Water Level After	er Sample:		E.90	ft		Bottle	500 m	L Nitric	1 [ it	er Raw			
Measuremer	nt Method:	Electric	Water Level In	dicator		List: 500 mL Nitric (		ric (filtered	ic (filtered) 4 - 1 Liter Nitric				
						L	1		· · · ·		1		

**Field Measurements** 

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1615	529	1652	bitor	6,10	85.9	71000	8,87	560	Tubid
2	1645	51.45	1661	7.43	4,71	83,1	24,5	8,90	80300	clear
3	1700	5,35	166 (	7.44	4,27	83.4	11.5	8.90	1500.	ch-
4	1700	5,30	1667	7,44	4,15	83,1	7.03	8,90	1000.	di
5	1715	5.35	1673	7,45	4,63	82.5	4.83	8290	500	a
6	1720	538	1667	7.45	4.00	82.2	4.24	8190	500	
7	1725	5.34	1672	7.45	4.02	82.5	4.87	8.50	500	da
8	14300						1			
9										
10										
Stabilized: Comments	Stabilized:     Yes     No       Comments:     4/1     +   Total Volume Removed: <u>6500</u> mL									

that trankle with the pump at the beginning and changedatit, t, check ball was stinding. That is why it is surbid at the beginning

2616 E. Broadway Ave, Bism	arck, ND		Field Datasheet Groundwater Assessment					 ersonal: _/	MDU Lewi 2017 V 1 l	is and Clark	a Rac	
Phone: (701) 258-9720											<u> </u>	
Weather Conditions:		Temp:	2 °F	Wind:	NS			Precip	Suni	ny / Partly C	loudy / Clo	udy
<u> </u>	-	Sampling Information										
Well Locked?	Yes	No			Purging Me	ethod:	Bladder			Co	ntrol Setting	IS
Well Labeled?	<u>Hes</u>	No			Sampling Me	ethod:	Blad	der		Purae:	4	sec
Casing Straight?		No			Dedicated Ed	quip?:	Yes	No		Recover:	56	Sec
Grout Seal Intact?	Yes	No	Not Visible		Duplicate Sam	ple?:	Yes	ANG	1	PSI	<u>`</u> ~`	
Repairs Necessary:	1	~			Duplicate Samp	ble ID:				Pumping R	ate:/ເປີ	ml /min
Casing D	iameter:		2"				1		1	i unping re		
Water Level Befor	e Purge:	Į.	107 ft		Purge	Date:	TEOL	1-7	Time Purg	ing Began:	1400	amtom
Total We	II Depth:	0	— ft		Well Puraec	Drv?	Yes	AND	Time F	Purged Dry:	<u> </u>	ampin
Well Volume:		liters		Sample Date:		~7	Time o	f Sampling:	1400	aminim		
Depth to Top of	Depth to Top of Pump: 5, 13, 38		13.38 ft		•			-/	L			annen
Water Level After Sample:		8,27 ft			Bottle 500 r		1 L Nitric 1 L ite		er Raw			
Measurement I	Method:	Electric \	Nater Level Indicator		List: 500	mL N	itric (filtered) 4 - 1 Lit		ter Nitric			ww

**Field Measurements** 

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1405	204	3983	6.86	4,59	77.4	72.5	8,27	500	Slightly tube
2	1425	7,39	3282	\$ 7.08	2.67	81.0	10,2	8,27	2500	der
3	1435	7,47	3206	7.11	2.98	82.5	5.44	8.27	1000.	ch
4	1440	7,35	3190	7,12	3,11	83.2	3.56	8.27	500	du
5	1445	7.56	3177	7,13	3,25	84,1	2,90	8,27	500	ci-
6	1450	7.58	3178	7.13	7,27	84.3	2,80	8,27	.500	Uh
7	1455	7,62	3178	7,13	3,29	84,6	2,83	8,27	500	U
8										
9										
		<u> </u>							(0.0	
Stabilized:     Yes     No       Comments:										

2



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MW117
Sampling Perso	nal: DalrenNillwrm

Weather Conditions:		Temn <sup>.</sup>	(	٩È	Wind:	NINS			D. 1	~			
		· omp.		1	vvinu.	10 000			Precip	: Suni	ny / Partly (	cloudy / Clo	udy
······		Sampling Information											
Well Locked?	Yes	No				Purgi	ing Method:	Blad	der		Co	ontrol Setting	s
Well Labeled?	<u> </u>	No				Sampli	ing.Method:	Blad	der		Purge:	511	sec.
Casing Straight?	Jes	No				Dedica	ted Equip?:	Yes	10		Recover	56	sec.
Grout Seal Intact?	Xês	No	Not V	/isible		Duplicate	Sample?:	Yes	No	1	PSI	~	
Repairs Necessary:						Duplicate	Sample ID:			1	Pumping R	ate: 1:272	ml /min
Casing	Diameter:		2"					A		4			
Water Level Befo	ore Purge:	6	30	ft		F	Purge Date:	6Fest	7	Time Purg	ing Began:	1158	aminm
Total W	ell Depth:	_	_	ft		Well P	urged Drv?	Tes	No	Time F	Purged Dry:	1230	ambm
We	Il Volume:	-		liters		Sa	ample Date:	TECHT	7	Time of	Sampling:	0840	Gm/nm
Depth to Top	of Pump:	<	7:09	ft					1	1		0010	anypin
Water Level After Sample:			8,09 10	∂∕ ft		Bottle	500 m	I Nitric	1 ite	er Raw		Т	
Measurement	t Method:	Electric	Water Level	Indicator		List: 500 mL		ric (filtered) 4 - 1		ter Nitric			<u> </u>
·····				*****		L	1				1		

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1203	5.95	8617	7.02	8.76	19962	160	6.30	500	Tubil
2	1213	5.14	8 (30	7.07	837	185.7	[2]	6,91	1000	Turbind
3	1223	4.90	5046	7.08	7,93	164.7	715	781	1000	Slightly Turbid
4	[z-38	5009	7931	7,10	7,99	154,9	84,9	8.09	1500	ST
5				7Feb 17	7)		(	652		
6	0835	pure	Ed L	~ 5%	mili, -			6.52		
7	0840	4.52	8425	6.97	9,65	217,4	33,8	6.81	500	Clear
8										
9										
10		$\Box \frown$								
Stabilized:     Yes     No       Comments:     Total Volume Removed:     4000										




Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MW/03
Sampling Perso	onal: Parcen Niesman

y / Cloudy
Settings
D- L/ sec.
SEL sec.
INGE DOX
00 mL/min
40 Cam/pm
am/pm
t5 and/pm

**Field Measurements** 

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.		
SEQ #	EQ # Time		±5%	±0.1	±10% ±20 mV ±10% 0.		0.25 ft		clear, slightly turbid, turbid			
1	1045	7,93	35-46	7,26	471	102.2	92,5	10.98	500	Slightly Turbit		
2	1105	8.21	1720	7.31	1.66	89.6	14.9	10,99	2000	Cleg,		
3	1(20	8.52	1643	7,31	1,38	86.2	3.56	[0,99	1500	Cled		
4	1125	8,48	1604	7,31	1,21	84,3	5.74	10,99	500	clear		
5	1130	8.59	1595	7.31	1.17	8414	4,24	10.99	500	Cler		
6	1135	9,09	1572	7.30	1106	83,5	3.40	10,29	500	cha		
7	1140	9.06	1564	7,30	1,02	83.4	3.62	10,99	500	Clea		
8	1145	2116	1560	7,30	1.04	83.0	3.38	10,99	500	der		
9												
10									· ·			
Stabilized Comment	Stabilized: Yes No Total Volume Removed: <u>6500</u> mL Comments:											



**Field Datasheet** 

Groundwater Assessment

Phone: (701) 258-9720

Company: MDU Lewis and Clark Event: 2017 MW109 Sample ID: Sampling Personal: Nichny

	· · · · · · · · · · · · · · · · · · ·									· ·				
Weather Conditions:		Temp:	<u>    9  °F</u>	Wind:	SW	S	ny / Partly C	loudy / Clo	udy					
	Well Info	ormation	4				Sampling Information							
Well Locked?	Yes	(NO)			Purgir	ng Method:	Blac	dder		Co	ntrol Setting	s		
Well Labeled?	Yes	No			Samplin	ng Method:	Blac	der		Purae:	<u> </u>	sec.		
Casing Straight?	Yes	No			Dedicat	ed Equip?:	Yes	NO		Recover:	56	sec.		
Grout Seal Intact?	Yes	No	(Not Visible		Duplicate	Sample?:	Yes	NO.		PSI:				
Repairs Necessary:					Duplicate	Sample ID:		~		Pumping R	ate: / ^ /	mUmin		
Casing	Diameter:		2"							·				
Water Level Befo	ore Purge:		10:82 ft		F	Purge Date:	8Feb	17	Time Purg	ing Began:	DRYD	(apr)/pm		
Total V	/ell Depth:		ft ft		Well P	urged Dry?	Yes	No	Time F	Purged Dry:		am/pm		
We	ll Volume:		liters		Sa	mple Date:	8 Feb,	17	Time o	f Sampling:	19930	amipm		
Depth to Top	of Pump:		13,92 ft				ý		La,			-		
Water Level Afte	Water Level After Sample: / ปีเวิโ		/0.21 ft		Bottle 500 m		L Nitric	1 Lite	r Raw	1				
Measuremen	t Method:	Electric	Nater Level Indicator		List:	500 mL Ni	tric (filtered)	) 4 - 1 Lit	er Nitric					
										.I.,	l			

Field Measurements

Stabilization (3 consecutive)		Temp (°C)	Spec. Cond.	Hq	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect
SEQ #	EQ # Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0845	5,77	1712	7118	4,38	121.4	[7.8	10,91	500	ch
2 7	680910	7.02	1667	7,26	2.68	101,3	4.60	10,89	2500	da
3	0915	7551	1664	7,27	2.06	960	2,25	10,91	500	ch
4	0920	7.74	1668	7,29	1.61	90.8	1,26	10.91	500	dr
5	0925	7,72	1665	7,29	1,60	90,6	1:31	10,91	580	th
6	0930	7.80	1663	7,29	1.58	901	1,32	10.91	500	a
7										
8										
9										
10										
Stabilized Comment	: (Yes) s: ()	No				Тс	otal Volume	Removed:	5000	.mL



## **Field Datasheet**

Water Level

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

Sampling Personnel:

ils whay hr (en

\_

Company: MDU Lewis and Clark

Well ID Time Depth to Water Date Comments 6F0617 1124 9.50 MW101 MW105 6F-5/7 ING 9,13 To Feb 9,74 MW106 114 4153 MW107 Feb 13.2 6 Feb 17 1142 17:06 MW108 1137 11.29 6 Febl MW116



## **Field Datasheet**

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

Water Level

Sampling Personnel:

Personnel: <u>Pavren Nieswaag</u>

Company:

MDU Lewis and Clark

		1	1		
Well ID	Date	Time	Gauge Reading	Comments	
East Scrubber Pond Gauge	8 F1617	1051	Dry	-	
West Scrubber Pond Gauge	8F1517	1052	5.58		
Stream behind Sewage Lagoon	8F=517	08-18	0.35		
				1	



Laboratories, Inc. 2616 E. Broadway Bismarck, ND 58501

**Chain of Custody Record** 

.

	Projec	t Name:														
							Na	ime (	of Sam	pler(s):	~					
3	MDU	Lewis and Clark	CCR Rad	iochem		2017				Da	Nen	Nies	naag			
	Report To:	MDU		Carbon C	opy:		14/	Work Order Number								
	Attn:	Samantha Marshall		Attn:				VV	Work Order Number:							
	Address:	400 N. 4th St		Address:					82 0200							
	Phone:	BISMARCK, ND 58501										ud-c	2007			
1	T Hone.	101-222-1023 Som	nlo Informati										_			
		J	pie informati	on			B	ottle	Тур	e ,	Fi	eld Para	meters		Analysis	
	/		/	/	/	/	1	/ /	1		1 .0			/		
	15		/	/	/ @	/		1			frie	Į į	/	/		
	1	19	/	1	15	1 -	NS	11	' /	11	pera	8	/	/		
	12	di		1	/ ela	lien	I I	11	1	11	Tem	pec	1	/		
	ab a	San	ate	jų į	am	rao	00	11	1	11	eld	Page	d p	/		
1	W287	N/10/110	1/Elin	1400	10	0			-		E	12 · C		Analys	s Required	
	10001	10100110	610511	1751	GW	Up	4			6.69	6.07	1118	7.37	MDU CCR c	ombined	
	NOGO	10100119	656617	1654	GW	Up	4				6.38	1204	7.36	RadChem		
Mart	Wayo	MW210	6 1-6617	1890	GW	Up	4			_	6.46	1465	7.65			
wa70	WAY	MW102	7 Fe517	1245	GW	Down	4				10.06	6912	6.81			
N991	W2920	MW118	756617	1725	GW	Down	4				5.34	1672	7.45			
RPEW	Wa93	MW111	TFESIT	1455	GW	Down	4		1.0		7.62	2178	7.13	-		
wa93	W294	MW117	7Fc617	0840	GW	Down	4				4.57	8425	697			
W294	W095	MW103	8 Fest 7	1145	GW		4				all	1010	740			
Wags	W296	MW109	8 Feb17	1970	GW		4				780	11/2	729			
W296	W297	Dup 1	870517	NA	w		4	-		-	NIA	10/77 NIA	1101			
W297	W298	Field Blank (FB)	8Feb 17	NA	W		4					N/A	NA			
10011	T	(					4				INA	NA	NA			
3	Comments:	DN 6 Feb17				9										

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	How Min	Walkinz	8 Feb (7 )778	angel Smore	P	OR FEB IT	- ROI 0.2
2				8			-TM562
3							8 Feb 17 pm

## MINNESOTA VALLEY TESTING LABORATORIES, INC.



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### CASE NARRATIVE

-MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-0803 Montana Dakota Utilities MDU Lewis & Clark State Groundwater – April 2017 Event 17-W800 through 17-W810

MDU Sample Identification	<b>MVTL Laboratory #</b>
MW110	17-W800
MW119	17-W801
MW210	17-W802
MW102	17-W803
MW118	17-W804
MW111	17-W805
MW117	17-W806
MW103	17-W807
MW109	17-W808
Dup 1	17-W809
Field Blank (FB)	17-W810

### I. RECEIPT

- All samples were received at the laboratory on 5 Apr 2017 at 1615.
- 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.

Temperature of samples upon receipt was 2.0°C.

- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

### II. HOLDING TIMES

• With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

### III. METHODS

- Approved methodology was followed for all sample analyses.
  - o Methods 6010D and Method 6020B were used to analyze the metals.

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### CASE NARRATIVE

-MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-0803 Montana Dakota Utilities MDU Lewis & Clark State Groundwater – April 2017 Event 17-W800 through 17-W810

### IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
  - For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
  - For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.
  - The recoveries for one alkalinity 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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

:\_\_\_\_\_ Claudette Carroll - MVTL Bismarck Laboratory Manager

18Apr17 DATE:

**Quality Control Report** 

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### Page: 1 of 5

Lad IDS: 1/- W800 to 1/- W8	810	Pr	oject: MI	JU Lewis	& Clark Stat	e V Matrix	Vork Or	der: 201 Matrix	782-0803 Matrix	MSD/				MSD/			
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Spike Orig Result	Matrix Spike Result	Spike Rec %	Spike % Rec Limits	Dup Orig Result	MSD/ Dup Result	MSD Rec %	MSD/ Dup RPD	Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Antimony - Dissolved mg/l	0.0160 0.0160	101 100	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.001 < 0.001	0.1054 0.1012	105 101	75-125 75-125	0.1054 0.1012	0.1033 0.1040	103 104	2.0 2.7	20 20	-		< 0.001 < 0.001
Arsenic - Dissolved mg/l	0.0160 0.0160	100 94	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.002 0.0023	0.1082 0.0982	108 96	75-125 75-125	0.1082 0.0982	0.1056 0.1052	106 103	2.4 6.9	20 20	-	1 1	< 0.002 < 0.002
Barium - Dissolved mg/l	0.0160 0.0160	100 . 99	80-120 80-120	0.100 0.100	17W805q 17W809q	0.0177 0.0203	0.1149 0.1159	97 96	75-125 75-125	0.1149 0.1159	0.1123 0.1205	95 100	2.3 3.9	20 20	-	-	< 0.002 < 0.002
Beryllium - Dissolved mg/l	0.0160 0.0160	102 97	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.0005 < 0.0005	0.1120 0.0975	112 97	75-125 75-125	0.1120 0.0975	0.1062 0.1015	106 102	5.3 4.0	20 20	-		< 0.0005 < 0.0005
Boron - Dissolved mg/l	0.40 0.40	108 110	80-120 80-120	3.00 1.50	17-W805 17-W806	7.13 8.16	10.4 9.76	109 107	75-125 75-125	10.4 9.76	10.5 9.92	112 117	1.0 1.6	20 20	-	-	< 0.1 < 0.1 < 0.1
															-	-	< 0.1

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## Quality Control Report

Lab IDs: 17-W800 to 17-W81	b IDs: 17-W800 to 17-W810 Project: MDU Lewis & Clark State									Work Order: 201782-0803									
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		
Cadmium - Dissolved mg/l	0.0160 0.0160	101 99	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.0005 < 0.0005	0.1020 0.0994	102 99	75-125 75-125	0.1020 0.0994	0.1004 0.0995	100 100	1.6 0.1	20 20	-	-	< 0.0005 < 0.0005		
Calcium - Dissolved mg/l	20.0	106	80-120	100 100	17-W800 17-W808	83.8 95.6	170 180	86 84	75-125 75-125	170 180	170 177	86 81	0.0 1.7	20 20	-	-	< 1 < 1		
Chromium - Dissolved mg/l	0.0160 0.0160	102 97	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.002 < 0.002	0.1030 0.0933	103 93	75-125 75-125	0.1030 0.0933	0.0998 0.0971	100 97	3.2 4.0	20 20	-	-	< 0.002 < 0.002		
Cobalt - Dissolved mg/l	0.0160 0.0160	101 97	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.002 < 0.002	0.1010 0.0914	101 91	75-125 75-125	0.1010 0.0914	0.0977 0.0947	98 95	3.3 3.5	20 20	-	-	< 0.002 < 0.002		

### Page: 2 of 5

**Quality Control Report** 

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### Lab IDs: 17-W800 to 17-W810 Project: MDU Lewis & Clark State Work Order: 201782-0803 Matrix Matrix Matrix MSD/ MSD/ LCS LCS LCS Matrix Matrix Spike Spike MSD/ **MSD** MSD/ Known Spike Matrix Dup Dup Known Spike Rec % Rec Spike Spike Orig % Rec Orig Dup % Rec Method Spike Rec Dup Rec RPD Rec Analyte % Limits ID RPD Amt Amt Result Result % Limits Result Result % Limit (<) (%) Limits Blank Lead - Dissolved mg/l 97 0.0160 102 80-120 0.100 17W805q < 0.0005 0.0973 75-125 0.0973 0.0940 94 3.5 20 < 0.0005 --0.0160 102 0.0946 80-120 0.100 17W809q < 0.000595 75-125 0.0946 99 < 0.0005 0.0994 4.9 20 --Lithium - Dissolved mg/l 0.40 112 80-120 0.200 17-W809 0.08 0.28 100 75-125 0.28 100 0.0 20 < 0.10.28 --0.200 17-W810 < 0.1 100 75-125 0.20 105 20 < 0.1 0.20 0.21 4.9 --< 0.1--Magnesium - Dissolved mg/l 20.0 108 80-120 100 17-D1019 95 14.1 109 75-125 109 108 94 0.9 20 --< 1 100 17-W800 52.9 91 75-125 144 91 < 1 144 144 0.0 20 -\_ 100 17-W808 140 223 83 75-125 223 221 81 0.9 20 --Magnesium - Total mg/l 20.0 94 110 80-120 100 17W796q 60.1 154 75-125 154 155 95 0.6 20 < 1 --20.0 108 80-120 94 100 17W802q 24.7 120 95 75-125 120 119 0.8 20 < 1 --< 1 -\_ < 1 --Mercury - Dissolved mg/l 0.0020 100 85-115 0.002 17-W809 < 0.0002 0.0019 95 70-130 0.0019 0.0019 95 0.0 20 < 0.0002 --0.002 17-W810 < 0.0002 0.0020 100 70-130 0.0020 0.0020 100 0.0 20 --

### Page: 3 of 5

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### **Quality Control Report**

Lab IDs: 17-W800 to 17-W8	10	Pr	oject: MI	DU Lewis	s & Clark Stat	e '	Work Or	der: 201	782-0803	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 - Dissolved mg/l	0.0160 0.0160	106 100	80-120 80-120	0.100 0.100	17W805q 17W809q	0.0718 0.0524	0.1794 0.1503	108 98	75-125 75-125	0.1794 0.1503	0.1806 0.1546	109 102	0.7 2.8	20 20	-	-	< 0.002 < 0.002
Potassium - Dissolved mg/l	10.0	95	80-120	20.0 20.0	17-W800 17-W808	5.8 7.4	23.6 24.8	89 87	75-125 75-125	23.6 24.8	23.6 24.7	89 86	0.0 0.4	20 20	-	-	< 1 < 1
Potassium - Total mg/l	10.0 10.0	98 96	80-120 80-120	20.0 20.0	17W796q 17W802q	3.9 7.8	22.0 25.7	90 90	75-125 75-125	22.0 25.7	22.1 25.6	91 89	0.5 0.4	20 20			< 1 < 1 < 1 < 1
Selenium - Dissolved mg/l	0.0160 0.0160	108 95	80-120 80-120	0.100 0.100	17W805q 17W809q	0.0912 0.0748	0.2042 0.1750	113 100	75-125 75-125	0.2042 0.1750	0.2008 0.1833	110 108	1.7 4.6	20 20	-	-	< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0	103	80-120	100 100	17-W800 17-W808	78.8 74.4	169 164	90 90	75-125 75-125	169 164	169 161	90 86	0.0 1.8	20 20	-	-	< 1 < 1

### Page: 4 of 5

**Ouality Control Report** 

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### Page: 5 of 5

Lab IDs: 17-W800 to 17-W810			Project: MDU Lewis & Clark State Work Order: 201782-0803														
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
Sodium - Total mg/l	20.0 20.0	105 103	80-120 80-120	100 200	17W796q 17W802q	43.6 262	138 473	94 106	75-125 75-125	138 473	139 475	95 106	0.7 0.4	20 20			<1 <1 <1 <1
Thallium - Dissolved mg/l	0.0160 0.0160	101 101	80-120 80-120	0.100 0.100	17W805q 17W809q	< 0.0005 < 0.0005	0.0986 0.0953	99 95	75-125 75-125	0.0986 0.0953	0.0950 0.0998	95 <sup>°</sup> 100	3.7 4.6	20 20	-	-	< 0.0005 < 0.0005
Total Alkalinity mg/l CaCO3	410 410 410	94 96 94	90-110 90-110 90-110	410 410 410	17-W799 17-W806 17-D1050	456 391 693	742 754 1047	70 89 86	80-120 80-120 80-120	742 754 1047	740 758 1041	69 90 85	0.3 0.5 0.6	20 20 20	94	80-120	< 20 < 20 < 20 < 20 < 20
Total Suspended Solids mg/l										146 12 20	133 10 18		9.3 18.2 10.5	20 20 20	-		< 2 < 2

Approved by:

6. GMTP 18Apr17



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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W800 Work Order #:82-0803 Account #: 002800 Date Sampled: 3 Apr 17 16:53 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receiv Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Total Suspended Solids	6	mg/l	2	I3765-85	6 Apr 17 14:56	SVS
pH - Field	7.43	units	NA	SM 4500 H+ B	3 Apr 17 16:53	DJN
Temperature - Field	6.95	Degrees C	NA	SM 2550B	3 Apr 17 16:53	DJN
Total Alkalinity	332	mg/l CaCO3	20	SM2320-B	5 Apr 17 18:00	SVS
Conductivity - Field	1103	umhos/cm	1	EPA 120.1	3 Apr 17 16:53	DJN
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Apr 17 12:02	EV
Magnesium - Total	54.3	mg/l	1.0	6010	11 Apr 17 13:01	SZ
Sodium - Total	80.1	mg/l	1.0	6010	11 Apr 17 13:01	SZ
Potassium - Total	5.9	mg/l	1.0	6010	11 Apr 17 13:01	SZ
Calcium - Dissolved	83.8	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Magnesium - Dissolved	52.9	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Sodium - Dissolved	78.8	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Potassium - Dissolved	5.8	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10 Apr 17 14:30	KMD
Boron - Dissolved	0.22	mg/l	0.10	6010	12 Apr 17 14:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 17 9:32	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Barium - Dissolved	0.0279	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 9:32	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 9:32	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 9:32	KMD
Molvbdenum - Dissolved	0.0035	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Selenium - Dissolved	0.0032	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 9:32	KMD

\* Holding time exceeded

Approved by:

Claudette K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

As Received

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W801 Work Order #:82-0803 Account #: 002800 Date Sampled: 3 Apr 17 18:40 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

Date

PO #: 165273

Method

Temp at Receipt: 2.0C

	Result		RL	Reference	Anal	.yzed		Analyst	
Tetal Guarandad Colida	3	ma/1	2	I3765-85	6 P	Apr 1	7 14:56	SVS	
Total Suspended Solids	7 46	units	NA	SM 4500 H+ B	3 P	pr 1'	7 18:40	DJN	
pH - Field	6 89	Degrees C	NA	SM 2550B	3 P	Apr 1'	7 18:40	DJN	
Temperature - Field	372	$m\alpha/1$ CaCO3	20	SM2320-B	5 F	Apr 1'	7 18:00	SVS	
Total Alkalinity	1197	umbos/cm	1	EPA 120.1	3 F	Apr 1'	7 18:40	DJN	
Conductivity - Field	- 0 0002	mg/l	0.0002	EPA 245.1	13 F	Apr 1	7 12:02	EV	
Mercury - Dissolved	59 3	mg/1	1.0	6010	11 F	Apr 1	7 13:01	SZ	
Magnesium - Total	86.6	mg/1	1.0	6010	11 F	Apr 1	7 13:01	SZ	
Sodium - Total	67	mg/1	1.0	6010	11 F	Apr 1	7 13:01	SZ	
Potassium - local	92 3	mg/1	1.0	6010	11 F	Apr 1	7 15:23	SZ	
Calcium - Dissolved	59.5	mg/1	1.0	6010	11 7	Apr 1	7 15:23	SZ	
Magnesium - Dissolved	96 9	mg/1	1.0	6010	11 <i>I</i>	Apr 1	7 15:23	SZ	
Sodium - Dissorved	2 0	mg/1	1.0	6010	11 7	Apr 1	7 15:23	SZ	
Potassium - Dissolved	- 0 1	mg/1	0.10	6010	10 /	Apr 1	7 14:30	KMD	
Lithium - Dissolved	0.23	mg/1	0.10	6010	12 <i>I</i>	Apr 1	7 14:29	KMD	
Boron - Dissolved	< 0.001	mg/1	0.0010	6020	10 /	Apr 1	7 9:32	KMD	
Antimony - Dissolved	< 0.002	mg/1	0.0020	6020	10 /	Apr 1	7 9:32	KMD	
Arsenic - Dissolved	0.0305	mg/1	0.0020	6020	10 /	Apr 1	7 9:32	KMD	
Barium - Dissolved	< 0 0005	mg/1	0.0005	6020	10 /	Apr 1	7 9:32	KMD	
Beryllium - Dissolved	0.0005	mg/1	0.0005	6020	10 /	Apr 1	7 9:32	KMD	
Cadmium - Dissolved	~ 0 002	mg/1	0.0020	6020	10 /	Apr 1	7 9:32	KMD	
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 /	Apr 1	7 9:32	KMD	
Cobalt - Dissolved	< 0.002	mg/1	0.0005	6020	10 /	Apr 1	7 9:32	KMD	
Lead - Dissolved	0.0005	mg/1	0.0020	6020	10 /	Apr 1	7 9:32	KMD	
Molybdenum - Dissolved	0.0038	mg/1	0.0020	6020	10 /	Apr 1	7 9:32	KMD	
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 2	Apr 1	7 9:32	KMD	

Method

\* Holding time exceeded

Approved by:

AorIT Clauditte K Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW210

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W802 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 10:55 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive Result	ed	Method RL	Method Reference	Da Ani	te alyze	ed		Analyst
Total Suspended Solids	6	mg/l	2	I3765-85	6	Apr	17	14:56	SVS
pH - Field	7.65	units	NA	SM 4500 H+ B	4	Apr	17	10:55	DJN
Temperature - Field	8.62	Degrees C	NA	SM 2550B	4	Apr	17	10:55	DJN
Total Alkalinity	384	mg/l CaCO3	20	SM2320-B	5	Apr	17	18:00	SVS
Conductivity - Field	1429	umhos/cm	1	EPA 120.1	4	Apr	17	10:55	DJN
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13	Apr	17	12:02	EV
Magnesium - Total	24.7	mg/l	1.0	6010	11	Apr	17	14:01	SZ
Sodium - Total	262	mg/l	1.0	6010	11	Apr	17	14:01	SZ
Potassium - Total	7.8	mg/l	1.0	6010	11	Apr	17	14:01	SZ
Calcium - Dissolved	41.8	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Magnesium - Dissolved	23.6	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Sodium - Dissolved	252	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Potassium - Dissolved	7.6	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10	Apr	17	14:30	KMD
Boron - Dissolved	0.20	mg/l	0.10	6010	12	Apr	17	14:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10	Apr	17	9:32	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Barium - Dissolved	0.0240	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD
Molybdenum - Dissolved	0.0042	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Selenium - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD

\* Holding time exceeded

Approved by:

17Apri7 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

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

As Received

Project Name: MDU Lewis & Clark

Sample Description: MW102

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W803 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 13:20 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

Date

PO #: 165273

Method

Temp at Receipt: 2.0C

	Result		RL	Reference	Analyzed	Analyst
Total Suspended Solids	12	mg/l	2	13765-85	6 Apr 17 14:56	SVS
nH - Field	7.01	units	NA	SM 4500 H+ B	4 Apr 17 13:20	DJN
Temperature - Field	8.71	Degrees C	NA	SM 2550B	4 Apr 17 13:20	DJN
Total Alkalinity	373	mg/l CaCO3	20	SM2320-B	5 Apr 17 18:00	SVS
Conductivity - Field	6812	umhos/cm	1	EPA 120.1	4 Apr 17 13:20	DJN
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Apr 17 12:02	EV
Magnesium - Total	1140	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Sodium - Total	206	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Potassium - Total	23.4	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Calcium - Dissolved	298	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Magnesium - Dissolved	1120	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Sodium - Dissolved	204	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Potassium - Dissolved	22.9	mg/l	1.0	6010	11 Apr 17 15:23	SZ
Lithium - Dissolved	0.25	mg/l	0.10	6010	10 Apr 17 14:30	KMD
Boron - Dissolved	25.5	mg/l	0.10	6010	12 Apr 17 14:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 17 9:32	KMD
Areenic - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Barium - Dissolved	0.0177	mg/1	0.0020	6020	10 Apr 17 9:32	KMD
Baryllium - Dissolved	< 0.0005	mg/1	0.0005	6020	10 Apr 17 9:32	KMD
Cadmium - Dissolved	< 0.0005	mg/1	0.0005	6020	10 Apr 17 9:32	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Cobalt - Dissolved	0.0073	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 9:32	KMD
Molybdenum - Dissolved	0.1239	mg/1	0.0020	6020	10 Apr 17 9:32	KMD
Colonium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 9:32	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 9:32	KMD

Method

\* Holding time exceeded

Clauditte Approved by: K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W804 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 17:25 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive Result	As Received Met Result RL	Method Method RL Reference		Dat Ana	ce alyze		Analyst	
·									
Total Suspended Solids	2	mg/l	2	I3765-85	6	Apr	17	14:56	SVS
pH - Field	7.64	units	NA	SM 4500 H+ B	4	Apr	17	17:25	DJN
Temperature - Field	6.13	Degrees C	NA	SM 2550B	4	Apr	17	17:25	DJN
Total Alkalinity	312	mg/l CaCO3	20	SM2320-B	5	Apr	17	18:00	SVS
Conductivity - Field	1618	umhos/cm	1	EPA 120.1	4	Apr	17	17:25	DJN
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13	Apr	17	12:02	EV
Magnesium - Total	157	mg/l	1.0	6010	11	Apr	17	14:01	SZ
Sodium - Total	80.2	mg/l	1.0	6010	11	Apr	17	14:01	SZ
Potassium - Total	6.4	mg/l	1.0	6010	11	Apr	17	14:01	SZ
Calcium - Dissolved	74.3	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Magnesium - Dissolved	154	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Sodium - Dissolved	79.8	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Potassium - Dissolved	6.3	mg/l	1.0	6010	11	Apr	17	15:23	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10	Apr	17	14:30	KMD
Boron - Dissolved	1.65	mg/l	0.10	6010	12	Apr	17	14:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10	Apr	17	9:32	KMD
Arsenic - Dissolved	0.0021	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Barium - Dissolved	0.0214	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD
Molvbdenum - Dissolved	0.0610	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Selenium - Dissolved	0.0767	mg/l	0.0020	6020	10	Apr	17	9:32	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	9:32	KMD

\* Holding time exceeded

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

and providence of

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W805 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 15:18 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

Date

PO #: 165273

Mathad

Temp at Receipt: 2.0C

	Result		RL	Reference	Analy	Analyst		
Total Suspended Solids	2	mg/1	2	13765-85	6 Ap	r 17	14:56	SVS
pH - Field	7.37	units	NA	SM 4500 H+ B	4 Ap	r 17	15:18	DJN
Temperature - Field	6.64	Degrees C	NA	SM 2550B	4 Ap	r 17	15:18	DJN
Total Alkalinity	372	mg/l CaCO3	20	SM2320-B	5 Ap	r 17	18:00	SVS
Conductivity - Field	3169	umhos/cm	1	EPA 120.1	4 Ap:	r 17	15:18	DJN
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Ap	r 17	12:02	EV
Magnesium - Total	410	mg/l	1.0	6010	11 Ap	r 17	14:01	SZ
Sodium - Total	112	mg/l	1.0	6010	11 Ap	r 17	14:01	SZ
Potassium - Total	8.3	mg/l	1.0	6010	11 Ap	r 17	14:01	SZ
Calcium - Dissolved	138	mg/l	1.0	6010	11 Ap	r 17	15:23	SZ
Magnesium - Dissolved	404	mg/l	1.0	6010	11 Ap	r 17	15:23	SZ
Sodium - Dissolved	109	mg/l	1.0	6010	11 Ap	r 17	15:23	SZ
Potassium - Dissolved	8.2	mg/l	1.0	6010	11 Ap	r 17	15:23	SZ
Lithium - Dissolved	0.15	mg/l	0.10	6010	10 Ap	r 17	14:30	KMD
Boron - Dissolved	7.13	mg/l	0.10	6010	12 Ap	r 17	14:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Ap	r 17	9:32	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	10 Ap	r 17	9:32	KMD
Barium - Dissolved	0.0177	mg/l	0.0020	6020	10 Ap	r 17	9:32	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 17	9:32	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 17	9:32	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Ap	r 17	9:32	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Ap	r 17	9:32	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 17	9:32	KMD
Molybdenum - Dissolved	0.0718	mg/l	0.0020	6020	10 Ap	r 17	9:32	KMD
Selenium - Dissolved	0.0912	mg/l	0.0020	6020	10 Ap	r 17	9:32	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Ap	r 17	9:32	KMD

Mathad

\* Holding time exceeded

Approved by:

Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W806 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 8:10 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Recei	ed	Method	Method	Date		
	Result		RL	Reference	Analyzed		Analyst
Total Suspended Solids	36	mg/l	2	I3765-85	6 Apr 17 :	14:56	SVS
pH - Field	7.24	units	NA	SM 4500 H+ B	4 Apr 17	8:10	DJN
Temperature - Field	5.74	Degrees C	NA	SM 2550B	4 Apr 17	8:10	DJN
Total Alkalinity	391	mg/l CaCO3	20	SM2320-B	5 Apr 17 3	17:00	SVS
Conductivity - Field	8308	umhos/cm	1	EPA 120.1	4 Apr 17	8:10	DJN
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Apr 17 3	12:02	EV
Magnesium - Total	1140	mg/l	1.0	6010	11 Apr 17 3	14:01	SZ
Sodium - Total	560	mg/l	1.0	6010	11 Apr 17 3	14:01	SZ
Potassium - Total	25.8	mg/l	1.0	6010	11 Apr 17 3	14:01	SZ
Calcium - Dissolved	398	mg/l	1.0	6010	11 Apr 17 3	15:23	SZ
Magnesium - Dissolved	1060	mg/l	1.0	6010	11 Apr 17 3	15:23	SZ
Sodium - Dissolved	530	mg/l	1.0	6010	11 Apr 17 3	15:23	SZ
Potassium - Dissolved	24.3	mg/l	1.0	6010	11 Apr 17 3	15:23	SZ
Lithium - Dissolved	< 0.2 @	mg/l	0.10	6010	10 Apr 17 3	14:30	KMD
Boron - Dissolved	8.16	mg/l	0.10	6010	12 Apr 17 3	15:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 17 1	12:07	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 3	12:07	KMD
Barium - Dissolved	0.0157	mg/l	0.0020	6020	10 Apr 17 3	12:07	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 3	12:07	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 3	12:07	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 3	12:07	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 3	12:07	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 7	12:07	KMD
Molybdenum - Dissolved	0.0029	mg/l	0.0020	6020	10 Apr 17 7	12:07	KMD
Selenium - Dissolved	0.0254	mg/l	0.0020	6020	10 Apr 17 7	12:07	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 3	12:07	KMD

\* Holding time exceeded

CC 17 AURIT Clauditte Approved by: K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

As Received

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W807 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 11:03 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

Date

PO #: 165273

Method

Temp at Receipt: 2.0C

	Result		RL	Reference	Ana	lyze	d		Analyst	
metel Guemended Colide	4	mg/1	2	13765-85	6	Apr	17	14:56	SVS	_
Total Suspended Solids	7 94	units	NA	SM 4500 H+ B	5	Apr	17	11:03	DJN	
pH - Field	0 50	Degrees C	NA	SM 2550B	5	Apr	17	11:03	DJN	
Temperature - Field	0.00	mg/l CaCO3	20	SM2320-B	5	Apr	17	17:00	SVS	
Total Alkalinity	366	umbos/cm	1	EPA 120.1	5	Apr	17	11:03	DJN	
Conductivity - Field	1919	ma/l	0 0002	EPA 245.1	13	Apr	17	12:02	EV	
Mercury - Dissolved	< 0.0002	mg/1	1 0	6010	11	Apr	17	14:01	SZ	
Magnesium - Total	124	mg/1	1.0	6010	11	Apr	17	14:01	SZ	
Sodium - Total	11.1	mg/1	1.0	6010	11	Apr	17	14:01	SZ	
Potassium - Total	6.9	mg/1	1.0	6010	11	Apr	17	15:23	SZ	
Calcium - Dissolved	83.0	mg/1	1.0	6010	11	Apr	17	15:23	SZ	
Magnesium - Dissolved	123	mg/1	1.0	6010	11	Apr	17	15:23	SZ	
Sodium - Dissolved	76.6	mg/1	1.0	6010	11	Apr	17	15.23	SZ	
Potassium - Dissolved	6.9	mg/l	1.0	6010	10	Apr	17	14.30	KMD	
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10	Apr	17	16.20	KMD	
Boron - Dissolved	1.57	mg/l	0.10	6010	12	ADL	17	10.07	KMD	
Antimony - Dissolved	0.0043	mg/l	0.0010	6020	10	Apr	1/	12:07	KMD	
Arsenic - Dissolved	0.0029	mg/l	0.0020	6020	10	Apr	17	12:07	KMD	
Barium - Dissolved	0.0212	mg/l	0.0020	6020	10	Apr	17	12:07	KMD	
Beryllium - Dissolved	< 0.0005	mq/1	0.0005	6020	10	Apr	17	12:07	KMD	
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	12:07	KMD	
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr	17	12:07	KMD	
Chromitum - Dissorved	< 0.002	$m\alpha/1$	0.0020	6020	/ 10	Apr	17	12:07	KMD	
Cobalt - Dissorved	< 0.002	mg/l	0.0005	6020	10	Apr	17	12:07	KMD	
Lead - Dissolved	0.0005	mg/1	0.0020	6020	1.0	Apr	17	12:07	KMD	
Molybdenum - Dissolved	0.0210	mg/1	0.0020	6020	10	Apr	17	12:07	KMD	
Selenium - Dissolved Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr	17	12:07	KMD	

Method

\* Holding time exceeded

Approved by:

Claudette K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW109

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W808 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 8:40 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive	As Received M		Method Method	Dat	e		Teslivet	
	Result		RL	Reference	Ana	Tyzed		Analyst	
Total Suspended Solids	3	mg/l	2	I3765-85	6	Apr 17	14:56	SVS	
pH - Field	7.55	units	NA	SM 4500 H+ B	5	Apr 17	8:40	DJN	
Temperature - Field	6.14	Degrees C	NA	SM 2550B	5	Apr 17	8:40	DJN	
Total Alkalinity	304	mg/l CaCO3	20	SM2320-B	5	Apr 17	17:00	SVS	
Conductivity - Field	1668	umhos/cm	1	EPA 120.1	5	Apr 17	8:40	DJN	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13	Apr 17	12:02	EV	
Magnesium - Total	138	mg/l	1.0	6010	11	Apr 17	14:01	SZ	
Sodium - Total	74.0	mg/l	1.0	6010	11	Apr 17	14:01	SZ	
Potassium - Total	7.2	mg/l	1.0	6010	11	Apr 17	14:01	SZ	
Calcium - Dissolved	95.6	mg/l	1.0	6010	11	Apr 17	16:23	SZ	
Magnesium - Dissolved	140	mg/l	1.0	6010	11	Apr 17	16:23	SZ	
Sodium - Dissolved	74.4	mg/l	1.0	6010	11	Apr 17	16:23	SZ	
Potassium - Dissolved	7.4	mg/l	1.0	6010	11	Apr 17	16:23	SZ	
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10	Apr 17	14:30	KMD	
Boron - Dissolved	2.06	mg/l	0.10	6010	12	Apr 17	15:29	KMD	
Antimony - Dissolved	0.0045	mg/l	0.0010	6020	10	Apr 17	12:07	KMD	
Arsenic - Dissolved	0.0027	mg/l	0.0020	6020	10	Apr 17	12:07	KMD	
Barium - Dissolved	0.0211	mg/l	0.0020	6020	10	Apr 17	12:07	KMD	
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr 17	12:07	KMD	
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr 17	12:07	KMD	
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr 17	12:07	KMD	
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10	Apr 17	12:07	KMD	
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr 17	12:07	KMD	
Molybdenum - Dissolved	0.0239	mg/l	0.0020	6020	10	Apr 17	12:07	KMD	
Selenium - Dissolved	0.0664	mg/l	0.0020	6020	10	Apr 17	12:07	KMD	
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10	Apr 17	12:07	KMD	

\* Holding time exceeded

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W809 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive	As Received Result		Method Reference	Date	Analyst
	Result		RED .	Reference	filling bou	
Total Suspended Solids	< 2	mg/l	2	I3765-85	6 Apr 17 14:56	SVS
Total Alkalinity	310	mg/l CaCO3	20	SM2320-B	5 Apr 17 17:00	SVS
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Apr 17 12:02	EV
Magnesium - Total	155	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Sodium - Total	79.7	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Potassium - Total	6.2	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Calcium - Dissolved	72.4	mg/l	1.0	6010	11 Apr 17 16:23	SZ
Magnesium - Dissolved	151	mg/l	1.0	6010	11 Apr 17 16:23	SZ
Sodium - Dissolved	78.6	mg/l	1.0	6010	11 Apr 17 16:23	SZ
Potassium - Dissolved	6.2	mg/l	1.0	6010	11 Apr 17 16:23	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10 Apr 17 14:30	KMD
Boron - Dissolved	1.65	mg/l	0.10	6010	12 Apr 17 15:29	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 17 12:07	KMD
Arsenic - Dissolved	0.0023	mg/l	0.0020	6020	10 Apr 17 12:07	KMD
Barium - Dissolved	0.0203	mg/l	0.0020	6020	10 Apr 17 12:07	KMD
Bervllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD
Molvbdenum - Dissolved	0.0524	mg/l	0.0020	6020	10 Apr 17 12:07	KMD
Selenium - Dissolved	0.0748	mg/l	0.0020	6020	10 Apr 17 12:07	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD

\* Holding time exceeded

Clauditte Approved by: 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





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Field Blank (FB)

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W810 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method	Date	Analyst	
	Result		КЦ	Kererence	Maryzeu	inter juo	
Total Suspended Solids	< 2	mg/l	2	I3765-85	6 Apr 17 14:56	SVS	
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	5 Apr 17 17:00	SVS	
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	13 Apr 17 12:02	EV	
Magnesium - Total	< 1	mg/l	1.0	6010	11 Apr 17 14:01	SZ	
Sodium - Total	< 1	mg/l	1.0	6010	11 Apr 17 14:01	SZ	
Potassium - Total	< 1	mg/l	1.0	6010	11 Apr 17 14:01	SZ	
Calcium - Dissolved	< 1	mg/l	1.0	6010	11 Apr 17 16:23	SZ	
Magnesium - Dissolved	< 1	mg/l	1.0	6010	11 Apr 17 16:23	SZ	
Sodium - Dissolved	< 1	mg/l	1.0	6010	11 Apr 17 16:23	SZ	
Potassium - Dissolved	< 1	mg/l	1.0	6010	11 Apr 17 16:23	SZ	
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	10 Apr 17 14:30	KMD	
Boron - Dissolved	< 0.1	mg/l	0.10	6010	12 Apr 17 15:29	KMD	
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	10 Apr 17 12:07	KMD	
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD	
Barium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD	
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD	
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD	
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD	
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD	
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD	
Molybdenum - Dissolved	< 0.002	mg/l	0.0020	6020	10 Apr 17 12:07	KMD	
Selenium - Dissolved	< 0.005 ^	mg/l	0.0020	6020	10 Apr 17 12:07	KMD	
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	10 Apr 17 12:07	KMD	

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette 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

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### CASE NARRATIVE

-MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-0803 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – April 2017 Event 17-W800 through 17-W810

MDU Sample Identification	MVTL Laboratory #
MW110	17-W800
MW119	17-W801
MW210	17-W802
MW102	17-W803
MW118	17-W804
MW111	17-W805
MW117	17-W806
MW103	17-W807
MW109	17-W808
Dup 1	17-W809
Field Blank (FB)	17-W810

### I. RECEIPT

- All samples were received at the laboratory on 5 Apr 2017 at 1615.
- 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.
  - Temperature of samples upon receipt was 2.0°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

### II. HOLDING TIMES

 With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

### III. METHODS

- Approved methodology was followed for all sample analyses.
  - Methods 6010D and Method 6020B were used to analyze the metals.

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CASE NARRATIVE

-MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-0803 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – April 2017 Event 17-W800 through 17-W810

### IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
  - For some metals, the reported results were elevated due to instrument performance at the lower limit of guantitation (LLOQ).
  - For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.

All laboratory data has been approved by MVTL Laboratories.

landitte SIGNED:

DATE: 18 Apr 17

Claudette Carroll - MVTL Bismarck Laboratory Manager

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### **Quality Control Report**

Lab IDs: 17-W800 to 17-W810 Pro				DU Lewis	s & Clark CCF	<b>۱</b>	Work Or	der: 201	782-0803	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 - Total mg/l	0.1000	103	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	<0.001 <0.001 <0.001	0.3938 0.4078 0.3954	98 102 99	75-125 75-125 75-125	0.3938 0.4078 0.3954	0.4062 0.4226 0.4168	102 106 104	3.1 3.6 5.3	20 20 20	-	- - -	< 0.001
Arsenic - Total mg/l	0.1000	106	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	<0.002 <0.002 <0.002	0.4124 0.4266 0.4158	103 107 104	75-125 75-125 75-125	0.4124 0.4266 0.4158	0.4222 0.4326 0.4292	106 108 107	2.3 1.4 3.2	20 20 20			< 0.002
Barium - Total mg/l	0.1000	103	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	< 0.002 0.0440 0.0290	0.3762 0.4290 0.4074	94 96 95	75-125 75-125 75-125	0.3762 0.4290 0.4074	0.3824 0.4384 0.4252	96 99 99	1.6 2.2 4.3	20 20 20	-	-	< 0.002
Beryllium - Total mg/l	0.1000	108	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	<0.0005 <0.0005 <0.0005	0.4118 0.4294 0.4258	103 107 106	75-125 75-125 75-125	0.4118 0.4294 0.4258	0.4052 0.4398 0.4460	101 110 112	1.6 2.4 4.6	20 20 20	-	-	< 0.0005
Boron - Total mg/l	0.40	108	80-120	0.400 0.400	17-W791 17-W801	0.40 0.22	0.81 0.63	102 102	75-125 75-125	0.81 0.63	0.80 0.64	100 105	1.2 1.6	20 20	-		< 0.1 < 0.1 < 0.1
Cadmium - Total mg/l	0.1000	104	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	< 0.0005 < 0.0005 0.0006	0.3984 0.4090 0.3892	100 102 97	75-125 75-125 75-125	0.3984 0.4090 0.3892	0.4040 0.4226 0.4090	101 106 102	1.4 3.3 5.0	20 20 20	-		< 0.0005
Calcium - Total mg/l	20.0 20.0	108 105	80-120 80-120	100 100	17W796q 17W802q	94.5 44.2	184 136	90 92	75-125 75-125	184 136	185 133	90 89	0.5 2.2	20 20	- - -		<1 <1 <1 <1 <1
Chloride mg/l	30.0 30.0 30.0 30.0 30.0	80 80 80 81	80-120 80-120 80-120 80-120	30.0 1200	17-W791 17-W876	8.1 2840	34.3 3980	87 95	80-120 80-120	34.3 3980	36.7 4230	95 116	6.8 6.1	20 20	- - - -	- - - -	<1 <1 <1 <1 <1 <1

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Quality Control R Lab IDs: 17-W800 to 17-W	uality Control Report ab IDs: 17-W800 to 17-W810 Project: MDU Lewis & Clark CCR Work Order: 201782-0803																
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
Chromium - Total mg/l	0.1000	99	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	<0.002 <0.002 <0.002	0.3762 0.3808 0.3676	94 95 92	75-125 75-125 75-125	0.3762 0.3808 0.3676	0.3810 0.3884 0.3852	95 97 96	1.3 2.0 4.7	20 20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000	99	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	< 0.002 < 0.002 < 0.002	0.3766 0.3778 0.3718	94 94 93	75-125 75-125 75-125	0.3766 0.3778 0.3718	0.3802 0.3900 0.3800	95 98 95	1.0 3.2 2.2	20 20 20			< 0.002
Fluoride mg/l	0.50 0.50 0.50 0.50	102 100 102 100	90-110 90-110 90-110 90-110	0.500 0.500 0.500	17-W791 17-W818 17-W855Q	0.16 0.41 4.29	0.68 0.93 4.73	104 104 88	80-120 80-120 80-120	0.68 0.93 4.73	0.68 0.93 4.74	104 104 90	0.0 0.0 0.2	20 20 20			< 0.1 < 0.1 < 0.1 < 0.1
Lead - Total mg/l	0.1000	105	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	< 0.0005 < 0.0005 < 0.0005	0.4050 0.3992 0.3938	101 100 98	75-125 75-125 75-125	0.4050 0.3992 0.3938	0.4016 0.4070 0.4178	100 102 104	0.8 1.9 5.9	20 20 20		-	< 0.0005
Lithium - Total mg/l	0.40 0.40	112 115	80-120 80-120	0.400 0.400 0.400	17-W775 17-W791 17-W801	<0.1 0.10 <0.1	0.45 0.56 0.47	112 115 118	75-125 75-125 75-125	0.45 0.56 0.47	0.45 0.55 0.48	112 112 120	0.0 1.8 2.1	20 20 20		- - - -	< 0.1 < 0.1 < 0.1 < 0.1 < 0.1
Mercury - Total mg/l	0.0020 0.0020	100 100	85-115 85-115	0.100 0.002 0.002 0.002	17-M541 17-W791 17-W810 A12188	<pre>&lt; 0.01 &lt; 0.0002 &lt; 0.0002 &lt; 0.0002 &lt; 0.0002</pre>	0.1048 0.0019 0.0020 0.0018	105 95 100 90	70-130 70-130 70-130 70-130	0.1048 0.0019 0.0020 0.0018	0.1038 0.0020 0.0020 0.0018	104 100 100 90	1.0 5.1 0.0 0.0	20 20 20 20			< 0.0002 < 0.0002
Molybdenum - Total mg/l	0.1000	102	80-120	0.400 0.400 0.400	17W775q 17W791q 17W801q	<0.002 <0.002 0.0035	0.3900 0.4174 0.4068	98 104 101	75-125 75-125 75-125	0.3900 0.4174 0.4068	0.4026 0.4304 0.4334	101 108 107	3.2 3.1 6.3	20 20 20	- - -		< 0.002

**Quality Control Report** 

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### Lab IDs: 17-W800 to 17-W810 Project: MDU Lewis & Clark CCR Work Order: 201782-0803 MSD/ Matrix Matrix MSD/ Matrix LCS LCS LCS Matrix Matrix Spike Matrix Spike Spike MSD/ MSD MSD/ Dup Known Known Dup Spike Rec % Rec Spike Spike Orig Spike % Rec Dup RPD Rec % Rec Method Rec Orig Dup Rec Analyte ID % RPD Limit (<) (%) Limits Blank Amt % Limits Amt Result Result % Limits Result Result pH units -7.3 7.4 1.4 20 $\simeq$ \_ ----4 -7.9 19.4 20 ------9.6 -------20 6.9 6.8 1.5 -------------Selenium - Total mg/l 0.1000 111 80-120 0.400 17W775q < 0.002 0.4650 75-125 0.4650 0.4420 110 5.1 20 < 0.002 116 $\sim$ -0.400 17W791q < 0.002 0.4572 114 75-125 0.4572 0.4448 111 2.7 20 -0.400 17W801q 0.0032 0.4510 112 75-125 0.4510 0.4656 116 3.2 20 - $\mathbf{H}$ Sulfate mg/l 103 80-120 17-W796 80-120 298 304 99 20 < 5 100 200 106 298 96 2.0 --100 100 80-120 100 17-W810 < 5 93.9 94 80-120 93.9 92.0 92 2.0 20 < 5 2 -81 500 17-W769 803 1230 85 80-120 1230 1210 1.6 20 --Thallium - Total mg/l 104 20 < 0.0005 0.1000 109 80-120 0.400 17W775q < 0.0005 0.4210 105 75-125 0.4210 0.4170 1.0 --0.400 17W791q < 0.0005 0.4172 104 75-125 0.4172 0.4238 106 1.6 20 -0.400 17W801q < 0.0005 0.4070 102 75-125 0.4070 0.4330 108 6.2 20 4 -Total Dissolved Solids mg/l 20 < 10 2010 2010 0.0 ------------2 1100 1180 7.0 20 < 10¥. -2 --------

Approved by: <u>C. Guill</u> 17 Apr 17





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW110

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W800 Work Order #:82-0803 Account #: 002800 Date Sampled: 3 Apr 17 16:53 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method Reference	Date	Analyst	
	Result		КШ	Reference	Fundaty bed	inima je e	
pH - Field	7.43	units	NA	SM 4500 H+ B	3 Apr 17 16:53	DJN	
μ	* 7.4	units	0.1	SM4500 H+ B	5 Apr 17 18:00	SVS	
Temperature - Field	6.95	Degrees C	NA	SM 2550B	3 Apr 17 16:53	DJN	
Conductivity - Field	1103	umhos/cm	1	EPA 120.1	3 Apr 17 16:53	DJN	
Fluoride	0.44	mg/l	0.10	SM4500-F-C	11 Apr 17 17:00	SVS	
Sulfate	166	mg/l	5.00	ASTM D516-07	7 Apr 17 10:41	EMS	
Chloride	21.6	mg/l	1.0	SM4500-Cl-E	13 Apr 17 11:35	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Apr 17 12:09	EV	
Total Dissolved Solids	653	mg/l	10	I1750-85	7 Apr 17 14:26	SVS	
Calcium - Total	86.1	mg/l	1.0	6010	11 Apr 17 13:01	SZ	
Lithium - Total	< 0.1	mg/l	0.10	6010	10 Apr 17 14:30	KMD	
Boron - Total	0.21	mg/l	0.10	6010	12 Apr 17 16:29	KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	11 Apr 17 11:00	KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Barium - Total	0.0287	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	
Molybdenum - Total	0.0033	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW119

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W801 Work Order #:82-0803 Account #: 002800 Date Sampled: 3 Apr 17 18:40 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.46	units	NA	SM 4500 H+ B	3 Apr 17 18:4	) DJN
pH FICIU	* 7.5	units	0.1	SM4500 H+ B	5 Apr 17 18:0	) SVS
Temperature - Field	6.89	Degrees C	NA	SM 2550B	3 Apr 17 18:4	) DJN
Conductivity - Field	1197	umhos/cm	1	EPA 120.1	3 Apr 17 18:4	) DJN
Eluoride	0.42	mg/l	0.10	SM4500-F-C	11 Apr 17 17:0	) SVS
Sulfate	171	mg/l	5.00	ASTM D516-07	7 Apr 17 10:4	EMS
Chloride	25.6	mg/l	1.0	SM4500-C1-E	13 Apr 17 11:3	5 EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Apr 17 12:0	) EV
Tetal Dissolved Solids	698	mg/l	10	I1750-85	7 Apr 17 14:2	5 SVS
Calcium - Total	92.5	mg/l	1.0	6010	11 Apr 17 13:0	L SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	10 Apr 17 15:3	0 KMD
Bichium - Total	0 22	$m_{\rm cr}/1$	0.10	6010	12 Apr 17 16:2	9 KMD
Boron - Total	< 0 001	mg/l	0.0010	6020	11 Apr 17 11:0	0 KMD
Ancimony - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:0	0 KMD
Arsenic - Iotal	0 0290	mg/1	0.0020	6020	11 Apr 17 11:0	0 KMD
Barium - Iocar	< 0 0005	mg/1	0.0005	6020	11 Apr 17 11:0	0 KMD
Beryllium - local	0.0006	mg/1	0.0005	6020	11 Apr 17 11:0	0 KMD
Cadmium - Total	< 0 002	mg/1	0.0020	6020	11 Apr 17 11:0	0 KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	11 Apr 17 11:0	0 KMD
Cobalt - Total	< 0.002	mg/1	0.0005	6020	11 Apr 17 11:0	0 KMD
Lead - Total	< 0.0005 0.0025	mg/1	0.0020	6020	11 Apr 17 11:0	0 KMD
Molybdenum - Total	0.0035	mg/1	0.0020	6020	11 Apr 17 11:0	0 KMD
Selenium - Total Thallium - Total	< 0.005	mg/l	0.0005	6020	11 Apr 17 11:0	0 KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW210

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W802 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 10:55 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

### PO #: 165273

Temp at Receipt: 2.0C

	As Received Result		Method RL	Method Reference	Date Analyzed				Analyst	
	Resurc		RB	Reference						
pH - Field	7.65	units	NA	SM 4500 H+ B	4	Apr	17 10	:55	DJN	
pH	* 7.6	units	0.1	SM4500 H+ B	5	Apr	17 18	:00	SVS	
Temperature - Field	8.62	Degrees C	NA	SM 2550B	4	Apr	17 10	:55	DJN	
Conductivity - Field	1429	umhos/cm	1	EPA 120.1	4	Apr	17 10	:55	DJN	
Fluoride	0.98	mg/l	0.10	SM4500-F-C	11	Apr	17 17	:00	SVS	
Sulfate	334	mg/l	5.00	ASTM D516-07	7	Apr	17 11	:04	EMS	
Chloride	4.0	mg/l	1.0	SM4500-C1-E	13	Apr	17 11	:35	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10	Apr	17 13	:10	EV	
Total Dissolved Solids	876	mg/l	10	I1750-85	7	Apr	17 14	:26	SVS	
Calcium - Total	44.2	mg/l	1.0	6010	11	Apr	17 14	:01	SZ	
Lithium - Total	< 0.1	mg/l	0.10	6010	10	Apr	17 15	:30	KMD	
Boron - Total	0.21	mg/l	0.10	6010	12	Apr	17 16	:29	KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	11	Apr	17 11	:00	KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11	:00	KMD	
Barium - Total	0.0238	mg/l	0.0020	6020	11	Apr	17 11	:00	KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11	:00	KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11	:00	KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11	:00	KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11	:00	KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11	:00	KMD	
Molybdenum - Total	0.0041	mg/l	0.0020	6020	11	Apr	17 11	:00	KMD	
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	11	Apr	17 11	:00	KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11	:00	KMD	

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW102

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W803 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 13:20 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

### PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method	Date			
	Result	RL		Reference	Analyzed	Analyst		
pH - Field	7.01	units	NA	SM 4500 H+ B	4 Apr 17 13:20	DJN		
Hq	* 7.4	units	0.1	SM4500 H+ B	5 Apr 17 18:00	SVS		
Temperature - Field	8.71	Degrees C	NA	SM 2550B	4 Apr 17 13:20	DJN		
Conductivity - Field	6812	umhos/cm	1	EPA 120.1	4 Apr 17 13:20	DJN		
Fluoride	1.81	mg/l	0.10	SM4500-F-C	11 Apr 17 17:00	SVS		
Sulfate	4980	mg/l	5.00	ASTM D516-07	7 Apr 17 11:04	EMS		
Chloride	58.8	mg/l	1.0	SM4500-Cl-E	13 Apr 17 11:35	EMS		
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Apr 17 13:10	EV		
Total Dissolved Solids	7360	mg/l	10	I1750-85	7 Apr 17 14:26	SVS		
Calcium - Total	304	mg/l	1.0	6010	11 Apr 17 14:01	SZ		
Lithium - Total	0.25	mg/l	0.10	6010	10 Apr 17 15:30	KMD		
Boron - Total	25.6	mg/l	0.10	6010	12 Apr 17 16:29	KMD		
Antimony - Total	< 0.001	mg/l	0.0010	6020	11 Apr 17 11:00	KMD		
Arsenic - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD		
Barium - Total	0.0164	mg/l	0.0020	6020	11 Apr 17 11:00	KMD		
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD		
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD		
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD		
Cobalt - Total	0.0063	mg/l	0.0020	6020	11 Apr 17 11:00	KMD		
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD		
Molybdenum - Total	0.1088	mg/l	0.0020	6020	11 Apr 17 11:00	KMD		
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	11 Apr 17 11:00	KMD		
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD		

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Cantep

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW118

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W804 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 17:25 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method	Date	100000000000000000000000000000000000000
	Result		RL	Reference	Analyzed	Analyst
pH - Field	7.64	units	NA	SM 4500 H+ B	4 Apr 17 17:25	DJN
pH	* 7.6	units	0.1	SM4500 H+ B	5 Apr 17 18:00	SVS
Temperature - Field	6.13	Degrees C	NA	SM 2550B	4 Apr 17 17:25	DJN
Conductivity - Field	1618	umhos/cm	1	EPA 120.1	4 Apr 17 17:25	DJN
Fluoride	1.28	mg/l	0.10	SM4500-F-C	11 Apr 17 17:00	SVS
Sulfate	534	mg/l	5.00	ASTM D516-07	7 Apr 17 11:04	EMS
Chloride	18.9	mg/l	1.0	SM4500-Cl-E	13 Apr 17 11:35	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Apr 17 13:10	EV
Total Dissolved Solids	1120	mg/l	10	I1750-85	7 Apr 17 14:26	SVS
Calcium - Total	75.0	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	10 Apr 17 15:30	KMD
Boron - Total	1.60	mg/l	0.10	6010	12 Apr 17 16:29	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	11 Apr 17 11:00	KMD
Arsenic - Total	0.0022	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Barium - Total	0.0216	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD
Molybdenum - Total	0.0546	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Selenium - Total	0.0696	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD

\* Holding time exceeded

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW111

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W805 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 15:18 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method	Date		
	Result		RL	Reference	Analy	Analyst	
pH - Field	7.37	units	NA	SM 4500 H+ B	4 A)	or 17 15:18	DJN
Hq	* 7.6	units	0.1	SM4500 H+ B	5 A)	or 17 18:00	SVS
Temperature - Field	6.64	Degrees C	NA	SM 2550B	4 A)	or 17 15:18	DJN
Conductivity - Field	3169	umhos/cm	1	EPA 120.1	4 A)	or 17 15:18	DJN
Fluoride	2.27	mg/l	0.10	SM4500-F-C	11 Aj	or 17 17:00	SVS
Sulfate	1620	mg/l	5.00	ASTM D516-07	7 A]	or 17 11:04	EMS
Chloride	30.5	mg/l	1.0	SM4500-C1-E	13 Aj	or 17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Aj	or 17 13:10	EV
Total Dissolved Solids	2720	mg/l	10	I1750-85	7 A]	or 17 14:26	SVS
Calcium - Total	140	mg/l	1.0	6010	11 Aj	or 17 14:01	SZ
Lithium - Total	0.15	mg/l	0.10	6010	10 Aj	pr 17 15:30	KMD
Boron - Total	6.89	mg/l	0.10	6010	12 A)	pr 17 16:29	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	11 Aj	pr 17 11:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	11 Aj	pr 17 11:00	KMD
Barium - Total	0.0174	mg/l	0.0020	6020	11 A)	pr 17 11:00	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD
Molybdenum - Total	0.0662	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Selenium - Total	0.0904	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD

\* Holding time exceeded

Approved by:

1C Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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



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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW117

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W806 Work Order #:82-0803 Account #: 002800 Date Sampled: 4 Apr 17 8:10 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method	Date		
	Result		RL	Reference	Analyzed	Analyst	
pH - Field	7.24	units	NA	SM 4500 H+ B	4 Apr 17 8:10	DJN	
PH	* 7.4	units	0.1	SM4500 H+ B	5 Apr 17 17:00	SVS	
Temperature - Field	5.74	Degrees C	NA	SM 2550B	4 Apr 17 8:10	DJN	
Conductivity - Field	8308	umhos/cm	1	EPA 120.1	4 Apr 17 8:10	DJN	
Fluoride	0.19	mg/l	0.10	SM4500-F-C	11 Apr 17 17:00	SVS	
Sulfate	5690	mg/l	5.00	ASTM D516-07	7 Apr 17 11:04	EMS	
Chloride	49.5	mg/l	1.0	SM4500-C1-E	13 Apr 17 14:27	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Apr 17 13:10	EV	
Total Dissolved Solids	8920	mg/l	10	I1750-85	7 Apr 17 14:26	SVS	
Calcium - Total	418	mg/l	1.0	6010	11 Apr 17 14:01	SZ	
Lithium - Total	< 0.2 @	mg/l	0.10	6010	10 Apr 17 15:30	KMD	
Boron - Total	8.82	mg/l	0.10	6010	12 Apr 17 16:29	KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	11 Apr 17 11:00	KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Barium - Total	0.0226	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	
Molybdenum - Total	0.0032	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Selenium - Total	0.0279	mg/l	0.0020	6020	11 Apr 17 11:00	KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD	

\* Holding time exceeded

Approved by:

Clauditte K. Cantlo

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW103

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W807 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 11:03 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

38	As Receive Result	ed	Method RL	Method Reference	Dat Ana	Analyst			
pH - Field	7.94	units	NA	SM 4500 H+ B	5	Apr	17 11:03	DJN	Ī
PH	* 7.1	units	0.1	SM4500 H+ B	5	Apr	17 17:00	SVS	
Temperature - Field	8.58	Degrees C	NA	SM 2550B	5	Apr	17 11:03	DJN	
Conductivity - Field	1519	umhos/cm	1	EPA 120.1	5	Apr	17 11:03	DJN	
Fluoride	0.76	mg/l	0.10	SM4500-F-C	11	Apr	17 17:00	SVS	
Sulfate	453	mg/l	5.00	ASTM D516-07	7	Apr	17 11:04	EMS	
Chloride	19.8	mg/l	1.0	SM4500-C1-E	13	Apr	17 14:27	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10	Apr	17 13:10	EV	
Total Dissolved Solids	1040	mg/l	10	I1750-85	7	Apr	17 14:26	SVS	
Calcium - Total	83.5	mg/l	1.0	6010	11	Apr	17 14:01	SZ	
Lithium - Total	< 0.1	mg/l	0.10	6010	10	Apr	17 15:30	KMD	
Boron - Total	1.55	mg/l	0.10	6010	12	Apr	17 16:29	KMD	
Antimony - Total	0.0044	mg/l	0.0010	6020	11	Apr	17 11:00	KMD	
Arsenic - Total	0.0029	mg/1	0.0020	6020	11	Apr	17 11:00	KMD	
Barium - Total	0.0231	mg/l	0.0020	6020	11	Apr	17 11:00	KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11:00	KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11:00	KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD	
Molvbdenum - Total	0.0252	mg/l	0.0020	6020	11	Apr	17 11:00	KMD	
Selenium - Total	0.0608	mg/l	0.0020	6020	11	Apr	17 11:00	KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD	

\* Holding time exceeded

Approved by:

Clauditte K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit




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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: MW109

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W808 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 8:40 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive Result	ed	RL RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.55	units	NA	SM 4500 H+ B	5 Apr 17 8:40	DJN
pH - Field	* 7.0	units	0.1	SM4500 H+ B	5 Apr 17 17:00	SVS
Temperature - Field	6.14	Degrees C	NA	SM 2550B	5 Apr 17 8:40	DJN
Conductivity - Field	1668	umhos/cm	1	EPA 120.1	5 Apr 17 8:40	DJN
Elucride	0.81	mg/l	0.10	SM4500-F-C	11 Apr 17 18:00	SVS
Sulfate	522	mg/l	5.00	ASTM D516-07	7 Apr 17 11:04	EMS
Chloride	20.7	mg/l	1.0	SM4500-Cl-E	13 Apr 17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 Apr 17 13:10	EV
Total Dissolved Solids	1160	mg/l	10	I1750-85	7 Apr 17 14:26	SVS
Calcium - Total	94.8	mg/l	1.0	6010	11 Apr 17 14:01	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	10 Apr 17 15:30	KMD
Boron - Total	2.06	mg/l	0.10	6010	12 Apr 17 16:29	KMD
Antimony - Total	0.0043	mg/l	0.0010	6020	11 Apr 17 11:00	KMD
Arsenic - Total	0.0024	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Barium - Total	0.0210	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD
Molybdenum - Total	0.0252	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Selenium - Total	0.0673	mg/l	0.0020	6020	11 Apr 17 11:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 Apr 17 11:00	KMD

\* Holding time exceeded

Approved by:

Clauditte K Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

# MIVIL

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: Dup 1

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W809 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Receive	ed	Method	Method	Dat	e	a	Analyst
	Result		RL	Reference	Ana	Analyst		
Н	* 7.3	units	0.1	SM4500 H+ B	5	Apr	17 17:00	SVS
Fluoride	1.29	mg/l	0.10	SM4500-F-C	11	Apr	17 18:00	SVS
Sulfate	528	mg/l	5.00	ASTM D516-07	7	Apr :	17 11:04	EMS
Chloride	19.1	mg/l	1.0	SM4500-Cl-E	13	Apr	17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10	Apr	17 13:10	EV
Total Dissolved Solids	1100	mg/l	10	I1750-85	7	Apr	17 14:26	SVS
Calcium - Total	73.6	mg/l	1.0	6010	11	Apr	17 14:01	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	10	Apr	17 15:30	KMD
Boron - Total	1.58	mg/l	0.10	6010	12	Apr	17 16:29	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	11	Apr	17 11:00	KMD
Arsenic - Total	0.0023	mg/l	0.0020	6020	11	Apr	17 11:00	KMD
Barium - Total	0.0226	mg/l	0.0020	6020	11	Apr	17 11:00	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11	Apr	17 11:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD
Molybdenum - Total	0.0596	mg/l	0.0020	6020	11	Apr	17 11:00	KMD
Selenium - Total	0.0765	mg/l	0.0020	6020	11	Apr	17 11:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11	Apr	17 11:00	KMD

\* Holding time exceeded

Approved by:

Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR

Sample Description: Field Blank (FB)

Event and Year: April 2017

Report Date: 14 Apr 17 Lab Number: 17-W810 Work Order #:82-0803 Account #: 002800 Date Sampled: 5 Apr 17 Date Received: 5 Apr 17 16:15 Sampled By: MVTL Field Services

PO #: 165273

Temp at Receipt: 2.0C

	As Received		Method	Method	Date	Analyst	
	Result		КЦ	Reference	Anar	Anarysc	
pH	* 6.0	units	0.1	SM4500 H+ B	5 A	pr 17 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	11 A	pr 17 18:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	7 A	or 17 11:04	EMS
Chloride	< 1	mg/l	1.0	SM4500-C1-E	13 A	pr 17 14:27	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	10 A	pr 17 13:10	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	7 A	pr 17 14:26	SVS
Calcium - Total	< 1	mg/l	1.0	6010	11 A	pr 17 14:01	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	10 A	pr 17 15:30	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	12 A	pr 17 16:29	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	11 A	pr 17 11:00	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	11 A	pr 17 11:00	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	11 A	pr 17 11:00	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	11 Aj	pr 17 11:00	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



# **Chain of Custody Record**

Project Name	e:		Event:				V	Vork Orde	r Number:	00	0.01	
	MDU Lewis and Clar	k		A	pril 2017			82-0803			3	
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon Co Attn: Address:	ору:			7	lame of Sa Dari	ampler(s): Cen Nie	swaag		
	Samp	le Informatio	n		and the second	B	ottl	е Туре	Fi	eld Para	meters	Analysis
Lab Number	Sample ID	Date	Time	Sample Type		1 liter 500mL Nin	500mL Nitric	(Illered)	Temp (°C)	Spec. Cond.	Hd	Analysis Required
10800	MW110	3April17	1653	GW		X X	X		6.95	1103	7.43	
12801	MW119	3April17	1840	GW		X X	Х		6.89	1197	7,46	
W802	MW210	4April17	1055	GW		X X	Х		8.62	1429	7.65	
12803	MW102	YAprill7	1320	GW		X X	Х		8.71	6812	1.01	
WROH	MW118	4April 17	1725	GW		X X	Х		6.13	1618	7,64	
w805	MW111	4Aprilly	1518	GW		X X	Х		6.64	3169	7,37	MDU CCR
W800	MW117	4 April 17	0810	GW		X X	Х		5.74	8308	7.24	
W807	MW103	5April17	1103	GW		X X	Х		8.58	1519	7.94	
W808	MW109	5 Apr:117	0840	GW		X X	Х		6.14	1668	7.55	
W809	Dup 1	4Aprill7	NA	GW		X X	Х		NA	NA	NA	
10810	Field Blank (FB)	5Anill7	NA	W		XX	X		NA	NA	NA	

Comments:

Relinguished By:	Sample Condition:			
Name:	Date/Time	Location:	Temp (°C)	
1 Done Nim	5Apr:17	Log In Walk In #2	TM562 (TM588)	
2				

Receive	ed by:
Name:	Date/Time
NIG XIII	5/10/2017
ng the	1615

# **MVTL Calibration Worksheet**

Site: MDU Loc

. .

Technician: Damen Miesunas

Date: 3 April 17	Time: 073	D			
Instrument (Circle One):	pН	Temp °C	Pre Cal	Post Cal	Post Cal Range mv mv Range +/- 50
#1 650 MDS 08F100203	Buffer 7	20.36	7.00	7.00	$6.95-7.05 - \frac{12}{2} - \frac{3}{2} + \frac{3}{2} - \frac{3}{2} + \frac{3}{2} - \frac{3}{2} + \frac{3}{2} - \frac{3}{2} + \frac{3}{2} - \frac$
#2 650 MDS 04H14736	Buffer 10	20,12	10.05	10.00	9.95-10.05 <u>192.0</u> -180 +/- 50
#3 556 MPS 12E102056	Conductivity	Temp °C	Pre Cal	Post Cal	Post Cal Range
Other:	Buffer 1413	19.80	1419	1413	1387-1426
Comments:	ORP	Temp °C	Pre Cal	Post Cal	Post Cal Range
	231 mV @ 25C	7.09	247.2	231.3	±10 mV
	DO	Temp °C	Pre Cal	Post Cal	Post Cal Range Barometric Pressure (mm Hg)
		14.27	9.20	9,50	mg/L 705,4

Date: 4April 17	<b>Time:</b> 071	5	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	·
Instrument (Circle One):	рН	Temp °C	Pre Cal	Post Cal Post Cal Range mv mv Range +/- 50
#1 650 MDS 08F100203	Buffer 7	19,97	7,02	7,00 6.95-7.05 -15,5 0+1-50
#2 650 MDS 04H14736	Buffer 10	19172	9,92	<u>9,99</u> 9.95-10.05 - 188,9 -180 +/- 50
#3 556 MPS 12E102056	Conductivity	Temp °C	Pre Cal	Post Cal Post Cal Range
Other:	Buffer 1413	19.75	1416	<u>1413</u> 1387-1426
Comments:	ORP	Temp °C	Pre Cal	Post Cal Post Cal Range
	231 mV @ 25C	19.98	212.8	<u>231,0</u> ±10 mV
	DO	Temp °C	Pre Cal	Post Cal Post Cal Range Barometric Pressure (mm Hg)
		19.01	5.39	8,31 mg/L 70816

# **MVTL Calibration Worksheet**

Site: MALLC

;

Technician: Darren Fesura

Date: 5 April 17	Time: 065	D		
Instrument (Circle One):	рН	Temp °C	Pre Cal	Post Cal Post Cal Range mv mv Range +/- 50
#1 650 MDS 08F100203	Buffer 7	20,30	7.04	<u>7.00</u> 6.95-7.05 <u>-17.5</u> 0 +/- 50
#2 650 MDS 04H14736	Buffer 10	20,15	10.03	10.00 9.95-10.05 <u>192.</u> -180 +/- 50
#3 556 MPS 12E102056	Conductivity	Temp <sup>°</sup> C	Pre Cal	Post Cal Post Cal Range
Other:	Buffer 1413	20.46	1421	<u>14</u> <u>B</u> 1387-1426
Comments:	ORP	Temp °C	Pre Cal	Post Cal Post Cal Range
	231 mV @ 25C	20,03	224.3	<u>231.0</u> ±10 mV
	DO	Temp °C	Pre Cal	Post Cal Post Cal Range Barometric Pressure (mm Hg)
		23,82	6.73	7.89 mg/L

Date:	Time:						
Instrument (Circle One):	рН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
#1 650 MDS 08F100203	Buffer 7				6.95-7.05		0 +/- 50
#2 650 MDS 04H14736	Buffer 10				9.95-10.05		-180 +/- 50
#3 556 MPS 12E102056	Conductivity	Temp °C	Pre Cal	Post Cal	Post Cal Range		-
Other:	_ Buffer 1413				1387-1426		
Comments:	ORP	Temp °C	Pre Cal	Post Cal	Post Cal Range		
	231 mV @ 25C				±10 mV		
	DO	Temp °C	Pre Cal	Post Cal	Post Cal Range	Barometri	c Pressure (mm Hg)
					mg/L		



2616 E. Broadway Ave, Bismarck, ND Phone: (701) 258-9720 Water Level

Sampling Personnel: Davien Nieswaag

Company:

MDU Lewis and Clark

Well ID	Date	Ţime	Depth to Water	Comments
MW101	3April 17	7401	9,21	
MW105	341117	1414	8,95	
MW106	3April 17	1412	7,61	
MW107	3A11/17	1403	4.35	
MW108	3April17	1410	16.95	
MW116	3April17	1406	9.92	
			L	



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# **Field Datasheet**

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

Water Level

Sampling Personnel:

Company:

MDU Lewis and Clark

Well ID	Date	Time	Gauge Reading	Comments	
East Scrubber Pond Gauge	SApril 17	0851	0:45		
West Scrubber Pond Gauge	SAD1:17	0850	0.60		
Stream behind Sewage Lagoon	SApril 17	1205	0.35		



Groundwater Assessment

Event: 2017	
Sample ID: n h///0	
Sampling Personal: Darren Mieswaa	

Phone: (701) 258-9720

Weather Conditions:		Temp:	55	۶F	Wind:	W5			Precip	: Sun	ny / Partly C	loudy (Clo	udy)
	Well Info	ormation						Sa	mpling	Informatio	on		
Well Locked?	Yes	No	No			Purgi	ing Method:	Method: Bladder			Со	ntrol Setting	js
Well Labeled?	Yes	No				Sampli	ing Method:	Blac	Bladder		Purge:	6	sec.
Casing Straight?	Nes	No				Dedica	ted Equip?:	Yes	No.		Recover:	57	sec.
Grout Seal Intact?	Yes	No	Not Vi	sible		Duplicate	e Sample?:	Yes	NO		PSI:	OB	
Repairs Necessary:						Duplicate	Sample ID:	·			Pumping Ra	ate: ] 00	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	G	1,28	ft		F	Purge Date:	3 ADI	117	Time Purg	ing Began:	1513	am/pm
Total W	/ell Depth:		-	ft		Well P	urged Dry?	Yes	Nø	Time F	Purged Dry:	<u> </u>	am/pm
We	Il Volume:			liters		Sa	ample Date:	SApri	117_	Time o	f Sampling:	1653	am/pm
Depth to Top	o of Pump:	] (	4.22	ft					. /				
Water Level After Sample: 9, 40 ft			Bottle	500 m	L Nitric	1 Lit	er Raw						
Measurement Method: Electric Water Level Indicator		ndicator		List:	500 mL Nit	tric (filtered)	4 - 1 L	iter Nitric					

Field Measurements

Stabil	ization	Temp	Spec.	nН	DO (mg/l.)	ORP (mV)	Turbidity	Water	mL Removed	Discription:
SFO #	Time	(0)	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	Removed	clear, slightly turbid, turbid
1	1518	7.56	1103	7.43	2,72	63,3	270	HF.9.34	500	Tartid
2	1538	7.53	1101	7.43	2,45	66.8	30.4	9.38	2000	Clear
3	1558	7.49	1103	7,43	2,42	6813	20,5	9,34	2000	dy
4	1608	7.37	1102	7,44	2,43	70.0	0,11	1,40	2000	cla
5	1638	7.19	1102	7,43	2.41	71.2	5,62	9,42	2000	ch
6	1643	7,98	1/02	7.43	2,39	72,1	4,97	9,38	500	ch
7	1648	7.01	1102	7,43	2.42	72,4	4.95	9.38	500	an
8	1653	6.95	1103	7,43	2.42	72,6	4.95	9.40	500	chear
9							Ĺ			
10										
Stabilized:	( /Yès /	No	-			To	otal Volume	Removed:	10000	mL
Comments	s:\								1	



**Field Measurements** 

Stabil	ization	Temp	Spec.		ро	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1800	7.46	1188	7.45	2.45	79,5	34.0	9,13	500	cher
2	1810	7,06	1198	7.46	1.50	9,5	14.6	9116	1000	cles
3	1(20	6.88	1197	7,46	1,44	1.7	6,93	9,16	1000	ch
4	1825	6.91	1197	7.46	1141	$-o_i$	3.59	1,16	\$500.	cler
5	18 30	6,91	1197	7.46	1.39	O.I	2.30	9.16	500	ch
6	1835	6.91	1197	7,46	1.40	Oib	2,37	9.16	500	ch
7	1040	6.89	1197	7.46	640	1.0	2,29	9.16	500	ch
8	l						•			
9										
10										
Stabilized	Yes )	No	<b>.</b>	1u	<u>.</u>	Т	otal Volume	Removed:	4500	mL
Comment	s:		-							

2616 E. Broadw Phone:	vay Ave. Bism (701) 258-972	narck, ND 20		Field Groun	Da1	ash	eet a		ompany: vent: sample ID: Sampling Per	N 2 // L sonal: ///	1DU Lewis 017 1/21 1/12/ 1/12/ Sunn	and Clark	U a	
Weather Cor	nditions:		Temp:	<u> 41 °F</u>		Wind: 💋	<u>ww</u>		Sor	anling In	formatio	n		
	V	Vell Infor	mation	. (		·.			Jai			Cor	trol Setting	js
Well	Locked?	her	(No)			Ļ	Purgin	g Method:	Blade	lor		Purge:	8	sec.
Well	abeled?	Tes	No			-	Samplin	g Method:		No		Recover:	52	sec.
Casing	Straight?	Yes	No			ŀ	Dedicate	ed Equip?	Ves	NO		PSI:		
Grout Sea	al Intact?	Yes	No	Not Vis	sible	ŀ	Duplicate					Pumping R	ate: <i>100</i>	mL/min
Repairs Nec	essary:						Duplicate 3	ample ib.				T	NONT	
	Casing	Diameter:		2"		-	P	urge Date:	UAMI	17	Time Purg	ing Began:	002	am/pm
Water	Level Befo	ore Purge:	7	<u>138</u>			Well Pu	rged Dry?	Yes	Nø	Time F	Purged Dry:	.025	
	Total W	ell Depth:			litors		Sai	mple Date:	UADON	17	Time o	f Sampling:	1000	Ampin
	We	Il Volume:		000	ft	Ì			· · · · · · · · · · · · · · · · · · ·			199 <u>8</u> .		
De	epth to Top	of Pump:		197	- n ft	Ĵ.	Bottle	500 m	nL Nitric	1 Lite	r Raw		t en	
Water	r Level Afte	er Sample:		lator Level	Indicator	fer -	List:	500 mL Ni	tric (filtered)	<u>4 - 1 Li</u>	ter Nitric			
Me	easuremen	it Methou.		aler Lever	and the second								•	Contract of the second s
Nythan		and a second			Field	Measure	Iments	1	<u> </u>					
				n Sanananan		000	Turkidita	Water	ml		Discription	า:		
Stabiliz	ation	Temp	Spec.		DO	ORP (m)()	(NTU)	Level (ft)	Removed	Clarit	y, Color, O	dor, Ect.	Уст	
(3 conse	ecutive)	(°C)	Cond.	рН	(mg/L)	(IIIV) +20 mV	+10%	0.25 ft		clear,	slightly turb	id, turbid		
SEQ #	Time		±5%	±0.1	±10%	1970	21-7	10.41	500	clea	1/	an San	and the second	
1	0940	8.02	1429	1.68	7.50	11/10	10/3	1120	2000	01.00		and the second		
2	inno	8.54	1128	7,65	0.32	13,1	61	11.50	2-000	- ch			1/ ~	
3	1020	6.69	1430	7,65	0.24	19-31.	117.6	11150	7000				1 Stars	9940.000 (AMA)
	1020	14.50	1430	7.66	0.26	-58.	3 6.89	11.69	1000.	1 an		and the property of the second s		
	ILUE	012	1430	765	0.25	-65,8	4.95	11,70	1500	1a			1.	• contraction of the second
5	1013	8167	HH R	715	0,24	-198	8 4.89	11.72	500	1an			-{··· · · ·	
6	1050	10164	1928	1100	074	-71	16.68	11.72	500	l			-	
7	1055	8162	1929	1.63	1.01						5		ed Standard A	Constant and Constant of Co
8				+							<u>~</u>		-	
9	1A			+	+	_	.* a	- 1997-1997-1997-1997-1997-1997-1997-199	A PIN-					
10	1/(						Total Volum	ne Remove	d: <u> </u>	mL				
Stabilized									and the second s					
Comment														

\$ PN 4 April 17



Phone: (701) 258-9720



Company:

Sample ID:

Sampling Personal:

Event:

MDU Lewis and Clark

2017

11

Field Measurements

**Field Datasheet** 

Groundwater Assessment

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1205	8,30	6649	6,99	0.68	42.4	35,5	19.00	500	C.Gr
2	1225	8,66	6684	7.01	0,33	2.1	22.3	19.08	2000	cler
3	1245	8.88	6708	7.01	0,29	113	12.5	19,12	2000	ch
4	1305	8.90	6775	7,01	0.24	-2.0	5.89	19,12	2000	cler
5	1310	8.82	6795	7.01	0.21	-3,3	4,54	19112	500	dr
6	1315	8.89	6804	7.01	0.20	-4,0	4,43	19,12	500	ch_
7	1320	8,71	68 12	7.01	0,21	- 4,5	4.31	19114	500	ch
8										
9										
10	$\square$									
Stabilized:	Yes	No				To	otal Volume	Removed:	<u> </u>	mL
Comments	s:  \								0 -	

<u>م</u>



Groundwater Assessment

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	mbell
Sampling Persona	al: Arrigo Nicswhan

Weather Conditions:		Temp:	47 °F		Wind:	h/10			Precip	Sun	ny / Partly Cl	oudy	ıdy /
······································	Well Info	rmation				-		Sa	mpling l	nformatio	on	~	
Well Locked?	Yes	NO				Purgi	ing Method:	Blad	der		Con	trol Settings	3
Well Labeled?	Yes	No				Sampl	ing Method:	Blad	der		Purge:	_5	sec.
Casing Straight?	Xes	No				Dedica	ted Equip?:	Yes	Nø		Recover:	55	sec.
Grout Seal Intact?	Aes	No	Not Visi	ble		Duplicate	e Sample?:	Tes	No		PSI:	-0	B
Repairs Necessary:	$\sim$					Duplicate	Sample ID:	Qup-			Pumping Ra	.te: [00	mL/min
Casing	Diameter:		2''									1	
Water Level Bef	ore Purge:	8	7.63	ft			Purge Date:	YAPril	17	Time Purg	ing Began:	620	amhom
Total V	Vell Depth:	0		ft		Well F	Purged Dry?	Yes	NO	Time F	ourged Dry:		am/pm
We	ell Volume:		<u> </u>	liters		Sa	ample Date:	4 April 1	7	Time of	f Sampling:	1725	am/pm
Depth to Top	o of Pump:	C	7.90	ft									<u> </u>
Water Level After	er Sample:			ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Water Level Ind	dicator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			
L					-								

## **Field Measurements**

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1625	8,13	1551	7,62	6.18	3816	477	8.71	500	Turbit Brown
2	1645	6.86	1108	7,63	4,93	43,9	147	6.71	\$2000	Turbid
3 ¥	14705	5.89	1609	7,64	4.42	46.4	14.6	8,71	2000	cler
4	1715	6.10	1615	7,64	4.54	45.4	3,72	\$ 8.71	1000	di
5	1-120	6.08	1617	7.64	4,44	45.6	3,75	8,71	500	Cler_
6	1425	613	1618	7.64	4.41	44.6	3.60	8,71	500	di
7										
8										
9										
10	$\square$								(	L
Stabilized	: / Yes	No	-			T	otal Volume	e Removed:	6500	mL

Comments:

HAMI'I,7



Groundwater Assessment

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	MW11)
Sampling Personal:	Parren Nieswaag

Weather Conditions:	Weather Conditions: Temp: 43 °F					NI			Precip	Suni	ny / Partly C	loudy I Clo	udy
١	Nell Info	rmation				, ,	Sampling Information						
Well Locked?	Yes	No				Purg	ing Method:	Bla	dder		Co	ntrol Setting	IS
Well Labeled?	Yes	No				Sampl	ing Method:	Bla	dder	J	Purge:	6	sec.
Casing Straight?	Ves	No				Dedica	ited Equip?:	Yes	NO		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Visi	ble		Duplicate	e Sample?:	Yes	NO		PSI:		
Repairs Necessary:	<u> </u>					Duplicate	Sample ID:				Pumping R	ate: <u>(00</u>	mL/min
Casing	Diameter:		2"										
Water Level Befo	re Purge:		8,00	ft			Purge Date:	YAPS	112	Time Purg	ing Began:	1423	am/pro
Total W	ell Depth:			ft		Well F	Purged Dry?	<u> </u>	(NO)	Time F	ourged Dry:	<	am/pm
Wel	I Volume:		-	liters		Sa	ample Date:	UApri	117	Time of	f Sampling:	1518	am/pm
Depth to Top	of Pump:	l	13.38	ft									
Water Level Afte	r Sample:	8	410	ft		Bottle	500 m	_ Nitric	1 Lite	er Raw			
Measurement	t Method:	Electric \	Water Level Ind	dicator		List:	500 mL Nit	ric (filtered	) 4 - 1 Li	ter Nitric			

### Field Measurements

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1428	6.89	3640	7,15	0.62	76,1	53.1	8.11	5.80	Slight x Turbid
2	1448	Risi	3/39	7.35	2,26	\$6.2	10,3	6,09	\$52000	den
3	1458	6:37	3150	7.36	2.58	91.0	6.08	8110	1000 .	du
4	1503	6.50	3115	7,36	2.66	93.4	3,70	8,09	500.	dr
5	1508	6.61	3164	7,37	2,79	94.2	2,54	8,10	500	du
6	1513	6.65	3166	7.37	2.80	95.2	2.47	8,10	500	ch
7	1518	6,64	3169	737	2.82	96.0	2,44	8.10	500	the
8	1									
9	$\square$									
10	V								Var	
Stabilized Yes No Total Volume Removed: Marco mL 5500									mL 5500	
Comments: DNUApril17								2		



Groundwater Assessment

Company:	and Clark	
Event:	2017	
Sample ID: /	nWIIT	
Sampling Perso	nal: Darren	Niguan

			7										
Weather Conditions:		Temp:	<u>3</u> 1°F	Wi	ind:	NW	-		Precip:	Sun	ny / Partly C	loudy (Clo	oudy )
	Well Info	rmation		·····		,	1	Sa	mpling l	nformatio	on		
Well Locked?	Yes	No	T			Purgi	ng Method:	Blad	der		Co	ntrol Setting	<u>js</u>
Well   abeled?	Yes	No				Sampli	ng Method:	Blad	der	]	Purge:	6	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	(No)		Recover:	5Y_	sec.
Grout Seal Intact?	Zes	No	Not Visil	ble		Duplicate	Sample?:	Yes	No		PSI:	OB	
Repairs Necessary:						Duplicate	Sample ID:		<u> </u>		Pumping R	ate: / ರಿ <i>ಧ</i>	mL/min
Casing	Diameter:		2''										
Water Level Befo	ore Purge:	ž	5.53	ft		F	Purge Date:	3 April	17	Time Purg	ging Began:	1925	ampm
Total W	/ell Depth:		<u> </u>	ft		Well P	urged Dry?	Yes	Ňo	Time F	Purged Dry:	1505	am/om
We	Il Volume:			liters		Sa	imple Date;	14	In:117	Time o	f Sampling:	0810	(am/pm
Depth to Top	o of Pump:		7.77	ft				121-27 11/1	/ · · · · · · · · · · · · · · · · · · ·				
Water Level After	er Sample:	-	7.72	ft		Bottle	500 n	nL Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level Inc	dicator		List:	500 mL N	itric (filtered)	4 - 1 Li	ter Nitric	<u> </u>		

### Field Measurements

Stabili (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1430	7.16	8280	7,21	8,25	42.0	66,2	6.02	500	x Gan slightly tub.
2	1440	6.87	8303	7,21	8,70	60.0	60,2	6,63	5003	the st
3	1450	6,62	8199	7.22	8,24	69,1	43,5	7,03	1000	<u> </u>
4	1500	6,43	8217	7,22	8.18	74,7	43,2	7.41	1000	dr
5	1505	6,87	8155	7,21	8,22	75,5	26,4	7,72	570	C.C.
6	1		0.0				٨t	×r		
7	0805	101	prd the	of for	Sonin.	e.		5.60		
8	OKIO	5,74	3308	7.24	8.53	219,5	13.5			clea
9			0					Su		
10		$\square$						<u> </u>		
Stabilized: Yes No Total Volume Removed: 400 mL										

Comments:

\* pargaprilly



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	n h 103
Sampling Personal:	Narren N. Irvaag
	P

Weather Conditions:		Temp:	36 °F		Wind: ,	<del>5</del> 5			Precip	Sunr	y) Partly C	Cloudy / Clo	oudy
N	Nell Info	rmation	57				Sampling Information						
Well Locked?	Yes	NO				Purgi	ng Method:	Blac	dder		Co	ntrol Setting	js
Well Labeled?	Cles	No				Sampli	ng Method:	Blac	dder		Purge:	5	sec.
Casing Straight?	Aes	No		_		Dedicat	ted Equip?:	Yes	No		Recover:	- 55	sec.
Grout Seal Intact?	Yes	No	Not Visit	rte		Duplicate	Sample?:	Yes	N		PSI:		
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: / <u>0</u> 0	mL/min
Casing [	Diameter:		2"					-		-			
Water Level Befo	re Purge:		10,70	ft		F	Purge Date:	SADI:	1(7)	Time Purg	ing Began:	0942	@m/pm
Total W	ell Depth:			ft		Well P	urged Dry?	Yes	NO	Time P	urged Dry:		am/pm
Wel	I Volume:		· .	liters		Sa	imple Date:	SADI	17	Time of	Sampling:	1103	/am/pm
Depth to Top	of Pump:		16.92	ft				· /	, 				
Water Level After	r Sample:			ft		Bottle	500 m	L Nitric	1 Lite	er Raw		/	
Measurement	Method:	Electric '	Water Level Ind	icator		List:	500 mL Ni	tric (filtered)	) 4 - 1 Li	ter Nitric			

Field Measurements

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.		
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid		
1	0947	7.45	2915	7.50	0,93	31.8	163	10072	500	sliphtly twid (ST)		
2	10 07	7.87	1592	7,40	0,40	12413	62.0	(0,72	2000	ST		
3	1027	8121	1556	7.56	0.37	143.4	8.95	10.72	2000	clear		
4	1037	8,42	1528	7,60	0.31	122,1	3,24	10.72	1000	Clar		
5	1043	8,47	1525	7,73	0,30	113.0	2,99	10,72	580	di		
6	1047	8.55	1524	7,78	0,29	104.7	2.90	10,72	500	Un		
7	1053	8.55	1522	7.86	0,29	81.4	2,80	10,72	500	A		
8	1057	8.60	1519	7,92	0.30	77.3	2.73	10,72	500	d		
9	1003	8,58	1519	7,94	0,27	7411	2.69	10,72	520	u		
10								Ľ				
Stabilized	: (Yes	No	•	Total Volume Removed: 8080 mL								

Comments:

Groundwater Assessment

°F

0

	Company:	MDU Lewis and Clark
	Event:	2017
	Sample ID:	NW 109
	Sampling Personal:	Darren Nieraus
	¢	
	Precip	Sunny / Partly Cloudy (Cloudy
	Sampling I	nformation
Method:	Bladder	Control Settings

Well Information											
Well Locked?	Yes	NO									
Well Labeled?	Yes/	No									
Casing Straight?	Tes	No									
Grout Seal Intact?	Yes	No	Not Visible								
Repairs Necessary:	~~~~										
Casing	Diameter:		2"								
Water Level Bef	fore Purge:	X-	3,210,13 ft								
Total V	Vell Depth:	ł	ft								
We	ell Volume:		liters								
Depth to To	p of Pump:	13	3,20 ft								
Water Level Aft	er Sample:	1	ft								
Measuremer	nt Method:	Electric	Water Level Indicator								

Temp:

0

MVTL

Weather Conditions:

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

	Sampling Information											
Purgin	g Method:	Blad	der		Co	ntrol Setting	gs					
Samplin	g Method:	Blad	der		Purge:	5	sec.					
Dedicate	ed Equip?:	Yes No			Recover:	55	sec.					
Duplicate	Duplicate Sample?:		No		PSI:							
Duplicate S	Sample ID:		~		Pumping F	late: 100	mL/min					
Pi	urge Date:	5 Aori	117	Time Purg	ing Began:	0750	@m/pm					
Well Pu	irged Dry?	Yes	No No	Time P	Purged Dry:		am/pm					
Sar	nple Date:	SANI	17	Time of	f Sampling:	D840	am/pm					
			· · · · · · · · · · · · · · · · · · ·		l.	<i>v</i> - <i>i</i> -						
Bottle	Bottle 500 mL Nitric 1			er Raw								
List:	List: 500 mL Nitric (filtered)		4 - 1 Li	ter Nitric								

### Field Measurements

Wind: Ur

Stabilization (3 consecutive) SFQ # Time		Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1755	5.70	1677	7,53	2,33	177,7	28,0	10:65	500	Cler
2	1815	611	1660	7,41	0.38	153.5	7.82	10.65	2000	de
3	0825	6.08	1666	7,48	0,35	140,0	2,28	10.68:	1000	de
4	0830	6,34	1663	7,50	0,35	136.3	0.94	10.68	500	dr
5	19835	6.19	1667	7.53	0.35	128.5	0,85	10.68	500	der
6	0840	614	1668	7.55	0,35	122,4	0.88	10,68	500	du
7		<del> </del>				<del>, ,</del>				
8										
9										
10										
Stabilized	:/\Yes	No				T	otal Volume	e Removed:	5000	mL

Comments:

AN SAPrill7





### CASE NARRATIVE - AMENDED 14 JUN 17 (Radiochem results on 17-W825 & 17-W830)

MVTL Lab Reference No/SDG:	
ML Lab Reference No/SDG:	
Client:	
Location:	
Project Identification:	
<b>MVTL Laboratory Identifications</b>	:
M Laboratory Identifications:	
Page 1 of 2	

201782-0810 S1704141 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – April 2017 Event 17-W821 through 17-W831 S1704141-001 through S1704141-011

MDU Sample Identification	IML Sample Identification	MVTL Laboratory #
MW110	S1704141-001	17-W821
MW119	S1704141-002	17-W822
MW210	\$1704141-003	17-W823
MW102	S1704141-004	17-W824
MW118	S1704141-005	17-W825
MW111	\$1704141-006	17-W826
MW117	S1704141-007	17-W827
MW103	S1704141-008	17-W828
MW109	\$1704141-009	17-W829
Dup 1	\$1704141-010	17-W830
Field Blank (FB)	S1704141-011	17-W831

### I. RECEIPT

- All samples were received at the laboratory on 5 Apr 17 at 1615.
- 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 ambient.
- 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 Apr 17.
  - 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.





CASE NARRATIVE - AMENDED 14 JUN 17 (Radiochem results on 17-W825 & 17-W830)

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IM Laboratory Identifications: Page 2 of 2 201782-0810 S1704141 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – April 2017 Event 17-W821 through 17-W831 S1704141-001 through S1704141-011

### 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.

### V. REPORTING

 Per email dated 30 May 2017 from Terri Olson at Barr, samples 17-W825 and 17-W830 were recounted for Radium 228.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

aufotte Cant

14Jun 17 DATE:

Claudette Carroll - MVTL Bismarck Laboratory Manager

# **Claudette Carroll**

From:Terri A. Olson <TOlson@barr.com>Sent:Tuesday, May 30, 2017 7:07 PMTo:Claudette CarrollSubject:RE: Emailing - 201782-0810 MDU L&C RADIOCHEM APR 17.pdf

Hi Claudette,

We have a source and field duplicate for Rad 228 that don't match well. The FD = <1 and the source (MW118) = 3.0. Please have the lab check these results.

Thanks,

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

-7.4:1:

### resourceful, naturally.

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.

From: Claudette Carroll [mailto:ccarroll@mvtl.com] Sent: Friday, May 19, 2017 4:01 PM To: Barr Data Management <BarrDM@barr.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com> Subject: Emailing - 201782-0810 MDU L&C RADIOCHEM APR 17.pdf

Hello all,

Attached is a set of Radiochem data for MDU Lewis & Clark from the sampling done in April. Hard copies to follow to Sam.

Have a wonderful weekend! Claudette



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





Page: 1 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 18 May 17 Lab Number: 17-W821 Work Order #:82-0810 Account #: 002800 Date Sampled: 3 Apr 17 16:53 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW110

#### Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.43	units	NA	SM 4500 H+ B	3 Apr 17 16:53	DJN
Temperature - Field	6.95	Degrees C	NA	SM 2550B	3 Apr 17 16:53	DJN
Conductivity - Field	1103	umhos/cm	1	EPA 120.1	3 Apr 17 16:53	DJN
Padium 226	See Atta	ached Report			3 May 17	OL
Radium 228	See Atta	ached Report			29 Apr 17	OL

Approved by:

11-9 May 17 Clauditte K Canter

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit



Page: 2 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 18 May 17 Lab Number: 17-W822 Work Order #:82-0810 Account #: 002800 Date Sampled: 3 Apr 17 18:40 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW119

Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.46	units	NA	SM 4500 H+ B	3 Apr 17 18:40	DJN
Temperature - Field	6.89	Degrees C	NA	SM 2550B	3 Apr 17 18:40	DJN
Conductivity - Field	1197	umhos/cm	1	EPA 120,1	3 Apr 17 18:40	DJN
Radium 226	See Atta	ached Report			3 May 17	OL
Radium 228	See Atta	ached Report			2 May 17	OL

Approved by:

10 Clauditte K Cantop

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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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 18 May 17 Lab Number: 17-W823 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 10:55 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW210

#### Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.65	units	NA	SM 4500 H+ B	4 Apr 17 10:55	DJN
Temperature - Field	8.62	Degrees C	NA	SM 2550B	4 Apr 17 10:55	DJN
Conductivity - Field	1429	umhos/cm	1	EPA 120.1	4 Apr 17 10:55	DJN
Radium 226	See Atta	ached Report			3 May 17	OL
Radium 228	See Atta	ached Report			2 May 17	OL

Approved by:

1c Clauditte K Canto May 17 19

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501 Report Date: 18 May 17 Lab Number: 17-W824 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 13:20 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW102

#### Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.01	units	NA	SM 4500 H+ B	4 Apr 17 13:20	DJN
Temperature - Field	8.71	Degrees C	NA	SM 2550B	4 Apr 17 13:20	DJN
Conductivity - Field	6812	umhos/cm	1	EPA 120.1	4 Apr 17 13:20	DJN
Radium 226	See Atta	ached Report			3 May 17	OL
Radium 228	See Atta	ached Report			2 May 17	OL

Approved by:

Claudite K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW118

#### Event and Year: April 2017

Report Date: 18 May 17 Lab Number: 17-W825 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 17:25 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

#### Temp at Receipt: Ambient

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.64	units	NA	SM 4500 H+ B	4 Apr 17 17:25	DJN
Temperature - Field	6.13	Degrees C	NA	SM 2550B	4 Apr 17 17:25	DJN
Conductivity - Field	1618	umhos/cm	1	EPA 120.1	4 Apr 17 17:25	DJN
Radium 226	See Atta	ached Report			3 May 17	OL
Radium 228	See Atta	ached Report			2 May 17	OL

CC Claudite K. Cantop 19May Approved by:

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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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 18 May 17 Lab Number: 17-W826 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 15:18 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW111

#### Event and Year: April 2017

Temp at Receipt: Ambient

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.37	units	NA	SM 4500 H+ B	4 Apr 17 15:18	DJN
Temperature - Field	6.64	Degrees C	NA	SM 2550B	4 Apr 17 15:18	DJN
Conductivity - Field	3169	umhos/cm	1	EPA 120.1	4 Apr 17 15:18	DJN
Radium 226	See Atta	ched Report			3 May 17	OL
Radium 228	See Atta	ched Report			2 May 17	OL

Approved by:

4 Claudette K Canto 19 May 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 18 May 17 Lab Number: 17-W827 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 8:10 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW117

#### Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	7.24	units	NA	SM 4500 H+ B	4 Apr 17	8:10	DJN
Temperature - Field	5.74	Degrees C	NA	SM 2550B	4 Apr 17	8:10	DJN
Conductivity - Field	8308	umhos/cm	1	EPA 120.1	4 Apr 17	8:10	DJN
Radium 226	See Atta	ached Report			3 May 17		OL
Radium 228	See Atta	ached Report			2 May 17		OL

Approved by:

Claudette K Cantle 19May 17

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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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 18 May 17 Lab Number: 17-W828 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 11:03 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW103

Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.94	units	NA	SM 4500 H+ B	5 Apr 17 11:03	DJN
Temperature - Field	8.58	Degrees C	NA	SM 2550B	5 Apr 17 11:03	DJN
Conductivity - Field	1519	umbos/cm	1	EPA 120.1	5 Apr 17 11:03	DJN
Radium 226	See Att	ached Report			3 May 17	OL
Radium 228	See Atta	ached Report			2 May 17	OL

Approved by:

Claudette K Canto 9May 17

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Report Date: 18 May 17 Lab Number: 17-W829 Work Order #:82-0810 Account #: 002800 Date Sampled: 5 Apr 17 8:40 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: MW109

#### Event and Year: April 2017

Temp at Receipt: Ambient

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	7.55	units	NA	SM 4500 H+ B	5 Apr 17	8:40	DJN
Temperature - Field	6.14	Degrees C	NA	SM 2550B	5 Apr 17	8:40	DJN
Conductivity - Field	1668	umhos/cm	1	EPA 120.1	5 Apr 17	8:40	DJN
Radium 226	See Atta	ached Report			3 May 17		OL
Radium 228	See Att	ached Report			2 May 17		OL

Approved by:

Claudette K Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: Dup1

Event and Year: April 2017

Report Date: 18 May 17 Lab Number: 17-W830 Work Order #:82-0810 Account #: 002800 Date Sampled: 4 Apr 17 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			3 May 17	OL
Radium 228	See Attached Report			3 May 17	OL

11 Claudette K Cantep 192/2017 Approved by:

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



#### Page: 11 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N. 4th Bismarck ND 58501

Project Name: MDU Lewis & Clark CCR Radiochem Sample Description: Field Blank (FB)

Event and Year: April 2017

Report Date: 18 May 17 Lab Number: 17-W831 Work Order #:82-0810 Account #: 002800 Date Sampled: 5 Apr 17 Date Received: 4 Apr 17 16:15 Sampled By: MVTL Field Services

Temp at Receipt: Ambient

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			3 May 17	OL
Radium 228	See Attached Report			3 May 17	OL

Approved by:

le 19 May 17 Claudite K Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

The reporting limit was elevated for any analyte requiring a dilution as coded below:  $\Theta$  = Due to sample matrix # = Due to con ; = Due to sample quantity + = Due to into  $\Theta$ # = Due to concentration of other analytes
+ = Due to internal standard response



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

Date: 6/14/2017

CLIENT:	MVTL Laboratories, Inc.
Project:	201782-0810
Lab Order:	S1704141

CASE NARRATIVE Report ID: S1704141002

(Replaces S1704141001)

Samples 17-W821 Mw110, 17-W822 MW119, 17-W823 MW210, 17-W824 MW102, 17-W825 MW118, 17-W826 MW111, 17-W827 MW117, 17-W828 MW103, 17-W829 MW109, 17-W830 Dup 1, and 17-W831 Field Blank were received on April 11, 2017.

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 S1704141002 replaces report S1704141001. Client requested Client requested a recount on samples S1704141-005 and S1705141-010 revised results reported.

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



Radium 228

Radium 228 Precision (±)

04/29/2017 1025

04/29/2017 1025

MB

MB

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

Sample Analysis Report

Company:	c.			Da Re	te Reported port ID	6/14/2017 S1704141002 (Replaces S1704141001)			
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-001 17-W821 Mw110 201782-0810				Wo Co Da Fie Ma	orkOrder: IlectionDate: teReceived: aldSampler: atrix:	S170 4/3/20 4/11/2 Wate	4141 017 4:53:00 PM 2017 11:29:00 AM r	
Comments									
Analyses		Result	Units	Qual	RL	Metho	d	Date Analyzed/I	nit
Radionuclides - To	tal								
Radium 226		0.04	pCi/L		0.2	SM 7500 Ra	-В	05/03/2017 954	MB
Radium 226 Precisio	n (±)	0.1	pCi/L			SM 7500 Ra	-B	05/03/2017 954	MB

pCi/L

pCi/L

-1.5

1.4

These results apply only to the samples tested.

Qualifiers:

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

Reviewed by:

**RL** - Reporting Limit

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J

1

Ga-Tech

Ga-Tech

- М Value exceeds Monthly Ave or MCL or is less than LCL
- 0 Outside the Range of Dilutions
- Matrix Effect х

Page 1 of 11

Wade Nieuwsma, Assistant Laboratory Manager



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Da Re	te Reported port ID	6/14/20 S1704 (Replac	)17 141002 ces S1704141001	)
ProjectName:	201782-0810				Wo	orkOrder:	S1704	141	
Lab ID:	S1704141-002				Co	llectionDate:	4/3/201	7 6:40:00 PM	
<b>ClientSample ID:</b>	17-W822 MW119				Da	teReceived:	4/11/20	017 11:29:00 AM	
COC:	201782-0810				Fie	IdSampler:			
					Ma	trix:	Water		
Comments						200659262	910 59590		
Analyses		Result	Units	Qual	RL	Metho	d	Date Analyzed/	Init
Radionuclides - To	tal					014 7500 D			

Radium 226	0.03	pCi/L	0.2	SM 7500 Ra-B	05/03/2017 954	MB
Radium 226 Precision (±)	0.04	pCi/L		SM 7500 Ra-B	05/03/2017 954	MB
Radium 228	0.6	pCi/L	1	Ga-Tech	05/02/2017 052	MB
Radium 228 Precision (±)	1.3	pCi/L		Ga-Tech	05/02/2017 052	MB

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

#### Qualifiers: В

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

Analyte detected in the associated Method Blank

Reviewed by: All

Wade Nieuwsma, Assistant Laboratory Manager

### **RL** - Reporting Limit

- 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
- х Matrix Effect

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Radium 228 Precision (±)

05/02/2017 355

MB

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

Sample Analysis Report

1.6

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Da Re	te Reported port ID	6/14/201 S170414 (Replace	7 1002 s S1704141001	)
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-003 17-W823 MW210 201782-0810				Wo Co Da Fie Ma	orkOrder: IlectionDate: teReceived: eldSampler:	S170414 4/4/2017 4/11/201	1 10:55:00 AM 7 11:29:00 AM	£.6
Comments					IVIC	unx.	Water		
Analyses		Result	Units	Qual	RL	Method	1 1	Date Analyzed/I	nit
Radionuclides - To	tal								
Radium 226		0.1	pCi/L		0.2	SM 7500 Ra	-B 0	5/03/2017 954	MB
Radium 226 Precision	n (±)	0.1	pCi/L			SM 7500 Ra	-B 0	5/03/2017 954	MB
Radium 228		-0.5	pCi/L		1	Ga-Tech	0	5/02/2017 355	MB

pCi/L

These results apply only to the samples tested.

Qualifiers:

в

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

### **RL** - Reporting Limit

- C Calculated Value
- Analyzed at IML Gillette laboratory G
- J Analyte detected below quantitation limits
- M Value exceeds Monthly Ave or MCL or is less than LCL

Ga-Tech

- 0 Outside the Range of Dilutions
- X Matrix Effect

Page 3 of 11



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

### Sample Analysis Report

Company:	MVTL Laboratories, Inc				Date	Reported	6/14/2017
	2616 E Broadway Ave.				Repo	rt ID	S1704141002
	Bismarck, ND 58501						(Replaces S1704141001)
ProjectName:	201782-0810				Work	Order:	S1704141
Lab ID:	S1704141-004				Colle	ctionDate:	4/4/2017 1:20:00 PM
<b>ClientSample ID:</b>	17-W824 MW102				Date	Received:	4/11/2017 11:29:00 AM
COC:	201782-0810				Field	Sampler:	
					Matri	x:	Water
Comments					64 6448.194		
Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.4	pCi/L	0.2	SM 7500 Ra-B	05/03/2017 954	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	05/03/2017 954	MB
Radium 228	0.1	pCi/L	1	Ga-Tech	05/02/2017 659	MB
Radium 228 Precision (±)	1.6	pCi/L		Ga-Tech	05/02/2017 659	MB

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

#### Qualifiers: B Analyte detected in the associated Method Blank E Value above guantitation range

- 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

Reviewed by: -1

**RL - Reporting Limit** 

- C Calculated Value
- 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
- X Matrix Effect

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Wade Nieuwsma, Assistant Laboratory Manager


Radium 228

Radium 228 Precision (±)

05/02/2017 1003

05/02/2017 1003

MB

MB

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

### Sample Analysis Report

-0.2

1.6

Company: MVTL Laboratories 2616 E Broadway Bismarck, ND 585		C.			Date Reported Report ID			6/14/2017 S1704141002 (Replaces S1704141001)		
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-005 : 17-W825 MW118 201782-0810				Wo Co Da Fie Ma	orkOrder: illectionDate: teReceived: eldSampler: atrix:	S17041 4/4/201 4/11/20 Water	41 7 5:25:00 PM 17 11:29:00 AM		
Analyses		Result	Units	Qual	RL	Metho	k	Date Analyzed/I	nit	
Radionuclides - To	otal									
Radium 226		0.1	pCi/L		0.2	SM 7500 Ra	-В	05/03/2017 954	MB	
Radium 226 Precisio	on (±)	0.05	pCi/L			SM 7500 Ra	-В	05/03/2017 954	MB	

pCi/L

pCi/L

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

Qualifiers:

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

Reviewed by: <

Wade Nieuwsma, Assistant Laboratory Manager

#### RL - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits

1

Ga-Tech

Ga-Tech

- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- X Matrix Effect

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

### Sample Analysis Report

Company:	MVTL Laboratories, Inc				Date	e Reported	6/14/201	7
	2616 E Broadway Ave.				Rep	ort ID	S170414	1002
	Bismarck, ND 58501						(Replace	s S1704141001)
ProjectName:	201782-0810				Wor	kOrder:	S170414	1
Lab ID:	S1704141-006				Coll	ectionDate:	4/4/2017	3:18:00 PM
<b>ClientSample ID:</b>	17-W826 MW111				Date	eReceived:	4/11/201	7 11:29:00 AM
COC:	201782-0810				Field	dSampler:		
					Mat	rix:	Water	
Comments					Para Pro Al	141575	Badir abkoroka	
Analyses		Result	Units	Qual	RL	Metho	l b	Date Analyzed/Init
Radionuclides - To	tal	Result	onits	Quai		wetho		Date Analyzeu/

Radium 226	0.1	pCi/L	0.2	SM 7500 Ra-B	05/03/2017 954	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	05/03/2017 954	MB
Radium 228	0.1	pCi/L	1	Ga-Tech	05/02/2017 1306	MB
Radium 228 Precision (±)	1.5	pCi/L		Ga-Tech	05/02/2017 1306	MB

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

Qualifiers:

#### в Analyte detected in the associated Method Blank

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions M 0
- х Matrix Effect

Page 6 of 11



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

Sample Analysis Report

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	<b>).</b>			Da Re	te Reported port ID	6/14/2017 S1704141002 (Replaces S1704141001)		
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-007 17-W827 MW117 201782-0810				Wo Co Da Fie Ma	orkOrder: IlectionDate: teReceived: eldSampler:	S17041 4/4/201 4/11/20 Water	41 7 8:10:00 AM 17 11:29:00 AM	
Comments									
Analyses		Result	Units	Qual	RL	Method	k	Date Analyzed/I	nit
Radionuclides - Tot	tal	0.2			0.2	SM 7500 Po	D	05/02/2017 054	MD

Radium 220	0.2	point	0.2	SIM 7500 Ra-D	05/05/2017 954	IVID
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	05/03/2017 954	MB
Radium 228	1.3	pCi/L	1	Ga-Tech	05/02/2017 1610	MB
Radium 228 Precision (±)	1.6	pCi/L		Ga-Tech	05/02/2017 1610	MB

These results apply only to the samples tested.

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

Reviewed by: A

**RL** - Reporting Limit

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- J Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions Μ
- 0
- х Matrix Effect

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Wade Nieuwsma, Assistant Laboratory Manager



Radium 228

Radium 228 Precision (±)

05/02/2017 1914

05/02/2017 1914

MB

MB

Ga-Tech

Ga-Tech

1

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

Sample Analysis Report

-3.3

1.4

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501	<b>).</b>			Da Re	te Reported port ID	6/14/2017 S1704141 (Replaces	002 S1704141001	)
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-008 17-W828 MW103 201782-0810				Wo Co Da Fie Ma	orkOrder: IlectionDate: teReceived: eldSampler:	S1704141 4/5/2017 1 4/11/2017 Water	1:03:00 AM 11:29:00 AM	
Comments					INIC		Water		
Analyses		Result	Units	Qual	RL	Metho	d Da	ate Analyzed/I	nit
Radionuclides - To	tal								
Radium 226		0.1	pCi/L		0.2	SM 7500 Ra	-B 05	/03/2017 954	MB
Radium 226 Precision	n (±)	0.1	pCi/L			SM 7500 Ra	-B 05	/03/2017 954	MB

pCi/L

pCi/L

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
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits S

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

### **RL - Reporting Limit**

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- J Analyte detected below quantitation limits
- Value exceeds Monthly Ave or MCL or is less than LCL Μ
- Outside the Range of Dilutions 0
- х Matrix Effect

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

### Sample Analysis Report

Company:	MVTL Laboratories, In 2616 E Broadway Ave Bismarck, ND 58501	C.			Da Re	te Reported port ID	6/14/201 S170414 (Replace	17 41002 es S1704141001	)
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-009 17-W829 MW109 201782-0810				Wo Co Da Fie Ma	orkOrder: IlectionDate: teReceived: eldSampler: atrix:	S170414 4/5/2017 4/11/201 Water	41 7 8:40:00 AM 17 11:29:00 AM	
Comments									
Analyses		Result	Units	Qual	RL	Metho	đ	Date Analyzed/I	nit
Radionuclides - Tot Radium 226	al	0.15	nCi/l		0.2	SM 7500 Ba	B	05/03/2017 954	MB

		•				
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	05/03/2017 954	MB
Radium 228	2.2	pCi/L	1	Ga-Tech	05/02/2017 2218	MB
Radium 228 Precision (±)	1.4	pCi/L		Ga-Tech	05/02/2017 2218	MB

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

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

<

**RL - Reporting Limit** 

- С Calculated Value
- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL М
- Outside the Range of Dilutions 0
- х Matrix Effect

Reviewed by: \_\_\_\_\_

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

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MB MB MB

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

Sample Analysis Report

Company:	MVTL Laboratories, Ir 2616 E Broadway Ave Bismarck, ND 58501	ю.			Da Re	te Reported port ID	6/14/20 S1704 (Replac	)17 141002 ces S1704141001	)
ProjectName:	201782-0810				We	orkOrder:	S1704	141	
Lab ID:	S1704141-010				Co	llectionDate:	4/4/201	7	
<b>ClientSample ID:</b>	mple ID: 17-W830 Dup 1 Date		teReceived:	4/11/2017 11:29:00 AM					
COC:	201782-0810				Fie	dSampler:			
					Ma	trix:	Water		
Comments					19992		An Cherry Oct		
Analyses		Result	Units	Qual	RL	Metho	d	Date Analyzed/I	nit
Radionuclides - To	tal								
Radium 226		0.02	pCi/L		0.2	SM 7500 Ra	-B	05/03/2017 954	MB

Radium 226	0.02	pCi/L	0.2	SM 7500 Ra-B	05/03/2017 954
Radium 226 Precision (±)	0.03	pCi/L		SM 7500 Ra-B	05/03/2017 954
Radium 228	-1.2	pCi/L	1	Ga-Tech	05/03/2017 122
Radium 228 Precision (±)	1.5	pCi/L		Ga-Tech	05/03/2017 122

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
- L
- Analyzed by another laboratory Not Detected at the Reporting Limit ND
- S Spike Recovery outside accepted recovery limits

-Reviewed by:

G

**RL - Reporting Limit** 

С

- Analyzed at IML Gillette laboratory Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL Outside the Range of Dilutions М
- 0
- x Matrix Effect

Calculated Value

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Wade Nieuwsma, Assistant Laboratory Manager



Radium 228

Radium 228 Precision (±)

05/03/2017 425

05/03/2017 425

MB

MB

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

### Sample Analysis Report

-0.6

1.5

Company:	MVTL Laboratories, Inc 2616 E Broadway Ave. Bismarck, ND 58501				Da Re	te Reported	6/14/2 S1704 (Repl	2017 4141002 aces S1704141001	)
ProjectName: Lab ID: ClientSample ID: COC:	201782-0810 S1704141-011 17-W831 Field Blank 201782-0810				We Co Da Fie Ma	orkOrder: IlectionDate: IteReceived: IdSampler: atrix:	S1704 4/5/20 4/11/2 Wate	4141 017 2017 11:29:00 AM r	
Comments								5	
Analyses		Result	Units	Qual	RL	Metho	ł	Date Analyzed/I	nit
Radionuclides - To	tal								
Radium 226		0.03	pCi/L		0.2	SM 7500 Ra	-В	05/03/2017 954	MB
Radium 226 Precisio	n (+)	0.04	nCi/l			SM 7500 Ra	-B	05/03/2017 954	MB

pCi/L

pCi/L

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

- Qualifiers: B Analyte detected in the associated Method Blank
  - 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

**RL** - Reporting Limit

- C Calculated Value
- G Analyzed at IML Gillette laboratory
- J Analyte detected below quantitation limits

1

Ga-Tech

Ga-Tech

- M Value exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- X Matrix Effect

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 11 of 11



Inter-Mountain Labs -

Your Environmental Monitoring Partner

	1673 Terra Aven	ue, Sheridan, Wyoming 82801 ph:	(307)6	72-8945				
	ANALY	TICAL QC SUMMARY R	EPO	RT				
IENT:	MVTL Laboratories, Inc.				Date: 6	6/14/201	7	
ork Order:	S1704141			Re	eport ID: S	6170414	1002	
oject:	201782-0810				(	Replace	s S170414100	1)
Radium 2	228 by Ga/Tech	Sample Type MBLK		Units	: pCi/L			
M	B-430 (04/26/17 11:52)	RunNo: 145297	PrepD	ate: 04/1	7/17 14:00	Bate	chID 13102	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	ND	1					
MI	B-431 (05/01/17 09:36)	RunNo: 145484	PrepD	ate: 04/1	7/17 14:00	Bato	hID 13123	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
Se	Total Radium 228	ND	1					
Radium 2	28 by Ga/Tech	Sample Type LCS		Units	: pCi/L			
LC	CS-430 (04/26/17 14:57)	RunNo: 145297	PrepD	ate: 04/1	7/17 14:00	Bato	hID 13102	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	39	1	40.1		98.1	65.9 - 132	
LC	CS-431 (05/01/17 12:40)	RunNo: 145484	PrepD	ate: 04/1	7/17 14:00	Bato	hID 13123	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	43	1	40.1		107	65.9 - 132	
Radium 2	28 by Ga/Tech	Sample Type LCSD		Units	: pCi/L	10		
LC	SD-430 (04/26/17 18:01)	RunNo: 145297	PrepD	ate: 04/1	7/17 14:00	Bato	hID 13102	
	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
	Total Radium 228	41	1	39	3.17	101	20	
Radium 2	28 by Ga/Tech	Sample Type MS		Units	: pCi/L			
S1	704140-003AMS (04/28/17 15:59)	RunNo: 145297	PrepD	ate: 04/1	7/17 14:00	Bato	hID 13102	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
9	Total Radium 228	25	1	40.1	ND	62.8	50 - 139	
MS	5-431 (05/01/17 18:44)	RunNo: 145484	PrepD	ate: 04/1	7/17 14:00	Bato	hID 13123	
	Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua
	Total Radium 228	49	1	40.1	ND	121	50 - 132	
Radium 2	28 by Ga/Tech	Sample Type MSD		Units	: pCi/L		1717 <u>1</u> 970	
MS	SD-431 (05/01/17 21:48)	RunNo: 145484	PrepD	ate: 04/1	7/17 14:00	Batc	hID 13123	
- (1997) (1997)	Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua
	Total Radium 228	45	1	49	7.52	112	20	

Qualifiers:

B Analyte detected in the associated Method Blank G Analyzed at IML Gillette laboratory

E Value above quantitation range

H Holding times for preparation or analysis exceeded

J Analyte detected below quantitation limits

ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

х Matrix Effect

L Analyzed by another laboratory

O Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits

Page 1 of 2



Inter-Mountain Labs

Your Environmental Monitoring Partner

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

### ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc. Date: 6/14/2017 Work Order: S1704141 Report ID: S1704141002 Project: 201782-0810 (Replaces S1704141001) Radium 226 in Water -Sample Type MBLK Units: pCi/L MB-1744 (05/03/17 09:54) RunNo: 145430 PrepDate: 04/27/17 0:00 BatchID 13118 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 ND 0.2 Radium 226 in Water -Sample Type LCS Units: pCi/L LCS-1744 (05/03/17 09:54) RunNo: 145430 PrepDate: 04/27/17 0:00 BatchID 13118 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 6.6 0.2 5.89 112 67.1 - 122 Radium 226 in Water -Units: pCi/L Sample Type LCSD PrepDate: 04/27/17 0:00 LCSD-1744 (05/03/17 09:54) RunNo: 145430 BatchID 13118 Analyte Result RL %RPD %REC % RPD Limits Qual Conc Radium 226 6.7 0.2 6.6 0.987 113 20 Radium 226 in Water -Units: pCi/L Sample Type MS S1704141-001AMS (05/03/17 09:54) RunNo: 145430 PrepDate: 04/27/17 0:00 BatchID 13118 Analyte Result RL Spike Ref Samp %REC % Rec Limits Qual Radium 226 10.6 0.2 11.8 ND 90.1 65 - 131

Qualifiers:

В

G

Analyte detected in the associated Method Blank

E

Analyzed at IML Gillette laboratory Analyte detected below quantitation limits

J ND Not Detected at the Reporting Limit

R RPD outside accepted recovery limits

X

Matrix Effect

Value above quantitation range

н Holding times for preparation or analysis exceeded

Analyzed by another laboratory L

0 Outside the Range of Dilutions

S Spike Recovery outside accepted recovery limits

Page 2 of 2



LABORATORIES, Inc. 2616 E Broadway Ave Bismarck, ND 58501

### Chain of Custody Record

Page 1 of 1 .

Toll Free: (8	Toll Free: (800) 279-6885 Fax: (701) 258-9724									201782-0810				
Company Nam	e and Address:			Account #	:						Phone #:			
										701-258-9720				
	M	VTL		Contact: Fax #:						Fax #:				
	2616 E E	Broadway		Claudette							For faxed report check box			
Billing Address	BISMARCK		Name of S	ampler:						E-mail: ccarroll@mvtl.com				
Dining Address	s (indicate il differenti		Ounder New	- h						For e-mail report check box				
	PO B	ox 249		Quote Nul	nber						Date Submitted:			
	New Ulm	MN 56073		Project Na	me/Numb					_	Purchase Order #:			
				i ioject ne	inc/Numb						BL5829			
		Sample Information				-	В	ottle	Тур	be	Analysis			
GIZDUN	41													
SITUTIO	in clai						03	pe						
	un 5/8/17					p	HN	erve	F					
IML Lab			Sample	Date	Time	eate	In (	Via	s J	5				
Number	MVTL Lab Number	Client Sample ID	Туре	Sampled	Sampled	Untr	1000	VOC	Glas	Othe	Analysis Required			
001						_		-	-					
001	17-W821	Mw110	GW	3-Apr-17	1653 -		4				Ra226 & Ra228			
002	17-W821 17-W822	Mw110 MW119	GW GW	3-Apr-17 3-Apr-17	1653 - 1840 -		4				Ra226 & Ra228 Ra226 & Ra228			
00 Z 203	17-W821 17-W822 17-W823	Mw110 MW119 MW210	GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17	1653 - 1840 - 1055 -		4 4 4				Ra226 & Ra228 Ra226 & Ra228 Ra226 & Ra228			
002 203 204	17-W821 17-W822 17-W823 17-W824	Mw110 MW119 MW210 MW102	GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17	1653 - 1840 - 1055 - 1320 -		4 4 4				Ra226 & Ra228			
002 203 204 025	17-W821 17-W822 17-W823 17-W824 17-W825	Mw110 MW119 MW210 MW102 MW118	GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17	1653 • 1840 • 1055 • 1320 • 1725 •		4 4 4 4				Ra226 & Ra228			
002 203 204 204 205	17-W821 17-W822 17-W823 17-W824 17-W825 17-W826	Mw110 MW119 MW210 MW102 MW118 MW111	GW GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17	1653 • 1840 • 1055 • 1320 • 1725 • 1518 •		4 4 4 4 4 4				Ra226 & Ra228			
002 203 204 005 005 007	17-W821 17-W822 17-W823 17-W824 17-W825 17-W825 17-W826 17-W827	Mw110 MW119 MW210 MW102 MW118 MW111 MW111	GW GW GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17	1653 - 1840 - 1055 - 1320 - 1725 - 1518 - 810 -		4 4 4 4 4 4 4 4				Ra226 & Ra228			
002 203 204 204 205 806 007	17-W821 17-W822 17-W823 17-W824 17-W825 17-W826 17-W827 17-W828	Mw110           MW119           MW210           MW102           MW118           MW111           MW117           MW103	GW GW GW GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 5-Apr-17	1653 • 1840 • 1055 • 1320 • 1725 • 1518 • 810 • 1103 •		4 4 4 4 4 4 4 4 4				Ra226 & Ra228			
002 203 204 025 007 007 007 007	17-W821 17-W822 17-W823 17-W824 17-W825 17-W825 17-W826 17-W827 17-W828 17-W829	Mw110       MW119       MW210       MW102       MW111       MW111       MW117       MW103       MW109	GW GW GW GW GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 5-Apr-17 5-Apr-17	1653 - 1840 - 1055 - 1320 - 1725 - 1518 - 810 - 1103 - 840 -		4 4 4 4 4 4 4 4 4 4				Ra226 & Ra228			
002 203 204 205 205 205 205 205 205 205 205 205 205	17-W821 17-W822 17-W823 17-W824 17-W825 17-W826 17-W827 17-W828 17-W828 17-W829 17-W830	Mw110           MWV119           MWV210           MWV102           MWV118           MWV111           MWV103           MWV109           Dup 1	GW GW GW GW GW GW GW GW GW	3-Apr-17 3-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 4-Apr-17 5-Apr-17 5-Apr-17 4-Apr-17	1653 - 1840 - 1055 - 1320 - 1725 - 1518 - 810 - 1103 - 840 -		4 4 4 4 4 4 4 4 4 4 4				Ra226 & Ra228         Ra226 & Ra228			

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

Transferred by:	Date:	Time:	Sample Condition:	Received by: /	Date:		Temp:
A. Simonson	7-Apr-17	1700		m Srohn	4/11/17	11:29	11.2
2.							

### **MVTL Calibration Worksheet**

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Site: MDU Loc	,,,,,,,,,,,	-		-	Technician: Pa	Men Maswrag
Date: 3 April 17	Time: 0730				Post Cal Bases	
#1 650 MDS 08F100203	Buffer 7	20,3 (	Pre Cal <u>7. 00</u>	7.00	6.95-7.05	mv mv Range +/- 50 -12-23 .0 +/- 50
#2 650 MDS 04H14736 #3 556 MPS 12E102056	Buffer 10 Conductivity	<u>20,12</u> Temp °C	<u>10,55</u> Pre Cal	1 D. 00 Post Cal	9.95-10.05 Post Cal Range	-192.0 -180 +/- 50
Other:	Buffer 1413	<u>19,80</u> Temp °C	<u>14(4</u> Bro Col	1413 Bost Col	1387-1426 Post Cal Bange	
	231 mV @ 25C	7.09	247.2	<u>231.3</u>	±10 mV	
	DO	Temp °C <u>14,27</u>	Pre Cal 9, 20	Post Cal	Post Cal Range mg/L	Barometric Pressure (mm Hg)

Date: 4April 17	Time: 071	5			· :
Instrument (Circle One):	рН	Temp °C	Pre Cal	Post Cal Post Cal Rang	e mv mv Range +/- 50
#1 650 MDS 08F100203	Buffer 7	19,97	7,02	7,00 6.95-7.05	-15,5 0 +/- 50
#2 650 MDS 04H14736	Buffer 10	19172	9,92	9,99 9.95-10.05	
#3 556 MPS 12E102056	Conductivity	Temp °C	Pre Cal	Post Cal Post Cal Rang	e
Other:	Buffer 1413	19.75	1416	<u>1413</u> 1387-1426	
Comments:	ORP	Temp °C	Pre Cal	Post Cal Post Cal Rang	e
	231 mV @ 25C	19.98	212.8	231.0 ±10 mV	
	DO	Temp °C	Pre Cal	Post Cal Post Cal Rang	e Barometric Pressure (mm Hg)
		19.01	8:39	8.31 mg/L	708.6



Groundwater Assessment

Company:	MDU Lewis a	and Clark
Event:	2017	
Sample ID: nu	~110	
Sampling Personal:	Darron	Nieswaa

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Weather Conditions:		Temp:	58	°F	Wind:	N.5 .		<del></del>	Precip	Sun	ny / Partly C	loudy/Clo	udy
We	ll Info	rmation				Sampling Information							
Well Locked?	Yes	No				Purging M	ethod:	Blac	der .		Co	ntrol Setting	IS
Well Labeled?	Yes	No				Sampling M	ethod:	Blac	der		Purge:	6	sec.
Casing Straight?	Nes	No				Dedicated E	quip?:	Yes	Ko		Recover:	57	sec.
Grout Seal Intact?	Yes	No	Not Vi	sible		Duplicate Sam	ple?:	Yes	No		PSI:	OB	
Repairs Necessary:						Duplicate Sam	ple ID:				Pumping R	ate: ] 00	mL/min
Casing Diar	meter:		2",										
Water Level Before F	Purge:	9	,28	ft		Purge	Date:	3 ADG	117	Time Purg	ing Began:	1513	am/pm
Total Well I	Depth:	~	-	ft		Well Purger	d Diry?	Yes	TNØ	Time F	Purged Dry:	·	am/pm
Well Vo	olume:	-		liters		Sample	Date:	SAPri	117	Time of	f Sampling:	1653	amipm
Depth to Top of I	Pump:	JL	1,22	ft				· //	· · /				
Water Level After Sa	ample:	I.	40	ft		Bottle	500 mL	. Nitric	1 Lite	er Raw			
Measurement Me	ethod:	Electric V	Vater Level	Indicator		List: 500	mL Nitr	ic (filtered)	4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect. 🕔
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1518	7.56	1103	7.43	2,72	63.3	270	14,9,34	500	Tursis
2	1538	7153	1101	7.43	2,45	66.8	30.4	9.38	2000	Clean
3	1558	7.49	1103	7,43	2,42	6813	20,5	9,34	2000	du
4	1618	7.37	1102	7,44	2,43	70,0	11.0	1,40	2000	cla
5	1638	7.19	1102	7,43	2.41	71.2	5,62	9,42	2000	ch
6	1647	7,98	1/02	7.43	2,39	721	4,97	9,38	500	ch
7	1648	7.01	11-62	7,43	2.42	72,4	4.95	9:38	580	an
8	1653	6.95	1/03	7,43	2.42	72,6	4.95	9,40	500	chear
9										
10										
Stabilized:	: ( /Yès /	No				Τc	otal Volume	Removed:	10000	mL
Comments	s:\								I	

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			Field	Da	itael	anat		Company:		MDU Lewi	s and Clark	c	
MVIL			ITEIU		ιασι	leer		Event:		2017			
			Ground	lwater	Assessi	ment		Sample ID:	m	~119			
2616 E. Broadway Ave, Bis	marck, ND							Sampling P	ersonal:	Darci	n Ali	Decis a	
Phone: (701) 258-9	720		1 - A			ONSUM	17						
Weather Conditions:		Temp:	50 °F		Wind:	W 2005			Precip:	Sunr	ny / Partly C	loudy / Cl	oudy
1	Well Info	rmation	6			<b>U</b>		Sa	mpling l	nformatio	on	C	
Well Locked?	- Cord	5NO)				Purging Me	ethod:	Blad	der		Co	ntrol Settir	igs
Well Labeled?	Ves	No				Sampling Me	ethod:	Blad	der		Purge:	4	sec.
Casing Straight?	Xes	No				Dedicated Ed	quip?:	Yes	(No)		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Visil	ole		Duplicate Sam	ple?:	Yes	Q		PSI:		
Repairs Necessary:	`					Duplicate Samp	le ID:				Pumping R	ate: //0c	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		9.19	ft		Purge	Date:	3 ADVI	117	Time Purg	ing Began:	1755	am/pm
Total W	/ell Depth:		~ (	ft		Well Purgeo	1 Dry?	Ýes	, No	Time F	urged Dry:		-am/pm
We	II Volume:		_	liters		Sample	Date:	3. April	17	Time of	Sampling:	1840	am/pm
Depth to Top	of Pump:	.	1.06	ft									
Water Level Afte	er Sample:			ft		Bottle	500 m	nL Nitric	1 Lite	r Raw			
Measuremen	t Method:	Electric \	Nater Level Ind	icator		List: 500	mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

Field Measurements

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1800	7.46	1188	7:45	2.45	79,5	34.0	9,13	500	cher
2	1810	1.OL	1198	7.46	1.50	5.5	14.6	911	1000	cle_
3	1(20	6-88	1197	7,46	1,44	1.7	6,93	9,16	1000	ch
4	1825	6-91	1197	7.46	1.41	$ -o_{\iota} $	3.59	Tilb	\$500-	rlen
5	18 30	6.91	1197	7,46	1:39	Di	2.30	9.16	500	ch
6	1835	6.91	1197	7,46	1.40	Orb	2,37	9.16	500	ch.
7	1040	6.89	1197	7.46	640	1.0	2,29	9.16	500	de
8			/							
9										
10	$\square$									
Stabilized:	: (Yes)	No	_			Т	otal Volume	Removed:	4500	mL

Comments: (

· ,														
				Fial	4 D-	took	hoot		Company:	•	MDU Lewi	s and Clark	<	
$\sim$ $\mathcal{N}$	AVTE			LIGI		11251	ieet		Event:	-	2017			
				Grou	undwater	Assessn	nent		Sample ID:		1/21	10		
2616 E. Broa	adway Ave. Bi	smarck, ND							Sampling Pe	ersonal:	anen	Nie	svan	
Phon	ie: (701) 258-9	9720												
Weather C	onditions:		Temp:	· 4.1	°F	Wind:	NW-	7		Precip:	Sunr	ny / Partly C	Cloudy (Clo	ouely
		Well Info	rmation	1		4 ×			Sa	mpling l	nformatio	on .	$\smile$	-
We	II Locked?	har	(No)				Purgir	ng Method:	Blad	der		Cc	ntrol Setting	gs
Well	I Labeled?	Tes	No				Samplir	ng Method:	Blad	der		Purge:	8	sec.
Casing	g Straight?	Tes	No				Dedicat	ed Equip?:	Yes	(No)		Recover:	52	sec.
Grout S	eal Intact?	Tes	No	Not V	'isible		Duplicate	Sample?:	Yes	NO		PSI:		
Repairs Ne	ecessary:						Duplicate \$	Sample ID:				Pumping R	late: /00	mL/min
	Casing	Diameter:		2"					1110 11	1-	Time Pura	ing Began:	6935	aminm
Wate	er Level Bet	ore Purge:		1038	ft			urge Date:	(14/n)	672	Time F	urged Dry:		
		Vell Depth:			tt.		Well Pi	urgea Dry?	IL And	1-7	Time of	Sampling:	1955	ampin
	VVE Depth to To:	n of Pump:	~~~~~	20 07	f		<u>Ja</u>	inple Date.	MATRIAL		1		1000	- <u>A</u>
Wate		er Sample:		11,77			Bottle	500 n	nL Nitric	1 Lite	er Raw			
M	leasuremer	nt Method:	Electric	Nater Level	Indicator		List:	500 mL N	itric (filtered)	4 - 1 Li	ter Nitric			
L			48°85	na ser <sup>ca</sup> n con	Field	Measure	ments	-	<u> </u>					
<u> </u>						Incucuro							1	
Stabili	ization	Temn	Spec.		DO	ORP	Turbidity	Water	mL		Discription	:	·	
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity	, Color, Od	or, Ect.		
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear,	slightly turbid	i, turbid		
1	0940	8.02	1429	7.68	4.58	197,0	36.7	10,4	. 500	clea	i/	· .		
2	1000	8.54	1128	7.65	0.32	73,7	26,3	11.30	2000	()-la	<u> </u>			•
3.	1020	8:69	1430	7.65	0.29	72-31.9	15.6	11.52	2000	ch	-		l.	
4	1040.	8458	1430	7.66	0.26	-58.	6.89	11.69	2000.	de			· · · · · · · · · · · · · · · · · · ·	.5
5	1045	8:63	1430	765	0.25	-65,8	4.95	11,72	1500	d	<u> </u>			
6	1050.	8.64 3	44000	7.65	0,24	-19.8	4.89	11.72	500	de			4.	
7	1055	8.62	1429	7.65	0.24	-71.6	6.68	11.72	500	1 de			-	
8	<u>_</u>	1				N				,				
9	$\langle \rangle$												. ·	
10	1/(:)		1	1		L		<u> </u>	1 STADO	<u> </u>	- <sup>19</sup> 94		· ·	· ·
Stabilized:		·No	_			. 1	otal volume	e Removed		INC				1. 4.
Commente	s.								. •					

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\$ nn 4 Apr: 117

MVTL	

Groundwater Assessment

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Company:	MDU Lew	vis and Clark	
Event:	2017		· · · · · · · · · · · · · · · · · · ·
Sample ID:	MIN	107_	
Sampling Pe	ersonal:	Cen Mesure	

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

			1 C			0				······			<u></u>
Weather Conditions:		Temp:	49°F		Wind:	// //			Precip	Suni	ny / Partly (	Cloudy (Clo	udy
	Well Info	rmation	l					Sa	mpling I	nformatio	on	$\sim$	/
Well Locked?	Yes	No				Purgi	ng Method:	Blad	der		Co	ntrol Setting	S
Well Labeled?	res	No				Sampli	ng Method:	Blac	der	]	Purge:	7	sec.
Casing Straight?	Tes	No				Dedica	ted Equip?:	Yes	Je.	]	Recover:	5-3	sec.
Grout Seal Intact?	Yes	No -	Not Visil	əle		Duplicate	Sample?:	Yes	No		PSI:	-06	7
Repairs Necessary:						Duplicate	Sample ID:	-			Pumping R	.ate: /00	mL/min
Casing	Diameter:		2"							-			
Water Level Bef	ore Purge:		18.71	ft		F	Purge Date:	TAPII	17	Time Purg	ing Began:	1200	amform
Total V	Vell Depth:			ft		Well P	urged Dry?	Yes	Se o	Time F	ourged Dry:	15	am/pm
We	ell Volume:			liters		Sa	ample Date:	4April	17	Time of	f Sampling:	1320	am/pm
Depth to Top	o of Pump:	7	0.24	ft				~ 1					
Water Level After	er Sample:		19,12	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Water Level Ind	licator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1205	8.30	6649	6,99	0.68	42.4	35,5	19.00	500	ca
2	12:25	8166	6684	7.01	0.33	2.1	22,3	12.08	2000	cler
3	1245	8.88	6708	7.01	0.29	113	12,5	19,12	2000	ch
4	1305	8.90	6775	7,01	0.24	-2.0	5.89	19.12	2000	cler
5	1310	8.82	6795	7.01	0.21	-3,3	4,54	19112	500	dr
6	1315	8.89	6004	7.01	0.20	-4.0	4,43	19,12	500	ch_
7	1320	8,71	6812	7.01	0,21	-4,5	4.31	19114	500	du
8										
9										
10	$\square$									
Stabilized:	Yes	No	_			Тс	otal Volume	Removed:	X700	mL
Comments	: N T								0-0	

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Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company:	MDU Lewis and Clark	
Event:	2017	
Sample ID:	MELLE	
Sampling Perso	nal: Darran Nicsarka	
	- Gold and and and and and and and and and an	

Weather Conditions:		Temp:	47 °F	Wind:	h/10			Precip	Sun	ny / Partly (	louduliel	
	Well Info	ormation	1		Sampling Information							udy
Well Locked?	Yes	NO			Purgi	ing Method:	Blac	lder		C	ntrol Sotting	
Well Labeled?	Xes	No			Sampli	ing Method:	Blac	lder	-	Burgoi		S
Casing Straight?	Xes	No			Dedica	ted Equip?:	Yes	a Na	4	Pagevor		sec.
Grout Seal Intact?	Hes	No	Not Visible		Duplicate	Sample?	Ned	No		Recover;	_ د ح	sec.
Repairs Necessary:					Duplicate	Sample ID:		110	1	P51:1		
Casing	Diameter:	·····	2"		Dapilouto	Campie ID.	-vup-1		1	Pumping R	ate: 100	mL/min
Water Level Bef	ore Purge:	8	.63	 ft		Purge Data	12 1 000	11-7	Time Dure		1100	
Total W	Vell Depth:			A		urge Date.	<u>Appil</u>	1		ing Began:	1620	am/om
We	ll Volume	······			Vell F	mple Detail	res	<u></u>		urged Dry:		am/pm
Depth to Tor	of Pump	9	.9D	0 4		ample Date:	4 April 1	/	lime of	Sampling:	1725	ampm
Water Level Affe	r Samnle	1		4		500				r		
Measuremon	t Method:	Electric 1			Bonie	500 ml	_ Nitric	1 Lite	r Raw			
Measuremen		Electric v	vater Level Indicator			[500 mL Niti	ric (filtered)	<u>4 - 1 Lit</u>	er Nitric			

Field Measurements

		1		1	1		1			
Stabi	lization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 con:	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1625	813	1551	7,62	6.18	3816	477	8.71	500	Trackit Bra
2	1645	6.86	1608	7.63	4,93	43,9	147	877	# 7 000	Tight
3 4	4,1705	5,89	1609	7,64	4.42	466.4	1.4.6	8,71	7:000	C/2
4	1715	6.10	1615	764	4.54	45.4	371	80 8,71	TAAD	- Cler
5	1720	6.08	1617	7.14	4,44	406	375	8.71	1.000	<u> </u>
6	1425	613	1618	7.64	4.41	141 141	210	8.71	500	- Cler-
7		_ <u> </u>	0			-6 110	2060	Q/I/	.200	aq
8										
9										
10	$\square$									
Stabilized:	Ves	No	L		L	LTc	l otal Volume	Removed:	(SAD	ml
Comments	s:/ //								0.700	1114



Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

MDU Lewis and Clark
2017
MWII
Darren Nilsmaag

Weather Conditions:		Temp:	<u>G</u> /3 °F	Wind:	NI	/	·····	Precip	: Sun	ny / Partly C	loudy /Clo	udy
V	Vell Info	rmation	V		• •		S	ampling I	nformati	on		
Well Locked?	Yes	Na			Pur	ging Method:	Bla	dder		Co	ntrol Setting	IS
Well Labeled?	Yes	No			Samp	oling Method:	Bla	dder		Purge:	6	sec.
Casing Straight?	<del>Kes</del>	No			Dedic	ated Equip?:	Yes	NO		Recover:	54	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplica	te Sample?:	Yes	NO		PSI:		
Repairs Necessary:	· _				Duplicat	e Sample ID:				Pumping Ra	ate: <i>1.00</i>	mL/min
Casing I	Diameter:		2"									
Water Level Befo	re Purge:		8.00	ft		Purge Date:	YADr	-117	Time Purg	ging Began:	1423	am/pr
Total We	ell Depth:		<u> </u>	ft	Well	Purged Dry?	Yes	NO)	Time I	Purged Dry:		_am/pm
· Wel	Volume:		lī	ters	5	Sample Date:	UApri	117	Time c	of Sampling:	1.1518	am/pm
Depth to Top	of Pump:		3.38	ft								
Water Level After	Sample:	8	410	ft	Bottle	500 m	L Nitric	1 Lite	er Raw			
Measurement	Method:	Electric	Nater Level Indicat	or	List:	500 mL Nit	ric (filtered	) 4-1Li	ter Nitric			

Field Measurements

Stat	ilization	Temp	Spec		по	ORP	Turbidity	Water	ml	Discription:
(3 co	nsecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1428	6.89	3640	7,15	0.62	76,1	53.1	8.11	5.00	5/ight x Turbid
2	1448	6.51	3139	7.35	2,26	\$6.2	10,3	6,09	\$52000	den
3	1458	6:37	3150	7.36	2.58	91.0	6.08	8110	1000 .	ch
4	1503	6.50	3115	7,36	2.66	93.4	3,70	8,09	500.	ch-
5	1508	6.61	3164	7.37	2,79	94,2	2,54	8,10	500	ch
6	1513.	6.65	3166	7,37	2.80	95.2	2.47	8.10	500	ch
7	1518	6264	3169	7.37	2.82	96.0	2,44	8.10	507.	The
8								0		
9	$\square$									
10	$\langle - \rangle$								Y~	
Stabilize	d Yes	No	-			To	otal Volume	Removed:	100	mL 5300
Commer	nts:							1	DN-1April 17	7



Groundwater Assessment

 Company:
 MDU Lewis and Clark

 Event:
 2017

 Sample ID:
 M M I I T

 Sampling Personal:
 Darren Missmany

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

			aa										
Weather Conditions:		Temp:		F	Wind:	NW	1		Precip:	Suni	ny / Partly C	Cloudy / Clo	udy
	Well Info	rmation				·	ı 	Sa	mpling l	nformatio	on	$\subset$	
Well Locked?	Yes ,	No				Purgi	ng Method:	Blad	der		Co	ontrol Setting	js
Well Labeled?	Yes)	No				Sampli	ng Method:	Blad	der		Purge:	6	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	(He)		Recover:	54	sec.
Grout Seal Intact?	-2¥es	No	Not Vis	sible		Duplicate	Sample?:	Yes	AD		PSI:	OB	
Repairs Necessary:						Duplicate	Sample ID:		_		Pumping R	ate: / 00	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	5	5,53	ft		F	urge Date:	SAGO	17	Time Purg	ing Began:	1425	ampm
Total W	ell Depth:		<u> </u>	ft		Well P	urged Dry?	Yes	No	Time F	ourged Dry:	1005	am/pm
We	ll Volume:			liters		Sa	mple Date	124	1117	Time of	Sampling:	0810	(am/pm
Depth to Top	of Pump:	-	7.72	ft			")						
Water Level Afte	r Sample:		7.72	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremen	t Method:	Electric	Water Level II	ndicator		List:	500 mL Ni	tric (filtered)	4 - 1 Lit	er Nitric			

**Field Measurements** 

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	mĹ	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1430	7.16	8280	7,21	8,25	42.0	66.2	6.02	\$00	signa slightly tub
2	1440	6.87	8303	7,21	8.70	60.0	60,2	6:63	5000	cle st
3	1450	6,62	8199	7,22	8,24	69,1	43,5	7,03	1000	
4	1500	6,43	8217	7,22	8.18	74,7	43,2	7,41	1000	de
5	1505	6,87	8155	7,21	8,22	75.5	26.4	7,72	570	ca_
6				•			1	r		
7	0805	1ur	5- d the	the for	Sun.y.			5.60		
8	OKIO	5,74	5,308	7.24	8.53	219,5	13.5			Clean
9			0				[ · · · · · · · · · · · · · · · · · · ·	- Su		
10	-									
Stabilized	: Yes	/No )				To	otal Volume	Removed:	4000	mL

Comments:

\* pargoprilly



Groundwater Assessment

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	nh 103
Sampling Persor	nal: Narran N. Irinaag

			,,,										
Weather Conditions:		Temp	YF		Wind: ,	55			Precip:	Śuni	ný) Partly C	loudy / Clo	udy
١	Well Info	rmation	- /					Sa	mpling l	nformatio	on		
Well Locked?	Yes	NO				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	s
Well Labeled?	Jes	No	•			Sampli	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	Jes	No				Dedicat	ed Equip?:	Yes	No		Recover:	35	sec.
Grout Seal Intact?	Yes	No	Not Visit	rte		Duplicate	Sample?:	Yes	NO		PSI:		
Repairs Necessary:						Duplicate	Sample ID:	$\subset$		]	Pumping R	ate: /₀ σ	mL/min
Casing	Diameter:		2"									······	
Water Level Befo	ore Purge:		10,70	ft		F	Purge Date:	SANC	(7	Time Purg	ing Began:	0942	am/pm
Total W	ell Depth:		·	ft		Well P	urged Dry?	Ýes	(Ng	Time F	Purged Dry:		am/pm
Wel	l Volume:		· .	liters		Sa	mple Date:	SARVI	17	Time o	f Sampling:	1103	am/pm
Depth to Top	of Pump:		16.92	ft							<u> </u>		
Water Level Afte	r Sample:			ft		Bottle	500 m	L Nitric	1 Lite	er Raw		//	
Measurement	t Method:	Electric	Water Level Ind	cator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pH.	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0947	7,45	2915	7.50	0,93	318	123	10072	500	sliphtly twid (ST)
2	1007	7.87	1592	7,40	0,40	124,3	62.0	10,72	2000	ST
3	1027	8121	1555	7.56	0.37	143.4	8,95	10.72	2000	clear
4	1037	8,42	1528	7,60	0.31	122,1	3,24	10,72	1000	Cler
5	1043	8,47	1525	7,73	0,30	113.0	2,99	10:72	500	di
6	1097	8.55	1524	7,78	0,29	104.7	2,90	10,72	500	un
7	1053	8.55	1522	7.86	0,29	81,4	2,80	10,72	500	du
8	1057	8,60	1519	7,92	0,30	77.3	2.73	10,72	500	d
9	1003	8,58	15/9	7.94	0,27	7411	2.69	10,72	500	u
10			/// L							
Stabilized	: (Yes	No	_			To	otal Volume	Removed:	8080	_mL
Comment	s: \//									

	1	/7	D		
 -				 	

Groundwater Assessment

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Company:	MDU Lew	is and Clark
Event:	2017	
Sample ID:	MW	109
Sampling Person	nal: Darren	Nisaay
	1	

5

2616 E. Broadway Ave, Bismarck, ND

Phone: (701) 258-9720

Weather Conditions:		Temp:	26 °F		Wind:	Light			Precip	Sunr	ny / Partly C	Cloudy / Clo	oudy
Well Information								Sampling Information					
Well Locked?	Yes	No.				Purgi	ng Method:	Blac	lder		Co	ontrol Setting	js
Well Labeled?	yes)	No				Sampli	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	TES	No				Dedicat	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visib	le		Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:	~~~~~					Duplicate	Sample ID:		~		Pumping R	ate: 100	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	*+	3,210,13	? ft		F	Purge Date:	5 Apr	:117	Time Purg	ing Began:	0750	@m/pm
Total V	Vell Depth:		· - ·	ft		Well P	urged Dry?	Yes	ୟିଟି	Time P	urged Dry:		am/pm
We	ell Volume:			liters		Sa	mple Date:	SANIT	17	Time of	Sampling:	12841	am/pm
Depth to Top	o of Pump:	13	8,20	ft			•				(		
Water Level Afte	er Sample:	· •		ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric \	Nater Level Indi	cator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			

**Field Measurements** 

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0755	5,70	1677	7.53	2,33	177,7	28,0	10:65	500	Cler
2	0815	6.11	1660	7,41	0.38	153.5	7.82	10.65	2000	ch_
3	0825	6.08	1666	7,48	0,35	140.0	2,28	1.0.68 :	1000	de
4	0830	6,34	1663	7,50	0,35	136.3	0,94	10.68	500	de
5	0835	6,19	16.62	7.53	0.35	128.5	0,85	10.68	500	cler
6	0840	614	1668	7.55	0,35	122,4	0:88	10,68	500	dy
7					-			Ŭ		
8										
9	$\square$									
10					ĺ					
Stabilized	:/\Yes /	No				Τc	otal Volume	Removed:	5000	mL

Comments: *F pr 5 April* 17

### **MVTL** Calibration Worksheet

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Muche Site:

Technician: Darren Miesun

Date: 5 Annill7	Time: 065	Ъ			······································		
Instrument (Circle One):	рН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv mv Range +/- 50	
#1 650 MDS 08F100203	Buffer 7	20,30	7.04	7.00	6.95-7.05	-17.5 0+1-50	
#2 650 MDS 04H14736	Buffer 10	20,15	10.03	10.00	9.95-10.05	- 192:180 +/- 50	
#3 556 MPS 12E102056	Conductivity	Temp °C	Pre Cal	Post Cal	Post Cal Range		
Other:	Buffer 1413	20:46	14,21	1403	1387-1426		
Comments:	ORP	Temp °C	Pre Cal	Post Cal	Post Cal Range		
	231 mV @ 25C	20,03	224,3	231.0	) ±10 mV		
	DO	Temp °C	Pre Cal	Post Cal	Post Cal Range	Barometric Pressure (mm Hg)	
		23.82	6.73	7.89	mg/L		

Date:	Time:						
Instrument (Circle One):	pН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50
#1 650 MDS 08F100203	Buffer 7				6.95-7.05		0 +/- 50
#2 650 MDS 04H14736	Buffer 10				9.95-10.05		-180 +/- 50
#3 556 MPS 12E102056	Conductivity	Temp °C	Pre Cal	Post Cal	Post Cal Range		
Other:	Buffer 1413				1387-1426		
Comments:	ORP	Temp °C	Pre Cal	Post Cal	Post Cal Range		
	231 mV @ 25C				±10 mV		
	DO	Temp °C	Pre Cal	Post Cal	Post Cal Range	Barometri	c Pressure (mm Hg)
					mg/L		



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

Sampling Personnel: Nieswaaz Jarran

Water Level

Company:

MDU Lewis and Clark

	Y		······	
Well ID	Date	Time	Depth to Water	Comments
MW101	3Apr:117	1401	9.21	
MW105	34:01:117	1414	8,95	
MW106	3April17	1412	7+61	
MW107	3A91:117	1403	4.35	
MW108	34pril17	1410	16.95	
MW116	3.April17	1406	9.92	
			L	



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

Water Level

Sampling Personnel: Parren Nieswaag

Company:

MDU Lewis and Clark

					<u> </u>
Well ID	Date	Time	Gauge Reading	Comments	
East Scrubber Pond Gauge	SApril 17	08.51	0:45		
West Scrubber Pond Gauge	SAPril17	0850	0:60		
Stream behind Sewage Lagoon	SApril 17	1205	0.35		······································
	1	· · ·			



# **Chain of Custody Record**

: MDULLowis and Clar	·Ŀ	Event:		oril 2017	anna a sealann feal na said feiliúith de le de an	v	/ork C	order N	lumber:		87	-0810
MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	Π	Carbon C Attn: Address:		N	Name of Sampler(s): Darren Niesmaas							
Sam	ple Informatio	, >n			B	ottle	Тур	9	Fi	eld Para	ameters	Analysis
Sample ID MW110 MW119 MW210 MW102 MW102 MW118 MW111 MW117 MW103 MW103 MW109 Dup 1	3 April 17 3 April 17 4 April 17 5 April 17 5 April 17 4 April 17	1653 1840 1855 1320 1725 1320 1725 1578 0810 1103 0840 NA	: D D D D D D D D D Sample Type		2				(), aug 6.95 6.97 8.62 8.71 6.13 6.64 5.74 <b>8.</b> 58 6.14 NA	риоз за 1103 1197 1429 6812 1618 3169 8308 1579 1668 NA	Fa 7.43 7.46 7.65 7.61 7.64 7.64 7.37 7.24 7.94 7.55 NA	Analysis Required
Field Blank (FB)	5 April 17	NA	w		4				NA	NA	NA	
	e: MDU Lewis and Clár MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 Sample ID MW110 MW110 MW119 MW210 MW102 MW102 MW118 MW111 MW111 MW117 MW113 MW117 MW103 MW109 Dup 1 Field Blank (FB)	e: MDU Lewis and Clárk MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829 Sample ID Sample ID MW110 3 April 17 MW119 3 April 17 MW102 4 April 17 MW102 4 April 17 MW111 4 April 17 MW113 4 April 17 MW113 4 April 17 MW113 4 April 17 MW103 5 April 17 5	E:       Event:         MDU Lewis and Clárk       Carbon C         MDU       Samantha Marshall         400 N. 4th St       Address:         Bismarck, ND 58501       Address:         701-222-7829       Sample Information         Sample Information         Sample ID         Sample ID $affilt7$ MW110 $3Affilt7$ $1655$ MW119 $3Affilt7$ $1840$ MW210 $4Affilt7$ $1855$ MW102 $4Affilt7$ $1725$ MW113 $4Affilt7$ $1725$ MW114 $4Affilt7$ $1725$ MW117 $4Affilt7$ $16548$ MW103 $5Affilt7$ $103$ MW103 $5Affilt7$ $103$ MW109 $5Affilt7$ $103$ MW109 $5Affilt7$ $NA$ Field Blank (FB) $5Affilt7$ $NA$	Event:       Event:         MDU Lewis and Clark       Carbon Copy:         Samantha Marshall       Attn:         400 N. 4th St       Address:         Bismarck, ND 58501       701-222-7829         Sample Information         Sample Information         Sample Information         MW110         April 17         MW110       3 April 17         MW119       3 April 17         MW119       3 April 17         MW210       Upril 17         MW102       Upril 17         MW118       Upril 17         MW111       Upril 17         MW112       Upril 17         MW113       Upril 17         MW114       Upril 17         MW117       Uppril 17         MW113       Uppril 17         MW103       Spril 17         MW103       Spril 17         MW109       Spril 17	E:       Event:         MDU Lewis and Clark       Event:         MDU       Carbon Copy:         Samantha Marshall       Address: $400$ N. 4th St       Address:         Bismarck, ND 58501       Address: $701-222-7829$ Sample Information         Sample Information         Sample ID         Bismarck, ND 58501 $Address:$ Sample Information         Sample ID         Bismarck $April 1/7$ $Id57$ GW         MW110 $April 1/7$ $Id55$ GW         MW110 $April 1/7$ $Id55$ GW         MW119 $April 1/7$ $Id55$ GW         MW102 $April 1/7$ $Id55$ GW         MW118 $April 1/7$ $Id578$ GW         MW111 $Idpril 1/7$ $V578$ GW         MW103 $Sdpril 1/7$ $O840$ GW         MW109 $Sdpril 1/7$ NA       GW         MW109 $Sdpril 1/7$ NA       GW         MW109 $Sdpril 1/7$ NA       W	Event:       Event:       April 2017         MDU       Samantha Marshall       Attn:       Address:         400 N. 4th St       Bismarck, ND 58501       Address:         701-222-7829       Sample Information       B         Sample ID $\frac{a}{b}$ $\frac{b}{b}$ $\frac{a}{b}$ $\frac{a}{b}$ $\frac{a}{b}$ MW110 $3 A_{pri}/17$ $1653$ GW       4       4         MW119 $3 A_{pri}/17$ $1840$ GW       4       4         MW110 $3 A_{pri}/17$ $1840$ GW       4       4         MW110 $3 A_{pri}/17$ $1855$ GW       4       4         MW111 $4 A_{pri}/17$ $1725$ GW       4       4         MW112 $4 A_{pri}/17$ $0810$ GW       4       4         MW111 $4 A_{pri}/17$ $0810$ GW       4       4         MW103 $5 A_{pri}/17$ $0840$ GW       4       4         MW109 $5 A_{pri}/17$ $0840$ GW       4       4         MW109 $5 A_{pri}/17$ $NA$ W       4       4 <td< td=""><td>E:       Event:       MDU Lewis and Clárk       April 2017         MDU       Carbon Copy:       Address:       N         Samantha Marshall       Address:       Attn:       Address:       N         Samantha Marshall       Address:       Address:       N         Samantha Marshall       Address:       Sample Information       Bottle         Sample ID       <math>a_{a,i}^{a}</math> <math>a_{a,i}^{b}</math> /td><td>Event:     Event:     Work C       MDU Lewis and Clárk     April 2017     Name of Samantha Marshall     Attn:       400 N. 4th St     Bismarck, ND 58501     Attn:     Address:     Name of Sample Information       Sample ID     B     E     E     Bottle Type       Sample ID     B     E     Sample Information     Bottle Type       MW110     Sample Information     Bottle Type       MW110     Sample II     If Sample Information     If Sample Information       MW110     Sample II     If Sample Information     If Sample Information       MW110     Sample II     If Sample Information     If Sample Information       MW111     Sample Information     If Sample Information     If Sample Information       MW1110     Sample Information     If Sample Information     If Sample Information       MW1110     Sample Information     If Sample Information     If Sample Information       MW1110     Sample Information     If Sample Information     If Sample Information       MW112     Sample Information     If Sample Information     If Sample Information       MW102     Sample Information     If Sample Information     If Sample Information       MW1111     If April 17     If Sample Information     If Sample Information       MW1111</td><td>Event:       Event:       Work Order N         MDU Lewis and Clark       April 2017       Name of Sam         MDU Samantha Marshall       Attn:       Address:       Name of Sam         400 N. 4th St       Bismarck, ND 58501       Address:       Name of Sam         Sample Information       Bottle Type       <math>\mathcal{P}_{G}</math> <math>\mathcal{P}_{G}</math>         Sample ID       <math>\mathcal{P}_{G}</math> <math>\mathcal{P}_{G}</math> <math>\mathcal{P}_{G}</math>         MW110       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/3</math>       GW       4       1         MW110       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/5</math>       GW       4       1       1         MW110       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/5</math>       GW       4       1       1         MW110       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/5</math>       GW       4       1       1         MW112       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/5</math>       GW       4       1       1         MW113       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/5</math>       GW       4       1       1         MW111       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/5</math>       GW       4       1       1         MW103       <math>\mathcal{A}_{gri}/1/7</math> <math>l/5/6</math>       GW       4       1       1         MW111&lt;</td><td>Event:       Work Order Number:         MDU Lewis and Clárk       April 2017         MDU       Carbon Copy:       Name of Sampler(s):         Samantha Marshall       Address:       Name of Sampler(s):         Model       Carbon Copy:       Name of Sampler(s):         Main and Sample Information       Bottle Type       Fi         Sample ID       <math>\frac{a}{b}</math> td>Event:       Event:       Work Order Number:         MDU       Carbon Copy:       Name of Sampler(s):         <math>400</math> N. 4th St       Bismarck, ND 58501       Address:       <math>Parten N iesmarck, ND 58501</math>         Sample Information       Bottle Type       Field Para         Sample ID       <math>\frac{2}{6}</math> <math>\frac{2}{6</math></td><td>Event:       Event:       Work Order Number:         MDU       Carbon Copy:       April 2017       Name of Sampler(s):         MDU       Carbon Copy:       Attn:       Address:       Name of Sampler(s):         MOU.4th St       Bismarck, ND 58501       Address:       <math>Darran N iegraag         T01-222-7829       Sample Information       Bottle Type       Field Parameters         Sample ID       <math>\frac{2}{6}</math> </math></td></td></td<>	E:       Event:       MDU Lewis and Clárk       April 2017         MDU       Carbon Copy:       Address:       N         Samantha Marshall       Address:       Attn:       Address:       N         Samantha Marshall       Address:       Address:       N         Samantha Marshall       Address:       Sample Information       Bottle         Sample ID $a_{a,i}^{a}$ $a_{a,i}^{b}$	Event:     Event:     Work C       MDU Lewis and Clárk     April 2017     Name of Samantha Marshall     Attn:       400 N. 4th St     Bismarck, ND 58501     Attn:     Address:     Name of Sample Information       Sample ID     B     E     E     Bottle Type       Sample ID     B     E     Sample Information     Bottle Type       MW110     Sample Information     Bottle Type       MW110     Sample II     If Sample Information     If Sample Information       MW110     Sample II     If Sample Information     If Sample Information       MW110     Sample II     If Sample Information     If Sample Information       MW111     Sample Information     If Sample Information     If Sample Information       MW1110     Sample Information     If Sample Information     If Sample Information       MW1110     Sample Information     If Sample Information     If Sample Information       MW1110     Sample Information     If Sample Information     If Sample Information       MW112     Sample Information     If Sample Information     If Sample Information       MW102     Sample Information     If Sample Information     If Sample Information       MW1111     If April 17     If Sample Information     If Sample Information       MW1111	Event:       Event:       Work Order N         MDU Lewis and Clark       April 2017       Name of Sam         MDU Samantha Marshall       Attn:       Address:       Name of Sam         400 N. 4th St       Bismarck, ND 58501       Address:       Name of Sam         Sample Information       Bottle Type $\mathcal{P}_{G}$ $\mathcal{P}_{G}$ Sample ID $\mathcal{P}_{G}$ $\mathcal{P}_{G}$ $\mathcal{P}_{G}$ MW110 $\mathcal{A}_{gri}/1/7$ $l/5/3$ GW       4       1         MW110 $\mathcal{A}_{gri}/1/7$ $l/5/5$ GW       4       1       1         MW110 $\mathcal{A}_{gri}/1/7$ $l/5/5$ GW       4       1       1         MW110 $\mathcal{A}_{gri}/1/7$ $l/5/5$ GW       4       1       1         MW112 $\mathcal{A}_{gri}/1/7$ $l/5/5$ GW       4       1       1         MW113 $\mathcal{A}_{gri}/1/7$ $l/5/5$ GW       4       1       1         MW111 $\mathcal{A}_{gri}/1/7$ $l/5/5$ GW       4       1       1         MW103 $\mathcal{A}_{gri}/1/7$ $l/5/6$ GW       4       1       1         MW111<	Event:       Work Order Number:         MDU Lewis and Clárk       April 2017         MDU       Carbon Copy:       Name of Sampler(s):         Samantha Marshall       Address:       Name of Sampler(s):         Model       Carbon Copy:       Name of Sampler(s):         Main and Sample Information       Bottle Type       Fi         Sample ID $\frac{a}{b}$ <td>Event:       Event:       Work Order Number:         MDU       Carbon Copy:       Name of Sampler(s):         <math>400</math> N. 4th St       Bismarck, ND 58501       Address:       <math>Parten N iesmarck, ND 58501</math>         Sample Information       Bottle Type       Field Para         Sample ID       <math>\frac{2}{6}</math> <math>\frac{2}{6</math></td> <td>Event:       Event:       Work Order Number:         MDU       Carbon Copy:       April 2017       Name of Sampler(s):         MDU       Carbon Copy:       Attn:       Address:       Name of Sampler(s):         MOU.4th St       Bismarck, ND 58501       Address:       <math>Darran N iegraag         T01-222-7829       Sample Information       Bottle Type       Field Parameters         Sample ID       <math>\frac{2}{6}</math> </math></td>	Event:       Event:       Work Order Number:         MDU       Carbon Copy:       Name of Sampler(s): $400$ N. 4th St       Bismarck, ND 58501       Address: $Parten N iesmarck, ND 58501$ Sample Information       Bottle Type       Field Para         Sample ID $\frac{2}{6}$ $\frac{2}{6$	Event:       Event:       Work Order Number:         MDU       Carbon Copy:       April 2017       Name of Sampler(s):         MDU       Carbon Copy:       Attn:       Address:       Name of Sampler(s):         MOU.4th St       Bismarck, ND 58501       Address: $Darran N iegraag         T01-222-7829       Sample Information       Bottle Type       Field Parameters         Sample ID       \frac{2}{6} $

Comments:

Relinquished By:	and the second states and the	Sar	nple Condition:	Rec	ceived by:
Name:	Date/Time	Location:	Temp (°C)	Name:	Date/Time
1 Jares Nim	5 April 17 16 151	رمار Walk In #2	TM562 / TM588	C Gmoll	5Apr17 1615
2					Ambient





June 28, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4<sup>th</sup> St. Bismarck, ND 58501

RE: Groundwater Sampling Event - 2017 at MDU Lewis & Clark Site

Dear Ms. Marshall:

It was brought to MVTL's attention that some of the summary data in the Field Data Report did not match the Raw Data collected in the field. Attached to this letter is the corrected Field Data Report.

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



WO# 82-1733

82-1734

### MDU Lewis and Clark

CCR Sampling

Attn: Samantha Marshall 400 North 4th St Bismarck, ND 58501

		START		TIME	WATER	WATER			FIELD READINGS				
WELL ID	PURGE DATE	PURGE TIME	SAMPLE DATE	OF SAMPLE	LEVEL START (FT)	LEVEL END (FT)	VOLUME REMOVED (mL)	SAMPLE METHOD	TEMP (°C)	EC	рН	Turb. NTU	SAMPLE APPEARANCE
MW110	26-Jun-17	11:14	26-Jun-17	14:44	9.33	9.42	21000.0	Bladder	14.50	1112	7.34	4.42*	clear
MW119	26-Jun-17	16:50	26-Jun-17	17:35	9.19	9.20	4500.0*	Bladder	14.25	1173	7.38	1.80	clear
MW210	26-Jun-17	18:40	26-Jun-17	19:35	9.40	11.48	5500.0	Bladder	14.05	1438	7.61	4.61	clear
MW102	27-Jun-17	7:41	27-Jun-17	9:46	19.28	19.68	12500.0	Bladder	12.61	6720	6.99	4.47	clear
MW118	27-Jun-17	14:00	27-Jun-17	15:10	8.78	8.90	7000.0*	Bladder	20.55	1698	7.41	4.96	clear
MW111	27-Jun-17	11:00	27-Jun-17	12:55	8.34	8.36	5500.0	Bladder	15.43	3691	7.24	2.37	clear
MW117	26-Jul-17	15:49	27-Jul-17	9:55	6.76	top of pump	6000.0	Bladder	13.88	8501	7.10	16.10	clear
MW103	28-Jun-17	7:45	28-Jun-17	8:50	10.77	10.79*	6500.0	Bladder	12.44	1573	7.42	3.52	clear
MW109	27-Jun-17	16:15	27-Jun-17	16:50	10.89	NR	3500.0	Bladder	17.35	1708	7.29	1.93	clear
MW101	NA	NA	28-Jun-17	9:56	9.31	NA	NA	WL	NA	NA	NA	NA	Water Level
MW105	NA	NA	28-Jun-17	10:07	9.09	NA	NA	WL	NA	NA	NA	NA	Water Level
MW106	NA	NA	28-Jun-17	10:06	9.89	NA	NA	WL	NA	NA	NA	NA	Water Level
MW107	NA	NA	28-Jun-17	9:58	4.64	NA	NA	WL	NA	NA	NA	NA	Water Level
MW108	NA	NA	28-Jun-17	10:04	16.51	NA	NA	WL	NA	NA	NA	NA	Water Level
MW116	NA	NA	28-Jun-17	10:11	10.57	NA	NA	WL	NA	NA	NA	NA	Water Level
					NR= Not	Recorded	NA = Not Applic	cable					
					*ammende	ed due to typi	ng or calculation	n error					

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MVTL



# CASE NARRATIVE – AMENDED 7 AUG 2017 (Reporting)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 1 of 2 201782-1733 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – June 2017 Event 17-W2575 through 17-W2585

MDU Sample Identification	MVTL Laboratory #
MW110	17-W2575
MW119	17-W2576
MW210	17-W2577
MW102	17-W2578
MW118	17-W2579
MW111	17-W2580
MW117	17-W2581
MW103	17-W2582
MW109	17-W2583
Dup 1	17-W2584
Field Blank (FB)	17-W2585

### I. RECEIPT

- All samples were received at the laboratory on 28 Jun 2017 at 1443.
- 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.
  - Temperature of samples upon receipt was 0.9°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

### II. HOLDING TIMES

 With the exception of laboratory pH, all holding times were met for both preparation and analysis unless noted here.

### III. METHODS

- Approved methodology was followed for all sample analyses.
  - Methods 6010D and Method 6020B were used to analyze the metals.





### CASE NARRATIVE - AMENDED 7 AUG 2017 (Reporting)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-1733 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – June 2017 Event 17-W2575 through 17-W2585

### IV. ANALYSIS

- All acceptance criteria was met for calibration, method blanks, laboratory control samples, laboratory fortified matrix/matrix duplicates unless noted here and/or flagged on the individual analytical laboratory report.
  - For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
  - For some metals, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.

DATE:

### V. REPORTING

• 7 Aug 2017: Per email from Terri Olson with Barr Engineering, the data package was amended to correct errors on the field data report.

All laboratory data has been approved by MVTL Laboratories.

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

SIGNED:

Claudette Carroll - MVTL Bismarck Laboratory Manager

### **Claudette Carroll**

From:	Terri A. Olson <tolson@barr.com></tolson@barr.com>						
Sent:	Friday, July 28, 2017 8:35 AM						
То:	Claudette Carroll						
Cc:	Justin Soberaski; Barr Data Management						
Subject:	RE: Emailing - 201782-1733 MDU L&C CCR JUN 17.pdf						
Follow Up Flag:	Follow up						
Flag Status:	Flagged						

Hi Claudette,

Reviewed the NDDH report for 201782-1733 and noted the following:

7.1=1=

- The dissolved Li MSD was 128% but this wasn't included in the case narrative of the report.
- Field Data Report items:
  - o MW110 turbidity recorded as 4.57 but raw data lists 4.42.
  - o MW119 volume removed recorded as 4000.0 but raw data adds up to 4500.
  - o MW118 volume removed recorded as 8000.0 but raw data adds up to 7000.
  - o MW117 purge date recorded as 06/27 but raw data lists 06/26.
  - o MW117 time of sample recorded as 10:55 but raw data lists 09:55.
  - o MW103 water level end recorded as 17.15 but raw data lists 10.79.

Please let me know if you have any questions.

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

### resourceful: naturally.

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

From: Claudette Carroll [mailto:ccarroll@mvtl.com] Sent: Thursday, July 13, 2017 10:49 AM

To: Barr Data Management <BarrDM@barr.com>; Jesse Hedlund <jhedlund@mvtl.com>; Julie Crispin <jcrispin@mvtl.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Mary Hames <mhames@mvtl.com>; Steve Bowen <sbowen@mvtl.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com> Subject: Emailing - 201782-1733 MDU L&C CCR JUN 17.pdf

Hello all,

Attached is the data package for the Jun 2017 CCR sampling done at MDU Lewis & Clark. Hard copies and EDDs to follow.

Regards, Claudette



Minnesota Valley Testing Laboratories, Inc. Providing Analytical Excellence Saloe 1951

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



**MVTL** 

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#### **Quality Control Report** Lab IDs: 17-W2575 to 17-W2585 Project: MDU Lewis & Clark - CCR Work Order: 201782-1733 Matrix Matrix Matrix MSD/ MSD/ LCS LCS LCS Matrix Matrix Spike Matrix Spike Spike MSD/ MSD MSD Dup Known Known Dup Spike Rec % Rec Spike Spike Spike % Rec Dup RPD Rec % Rec Method Orig Rec Orig Rec Dup Analyte Amt % ID % Limits Amt Result Result % Limits Result Result RPD Limit (<) (%) Limits Blank Antimony - Total mg/l 0.1000 100 80-120 0.400 17W2578q < 0.001 0.4318 108 75-125 0.4318 0.4218 105 20 < 0.001 2.3 \_ 0.400 17W2584q 0.0046 0.4228 105 75-125 0.4228 0.4248 105 0.5 20 --Arsenic - Total mg/l 0.1000 100 80-120 0.400 17W2578q 0.0024 0.4400 109 75-125 0.4400 0.4324 108 1.7 20 -< 0.002 \_ 0.400 17W2584q 0.0025 20 0.4272 106 75-125 0.4272 0.4150 103 2.9 ----Barium - Total mg/l 0.1000 95 80-120 0.400 17W2578q 0.0160 0.4128 99 75-125 0.4128 0.4146 100 0.4 20 < 0.002 ... -0.400 17W2584q 0.0219 0.4190 99 75-125 0.4190 0.4106 97 2.0 20 -Beryllium - Total mg/l 0.1000 107 80-120 0.400 17W2578q < 0.0005 0.4418 110 75-125 0.4418 0.4400 110 0.4 20 < 0.0005\_ -0.400 17W2584q < 0.0005 0.4308 108 75-125 0.4308 0.4176 104 3.1 20 -\_ Boron - Total mg/l 0.40 100 80-120 6.00 17-W2578 24.2 29.7 92 75-125 29.7 30.1 98 1.3 20 < 0.1 ... \_ 0.400 17-W2584 < 0.1 1.69 2.05 90 75-125 2.05 2.07 95 1.0 20 --< 0.1--Cadmium - Total mg/l 0.1000 105 80-120 0.400 17W2578q < 0.0005 0.4382 75-125 108 1.9 20 < 0.0005 110 0.4382 0.4300 --0.400 17W2584q < 0.00050.4284 20 107 75-125 0.4284 0.4418 110 3.1 \_ -Calcium - Total mg/l 20.0 108 80-120 100 17W2562q 95.8 188 92 75-125 190 94 20 < 1188 1.1 \_ \_ 20.0 115 80-120 100 17W2571q 211 294 83 75-125 294 292 81 0.7 20 < 1 -100 17-W2661 18.8 125 121 3.3 20 106 75-125 125 102 < 1--500 17-M1596 178 740 112 75-125 740 705 105 4.8 20 < 1 --Chloride mg/l 30.0 87 80-120 30.0 17-D2180 67.5 97 37.5 100 80-120 67.5 66.7 1.2 20 < 1 --30.0 87 80-120 30.0 17-W2583 21.4 49.1 92 80-120 49.1 49.1 92 0.0 20 < 1\_ -88 30.0 80-120 < 1-\_ < 1 -Chromium - Total mg/l 0.1000 98 80-120 0.400 17W2578q < 0.002 < 0.002 0.4048 101 75-125 0.4048 0.3970 99 1.9 20 \_ \_ 0.400 17W2584q < 0.002 0.3830 96 75-125 0.3830 0.3792 95 1.0 20 --Cobalt - Total mg/l 0.1000 96 80-120 < 0.002 0.400 17W2578q 0.0064 0.4082 100 75-125 0.4082 0.3992 98 2.2 20 --20 0.400 17W2584g 0.0024 0.3820 95 75-125 0.3820 0.3842 95 0.6 --Fluoride mg/l 0.50 106 90-110 0.500 < 0.1 17-W2576 0.46 80-120 1.02 1.0 20 1.01 110 1.01 112 --0.500 17-W2584 0.84 1.35 102 2.2 20 < 0.1 1.32 96 80-120 1.32 -----Lead - Total mg/l 0.1000 99 < 0.0005 80-120 0.400 20 17W2578q < 0.0005 0.3792 95 75-125 0.3792 0.3850 96 1.5 --0.400 17W2584a < 0.0005 101 0.3958 99 2.2 20 0.4048 75-125 0.4048 -

### Page: 1 of 2

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Page: 2 of 2

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### **Quality Control Report**

Lab IDs: 17-W2575 to 17-V	V2585	Pr	oject: MI	DU Lewis	s & Clark - CC	R N	Work Or	der: 201	782-1733	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
Lithium - Total mg/l	0.40	105	80-120	0.400 0.400	17-W2578 17-W2584	0.25 0.07	0.71 0.49	115 105	75-125 75-125	0.71 0.49	0.70 0.48	112 102	1.4 2.1	20 20	-	-	< 0.1 < 0.1 < 0.1 < 0.1 < 0.1
Mercury - Total mg/l	0.0020	95	85-115	0.002 0.002 0.002	A2999 17-W2575 17-W2585	< 0.0002 < 0.0002 < 0.0002	0.0019 0.0018 0.0020	95 90 100	70-130 70-130 70-130	0.0019 0.0018 0.0020	0.0019 0.0018 0.0020	95 90 100	0.0 0.0 0.0	20 20 20	-	-	< 0.0002
Molybdenum - Total mg/l	0.1000	99	80-120	0.400 0.400	17W2578q 17W2584q	0.1074 0.0250	0.5306 0.4052	106 95	75-125 75-125	0.5306 0.4052	0.5222 0.4034	104 95	1.6 0.4	20 20	-	-	< 0.002
pH units	-	-	-	-	-	-	-	-	-	7.7 8.2	7.8 8.2	-	1.3 0.0	20 20	-		-
Selenium - Total mg/l	0.1000	108	80-120	0.400 0.400	17W2578q 17W2584q	< 0.005 0.0718	0.4922 0.5376	123 116	75-125 75-125	0.4922 0.5376	0.4926 0.5298	123 114	0.1 1.5	20 20			< 0.002
Sulfate mg/l	100 100	118 101	80-120 80-120	500 100	17-W2568 17-W2585	196 < 5	733 106	107 106	80-120 80-120	733 106	740 95.0	109 95	1.0 10.9	20 20			< 5 < 5
Thallium - Total mg/l	0.1000	97	80-120	0.400 0.400	17W2578q 17W2584q	< 0.0005 < 0.0005	0.3786 0.3986	95 100	75-125 75-125	0.3786 0.3986	0.3764 0.3904	94 98	0.6 2.1	20 20		-	< 0.0005
Total Dissolved Solids mg/l	-	-	-		-		-	-	-	1190 < 10	1160 < 10		2.6 0.0	20 *	-		< 10
	- the state in the second s					1			1	4	1	,		1	1	,	1

\* Due to result < 10 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 3 mg/L.

Approved by: <u>C. Gurl</u> 13JU17





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#### CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2575 Work Order #: 82-1733 Account #: 002800 Date Sampled: 26 Jun 17 14:44 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Received		Method BI.	Method Reference	Ana		Analyst		
	Result		ici.	Reference		-1			
pH - Field	7.34	units	NA	SM 4500 H+ B	26	Jun	17 1	4:44	DJN
PH	* 7.6	units	0.1	SM4500 H+ B	29	Jun	17 1	7:00	CS
Temperature - Field	14.5	Degrees C	NA	SM 2550B	26	Jun	17 1.	4:44	DJN
Conductivity - Field	1112	umhos/cm	1	EPA 120.1	26	Jun	17 1.	4:44	DJN
Fluoride	0.49	mg/l	0.10	SM4500-F-C	29	Jun	17 1	7:00	CS
Sulfate	185	mg/l	5.00	ASTM D516-07	6	Jul	17 1	4:27	EMS
Chloride	22.0	mg/l	1.0	SM4500-C1-E	7	Jul	17 1	0:31	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7	Jul	17 1	1:04	EV
Total Dissolved Solids	659	mg/l	10	11750-85	29	Jun	17 1	3:50	SVS
Calcium - Total	90.8	mg/l	1.0	6010	30	Jun	17 1	4:04	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	6	Jul	17 1	2:27	KMD
Boron - Total	0.19	mg/l	0.10	6010	5	Jul	17 1	3:10	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	5	Jul	17 1	6:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17 1	6:20	KMD
Barium - Total	0.0311	mg/l	0.0020	6020	5	Jul	17 1	6:20	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17 1	6:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17 1	6:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17 1	6:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17 1	6:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17 1	6:20	KMD
Molybdenum - Total	0.0041	mg/l	0.0020	6020	5	Jul	17 1	6:20	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	5	Jul	17 1	6:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17 1	6:20	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 2 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2576 Work Order #: 82-1733 Account #: 002800 Date Sampled: 26 Jun 17 17:35 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Received		Method	Method	Date		
	Result		RL	Reference	Analyzed	Analyst	
pH - Field	7.38	units	NA	SM 4500 H+ B	26 Jun 17 17:39	DJN	
pH	* 7.4	units	0.1	SM4500 H+ B	29 Jun 17 17:00	CS	
Temperature - Field	14.2	Degrees C	NA	SM 2550B	26 Jun 17 17:35	DJN	
Conductivity - Field	1173	umhos/cm	1	EPA 120.1	27 Jun 17 17:39	DJN	
Fluoride	0.46	mg/l	0.10	SM4500-F-C	29 Jun 17 17:00	CS	
Sulfate	245	mg/l	5.00	ASTM D516-07	6 Jul 17 14:27	EMS	
Chloride	25.5	mg/l	1.0	SM4500-Cl-E	7 Jul 17 10:33	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:04	EV	
Total Dissolved Solids	687	mg/l	10	I1750-85	29 Jun 17 13:50	SVS	
Calcium - Total	95.1	mg/l	1.0	6010	30 Jun 17 14:04	SZ	
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jul 17 12:27	KMD	
Boron - Total	0.21	mg/l	0.10	6010	5 Jul 17 13:10	KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	5 Jul 17 16:20	KMD	
Arsenic - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Barium - Total	0.0324	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	
Cadmium - Total	0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	
Molybdenum - Total	0.0040	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

Claudette K. Cantlo 13JULI7

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 3 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW210

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2577 Work Order #: 82-1733 Account #: 002800 Date Sampled: 26 Jun 17 19:35 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receive	d	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
pH - Field	7.61	units	NA	SM 4500 H+ B	26 Jun 17 19:	5 DJN
Hq	* 7.7	units	0.1	SM4500 H+ B	29 Jun 17 17:0	00 CS
Temperature - Field	14.0	Degrees C	NA	SM 2550B	26 Jun 17 19:	5 DJN
Conductivity - Field	1438	umhos/cm	1	EPA 120.1	26 Jun 17 19:	5 DJN
Fluoride	0.95	mg/l	0.10	SM4500-F-C	29 Jun 17 17:	00 CS
Sulfate	344	mg/l	5.00	ASTM D516-07	6 Jul 17 14:	7 EMS
Chloride	4.0	mg/l	1.0	SM4500-Cl-E	7 Jul 17 10:	1 EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:	)4 EV
Total Dissolved Solids	900	mg/l	10	I1750-85	29 Jun 17 13:	50 SVS
Calcium - Total	44.4	mg/l	1.0	6010	30 Jun 17 14:	04 SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jul 17 12:	27 KMD
Boron - Total	0.17	mg/l	0.10	6010	5 Jul 17 13:	LO KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	5 Jul 17 16:	20 KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:	20 KMD
Barium - Total	0.0228	mg/l	0.0020	6020	5 Jul 17 16:	20 KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:	20 KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:	20 KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:	20 KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:	20 KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:	20 KMD
Molvbdenum - Total	0.0036	mg/l	0.0020	6020	5 Jul 17 16:	20 KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	5 Jul 17 16:	20 KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:	20 KMD

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

CI Clauditte 135417 K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

# MIVIL

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW102

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2578 Work Order #: 82-1733 Account #: 002800 Date Sampled: 27 Jun 17 9:46 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Received		Method	Method	Date		
	Result		RL	Reference	Analyzed	Analyst	
pH - Field	6.99	units	NA	SM 4500 H+ B	27 Jun 17 9:46	DJN	
H	* 7.2	units	0.1	SM4500 H+ B	29 Jun 17 17:00	CS	
Temperature - Field	12.6	Degrees C	NA	SM 2550B	27 Jun 17 9:46	DJN	
Conductivity - Field	6720	umhos/cm	1	EPA 120.1	27 Jun 17 9:46	DJN	
Fluoride	1.71	mg/l	0.10	SM4500-F-C	29 Jun 17 17:00	CS	
Sulfate	5530	mg/l	5.00	ASTM D516-07	6 Jul 17 14:27	EMS	
Chloride	55.3	mg/l	1.0	SM4500-C1-E	7 Jul 17 10:31	EMS	
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:04	EV	
Total Dissolved Solids	7320	mg/l	10	I1750-85	29 Jun 17 13:50	SVS	
Calcium - Total	337	mg/l	1.0	6010	7 Jul 17 11:31	KMD	
Lithium - Total	0.25	mg/l	0.10	6010	6 Jul 17 12:27	KMD	
Boron - Total	24.2	mg/l	0.10	6010	5 Jul 17 13:10	KMD	
Antimony - Total	< 0.001	mg/l	0.0010	6020	5 Jul 17 16:20	KMD	
Arsenic - Total	0.0024	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Barium - Total	0.0160	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Cobalt - Total	0.0064	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	
Molybdenum - Total	0.1074	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	5 Jul 17 16:20	KMD	
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD	

\* Holding time exceeded

^ Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

10 Claudette 135117 K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016




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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2579 Work Order #: 82-1733 Account #: 002800 Date Sampled: 27 Jun 17 15:10 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receiv	ed	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
pH - Field	7.41	units	NA	SM 4500 H+ B	27 Jun 17 15:10	DJN
pH	* 7.6	units	0.1	SM4500 H+ B	29 Jun 17 17:00	CS
Temperature - Field	20.6	Degrees C	NA	SM 2550B	27 Jun 17 15:10	DJN
Conductivity - Field	1698	umhos/cm	1	EPA 120.1	27 Jun 17 15:10	DJN
Fluoride	1.28	mg/l	0.10	SM4500-F-C	29 Jun 17 17:00	CS
Sulfate	566	mg/l	5.00	ASTM D516-07	6 Jul 17 14:27	EMS
Chloride	19.6	mg/l	1.0	SM4500-Cl-E	7 Jul 17 10:33	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:04	EV
Total Dissolved Solids	1160	mg/l	10	I1750-85	29 Jun 17 13:50	SVS
Calcium - Total	88.6	mg/l	1.0	6010	7 Jul 17 11:33	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jul 17 12:27	KMD
Boron - Total	1.66	mg/l	0.10	6010	5 Jul 17 13:10	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	5 Jul 17 16:20	) KMD
Arsenic - Total	0.0021	mg/l	0.0020	6020	5 Jul 17 16:20	) KMD
Barium - Total	0.0306	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	) KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	) KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	) KMD
Molybdenum - Total	0.0460	mg/l	0.0020	6020	5 Jul 17 16:20	) KMD
Selenium - Total	0.0756	mg/l	0.0020	6020	5 Jul 17 16:20	) KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	) KMD

\* Holding time exceeded

Approved by:

Clauditte K. Cantlo 13JUNI7

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2580 Work Order #: 82-1733 Account #: 002800 Date Sampled: 27 Jun 17 12:55 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receive	ed	Method	Method	Dat	e	d		Analyst
	Result		RL	Reference	Alla	LTYZE	u		Anaryse
pH - Field	7.24	units	NA	SM 4500 H+ B	27	Jun	17	12:55	DJN
pH	* 7.5	units	0.1	SM4500 H+ B	29	Jun	17	17:00	CS
Temperature - Field	15.4	Degrees C	NA	SM 2550B	27	Jun	17	12:55	'DJN
Conductivity - Field	3691	umhos/cm	1	EPA 120.1	27	Jun	17	12:55	DJN
Fluoride	2.28	mg/l	0.10	SM4500-F-C	29	Jun	17	17:00	CS
Sulfate	1940	mg/l	5.00	ASTM D516-07	6	Jul	17	14:27	EMS
Chloride	34.9	mg/l	1.0	SM4500-Cl-E	7	Jul	17	10:31	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7	Jul	17	11:04	EV
Total Dissolved Solids	3280	mg/l	10	I1750-85	29	Jun	17	13:50	SVS
Calcium - Total	178	mg/l	1.0	6010	7	Jul	17	11:31	KMD
Lithium - Total	0.18	mg/l	0.10	6010	6	Jul	17	12:27	KMD
Boron - Total	7.51	mg/l	0.10	6010	5	Jul	17	13:10	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	5	Jul	17	16:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Barium - Total	0.0218	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD
Molvbdenum - Total	0.0696	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Selenium - Total	0.1015	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD

\* Holding time exceeded

Approved by:

1350217 Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2581 Work Order #: 82-1733 Account #: 002800 Date Sampled: 27 Jun 17 10:55 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receive	ed	Method	Method	Date	Analyst
	Result		RL	Reference	Anaryzeu	Anaryse
pH - Field	7.10	units	NA	SM 4500 H+ B	27 Jun 17 10:55	DJN
Hq	* 7.5	units	0.1	SM4500 H+ B	29 Jun 17 17:00	CS
Temperature - Field	13.9	Degrees C	NA	SM 2550B	27 Jun 17 10:55	DJN
Conductivity - Field	8501	umhos/cm	1	EPA 120.1	27 Jun 17 10:55	DJN
Fluoride	0.26	mg/l	0.10	SM4500-F-C	29 Jun 17 17:00	CS
Sulfate	7300	mg/l	5.00	ASTM D516-07	6 Jul 17 14:27	EMS
Chloride	46.6	mg/l	1.0	SM4500-Cl-E	7 Jul 17 10:31	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:04	EV
Total Dissolved Solids	8970	mg/l	10	I1750-85	29 Jun 17 13:50	SVS
Calcium - Total	486	mg/l	1.0	6010	7 Jul 17 11:31	KMD
Lithium - Total	< 0.2 @	mg/l	0.10	6010	6 Jul 17 12:27	KMD
Boron - Total	9.30	mg/l	0.10	6010	5 Jul 17 13:10	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	5 Jul 17 16:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Barium - Total	0.0246	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Molvbdenum - Total	0.0044	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Selenium - Total	0.0363	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD

\* Holding time exceeded

Approved by:

Claudette 13 JULIT K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2582 Work Order #: 82-1733 Account #: 002800 Date Sampled: 28 Jun 17 8:50 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receiv	ed	Method	Method	Dat	e			
	Result		RL	Reference	Ana	alyze	ed		Analyst
pH - Field	7.42	units	NA	SM 4500 H+ B	28	Jun	17	8:50	DJN
pH	* 7.6	units	0.1	SM4500 H+ B	29	Jun	17	17:00	CS
Temperature - Field	12.4	Degrees C	NA	SM 2550B	28	Jun	17	8:50	DJN
Conductivity - Field	1573	umhos/cm	l	EPA 120.1	28	Jun	17	8:50	DJN
Fluoride	0.85	mg/l	0.10	SM4500-F-C	29	Jun	17	17:00	CS
Sulfate	437	mg/l	5.00	ASTM D516-07	6	Jul	17	14:27	EMS
Chloride	21.7	mg/l	1.0	SM4500-Cl-E	7	Jul	17	10:31	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7	Jul	17	11:04	EV
Total Dissolved Solids	1020	mg/l	10	I1750-85	29	Jun	17	13:50	SVS
Calcium - Total	94.6	mg/l	1.0	6010	7	Jul	17	11:31	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6	Jul	17	12:27	KMD
Boron - Total	1.52	mg/l	0.10	6010	5	Jul	17	13:10	KMD
Antimony - Total	0.0047	mg/l	0.0010	6020	5	Jul	17	16:20	KMD
Arsenic - Total	0.0033	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Barium - Total	0.0227	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD
Molvbdenum - Total	0.0250	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Selenium - Total	0.0559	mg/l	0.0020	6020	5	Jul	17	16:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul	17	16:20	KMD

\* Holding time exceeded

Approved by:

13JUIT Claudette K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW109

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2583 Work Order #: 82-1733 Account #: 002800 Date Sampled: 27 Jun 17 16:50 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receiv	ed	Method	Method	Dat	e		
	Result		RL	Reference	Ana	lyzed		Analyst
pH - Field	7.29	units	NA	SM 4500 H+ B	27	Jun 1	7 16:50	DJN
pH	* 7.6	units	0.1	SM4500 H+ B	29	Jun 1	7 17:00	CS
Temperature - Field	17.4	Degrees C	NA	SM 2550B	27	Jun 1	7 16:50	DJN
Conductivity - Field	1708	umhos/cm	1	EPA 120.1	27	Jun 1	7 16:50	DJN
Fluoride	0.84	mg/l	0.10	SM4500-F-C	29	Jun 1	7 17:00	CS
Sulfate	541	mg/l	5.00	ASTM D516-07	6	Jul 1	7 14:27	EMS
Chloride	21.4	mg/l	1.0	SM4500-C1-E	7	Jul 1	7 11:30	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7	Jul 1	7 11:04	EV
Total Dissolved Solids	1160	mg/l	10	I1750-85	29	Jun 1	7 13:50	SVS
Calcium - Total	113	mg/l	1.0	6010	7	Jul 1	7 11:31	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6	Jul 1	7 12:27	KMD
Boron - Total	1.69	mg/l	0.10	6010	5	Jul 1	7 13:10	KMD
Antimony - Total	0.0045	mg/l	0.0010	6020	5	Jul 1	7 16:20	KMD
Arsenic - Total	0.0029	mg/l	0.0020	6020	5	Jul 1	7 16:20	KMD
Barium - Total	0.0214	mg/l	0.0020	6020	5	Jul 1	7 16:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul 1	7 16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul 1	7 16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5	Jul 1	7 16:20	KMD
Cobalt - Total	0.0024	mg/l	0.0020	6020	5	Jul 1	7 16:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5	Jul 1	7 16:20	KMD
Molybdenum - Total	0.0246	mg/l	0.0020	6020	5	Jul 1	7 16:20	KMD
Selenium - Total	0.0676	mg/l	0.0020	6020	5	Jul 1	7 16:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5	Jul 1	7 16:20	KMD

\* Holding time exceeded

Approved by:

Claudette K. Cantep 13JVLD

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2584 Work Order #: 82-1733 Account #: 002800 Date Sampled: 27 Jun 17 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Receiv	red	Method	Method	Date	
	Result		RL	Reference	Analyzed	Analyst
pH	* 7.6	units	0.1	SM4500 H+ B	29 Jun 17 17:00	CS
Fluoride	0.84	mg/l	0.10	SM4500-F-C	29 Jun 17 17:00	CS
Sulfate	569	mg/l	5.00	ASTM D516-07	6 Jul 17 14:50	EMS
Chloride	21.1	mg/l	1.0	SM4500-Cl-E	7 Jul 17 11:30	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:04	EV
Total Dissolved Solids	1190	mg/l	10	11750-85	29 Jun 17 13:50	SVS
Calcium - Total	113	mg/l	1.0	6010	7 Jul 17 11:31	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jul 17 12:27	KMD
Boron - Total	1.69	mg/l	0.10	6010	5 Jul 17 13:10	KMD
Antimony - Total	0.0046	mg/l	0.0010	6020	5 Jul 17 16:20	KMD
Arsenic - Total	0.0025	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Barium - Total	0.0219	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Bervllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Cobalt - Total	0.0024	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Molybdenum - Total	0.0250	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Selenium - Total	0.0718	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD

\* Holding time exceeded

Approved by:

Claudette K. Cantep

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Field Blank (FB)

Event and Year: June 2017

Report Date: 10 Jul 17 Lab Number: 17-W2585 Work Order #: 82-1733 Account #: 002800 Date Sampled: 28 Jun 17 Date Received: 28 Jun 17 14:43 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Received		Method	Method	Date	Analyst
	Result		КЦ	Reference	Anaryzeu	Analyst
рН	* 6.0	units	0.1	SM4500 H+ B	29 Jun 17 17:00	CS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	29 Jun 17 17:00	CS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	6 Jul 17 14:50	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	7 Jul 17 11:30	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	7 Jul 17 11:04	EV
Total Dissolved Solids	< 10	mg/l	10	I1750-85	29 Jun 17 13:50	SVS
Calcium - Total	< 1	mg/l	1.0	6010	7 Jul 17 11:31	KMD
Lithium - Total	< 0.1	mg/l	0.10	6010	6 Jul 17 12:27	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	5 Jul 17 13:10	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	5 Jul 17 16:20	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	5 Jul 17 16:20	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	5 Jul 17 16:20	KMD

\* Holding time exceeded

\* Elevated result due to instrument performance at the lower limit of quantification (LLOQ).

Approved by:

13JULI) Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

## **MVTL Calibration Worksheet**

Site: MDU Lew	vis and Clark		Technician:	RVI	rea Niesnag	
Instrument (Circle One):	#1 650 MDS 08F100203	#2 65	50 MDS 04H14736	#3 556 MPS 12E102056		
	Pre Site Calibr	ation			Post Site Check	
Date: 26 TU	Ne/7 Time: 0640				Time: 0 \$15 2015	
			mv Range +/-			
рН	Temp °C Pre Cal Post Cal	Post Cal Range	50		pH Temp °C Reading	
Buffer 7	19174 7.02 7.00	6.95-7.05	-13, 5 0 +/- 50		Buffer 7 23, 44 7, 03	
Buffer 10	19.83 10.08 10.00	9.95-10.05	-190.6 -180 +/- 50			
Conductivity			Check		Conductivity	
Buffer 1413	[9,87] [1432] [1414]	±10%	Buffer 5000 9982		Buffer 1413 23, 59 1408	
ORP						
´ 231 mV @ 25C	19.7 2327 231.0	±10 mV				
DO		Baromet	ric Pressure (mm Hg)			
	20,05 8.45 8.65	mg/L	718.7			
Date: 7, 7 Jun	<u>Time: 06 10</u>				Time: 1727	
рН	Temp ℃ Pre Cal Post Cal	Post Cal Range	mv 50		pH Temp °C Reading	
Buffer 7	22,08 7,02 7,00	6.95-7.05	-14.9 0+/-50		Buffer 7 30.07 6.99	
Buffer 10	22.02 9.45 9.94	9.95-10.05	-190 -180 +/- 50			
Conductivity			, Check		Conductivity	
Buffer 1413	22.03 1405 1413	±10%	Buffer 5000 49.88		Buffer 1413 30,05 1405	
ORP	-					
· 231 mV @ 25C	22,09 226.1 231,1)	±10 mV				
DO	-	Baromet	ric Pressure (mm Hg)			
	21.15 8.33 8.57	mg/L	700.0			

 $\wedge$ 1

Site: MDU Lew	vis and Clark			<u>T</u>	echnician:	arre	~Mes-		<
Instrument (Circle One):	#1 650 MDS	08F100203	#2 65	50 MDS 04H1473	36		#3 5	56 MPS-12E102	2056
	•	Pre Site Calib	ration				P	ost Site Chec	k ·
Date: 28 The	217 Time:	0700	_			Tir	ne: 085	55	
			-	r	mv Range +/-				
рН	Temp °C Pre (	Cal Post Cal	Post Cal Range	mv	50		рН	Temp °C	Reading
Buffer 7	22.15 6.9	9 7.00	6.95-7.05	-14.0	0 +/- 50		Buffer 7	19.92	7.04
Buffer 10	22.13 10,0	92 (0,00	9.95-10.05	-190.2	-180 +/- 50				
Conductivity					Check	0	Conductivity		
Buffer 1413	21,98 138	9 1413	±10%	Buffer 5000	5015		Buffer 1413	20.02	1419
ORP	21.88 23/	<u>5 2310</u>	_						
231 mV @ 25C	22.13 100	2-10.00	10 mV						
DO		-	Barometi	ric Pressure (mm	n Hg)				м.
	21.14 7.	36 8.17	] mg/L	702.	6				
Date:	Time:					Tir	me:		
рН	Temp °C Pre	Cal Post Cal	Post Cal Range	mvr	mv Range +/- 50		рН	Temp °C	Reading
Buffer 7			6.95-7.05		0 +/- 50		Buffer 7		
Buffer 10			9.95-10.05		-180 +/- 50				
Conductivity			_		Check		Conductivity	/	
Buffer 1413			±10%	Buffer 5000			Buffer 1413		
ORP									
231 mV @ 25C			] ±10 mV						,
DO			Baromet	ric Pressure (mr	n Hg)				
			mg/L						

## **MVTL Calibration Worksheet**

2616 E. Broadway Ave, Bis Phone: (701) 258-9	smarck, ND 9720		Field Groun	l Da <sup>dwater</sup>	tasl Assessi	neet ment	Company: Event: Sample ID: Sampling Personal:	MDU Lewis and Cl 2017 MWIID Davien Nie	ark Lanaan J	
Weather Conditions:		Temp:	The F		Wind:	510	Precip	o: 🕞 Sunny / Partl	/ Cloudy / Clo	oudy
	Well Info	ormation	, <del>-</del>		47 47 48		Sampling	Information		
Well Locked?	Yes	Ng		• " • •	· ·	Purging Method	Bladder		Control Setting	js
Well Labeled?	(es	No				Sampling Method	Bladder	Purg	e: 5	sec.
Casing Straight?	Ves	No	_			Dedicated Equip?	Yes No	Recove	er: 55	sec.
Grout Seal Intact?	Yes	No	Not Visi	ible 🐇		Duplicate Sample?:	Yes No	PS	51: <u> </u>	
Repairs Necessary:	<u> </u>					Duplicate Sample ID	:	Pumping	Rate: 180	mL/min
Casing	Diameter:		2"			n an	1			
Water Level Bef	ore Purge:	C	1.33	ft	:	Purge Date	:26JUN7	Time Purging Bega	n: 1164	am/pm
Total V	Vell Depth:			ft		Well Purged Dry	Yes No	Time Purged Dr	y:	am/pm
We	ell Volume:			liters	^	Sample Date	: 26 Tue 17	Time of Samplin	g: 1444	am/pm)
Depth to Top	p of Pump:		14.38	ft		ده به همه مواد د. د				
Water Level After	er Sample:	0	1:42	ft		Bottle 500 r	nL Nitric 1 Lit	ter Raw		
Measuremer	nt Method:	Electric V	Vater Level In	dicator	6	List: 500 mL N	itric (filtered) 4 - 1 L	iter Nitric		

Acres

Field Measurements

Stabi	lization	Temp	Spec.		DO 200	ORP	Turbidity	Water	mL	Discription:
(3 con	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NIU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1119	14.63	1114	7.33	2.69	158.3	71000	9,39	500	Thresd Tan
2	1139	14,54	1114	7,35	2.82	174.9	272	9,39	2000	Fighty Tursit
: 3	1159	14.31	1109	7.34	3.08	19011	155	9,39	Z050	57
4	1229	14,34	1107	7.28	3,00	204.3	51.8	9.39	3000	ST
5	1259	14,5-	1106	7.36	3,13	209.8	28.7	9,42	3000	ST
6	1329	14,43	1107	7,35	3,21	25.8	16.4	9,40	3000	( 1041
7	1359	14:41	1107	7.36	3,23	222,6	9.48	9.42	3000	dar
8	1419	14.64	1110	7,35	3,25	224,2	8,15	9.12	2000	de
9	1424	14.68	111	735	3,21	225,7	6018.	9,42	500	de
10	1429	14.65	ilng	7.36	3.25	225.9	4.97	9.42	50-	ch
Stabilized	: Yes_	No.	- 1		-	ΤČ	otal V <b>olum</b> e	Removed:		mL

Comments:

When lowering the pupper there is a catch in the well. I think the PUC is coming about a little incur down



**Groundwater Assessment** 

Company:	MDU	Lewis and Clark
Event:		2017
Sample ID: MW///	)	
Sampling Personal: An (rd)	in Nie	way
Date: 26Jul7		

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft	-	clear, slightly turbid, turbid
12	1434	14,73	1110	7.34	3,27	226.7	4.57	9,42	-500	cleg
13	1439	14.56	1110	7.33	3.29	228,8	4,48	9.42	500	the
14	1444	14,50	1112	7,34	3.29	229.7	4142	9.42	500	ca
15							e			
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27						-		_		
28										
29										
30	$ c\rangle$		<u> </u>							
Stabilized	: \Yes	No	-			Т	otal Volum	e Removed	: 21,000	_mL
Comment	s: \\								v	



Groundwater Assessmen

ft

ft

ft

ft

liters

Wind:

۴F

Not Visible

2" 9 10

-

a

3.20

20

Electric Water Level Indicator

Temp:

NO)

No

No

No

Well Information

Yes Yes

Yes

aes

Casing Diameter:

Total Well Depth:

Depth to Top of Pump:

Measurement Method:

Water Level After Sample:

Well Volume:

Water Level Before Purge:

Well Locked?

Well Labeled?

Casing Straight?

Grout Seal Intact?

Repairs Necessary:

Weather Conditions:

Phone: (701) 258-9720

haat	Company:		MDU Lewis and Clark							
ieel	Event:		2017							
nent	Sample ID:	M	wil9							
	Sampling P	ersonal:	Dar	en N	iesna	~~				
571)		Precip:	Sun	ny I/Partly (	Cloudy / Clou	ıdy				
<i>v p</i>	Sa	mpling l	nformatio	on						
Purging Method:	Blac	lder		Co	ontrol Settings	5				
Sampling Method:	Blac	lder		Purge:	5	sec.				
Dedicated Equip?:	Yes	AD)		Recover:	55	sec.				
Duplicate Sample?:	Yes	NO		PSI:						
Duplicate Sample ID:				Pumping F	Rate: / 00	mL/min				

						i	
P	urge Date:	26.Tu	47	Time Purg	ing Began:	1650	am/øm
Well P	urged Dry?	Yes	(NO)	Time F	Purged Dry:	· · · · · · · · · · · · · · · · · · ·	am/pm
Sa	mple Date:	2600	17	Time of Sampling:		1735	am/pm
Bottle	Bottle 500 mL Nitric		1 Liter Raw				
List:	500 mL Nit	tric (filtered)	4 - 1 Li	iter Nitric			

Stabil	ization	Temp (°C)	Spec. Cond	ъH	DO (ma/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time	(0)	±5%	±0.1	±10%	10% ±20 mV ±10		0.25 ft		clear, slightly turbid, turbid
1	1655	14.27	1172	7,34	1.05	250,2	13.1	9.21	500	den
2 6	1710	14.17	1170	7:38	1,02	01593	5.06	9:19	1500	ch
3	1715	14.3D	1172	7.37	1.06	134,5	3.64	9,20	100	ch
4	1720	14.01	1172	7.36	1.14	122.8	217	9,20	500	dr
5	1725	14.26	1171	7,31	1,16	104,8	1,92	9.20	500	d_
6	1730	14.12	1172	7.37	1,20	101,9	1,83	9,20	500	ti
7	1735	14,25	1173	7,38	1.23	99,7	1.80	9,20	500	h
8		7 1103								
9										
10										
Stabilized:  Yes  No  Total Volume Removed: <u>Used</u> Comments:										



Groundwater Assessment

2616 E. Broadway Ave, Bisma	rck, ND
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Phone: (701) 258-9720

Company:	MDU Lewis and Clark	
Event:	2017	
Sample ID:	MW210	
Sampling Perso	onal: Darren Niesny	

Weather Conditions: Temp: 53 °F				Wind:	511			Precip	Suni	ny / Partly C	Cloudy / Clo	oudy	
	Well Info	ormation	U ·			Sampling Information							
Well Locked?	Yes	Nø				Purgi	ng Method:	Bla	dder	Control Settings			IS
Well Labeled?	Xes	No			Sampli	ng Method:	Bla	dder		Purge:	5	sec.	
Casing Straight?	Tes	No			Dedica	ted Equip?:	Yes	- BB		Recover:	TT	sec.	
Grout Seal Intact?	Nes	No Not Visible			Duplicate	Sample?:	Yes	<b>A</b>		PSI:			
Repairs Necessary:	ary:					Duplicate	Sample ID:				Pumping R	ate: /p n	mL/min
Casing	Diameter:		2"									·····/································	-
Water Level Befo	ore Purge:	9,90 ft			F	Purge Date:	rge Date: 26 Tuel 7		Time Purg	ing Began:	1840	am/pm	
Total W	/ell Depth:	ft ft			Well P	Well Purged Dry? Yes No		Time P	urged Dry:		am/pm		
We	Well Volume: liters			Sa	Sample Date: 26 Thr. (7		Time of	Sampling:	193K	am/pm			
Depth to Top	Depth to Top of Pump: 30,82 ft									100			
Water Level Afte	r Sample:		11,48	· ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremen	t Method:	Electric \	Nater Level Ind	licator		List:	500 mL Ni	tric (filtered)	4 - 1 Lit	er Nitric			

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	845	13.48	1438	7.58	1,32	-32.1	199	10.29	500	Sliphty tubit
2	1900	13,77	1438	7.61	DAth	-89,6	48.6	11.21	1500	ST ST
3	1915	13,98	1439	Tab 1	0,30	-103.3	1704	11.36	1500	chi
4	1920	B.49	1440	7.61	0.25	-106,3	9,23	11.38	500	lu
5	1925	14,04	14.36	7,61	0,28	-108,3	4.9.2	11,38	500	U
6	1930	13,96	1436	7,60	0,28	-108,8	4.73	11.28	500	cler
7	(935	14,05	1438	7,61	0,29	-129.3	4,61	11.46	500	ch-
8					L L					
9										
10	A									
Stabilized:	Yes	) No				To	otal Volume	Removed:	5500	mL
Commente	"ヽ /	r								



Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	AW212CMW102
Sampling Pe	rsonal: Darren Nicsway

Weather Conditions:		Temp:	64 °F		Wind:	511			Precip:	Sun	ny) Partly C	Cloudy / Clo	oudy
W	ell Info	rmation	С (			Sampling Information							
Well Locked?	? Yes Ap				Purgir	ng Method:	Blac	lder		Control Settings			
Well Labeled?	Yes	Yes No			Samplin	ng Method:	Blac	lder		Purge:	$\langle \rangle$	sec.	
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	(Q)		Recover:	< <	sec.
Grout Seal Intact?	205	No	-Not Visi	ole)		Duplicate	Sample?:	Yes	/No		PSI:		
Repairs Necessary:					Duplicate Sample ID:				Pumping R	late: / 00	mL/min		
Casing Di	iameter:		2"							-			
Water Level Before	e Purge:	1	9.28	ft		P	Purge Date: 27Tue 17		017	Time Purg	ing Began:	0741	(am/pm
Total Well	I Depth:	•		ft		Well P	/ell Purged Dry? Yes		NO	Time F	ourged Dry:		am/pm
Well \	Volume:		~	liters		Sa	Sample Date: 27Th		17	Time of	Sampling:	0946	ampm
Depth to Top of Pump:		2	1.90	ft									
Water Level After S	Sample:	ł	9.68	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measurement M	Method:	Electric V	Vater Level Inc	licator		List:	500 mL Ni	tric (filtered)	4 - 1 Lit	er Nitric			

Stabilization (3 consecutive)		Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:		
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.		
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid		
1	0746	11.81	6571	6.95	0.92	123.9	139	19,56	500	Slightly turbed		
2	0816	11,49	6659	6,98	0,44	2,2	35.2	19.68	3000	ST		
3	0846	12,09	6700	6.97	0.24	-4.0	14.0	19,68	3000	ch		
4	OA16	12000	6739	6.98	OIL	-10,4	9,74	19.64	3000	chi		
5	0431	12.19	6732	6,99	0117	-11.9	5.98	19.68	1500.	Clan		
6	0936	12.17	6767	6.78	0117	-12,2	4.17	19,68	500	ch		
7	0941	12,36	6744	6.98	0,16	-12,7	4,56	19.68	500	ch		
8	0946	12.61	6720	6.99	0.16	-12.9	4.47	19.68	500	ch		
9												
10	$\square \cap$											
Stabilized:	( Yes	No	Total Volume Removed: 1250 1/ mL									
Comments	s: \		-						1.0			

MVTL	2616 E. Broadway Ave. Bismarck, ND						atasheet			MDU Lewi 2017 ~118	s and Clark		
2616 E. Broadway Ave, Bi	smarck, ND							Sampling Personal: Paren Missing					/
Phone: (701) 258-9									$\leq$				
Weather Conditions:	۶F	Wind:	NW13			Precip	: Suni	ıy / Partly C	loudy / Clo	udy			
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?			Purgi	ng Method:	Blac	lder		Co	ntrol Setting	s			
Well Labeled?	Yes	No				Sampli	ng Method:	Blac	lder		Purge:	<u></u>	sec.
Casing Straight?	Tes	No				Dedicat	ted Equip?:	Yes	Na		Recover:	SJ	sec.
Grout Seal Intact?	Yes	No	Not Vi	sible		Duplicate	Sample?:	Yes	No		PSI:	~	
Repairs Necessary:	There are a state of the state					Duplicate	Sample ID:				Pumping R	ate:( )0	mL/min
Casing	Diameter:		2"									1400	
Water Level Bef	ore Purge:	8	.78	ft		F	Purge Date:	Utin	17	Time Purg	ing Began:	1300	am/m
Total V	Vell Depth:		*****	ft		Well P	urged Dry?	Yes	NO	Time P	urged Dry:		am/pm
We	ell Volume:			liters		Sa	mple Date:	27The	17	Time of	Sampling:	1510	am/pm
Depth to Top	p of Pump:	a.	148	ft								-	
Water Level After Sample:				ft		Bottle	500 m	IL Nitric	1 Lite	er Raw			
Measurement Method: Electric Water Level Indicator			ndicator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric				
<b>1</b> <sup>10</sup> - 1 <sup>2 - 1</sup> - 11 - 11 - 11 - 11 - 12 - 1			r	Field	Measure	ments	1		<b>,</b>				

Stabil	ization	Temp	Spec.		ро	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1405	20,98	1693	7.36	3.34	2242	218	8.88	500	Turbid, Tan
2	1425	19.55	1693	7,38	2:01	237.8	22.8	6,92	2000	Slightly twofind
3	1430	19,63	1695	7,40	2.03	241,6	11.2	8,90	500	Char
4	1435	19,13	1692	7,40	1,99	243,9	7.32	890	500 .	dr
5	1450	20.36	1697	7,41	1.98	249,1	5.43	8,90	200 Dise	o clea
6	1155	20,46	1698	7,41	2.00	250,5	4.46	8,90	500	olen
7	1500	20,56	1678	7.41	1.97	252.1	4.76	8.90	500	cles
8	1505	20,09	1701	7,42	2:04	253.6	4.82	8,90	500	Car
9	1510	20.55	1698	7.41	1196	254,9	4,96	8.90	500	u
10										
Stabilized:	: / Yes )	No				To	otal Volume	Removed:	8090	mL
Comments	s:								0-	



Groundwater Assessment

Phone: (701) 258-9720

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	mm/ll
Sampling Persor	nal: Darren Niesinaac
<u> </u>	
-	

			<u></u>								and d		
Weather Conditions:		Temp:	80°F	-	Wind:	513			Precip:	Sun	y) Partly C	Cloudy / Clo	oudy
	Well Info	ormation	V			· /		Sa	mpling I	nformatio	- on		
Well Locked?	Yes	No				Purgi	ng Method:	Blad	lder		Co	ontrol Settin	gs
Well Labeled?	Tes	No			•	Sampli	ng Method:	Blad	lder		Purge:	5	sec.
Casing Straight?	Les	No				Dedicat	ted Equip?:	Yes	Sto-		Recover:	55	sec.
Grout Seal Intact?	Xes	No	Not Vis	ible		Duplicate	Sample?:	Yes	Nd		PSI:		
Repairs Necessary:	-	and the second				Duplicate	Sample ID:			]	Pumping R	tate://) 0	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	8	34	ft		F	Purge Date:	2754	nely	Time <sup>•</sup> Purg	ing Began:	1100	amlpm
Total W	/ell Depth:	V		ft		Well P	urged Dry?	Yes	NO.	Time F	Purged Dry:	<	am/pm
We	ll Volume:		<u> </u>	liters		Sa	mple Date:	275400	e(7	Time of	f Sampling:	1255	am/pm
Depth to Top	of Pump:	<i>.</i>	13.35	ft				<b>.</b>	, ,				
Water Level Afte	er Sample:	8.	36	ft		Bottle	500 m	IL Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level Ir	dicator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:	
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	
SEQ #	Time		±5%	±0.1	2 ±10%	≁ ±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1	1205	16.07	3990	6.98	257.7	253.6	45.5	8:38	500	5lightly Turbid	202.03
2	1215	16.55	3727	67.15	\$21,57	249.0	22.5	8136	1000	ST	-
3	1235	15,75	3693	7,22	2,14	254.8	7,21	8136	2000	da	
4	1240	15.50	3103	7,22	2.25	256,9	3.89	8,36.	500	Clee	
5	1245	15.50	3694	7.24	2,29	258,2	2.16	8,36	500	ch	
6	1250	15.61	3701	7,23	2.30	261.5	2.34	8136	500	ca	
7	1255	15:43	3691	7,24	2.34	262,3	2,37	8,36	500	Cla	
8											
9											]
10											]
Stabilized:	(Yes	Νο				Тс	otal Volume	Removed:	Z50D	mL	
Comments		/	-							-	



Groundwater Assessment

Phone: (701) 258-9720

Company:	MDU Lewis and Clark	
Event:	2017	
Sample ID:	nv117	
Sampling Perse	nal: Parin Nitsuan	

			1				•				*		
Weather Conditions:		Temp:	63 °F		Wind:	513			Precip:	Suni	ny /)Partly C	Cloudy / Clo	oudy
	Well Info	rmation						Sa	ampling l	nformatio	ón		
Well Locked?	/ tes	No				Purgi	ng Method:	Blac	der		Co	ntrol Settin	gs
Well Labeled?	Tes	No				Sampli	ng Method:	Blac	dder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedica	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visi	ble		Duplicate	e Sample?:	Yes	B		PSI:		
Repairs Necessary:						Duplicate	Sample ID:	Ć	Non-Concernent of the Concernent of the		Pumping R	ate: / ฏโ	) mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:		a the	ft		F	Purge Date:	26 The	17	Time Purg	ing Began:	1540	7 am/pm
Total W	/ell Depth:			ft		Well P	urged Dry?	Yes	No	Time F	urged Dry:	1640	/ am/om
We	ell Volume:			liters		Sa	ample Date:	27Jun	617	Time of	Sampling:	0955	(and/pm
Depth to Top	o of Pump:	9	.85	ft					/				
Water Level After	er Sample:	10,	Stump	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremen	t Method:	Electric V	Vater Level Inc	licator		List:	500 mL Nit	tric (filtered)	4 - 1 Lit	er Nitric			

				· · ·								
	Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:	
	(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	
	SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
	1	1554	15 32	8384	7.00	6.57	233,1	29.0	6,94	500	Starbyly y	16 1
1	2	1504	15.67	8356	7.03	5,79	249.5	28.7	7.36	1000	ST	1910
	3	1614	14.93	8199	7,07	7,07	269.0	17.1	7.74	1000	der	
	4	1629	14.90	8215	7.06	6.53	279.3	10,3	8.67.74	1500	du	
	5	16 44	14,33	8246	7,07	5.62	283,0	8.61	9,85	1500	dr	
	6							,				
	7										τ	
	8	0950	Pure	ed l	in tor	- Sm	à bete	re Saul	7.82			
	9	0955	13.88	8501	7.10	6.09	238,6	16,1	8-14	500	clean	
	10			0-						0	6	
	Stabilized:	Yes	(No				To	otal Volume	Removed:	6.000	mL	
	Comments	s:	- I					ł,		3	-	
		F	here,	valit -	2 noul	. La	, <b>、</b>				, .	
			, , , ,		ruugh	Water	- In n	1211 Yo	964	Stabil	reation.	
								- 1 /0	101 -	10011		

2616 E. Broadway Ave, Bis Phone: (701) 258-9		Field Ground	Da water	task Assessr	neet		Company: Event: Sample ID: Sampling P	M L ersonal: 7	MDU Lewis 2017 10 2117 2117 2117 2117 2117 2117 2	s and Clark			
Weather Conditions:		Temp:	62°F		Wind: 4	Light	F		Precip	Sunr	ny / Partly C	loudy / Clo	oudy
	Well Info	rmation				100		Sa	mpling I	nformatic	on		
Well Locked?	Yes	ALO				Purgi	ng Method:	Blac	lder		Co	ntrol Setting	js
Well Labeled?	Yes	No				Sampli	ng Method:	Blac	lder		Purge:	-5	sec.
Casing Straight?	Tos	No				Dedicat	ed Equip?:	Yes	NO		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visit	łè		Duplicate	Sample?:	Yes	NO)		PSI:		
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: / ပိ 🗅	mL/min
Casing	Diameter:		2"							<b>.</b>			
Water Level Bef	ore Purge:		10,77	ft		F	Purge Date:	28 Tu	17_	Time Purg	ing Began:	0745	am/pm
Total W	/ell Depth:			ft		Well P	urged Dry?	Yes	No	Time P	urged Dry:		am/pm
We	Il Volume:			liters		Sa	mple Date:	2.8The	17	Time of	Sampling:	0850	am/pm
Depth to Top	o of Pump:	: 1	7,15	ft			·····		, 			-	
Water Level After	er Sample:	,	10,79	ft		Bottle	500 m	nL Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level Ind	cator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			

Stabi	lization	Temp (°C)	Spec. Cond.	На	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0750	12.42	8088	7,22	5153	259.7	446	10,79	500	Tursid aven
2	6820	12.28	\$1593	7,43	210	241.5	42.0	10,79.	130030	Slightly talbid
3	0830	12.30	1594	7.43	0,31	242,5	13.1	10,79	1000	clear
4	0840	12,46	1569	7,42	0,32	241,6	3.83	10,79	1000	CG
5	6845	12,39	1572	7,42	0131	241.9	3.78	10,29	500	di
6	9850	12.44	1573	7642	0,30	241,7	3152	10,79	500	-h_
7										
8										
9										
10						-		1		
Stabilized Comment	ts:	<u>`</u> No	-			Τ¢	otal Volume	e Removed:	<u>(500</u>	mL



Temp:

No

No

No

No

92 3.

Electric Water Level Indicator

O

Well Information

Yes

Yes

Yes

Yes

Casing Diameter:

Total Well Depth: Well Volume:

Depth to Top of Pump:

Measurement Method:

Water Level After Sample:

Water Level Before Purge:

## **Field**

Well Locked?

Well Labeled?

Casing Straight?

Grout Seal Intact?

Repairs Necessary:

Weather Conditions:

Phone: (701) 258-9720

ield Da	Itasł	neet		Company:		MDU Lew	is and Clark	, 	
		1001		Event:		2017			
Groundwater	Assessr	nent		Sample ID:		hack	199		
				Sampling P	ersonal:	Para	mNi	your	
$\mathbf{O}$					<del></del>				
XY °F	Wind:	NW15			Precip	: Sun	ny / Partly C	loudy/ Clo	oudy
		·		Sa	mpling I	nformatio	on	$\subseteq$	
		Purgir	ng Method:	Blac	lder		Со	ntrol Setting	js
		Samplin	ng Method:	Blac	lder		Purge:	5	sec.
		Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Not Visible		Duplicate	Sample?:	(es	No		PSI:		
		Duplicate :	Sample ID:	Dyp-	1		Pumping Ra	ate: / つつ	mL/min
2"					1	-			
<b>£</b> 9 ft		P	urge Date:	2750	117	Time Purg	ing Began:	1615	am/pm)
		Well P	urged Dry?	Yes	ALO?	Time F	Purged Dry:	· · · · ·	_am/pm
liters		Sa	mple Date:	VITure	17	Time of	f Sampling:	1650	ampm
.92 ft				<u> </u>	1		2		
ft		Bottle	500 m	L Nitric	1 Lite	er Raw			

4 - 1 Liter Nitric

#### **Field Measurements**

List:

500 mL Nitric (filtered)

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time,		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1620	19,22	1794	7,25	1.18	228,5	32.5	10.84	500	Slightly Tribil
2	1630	17,46	1709	7.28	0,23	2226	7.64	10,84	1000	clein
3	1635	17.29	1704	7,28	0,24	2223	3,28	10,84	500	di
4	1640	17,43	1703	7,28	0,22	221.9	2.06	10.84	500	Clear
5	1645	17,44	1709	7.29	0,20	221,0	1,90	10,84	500	de
6	1650	17:35	1708	7,29	0.19	220,4	1.93	10,84	500	Clev
7	$H^{-1}$							, ,		
8										
9										
10										
Stabilized:	Yes	) No	,		1 to 1 million	Тс	otal Volume	Removed:	3500	mL
Comments	* \ _	·								



## **Chain of Custody Record**

Project Name	e:		Event: W					Work Order Number:							
	MDU Lewis and Clark	k.			June 2017								XH	-17	33
Report To: Attn: Address: phone: email:	<b>MDU</b> Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon Co Attn: Address:	ору:				M	lame	of Sa		er(s): /// <i>e</i>	en Nie	Swaa	7
	Samp	le Informatio	on /				В	ottle	э Тур	e	,	Fie	eld Para	meters	Analysis
Lab Number	Sample ID MW110	teg Q 2-b Tyart 7	94 11744	Sample T <sub>VDA</sub>		× 1 liter	X 500mL Nitri	× 500mL Nitric (e	(Deliginit	 		of Temp (°C)	P Spec. Cond.	Ha 34	Analysis Required
W2576	MW119	2654ne/7	1735	GW		X	X	x			10	4.25	1173	7,38	
W2577	MW210	265well	1935	GW		X	X	Х			10	1.05	1438	7.61	
W2578	MW102	27 Juneit	0946	GW		X	Х	Х			lź	2,61	6720	6.99	
W2579	MW118	27 JUNE 17	1510	GW		X	Х	x			2	0.55	1698	7.41	
W2580	MW111	27 June 17	1255	GW		X	X	X			is	5.43	3691	7,24	MDU CCR
W2581	MW117	2754pe17	+++55h	2 GWm	17	X	X	X			l.	3.88	8501	7.10	
W2582	MW103	2856mel7	0850	GW		X	X	X			12	2.44	1573	7.42	
W2583	MW109	27Junel7	1650	GW		X	X	X			_F	7.35	1708	7.29	
122584	Dup 1	27 Junel 7	' NA	GW		X	X	X				NA	NA	NA	
W2585	Field Blank (FB)	28 June 17	NA	W		X	X	x				NA	NA	NA	

Comments:

Relinquished By:	Relinquished By: Sample Condition:		] [	Received by:		
Name:	Date/Time	Location:	Temp (°C)		) AName:	Date/Time
1 Dan Nung	28 June 17 1443	Uog In Walk In #2	ିଥି ଏ TM562 / TM588	] {	Tea Xh	28 Jun 2017 1443





#### CASE NARRATIVE

**MVTL Lab Reference No/SDG:** IML Lab Reference No/SDG: Client: Location: **Project Identification: MVTL Laboratory Identifications: IM Laboratory Identifications:** Page 1 of 2

201782-1734 S1707004 **Montana Dakota Utilities MDU Lewis & Clark** CCR Groundwater – June 2017 Event 17-W2586 through 17-W2596 S1707004-001 through S1707004-011

MDU Sample Identification	IML Sample Identification	MVTL Laboratory #
MW110	S1707004-001	17-W2586
MW119	S1707004-002	17-W2587
MW210	S1707004-003	17-W2588
MW102	S1707004-004	17-W2589
MW118	S1707004-005	17-W2590
MW111	\$1707004-006	17-W2591
MW117	S1707004-007	17-W2592
MW103	S1707004-008	17-W2593
MW109	\$1707004-009	17-W2594
Dup 1	\$1707004-010	17-W2595
Field Blank (FB)	S1707004-011	17-W2596

#### ١. RECEIPT

- All samples were received at the laboratory on 28 Jun 17 at 1443. .
- 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.
  - Temperature of samples upon receipt was 0.9°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 3 July 17.
  - o All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

#### HOLDING TIMES 11.

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





#### CASE NARRATIVE

MVTL Lab Reference No/SDG: IML Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: IM Laboratory Identifications: Page 2 of 2 201782-1734 S1707004 Montana Dakota Utilities MDU Lewis & Clark CCR Groundwater – June 2017 Event 17-W2586 through 17-W2596 S1707004-001 through S1707004-011

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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

DATE:

Z8JULI7

Claudette Carroll - MVTL Bismarck Laboratory Manager





1 of 1 Page:

Report Date: 21 Aug 17 Lab Number: 17-W2586 Work Order #: 82-1734 Account #: 002800 Date Sampled: 26 Jun 17 14:44 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: June 2017

As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
7.34	units	NA	SM 4500 H+ B	26 Jun 17 14:44	DJN
14.5	Degrees C	NA	SM 2550B	26 Jun 17 14:44	DJN
1112	umbos/cm	1	EPA 120.1	26 Jun 17 14:44	DJN
See Attached Report				3 Aug 17	OL
See Atta	ached Report			29 Jul 17	OL
	As Rece: Result 7.34 14.5 1112 See Atta See Atta	As Received Result 7.34 units 14.5 Degrees C 1112 umhos/cm See Attached Report See Attached Report	As Received Method Result RL 7.34 units NA 14.5 Degrees C NA 1112 umhos/cm 1 See Attached Report See Attached Report	As Received Result  Method RL  Method Reference    7.34  units  NA  SM 4500 H+ B    14.5  Degrees C  NA  SM 2550B    1112  umhos/cm  1  EPA 120.1    See Attached Report  See Attached Report  See Attached Report	As Received ResultMethod RLMethod ReferenceDate Analyzed7.34unitsNASM 4500 H+ B26 Jun 17 14:4414.5Degrees CNASM 2550B26 Jun 17 14:441112umhos/cm1EPA 120.126 Jun 17 14:44See Attached Report3 Aug 1729 Jul 17

OL = Analysis performed by an Outside Laboratory.

Approved by:

281 Claudette K. Canrep

CC

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 1

Report Date: 21 Aug 17 Lab Number: 17-W2587 Work Order #: 82-1734 Account #: 002800 Date Sampled: 26 Jun 17 17:35 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: June 2017

	As Rece: Result	ived	Method RL	Method Reference	Analyzed	Analyst
pH - Field	7.38	units	NA	SM 4500 H+ B	26 Jun 17 17:35	DJN
Temperature - Field	14.2	Degrees C	NA	SM 2550B	26 Jun 17 17:35	DJN
Conductivity - Field	1173	umhos/cm	1	EPA 120.1	26 Jun 17 17:35	DJN
Radium 226 Radium 228	See Atta See Atta	ached Report ached Report			29 Jul 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

10 Claudette K. Canreo

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 co ! = Due to sample quantity + = Due to in CERTIFICATION: ND # ND-00016

lution as coded below: # = Due to concentration of other analytes + = Due to internal standard response





Page: 1 of 1

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 21 Aug 17 Lab Number: 17-W2588 Work Order #: 82-1734 Account #: 002800 Date Sampled: 26 Jun 17 19:35 Date Received: 28 Jun 17 14:43 Sampled By: Client

Project Name: MDU Lewis & Clark

Sample Description: MW210

Event and Year: June 2017

Temp at Receipt: 0.9C

PO #: 165273 OP

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226	7.61 14.0 1438 See Atta	units Degrees C umhos/cm ached Report	NA NA 1	SM 4500 H+ B SM 2550B EPA 120.1	26 Jun 17 19:35 26 Jun 17 19:35 26 Jun 17 19:35 3 Aug 17	DJN DJN DJN OL
Radium 228	See Atta	ached Report			29 Jul 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canreo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 21 Aug 17 Lab Number: 17-W2589 Work Order #: 82-1734 Account #: 002800 Date Sampled: 27 Jun 17 9:46 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

Sample Description: MW102

Project Name: MDU Lewis & Clark

Event and Year: June 2017

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyzed	
	6 00	undta	NIA	CM 4500 H+ B	27 Jun 17	9:46	DJN
pH - Field	6.99	unics	INA	SH 4500 HT 2	07 7	0.46	TO TN
Temperature - Field	12.6	Degrees C	NA	SM 2550B	2/ Jun I/	9:46	DOM
remperature	6720	umbog (cm	1	EPA 120.1	27 Jun 17	9:46	DJN
Conductivity - Field	6720	unitos/ cm	-	DETT EROLE	2 200 17		OT.
Radium 226	See Attached Report				3 Aug 17		0L
Raditum 220	Geo Att	Geo Atteshed Deport			29 Jul 17		OL
Radium 228	See Act	ached Report			And and the second second		

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canreo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

Report Date: 21 Aug 17 Lab Number: 17-W2590 Work Order #: 82-1734 Account #: 002800 Date Sampled: 27 Jun 17 15:10 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: June 2017

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.41	units	NA	SM 4500 H+ B	27 Jun 17 15:10	DJN
Temperature - Field	20.6	Degrees C	NA	SM 2550B	27 Jun 17 15:10	DJN
Conductivity - Field	1698	umhos/cm	1	EPA 120.1	27 Jun 17 15:10	DJN
Dadium 226	See Attached Report				3 Aug 17	OL
Radium 228	See Atta	ached Report			30 Jul 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

Report Date: 21 Aug 17 Lab Number: 17-W2591 Work Order #: 82-1734 Account #: 002800 Date Sampled: 27 Jun 17 12:55 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: June 2017

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.24	units	NA	SM 4500 H+ B	27 Jun 17 12:55	DJN
Temperature - Field	15.4	Degrees C	NA	SM 2550B	27 Jun 17 12:55	DJN
Conductivity - Field	3691	umhos/cm	1	EPA 120.1	27 Jun 17 12:55	DJN
Radium 226	See Attached Report				3 Aug 17	OL
Radium 228	See Att.	ached Report			30 Jul 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Canrep

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: 21 Aug 17 Lab Number: 17-W2592 Work Order #: 82-1734 Account #: 002800 Date Sampled: 27 Jun 17 10:55 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: June 2017

	As Rece Result	ived	Method RL	Method Reference	Date Analyze	bd	Analyst
pH - Field	7.10	units	NA	SM 4500 H+ B	27 Jun	17 10:55	DJN
Temperature - Field	13.9	Degrees C	NA	SM 2550B	27 Jun	17 10:55	DJN
Conductivity - Field	8501	umhos/cm	1	EPA 120.1	27 Jun	17 10:55	DJN
Radium 226	See Att	ached Report			3 Aug	17	OL
Radium 228	See Att	ached Report			30 Jul	17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501 Report Date: 21 Aug 17 Lab Number: 17-W2593 Work Order #: 82-1734 Account #: 002800 Date Sampled: 28 Jun 17 8:50 Date Received: 28 Jun 17 14:43 Sampled By: Client

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: June 2017

PO #: 165273 OP

Temp at Receipt: 0.9C

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed		Analyst
pH - Field Temperature - Field Conductivity - Field Radium 226	7.42 12.4 1573 See Atta	units Degrees C umhos/cm ached Report	NA NA L	SM 4500 H+ B SM 2550B EPA 120,1	28 Jun 17 28 Jun 17 28 Jun 17 3 Aug 17	8:50 8:50 8:50	DJN DJN DJN OL OL
Radium 228	See Atta	ached Report			30 001 17		<b>UI</b>

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudithe K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





Page: 1 of 1

Report Date: 21 Aug 17 Lab Number: 17-W2594 Work Order #: 82-1734 Account #: 002800 Date Sampled: 27 Jun 17 16:50 Date Received: 28 Jun 17 14:43 Sampled By: Client

PO #: 165273 OP

Temp at Receipt: 0.9C

#### Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW109

Event and Year: June 2017

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	7.29	units	NA	SM 4500 H+ B	27 Jun 17 16:50	DJN
Temperature - Field	17.4	Degrees C	NA	SM 2550B	27 Jun 17 16:50	DJN
Conductivity - Field	1708	umhos/cm	1	EPA 120.1	27 Jun 17 16:50	DJN
Padium 226	See Attached Report				3 Aug 17	OL
Radium 228	See Atta	ached Report			30 Jul 17	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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Page: 1 of 1

Radium 226 Radium 228	See Attached Report See Attached Report			17 Aug 17 6 Aug 17	OL OL
	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Event and Year: June	2017				
Sample Description: D	up 1		Temp at Re	ceipt: 0.9C	
Project Name: MDU Lew	is & Clark		PO #: 1652	73 OP	
			Date Recei Sampled By	ved: 28 Jun 17 : Client	14:43
Montana Dakota 400 N 4th St Bismarck ND	Utilities 58501		Work Order Account #: Date Sampl	#: 82-1734 002800 ed: 27 Jun 17	
Comontha March	211		Report Dat	e: 21 Aug 17 • 17-W2595	

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudette K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit



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 Fast Part of the optimum of the DD 5601 ~ 800 270 6885 ~ Fax 507-359-2890 MER 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 1 Page:

PO #: 165273 OP

Temp at Receipt: 0.9C

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Report Date: 21 Aug 17 Lab Number: 17-W2596 Work Order #: 82-1734 Account #: 002800 Date Sampled: 28 Jun 17 Date Received: 28 Jun 17 14:43 Sampled By: Client

Project Name: MDU Lewis & Clark

#### Sample Description: Field Blank (FB)

Event and Year: June 2017

Radium 228

As Received Method Method Date Analyst Reference Analyzed RL Result OL 10 Aug 17 See Attached Report Radium 226 OL 6 Aug 17 See Attached Report

OL = Analysis performed by an Outside Laboratory.

Approved by:

10 Claudite K. Canrep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016



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

Date: 8/17/2017

CLIENT:	MVTL Laboratories, Inc.
Project:	201782-1734
Lab Order:	S1707004

CASE NARRATIVE

Report ID: S1707004001

Samples 17-W2586 MW110, 17-W2587 MW119, 17-W2588 MW210, 17-W2589 MW102, 17-W2590 MW118, 17-W2591 MW111, 17-W2592 MW117, 17-W2593 MW103, 17-W2594 MW109, 17-W2595 Dup 1, and 17-W2596 FB were received on July 3, 2017.

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:

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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	8/17/2017 S1707004001
ProjectName: Lab ID: ClientSample ID: COC:	201782-1734 S1707004-001 17-W2586 MW110 201782-1734	WorkOrder: CollectionDate: DateReceived: FieldSampler:	S1707004 6/26/2017 2:44:00 PM 7/3/2017 10:49:00 AM
Comments		Matrix:	Water

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total	n an						
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/03/2017 810	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/03/2017 810	MB
Radium 228	0.2	pCi/L		1	Ga-Tech	07/29/2017 1401	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/29/2017 1401	MB

These results apply only to the samples tested.

#### **RL - Reporting Limit**

- B Analyte detected in the associated Method Blank
- 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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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
- X Matrix Effect

Page 1 of 11



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

#### Sample Analysis Report

Ameliana		Bocult	Unite	Oual	RI	Methor	Date Analyzed/Init
Comments					Iviatii	~·	
COC:	201782-1734				Field: Matri	Sampler:	Water
ClientSample ID:	17-W2587 MW119				Datel	Received:	7/3/2017 10:49:00 AM
Lab ID:	S1707004-002				Colle	ctionDate:	6/26/2017 5:35:00 PM
ProjectName:	201782-1734				Work	Order:	S1707004
	2616 E Broadway Ave. Bismarck, ND 58501				Repo	rt ID	\$1707004001
Company:	MVTL Laboratories, Inc				Date	Reported	8/17/2017

Analyses	Result	Units	Quai		Method	Bate / mary to among		
Radionuclides - Total								
Radium 226	0.18	pCi/L		0.2	SM 7500 Ra-B	08/03/2017 1131	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/03/2017 1131	MB	
Radium 228	-3.6	pCi/L		1	Ga-Tech	07/29/2017 1704	MB	
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/29/2017 1704	MB	

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

#### **RL** - Reporting Limit С

G

- Analyte detected in the associated Method Blank в
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded н
- Analyzed by another laboratory L
- Not Detected at the Reporting Limit ND
- S
- J М
- Spike Recovery outside accepted recovery limits
- Outside the Range of Dilutions 0 Х Matrix Effect

Calculated Value

Analyzed at IML Gillette laboratory

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 11


#### Sample Analysis Report

Analyses		Result	Units	Qual	RL	Method	Date Analyzed/Init
Comments							
					Matr	ix:	Water
COC:	201782-1734				Field	lSampler:	
ClientSample ID:	17-W2588 MW210				Date	Received:	7/3/2017 10:49:00 AM
Lab ID:	S1707004-003				Colle	ectionDate:	6/26/2017 7:35:00 PM
ProjectName:	201782-1734				Worl	(Order:	S1707004
Company:	2616 E Broadway Ave. Bismarck, ND 58501				Repo	ort ID	S1707004001
-	M/TI Laboratorian Inc				Data	Reported	8/17/2017

Radionuclides - Total						
Radium 226	0.3	pCi/L	0.2	SM 7500 Ra-B	08/03/2017 1131	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	08/03/2017 1131	MB
Radium 228	0.6	pCi/L	1	Ga-Tech	07/29/2017 2007	MB
Radium 228 Precision (±)	1.5	pCi/L		Ga-Tech	07/29/2017 2007	MB

These results apply only to the samples tested.

### RL - Reporting Limit

- B Analyte detected in the associated Method Blank
- 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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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
- X Matrix Effect

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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 Rep Report ID	orted )	8/17/2017 S1707004001
ProjectName: Lab ID: ClientSample ID: COC:	201782-1734 S1707004-004 17-W2589 MW102 201782-1734				WorkOrd Collectio DateRece FieldSam Matrix:	er: nDate: eived: npler:	S1707004 6/27/2017 9:46:00 AM 7/3/2017 10:49:00 AM Water
Comments							
Analyses		Result	Units	Qual	RL I	Method	Date Analyzed/Init

Radionuclides - Total						
Radium 226	0.5	pCi/L	0.2	SM 7500 Ra-B	08/03/2017 1131	MB
Padium 226 Precision (+)	0.1	nCi/L		SM 7500 Ra-B	08/03/2017 1131	MB
	1.1	nCi/l	1	Ga-Tech	07/29/2017 2310	MB
Radium 228	-1.1	- O!/L	•	Ga Tach	07/20/2017 2310	MB
Radium 228 Precision (±)	1.6	point		Garleun	0112012011 2010	

These results apply only to the samples tested.

#### RL - Reporting Limit C Calcula

G

- B Analyte detected in the associated Method Blank
- 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
- . . .

Reviewed by: b

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- Calculated Value Analyzed at IML Gillette laboratory
- JAnalyte detected below quantitation limitsMValue exceeds Monthly Ave or MCL or is less than LCL
- O Outside the Range of Dilutions
- X Matrix Effect

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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	8/17/2017 S1707004001
ProiectName:	201782-1734	WorkOrder:	S1707004
Lab ID:	S1707004-005	CollectionDate:	6/27/2017 3:10:00 PM
ClientSample ID:	17-W2590 MW118	DateReceived:	7/3/2017 10:49:00 AM
COC:	201782-1734	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total	0.011000						
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	08/03/2017 1131	MB
Radium 226 Precision (±)	0.05	pCi/L			SM 7500 Ra-B	08/03/2017 1131	MB
Radium 228	-0.4	pCi/L		1	Ga-Tech	07/30/2017 213	MB
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	07/30/2017 213	MB

These results apply only to the samples tested.

#### **RL - Reporting Limit**

- B Analyte detected in the associated Method Blank
- 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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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
- X Matrix Effect

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Inter-Mountain Labs

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

### Sample Analysis Report

Analyse		Result	Units	Qual	RL	Method	Date Analyzed/Init
Comments							
					Matr	ix:	Water
COC:	201782-1734				Field	ISampler:	
ClientSample ID:	17-W2591 MW111				Date	Received:	7/3/2017 10:49:00 AM
Lab ID:	S1707004-006				Colle	ectionDate:	6/27/2017 12:55:00 PM
ProjectName:	201782-1734				Worl	(Order:	S1707004
	Bismarck, ND 58501						
Company.	2616 E Broadway Ave.				Repo	ort ID	S1707004001
Company	MVTI Laboratories, Inc				Date	Reported	8/17/2017

)8/03/2017 1131	MB
)8/03/2017 1131	MB
07/30/2017 517	MB
07/30/2017 517	MB
	)8/03/2017 1131 )8/03/2017 1131 07/30/2017 517 07/30/2017 517

These results apply only to the samples tested.

#### **RL** - Reporting Limit С

- Analyte detected in the associated Method Blank В
- Value above quantitation range Е
- Holding times for preparation or analysis exceeded Н
- L Analyzed by another laboratory
- Not Detected at the Reporting Limit ND
- Spike Recovery outside accepted recovery limits S
- Analyzed at IML Gillette laboratory G
  - Analyte detected below quantitation limits J Value exceeds Monthly Ave or MCL or is less than LCL М
  - Outside the Range of Dilutions
  - 0 Matrix Effect

Calculated Value

х

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

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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	2.			Da Re	te Reported port ID	8/17/20 S17070	)17 )04001	
ProjectName: Lab ID: ClientSample ID: COC:	201782-1734 S1707004-007 17-W2592 MW117 201782-1734				Wo Co Da Fie Ma	orkOrder: IllectionDate: IteReceived: IdSampler: Itrix:	S17070 6/27/20 7/3/201 Water	004 017 10:55:00 AM 17 10:49:00 AM	
Comments									
Analyses		Result	Units	Qual	RL	Metho	d	Date Analyzed/I	nit
Radionuclides - To	tal	0.3	pCi/L		0.2	SM 7500 Ra	а-В	08/03/2017 1131	MB

Radium 226	0.3	pCi/L	0.2	SM 7500 Ra-B	08/03/2017 1131	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	08/03/2017 1131	MB
Radium 228	-2.6	pCi/L	1	Ga-Tech	07/30/2017 820	MB
Radium 228 Precision (±)	1.6	pCi/L		Ga-Tech	07/30/2017 820	MB

These results apply only to the samples tested.

#### Analyte detected in the associated Method Blank В

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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

С Calculated Value

**RL - Reporting Limit** 

- Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL. М
- Outside the Range of Dilutions 0
- Matrix Effect Х



### Sample Analysis Report

Company:	MVTL Laboratories, Inc. 2616 E Broadway Ave. Bismarck, ND 58501	Date Reported Report ID	8/17/2017 S1707004001
ProjectName: Lab ID: ClientSample ID: COC:	201782-1734 S1707004-008 17-W2593 MW103 201782-1734	WorkOrder: CollectionDate: DateReceived: FieldSampler: Matrix:	S1707004 6/28/2017 8:50:00 AM 7/3/2017 10:49:00 AM Water
Comments			

Analyses	Result	ılt Units Qual RL		Method	Date Analyzed/I	nit	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/03/2017 1131	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/03/2017 1131	MB
Radium 228	-1.2	pCi/L		1	Ga-Tech	07/30/2017 1123	MB
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/30/2017 1123	MB

These results apply only to the samples tested.

#### **RL - Reporting Limit**

- B Analyte detected in the associated Method Blank
- 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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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
- X Matrix Effect

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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	8/17/2017 S1707004001
ProjectName: Lab ID: ClientSample ID: COC:	201782-1734 S1707004-009 17-W2594 MW109 201782-1734	WorkOrder: CollectionDate: DateReceived: FieldSampler:	S1707004 6/27/2017 4:50:00 PM 7/3/2017 10:49:00 AM
Comments		Matrix:	Water

Analyses	Result Units		Qual	RL	Method	Date Analyzed/Init		
Analyses Radionuclides - Total Radium 226 Radium 226 Precision (±) Radium 228								
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	08/03/2017 1131	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	08/03/2017 1131	MB	
Radium 228	0.5	pCi/L		1	Ga-Tech	07/30/2017 1425	MB	
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	07/30/2017 1425	MB	

These results apply only to the samples tested.

#### **RL - Reporting Limit**

- B Analyte detected in the associated Method Blank
- 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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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
- X Matrix Effect

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

Sample Analysis Report

Analyses		Result	Units	Qual	RL	Metho	d Date Analyzed/Init
Comments							
					Matr	ix:	Water
COC:	201782-1734				Field	dSampler:	
ClientSample ID:	17-W2595 Dup 1				Date	Received:	7/3/2017 10:49:00 AM
Lab ID:	S1707004-010				Coll	ectionDate:	6/27/2017
ProjectName:	201782-1734				Wor	kOrder:	S1707004
	2616 E Broadway Ave Bismarck, ND 58501				Rep	ort ID	S1707004001
Company:	MVTL Laboratories, In	C.			Date	Reported	8/17/2017

Radionuclides - Total						
Radium 226	0.1	pCi/L	0.2	SM 7500 Ra-B	08/17/2017 846	MB
Radium 226 Precision (±)	0.1	pCi/L		SM 7500 Ra-B	08/17/2017 846	MB
Radium 228	-1.1	pCi/L	1	Ga-Tech	08/06/2017 1324	MB
Radium 228 Precision (±)	1.5	pCi/L		Ga-Tech	08/06/2017 1324	MB

These results apply only to the samples tested.

#### Analyte detected in the associated Method Blank В

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

Reviewed by:

Qualifiers:

Wade Nieuwsma, Assistant Laboratory Manager

С

**RL - Reporting Limit** 

- Calculated Value Analyzed at IML Gillette laboratory G
- Analyte detected below quantitation limits J
- Value exceeds Monthly Ave or MCL or is less than LCL М
- Outside the Range of Dilutions
- Ó Matrix Effect Х

Page 10 of 11



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	8/17/2017 S1707004001
ProjectName:	201782-1734	WorkOrder:	S1707004
Lab ID:	S1707004-011	CollectionDate:	6/28/2017
ClientSample ID:	17-W2596 FB	DateReceived:	7/3/2017 10:49:00 AM
COC:	201782-1734	FieldSampler:	
		Matrix:	Water
Comments			

Analyses	Result	Result Units Qual RL		RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	08/10/2017 1549	MB	
Radium 226 Precision (±)	0.04	pCi/L			SM 7500 Ra-B	08/10/2017 1549	MB	
Radium 228	-2.7	pCi/L		1	Ga-Tech	08/06/2017 1627	MB	
Radium 228 Precision (±)	1.5	pCi/L			Ga-Tech	08/06/2017 1627	MB	

These results apply only to the samples tested.

### **RL - Reporting Limit**

- Qualifiers:
- B Analyte detected in the associated Method BlankE 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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

- C Calculated Value
- 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
- X Matrix Effect

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Inter-Mountain Labs -

Your Environmental Monitoring Partner

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

## ANALYTICAL QC SUMMARY REPORT

Date: 8/17/2017 MVTL Laboratories, Inc. CLIENT: S1707004 Work Order: Report ID: S1707004001 **Project:** 201782-1734 Sample Type MBLK Units: pCi/L Radium 228 by Ga/Tech PrepDate: 07/12/17 14:00 BatchID 13495 RunNo: 148477 MB-450 (07/27/17 16:14) % Rec Limits Qual Spike Ref Samp %REC Analyte Result RL ND 1 Total Radium 228 Units: pCi/L Radium 228 by Ga/Tech Sample Type LCS LCS-450 (07/27/17 19:17) RunNo: 148477 PrepDate: 07/12/17 14:00 BatchID 13495 Spike Ref Samp %REC Result RL % Rec Limits Qual Analyte 65.9 - 132 Total Radium 228 34 1 39.3 85.5 Sample Type MS Units: pCi/L Radium 228 by Ga/Tech PrepDate: 07/12/17 14:00 BatchID 13495 MS-450 (07/28/17 01:23) RunNo: 148477 Spike Ref Samp %REC % Rec Limits Qual RL Analyte Result 41 1 39.3 ND 105 50 - 139 Total Radium 228 Sample Type MSD Units: pCi/L Radium 228 by Ga/Tech BatchID 13495 PrepDate: 07/12/17 14:00 MSD-450 (07/28/17 04:27) RunNo: 148477 %RPD %REC % RPD Limits Qual Result RL Conc Analyte 1 41 13.8 91.7 20 Total Radium 228 36

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

RPD outside accepted recovery limits

S Spike Recovery outside accepted recovery limits

R

Inter-Mountain Labs -

Your Environmental Monitoring Partner

NTER-MOUNTAI	Inter-Mountain Labs 1673 T	erra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945	
		ANALYTICAL QC SUMMARY REPORT	
CLIENT:	MVTL Laboratories, Inc.	Date: 8/17/2017	
Work Ord	er: S1707004	<b>Report ID:</b> S1707004001	
Project:	201782-1734		
Radiu	ım 226 in Water -	Sample Type MBLK Units: pCi/L	
	MB-1776 (08/03/17 08:10)	RunNo: 148678 PrepDate: 07/26/17 0:00 BatchID 13517	
	Analyte	Result RL Spike Ref Samp %REC % Rec Limits	Qual
	Radium 226	ND 0.2	
	MB-1777 (08/10/17 15:49)	RunNo: 148982 PrepDate: 07/31/17 0:00 BatchID 13530	
	Analyte	Result RL Spike Ref Samp %REC % Rec Limits	Qual
	Radium 226	ND 0.2	
Radiu	um 226 in Water -	Sample Type LCS Units: pCi/L	
	LCS-1776 (08/03/17 08:10)	RunNo: 148678 PrepDate: 07/26/17 0:00 BatchID 13517	
	Analyte	Result RL Spike Ref Samp %REC % Rec Limits	Qual
	Radium 226	6.0 0.2 6.41 93.9 67.1 - 122	
	LCS-1777 (08/10/17 15:49)	RunNo: 148982 PrepDate: 07/31/17 0:00 BatchID 13530	
	Analyte	Result RL Spike Ref Samp %REC % Rec Limits	Qual
	Radium 226	5.9 0.2 6.41 92.5 67.1 - 122	
Radiu	um 226 in Water -	Sample Type MS Units: pCi/L	
	MS-1776 (08/03/17 08:10)	RunNo: 148678 PrepDate: 07/26/17 0:00 BatchID 13517	
	Analyte	Result RL Spike Ref Samp %REC % Rec Limits	Qual
	Radium 226	5.6 0.2 6.41 ND 87.4 65 - 131	
	MS-1777 (08/10/17 15:49)	RunNo: 148982 PrepDate: 07/31/17 0:00 BatchID 13530	
	Analyte	Result RL Spike Ref Samp %REC % Rec Limits	Qual
	Radium 226	5.6 0.2 6.41 ND 86.4 65 - 131	
Radiu	um 226 in Water -	Sample Type MSD Units: pCi/L	
	MSD-1776 (08/03/17 08:10)	RunNo: 148678 PrepDate: 07/26/17 0:00 BatchID 13517	
	Analyte	Result RL Conc %RPD %REC % RPD Limits	Qual
	Radium 226	6.0 0.2 5.6 5.89 92.7 20	
	MSD-1777 (08/10/17 15:49)	RunNo: 148982 PrepDate: 07/31/17 0:00 BatchID 13530	
	Analyte	Result RL Conc %RPD %REC % RPD Limits	Qual
	Radium 226	5.8 0.2 5.6 5.14 91.0 20	

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

X Matrix Effect



LABORATORIES, Inc. 2616 E Broadway Ave Bismarck, ND 58501

# Chain of Custody Record

Page 1\_of 1\_.

Toll Free: (8	Phone: (701) 2 00) 279-6885			201782-1734									
Company Nam	e and Address:			Account #: Phor						Phone #:			
	<u>M</u> 2616 E E	VTL Broadway		Contact: Claudette							Fax #:		
Billing Address		Name of S	ampier:						E-mail: <u>ccarroin@rnvii.com</u> For e-mail report check box				
	PO B		Broject Na	mo/Numb	or:				_	29-Jun-17			
	New Onn		TOJECTNA	mentumb						BL5917			
		Sample Information		-			B	ottle	Ту	be	Analysis		
S 140700 IML Lab Number	H MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Jntreated	1000 ml HNO3	/OC Vials Jmpreserved	Glass Jar	Other	Analysis Required		
001	17-W2586	MW110	GW	26-Jun-17	1444		4				Ra226 & Ra228		
502	17-W2587	MW119	GW	26-Jun-17	1735		4				Ra226 & Ra228		
013	17-W2588	MW210	GW	26-Jun-17	1935		4				Ra226 & Ra228		
004	17-W2589	MW102	GW	27-Jun-17	941 9	46 *	4				Ra226 & Ra228		
005	17-W2590	MW118	GW	27-Jun-17	1510		4				Ra226 & Ra228		
606	17-W2591	MW111	GW	27-Jun-17	1255		4				Ra226 & Ra228		
007	17-W2592	MW117	GW	27-Jun-17	1055		4				Ra226 & Ra228		
008	17-W2593	MW103	GW	28-Jun-17	850		4				Ra226 & Ra228		
009	17-W2594	MW109	GW	27-Jun-17	1650		4				Ra226 & Ra228		
010	17-W2595	Dup 1	GW	27-Jun-17	4		4				Ra226 & Ra228		
$\Delta$ .	17 10/2506	FR	GW	28 Jun 17			4				Ra226 & Ra228		

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
M. BAUMGARTNER	29-Jun-17	1700		Kathy Pour	7.3.17	10:49	25.20
2.							24.9
L							24.4

#### Technician: / arren Nieswac Site: MDU Lewis and Clark Instrument #1 650 MDS 08F100203 #3 556 MPS 12E102056 #2 650 MDS 04H14736 (Circle One): **Pre Site Calibration** Post Site Check 640 2 The A Date: Time: 5 2015 Time: mv Range +/pН Temp °C Pre Cal Post Cal Range 50 Post Cal pН Temp °C mv Reading 1917 7.02 -13,5 Buffer 7 7,00 6.95-7.05 23,44 0 +/- 50 Buffer 7 7,03 Buffer 10 0,0 -190.b 10,00 9.95-10.05 -180 +/- 50 Conductivity Check Conductivity 43 4982 19 23.58 1408 Buffer 1413 ±10% Buffer 5000 Buffer 1413 ORP 7 231,0 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) 8.65 20.05 84 mg/L Time: 06-00 Date: 7.75m217 727 Time: mv Range +/pН Post Cal Range Temp °C Pre Cal Post Cal mv pН Temp °C 50 Reading 7.00 22, CR 7.02 30.07 Buffer 7 6.95-7.05 0 +/- 50 Buffer 7 6. 22.02 9,94 45 Buffer 10 9.95-10.05 -180 +/- 50 · MAR Conductivity Check Conductivity 49.88 22.03 145 30,0 Buffer 1413 ±10% Buffer 5000 Buffer 1413 ORP 2311 22.09 226. 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) 8.57 .3 21.15 780.0 mg/L

# **MVTL Calibration Worksheet**

#### Site: MDU Lewis and Clark Technician: Narren Mey-Instrument #3 556 MPS-12E102056 #1 650 MDS 08F100203 #2 650 MDS 04H14736 (Circle One): Pre Site Calibration **Post Site Check** <u>Time: 0855</u> Time: 0700 Date: 28 Tre17 mv Range +/-Post Cal Range 50 pН pН Temp °C Post Cal Temp °C Pre Cal mv Reading 7.00 19,92 400 7,02 6.95-7.05 0 +/- 50 Buffer 7 Buffer 7 -190.2 221 10,02 10,00 -180 +/- 50 Buffer 10 9.95-10.05 Conductivity Conductivity Check 14 20,02 21,98 5015 a ±10% Buffer 5000 Buffer 1413 Buffer 1413 ORP 231 mV @ 25C '£10 mV Barometric Pressure (mm Hg) DO 702.6 7.3 8117 21,44 mg/L Time: Time: Date: mv Range +/-Post Cal Range Pre Cal pН Temp °C Reading pН Temp °C Post Cal mv 50 0 +/- 50 6.95-7.05 Buffer 7 Buffer 7 -180 +/- 50 Buffer 10 9,95-10.05 Conductivity Conductivity Check Buffer 5000 Buffer 1413 ±10% Buffer 1413 ORP 231 mV @ 25C ±10 mV DO Barometric Pressure (mm Hg) mg/L

## **MVTL Calibration Worksheet**

2616 E. Broadway Ave, Bis Phone: (701) 258-9	smarck, ND		Fiel	d Da	tas Assess	neet		Company: Event: Sample ID: Sampling P	?ersonal:	MDU Lewi 2017 M W J Amen	s and Clark	~aa_	
Weather Conditions:		Temp:	Th	°F	Wind:	510			Precip	: C Sun	y√ Partly C	loudy / Clo	udy
	Well Info	rmation	, .	1. N.	مربع مطلع .			Sa	ampling	nformatio	on		
Well Locked?	Yes	Ng		- · · ]	• •	Purgi	ng Method:	Blac	lder		Co	ntrol Setting	js
Well Labeled?	Yeş	No		1	i.	Sampli	ng Method:	Blac	dder 🦯		Purge:	5	sec.
Casing Straight?	Ves	No				Dedicat	ed Equip?:	Yes	(No/		Recover:	55	sec.
Grout Seal Intact?	(Yes)	No	Not V	isible ··		Duplicate	Sample?:	Yes	NO		PSI:		
Repairs Necessary:	X					Duplicate Sample ID		:			Pumping R	ate: <u>180</u>	mL/min
Casing	Diameter:		2"			, T		·					
Water Level Bef	ore Purge:	0	7.33	ft	1	F	Purge Date:	26JU	<u>u7</u>	Time Purg	ing Began:	1104	am/pm
Total V	Vell Depth:		n. <u> </u>	ft	с. С	Well P	urged Dry?	Yes		Time F	ourged Dry:		am/pm
· We	ell Volume:			liters	~	Sa	mple Date:	26 Jac	17	Time of	Sampling:	1999	am/pm)
Depth to To	p of Pump:		14,38	ft			19 <b>2</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2						
Water Level Aft	er Sample:		Tiur	ft		Bottle	<del>5</del> 00 m	nL Nitric	1 Lit	er Raw			
Measuremer	nt Method:	Electric	Water Level	Indicator		List:	500 mL N	itric (filtered)	4-1L	iter Nitric			
1995.	Field Meas						, ja (r., r. v.						
Stabilization	Temp	Spec.		DO	ORP		Water	mL	Clarit	Discription	: or Ect		

(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU) -	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1119	14.63	1114	7.33	2.69	158,3	71000	9,39	500	Thisid Tan
2	1139	14,54	1114	7,35	2.82	174.9	272	9:39	2000	56 yory tursia
3	1159	14.31	1109	7,34	3.08	19011	155	9,39	2000	ST
4	1229	14,34	1107	7.28	3,00	264.3	51.8	9.39	3000	ST
: 5	1259	14,5-	1106	7.36	3,13	209.8	28.7	9,42	3000	ST
6	1329	14,43	1107	7,35	3,21	215.8	16.4	9,40	3000	(1041
7	1359	14:41	1107	7,36	3,23	22216	9.48	9.42	3000	dar
8	1419	14,64	1110	7,35	3,25	224,2	- 8,15	9.12	2000	de
9	1424	14.68	1111	735	3,21	225,7	6,12.	9.42	500	di
10	1429	14.65	ling	7.31	3,25	225,9	4.97	9.42	50-	ch
Stabilized:	Yes	-No.			-y	To	tal Volume	Removed:	<u> </u>	mL

Comments:

When lowering the pump there is a catch in the west. I think the full is coming about a little man down



Groundwater Assessment

Company:	MDU	Lewis and Clark
Event:		2017
Sample ID: MIN	110	
Sampling Personal:	arden Nies	was
Date: 26Tru	17	

### **Field Measurements**

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)		Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 π		clear, slightly turbid, turbid
12	1434	14,73	1110	7.34	3,27	226.7	4.57	1,42	-300	clean
13	1439	14.56	1110	7,37	3.29	228,8	4,48	9.42	500	- Clar
14	1444	14,50	1112	7.34	3,29	229.7	4142	9.42	500	ca
15							e			· · · · · · · · · · · · · · · · · · ·
16										
17										
18										
19				<u> </u>						
20					,					
21										
22										
23										
24										
25										
26										
27										
28										
29										
30	$\left \left( \cdot\right) \right\rangle$									
Stabilized	: \\Yes	No				-	Total Volum	ne Remove	1: <u>21,000</u>	_mL
Comment	ts:	1							·	

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

MVTL
2616 E. Broadway Ave, Bismarck, ND

Groundwater Assessment

Company:	MDU Lewis and Clark
Event:	2017
Sample ID:	mwll9
Sampling Persona	11: Darren Niesung

Phone: (701) 258-9720

Weather Conditions:	<u>, ,,</u>	Temp:	\$5°F		Wind:	510			Precip:	Sunr	ny I/Partly C	loudy / Clou	udy
1	Well Info	rmation	-0-0		e	τp	Sampling Information						
Well Locked?	Yes	NO)				Purgi	ng Method:	Bla	dder		Co	ntrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Bla	dder		Purge:	_5	sec.
Casing Straight?	Aes	No				Dedicat	ted Equip?:	Yes	MO.		Recover:	55	sec.
Grout Seal Intact?	Tes	No	Not Visil	ole		Duplicate	Sample?:	Yes	NO		PSI:		
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	<u>ate://00</u>	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		9,19	ft		F	Purge Date:	26 JU	<u>~17</u>	Time Purg	ing Began:	1650	am/pm
Total W	/ell Depth:		'	ft		Well P	urged Dry?	Yes	(NO)	Time F	ourged Dry:	<u> </u>	am/pm
Well Volume:		liters			Sample Date: 26 June 17		Time of Sampling: 735 am			am/pm			
Depth to Top	of Pump:		13.20	ft									
Water Level After Sample:			9,20	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measurement Method:		Electric \	Water Level Inc	licator		List:	500 mL Ni	tric (filtered	) 4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil	ization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1655	14.27	1172	7.34	1.05	250,2	13.1	9,21	590	den
2 6	FA 1710	14.17	1170	7:38	1,02	@1593	5.06	9,19	1500	d
3	1715	14.30	1172	7.37	1.06	134,5	3.64	9,20	100	ch
4	1720	14.01	1172	7.36	1.14	122.8	2.17	9,20	500	dr
5	1725	14.26	1171	7.21	Lik	104.8	1,92	9.20	500	de
6	1730	1412	11-72-	7.37	1.20	101.9	1,83	9,20	500	di
7	1735	140t	11-73	7.38	1.23	99,7	1.80	9,20	500	de
8		1-11-1-1-5-			<b>/</b>					
9		1								
10								<u> </u>	<u> </u>	
Stabilized:	Yes	No	•			Te	otal Volume	e Removed:	4000	_mL

Comments



Groundwater Assessment

2616 E.	Broadway Ave	Bismarck, ND
2010 2.	Dioda way / we	

Phone: (701) 258-9720

Event: 2017 Sample ID: NWZIO Sampling Personal: DAMA Nicsma	Company:	MDU Lewis and Clark	
Sample ID: NN210 Sampling Personal: DAMA Nicsmy	Event:	2017	
Sampling Personal: Darra Niesny	Sample ID:	MW210	
	Sampling Perso	onal: Darren Niesny	

Weather Conditions:		Temp:	83 "	=	Wind:	511			Precip	: Sun	ny / Partly C	loudy / Clo	udy
Well Information						Sampling Information							
Well Locked?	Yes	Nø				Purging Method: Bladder			Co	ntrol Setting	js		
Well Labeled?	স্ত্রে	No				Sampli	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Tes	No				Dedicat	ted Equip?:	Yes			Recover:	TT	sec.
Grout Seal Intact?	Nes	No	Not Vis	ible		Duplicate	Sample?:	Yes	(A)		PSI:		
Repairs Necessary:		-				Duplicate	Sample ID:	·	-		Pumping R	ate: / v í)	mL/min
Casing	Diameter:		<u>, 2"</u>									,	
Water Level Befo	ore Purge:	0	1,40	ft		F	Purge Date:	2670	el7	Time Purg	ing Began:	1840	am/pm
Total W	ell Depth:		$\sim$	ft		Well P	urged Dry?	Yes	No)	Time F	Purged Dry:		am/pm
We	ll Volume:		_	liters		Sa	mple Date:	26 Th	-17	Time o	f Sampling:	1935	am <i>l</i> om
Depth to Top	of Pump:	3	0.82	ft								11-0	
Water Level After Sample:		•	11,48	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level Ir	ndicator		List:	500 mL Nit	ric (filtered)	4 - 1 Li	ter Nitric			

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 consecutive)		(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1845	13.48	1438	7.58	1,32	-32.(	199	10.29	500	Slightly tubit
2	1900	13,77	1438	7.61	DAtb	-89,6	48.6	11.21	1500	ST.
3	1915	13,98	1439	Tabl	0,30	-103.3	1704	11.36	1500	chi
4	1920	13,49	1440	7.61	0.25	-106,3	9,23	1638	500	lu
5	1925	14,04	1436	7.61	0,28	-108,3	4.92	11.38	500	4
6	1930	13.96	1436	7,60	0.28	-108,8	4.73	11.28	500	cler
7	1935	14,05	1438	7,61	0,29	-129.3	4,61	11.46	500	-
8									5	
9										
10	1									
Stabilized:	Yes	) No				To	otal Volume	Removed:	5588	mL
Comments	3:	/	•							



**Groundwater Assessment** 

Phone: (701) 258-9720

Company	<i>'</i> :	MDU Lewi	s and Clark		
Event:		2017			
Sample I	D: AH	NDton	m	W	102
Sampling	Personal:	Darren	NICCU		

Weather Conditions:		Temp:	64	°F	Wind:	511			Precip:	Sunt	ny) Partly (	Cloudy / Clo	oudy
	Well Info	rmation	<del>- 6 (</del>			<u> </u>		Sa	mpling l	nformatio	on		
Well Locked?	Yes	(A)0				Purgi	ng Method:	Blad	der		Co	ontrol Setting	gs
Well Labeled?	Yes	No				Samplii	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	No		Recover:	<u> </u>	sec.
Grout Seal Intact?	105	No	(-110	t Visible		Duplicate	Sample?:	Yes	/No		PSI:		
Repairs Necessary:			<u> </u>			Duplicate	Sample ID:				Pumping R	ate: / 00	mL/min
Casing	Diameter:		2"							-	·		
Water Level Befe	ore Purge:	1	192	ft ft		F	Purge Date:	2775	017	Time Purg	ing Began:	<u> 0771</u>	Cam/pm
Total W	Vell Depth:	•		ft		Well P	urged Dry?	Yes	NO	Time F	urged Dry:		-am/pm
We	ell Volume:		~	liters		Sa	mple Date:	27 June	17	Time of	Sampling:	0946	@m/pm
Depth to Top	o of Pump:	2	1, 90	ft									
Water Level Afte	er Sample:	ł	9.6	ft ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremen	nt Method:	Electric	Water Le	vel Indicator		List:	500 mL Nit	tric (filtered)	4 - 1 Li	ter Nitric			

### **Field Measurements**

Stabil	lization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(-0)		рп	(mg/L)	(IIIV) (20 m)/			Removed	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 11		clear, slightly turbid, turbid
1	0746	11.81	6571	6.95	0.92	123.9	139	1956	500	Slightly turked
2	0816	11,49	6659	6,98	0,44	2.2	35,2	19.68	3000	ST /
3	0846	12,09	6700	6.97	0.24	-4.0	14.0	19,68	3000	Ch/
4	0416	1200	6739	6.98	OIL	-10,4	9,74	19.64	3000.	ch_
5	0431	12.19	6732'	6,99	0117	-11.9	5.98	19.68	1500.	clan
6	0936	12.17	6767	6.78	0117	-12,2	4.17	19.68	500	ch
7	0941	12,36	6744	6.98	0,16	-12,7	4,56	19.68	500	ch
8	0946	12.61	6720	6.99	0.16	-12.9	4.47	19.68	500	ch
9										
10	$\square \bigcirc$									<u> </u>
Stabilized	: (Yes	No		••••••••••••••••••••••••••••••••••••••		То	otal Volume	Removed:	12500	mL
9 10 Stabilized	0991 0946 : (Yes	12,38 12,61 No	6799	6.99	0,1b	-12, q -12, q To	9,56 9,77 Dotal Volume	19.68 Removed:	500	mL

Comments:

	AVTL			Fiel	d Da	tasł	neet		Company: Event:	npany: MDU Lewis and Clark nt: 2017				
2616 E. Bro	adway Ave B	ismarck ND		Grou	indwater	Assessr	nent		Sample ID:		<u>~118</u>	16:-0		
2010 E. DIU	(704) 050 (	0700							Sampling P		allen	10/ ccm	2	
Phor	ne: (701) 258-9	9720		(A)										
Weather C	onditions:		Temp:	XX	۴F	Wind:	NW13			Precip:	Suni	ny / Partly C	Cloudy / Clo	oudy
		Well Info	rmation	00			_		Sa	mpling li	nformatio	on		
We	ell Locked?	Yes	No				Purgir	ng Method:	Blad	der		Co	ontrol Settin	gs
Wel	Il Labeled?	Yes	No				Samplii	ng Method:	Blad	der		Purge:	ŝ	sec.
Casin	g Straight?	Yes	No				Dedicat	ed Equip?:	Yes	Na		Recover:		sec.
Grout S	Seal Intact?	Jes	No	Not V	isible		Duplicate	Sample?:	Yes	A A		PSI:	~	
Repairs Ne	ecessary:						Duplicate :	Sample ID:				Pumping R	Rate:	mL/min
	Casing	Diameter:		2"									1492	)
Wate	er Level Bet	fore Purge:	R	,78	ft		F	urge Date:	VEIN	17	Time Purg	jing Began:	1300	am/pm
	Total V	Vell Depth:			ft		Well P	urged Dry?	Yes	(No)	Time F	Purged Dry:		am/pm
	W	ell Volume:			liters		Sa	mple Date:	27The	17	Time or	f Sampling:	1510	am/pm
[	Depth to To	p of Pump:	q	148	ft					<u> </u>				
Wate	er Level Aft	er Sample:	٠	8.90	ft		Bottle	500 m	nL Nitric	1 Lite	r Raw			
N	<i>l</i> leasureme	nt Method:	Electric	Water Level	Indicator		List:	500 mL Ni	tric (filtered)	4 - 1 Lit	er Nitric			
					Field	Measure	ments							
	<u>.</u>													
Stabil	ization	Temp	Spec.		ро	ORP	Turbidity	Water	mL		Discription	:		
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity	, Color, Od	or, Ect.		
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, s	slightly turbio	d, turbid		
1	1405	20.98	1693	7,36	3.34	2242	218	8.88	500	Thebi	diTa	r		
2	1425	19.55	1693	7,38	2001	237.8	22.8	6,92	2000	Slive	The two	bid	]	
3	1430	19,63	1695	7,40	2.03	241,6	11.2	8,90	500	Che				
4	1435	19,13	1692	7.40	1.99	243,9	7.32	890	500 .	dr				

10 Stabilized: (Yes) No

155

1500

1505

1510

1450 20,36 1697

20,46 1698

20,09 1701

20.55 1698

20,56 1698

7,41

7,41

7.41

7.41

7,42

1.98

2.00

2:04

1196

1.97

249,1

250,5

252.1

253.6

254,9

Total Volume Removed: X090 mL

8,90

8:00

20001500 clear

ober

Cle

~ (s

 $\mathcal{A}$ 

500

500

500

500

5.43 8,90

4.82 8,90

4,96 8.90

4.46

4.76

Comments:

5

6

7

8

9

2616 E. Broadway Ave, Bit Phone: (701) 258-9	smarck, ND 9720		Field Groun	<b>Da</b> dwater	tasł Assessi	neet		Company: Event: Sample ID: Sampling Pe	Mersonal: p	MDU Lewi 2017 M/ [] Arch	s and Clark	isi~aa	iy
Weather Conditions:		Temp:	\$0°F		Wind:	213	,		Precip:	Sunr	ry∕l Partly C	loudy / Clo	oudy
	Well Info	ormation	v			· /		Sa	mpling l	nformatio	on		
Well Locked?	Yes	No				Purgir	ng Method:	Blad	der		Co	ntrol Settin	gs
Well Labeled?	Aes	No			*	Samplir	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Xes	No				Dedicat	ed Equip?:	Yes	<b>A</b>		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visi	ble		Duplicate	Sample?:	Yes	N		PSI:		
Repairs Necessary:	-		1			Duplicate \$	Sample ID:				Pumping R	ate://) 🖏	mL/min
Casing	Diameter:		2"										
Water Level Bef	ore Purge:	8	,34	ft		P	urge Date:	2754	nely	Time <sup>®</sup> Purg	ing Began:	1100	am/pm
Total V	Vell Depth:	2	- '	ft		Well Pi	urged Dry?	Yes	NO	Time P	urged Dry:	< <u> </u>	am/pm
We	ell Volume:		<u> </u>	liters		Sa	mple Date:	27 June	217	Time of	Sampling:	1255	am/pm
Depth to Top	o of Pump:		13.35	ft									
Water Level After	er Sample:	8.	36	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremer	nt Method:	Electric \	Vater Level Inc	licator		List:	500 mL Ni	tric (filtered)	4 - 1 Lit	ter Nitric			

Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:	
(3 cons	ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	-
SEQ #	Time		±5%	±0.1	2.±10%	≁ ±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1	1205	16.07	3990	6.98	25517	253.6	45,5	8.38	500	5lightly Turbid	102.03
2	1215	16.55	3727	67.15	\$1,57	249.0	22.5	8136	1000	ST	
3	1235	15,75	3693	7,22	2,14	254.8	7,21	8136	2000	der	
4	1240	15.50	3103	7,22	2.25	2.56,9	3.89	8,36.	500	Cleer	
5	1245	15,50	3694	7.24	2,29	258,2	2.16	8,36	500	ch	
6	1250	15.61	3701	7,23	2.30	261.5	2,34	8,36	500	ch	
7	1255	15.43	3691	7,24	2.34	262,3	2,37	8,36	500	Cler	
8											
9				:							
10											
StabNized:	(Yes	) No	-			Т	otal Volume	Removed:	5500	mL	
Comments	3:	/	-	1							



**Groundwater Assessment** 

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

Phone: (701) 258-9720

MDU Lewis and Clark	
2017	
nVIIT	
onal drace alight	
	MDU Lewis and Clark 2017 M VII 7

Weather Conditions:		Temp:	63 °F		Wind:	513			Precip:	Sun	ny )Partly C	Cloudy / Clo	oudy
	Well Info	rmation						Sa	mpling li	nformatio	ón		
Well Locked?	Ales-	No				Purgi	ng Method:	Blad	der		Co	ntrol Setting	js
Well Labeled?	Tes	No				Sampli	ng Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Tes	No				Dedicat	ed Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visi	ble		Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:	$\langle \cdot \rangle$	-				Duplicate	Sample ID:	<u>ٰ</u>			Pumping R	ate: / ฏ 🤇	) mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		6.7/2	ft		F	Purge Date:	26.The	17	Time Purg	ing Began:	1544	7 am/pm
Total W	ell Depth:			ft		Well P	urged Dry?	Yes	No	Time P	urged Dry:	-1649	am/om
We	ll Volume:			liters		Sa	mple Date:	2/ Tun	:17	Time of	f Sampling:	0 955	(am/pm
Depth to Top	of Pump:	9	.85	ft					1				
Water Level Afte	r Sample:	10	fostund	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremen	t Method:	Electric	Water Level Inc	licator		List:	500 mL. Ni	tric (filtered)	4 - 1 Lit	er Nitric			

Stab	ilization	Temp	Spec.		ро	ORP	Turbidity	Water	mL	Discription:	
(3 cor	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.	
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid	
1	1554	1532	8384	7,00	6.57	233,1	29.0	6094	500	Sterberlit, the	X
2	1504	15.67	8356	7.03	5,79	249.5	28.7	7.36	1000	57	
3	1614	14.93	8199	7,07	7,07	269.0	17.1	7.74	1000	de	
4	1624	14.90	8215	7.06	6.53	279.3	10,3	8,67.79	1500	du	
5	16 44	14,33	8246	7,07	5.62	283.0	8.61	9,85	1500	il	
6											
7											
8	0950	Pur	Ed !	in to,	- Son	in Let	Pre Soule	7.82	1		
9	0955	13.88	8501	7.10	6.09	23816	16,1-	8714	500	clean	
10			0 -						0		
Stabilized	i: Yes	(No				Т	otal Volume	Removed:	6.000	_mL	
Commen	ts:		-				l,		9		
	-	There.	addingt .	2001	. 60	, <b>L</b>	11		er lad		
				en ovgh	Water	-10 h	K11 40	964	Stabil	Teation.	
							/ -	J J	-		

2616 E. Broadway Ave, Bis Phone: (701) 258-97	marck, ND 720	Field Datasheet Groundwater Assessment						Company: Event: Sample ID: Sampling Pe	<u> </u>	MDU Lewi 2017 2017 2017 2017 2017 2017 2017 2017	s and Clark	ny_	
Weather Conditions:		Temp:	62	°F	Wind:	Light			Precip:	Sunr	ny Partly C	loudy / Clo	udy
	Well Info	rmation				1.0	, ,	Sa	mpling l	nformatio	on		
Well Locked?	Yes	\$10)				Purgi	ng Method:	Blad	der		Co	ntrol Setting	s
Well Labeled?	Yes	No				Sampli	ng Method:	Blad	der		Purge:	5	sec
Casing Straight?	Tos	No				Dedicat	ted Equip?:	Yes	NO		Recover:	55	sec
Grout Seal Intact?	Yes	No	NOT V	isible		Duplicate	Sample?:	Yes	NO)		PSI:	<u> </u>	
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: / ပိ 🗅	mL/mir
Casing	Diameter:		2"							<b>.</b>			
Water Level Befo	ore Purge:		10,7	<u>7 ft</u>		F	Purge Date:	28 Tue	17	Time Purg	ing Began:	0745	am/pn
Total W	/ell Depth:		<u> </u>	ft		Well P	urged Dry?	Yes	No.	Time P	urged Dry:		-am/pm
We	Il Volume:			liters		Sa	imple Date:	28The	7	Time of	Sampling:	0850	am/pm
Depth to Top	of Pump:	1	7,15	ft					·				
Water Level Afte	er Sample:	ļ	10,79	ft		Bottle	500 m	nL Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric V	Water Level	Indicator		List:	500 mL Ni	tric (filtered)	4 - 1 Li	ter Nitric			
			1	Field	Measure	ements		1 1					

t leid medaurementa										
	DO	ORP	Turbidity	Water						

Stabi	lization	Temp	Spec.	:	DO	ORP	Turbidity	Water	mL	Discription:
(3 con	secutive)	(°C)	Cond.	рΗ	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0750	12.42	8088	7,22	5153	259,7	446	10,79	500	Turbid aven
2	6820	12:28	\$1593	7,43	2,10	241.5	42.0	10,79.	130030	Slightlythefid
3	0830	12,30	1594	7.43	0,3]	242,5	13.1	10,79	1000	clear
4	0840	12,46	1569	7,42	0,32	241,6	3.83	10,79	1000	cG_
5	6845	12,39	1572	7,42	0131	241.9	3.78	10,29	500	di
6	9850	12.44	1573	7042	0,30	241.7	3152	10,79	500	de
7										
8										
9										
10								<u> </u>		
Stabilized	: /Yes /	No				To	otal Volume	Removed:	(500)	mL
Comment	is:									

.

2616 E. Broadway Ave, Bis Phone: (701) 258-9	smarck, ND		Field Ground	Da water	tasl Assessi	neet ment	Company: Event: Sample ID: Sampling Per	rsonal:	MDU Lewi 2017 み <i>いし</i> <i>Pacca</i>	s and Clark 999 m Mi	ym	2
Weather Conditions:		Temp:	89°F		Wind:	NW15		Precip	Sunr	ny / Partly C	loudy/ Clou	ıdy
	Well Info	rmation	01			, , ,	San	npling l	nformatio	on	$\subseteq$	
Well Locked?	Yes	No				Purging Method:	Bladd	er		Co	ntrol Setting	s
Well Labeled?	Yes	No				Sampling Method:	Bladd	er	]	Purge:	5	sec.
Casing Straight?	Yes	No				Dedicated Equip?:	Yes	No	]	Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not VisiB	le		Duplicate Sample?:	Tes	No		PSI:	<u> </u>	
Repairs Necessary:						Duplicate Sample ID:	Dyp-1			Pumping R	ate: / つつ	mL/min
Casing	Diameter:		2"									
Water Level Befe	ore Purge:	l	0,89	ft		Purge Date:	275m	17	Time Purg	ing Began:	1615	am/pm
Total W	/ell Depth:	p.	,	ft		Well Purged Dry?	Yes	Alo?	Time P	urged Dry:		_am/pm
We	II Volume:			liters		Sample Date:	27 Tures	7	Time of	Sampling:	1650	am(pm)
Depth to Top	o of Pump:	l	13.92	ft				1		ć		

Bottle

List:

500 mL Nitric

500 mL Nitric (filtered)

1 Liter Raw

4 - 1 Liter Nitric

### **Field Measurements**

ft

Electric Water Level Indicator

.

Water Level After Sample:

Measurement Method:

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time,		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1620	19,22	1794	7,25	1.18	228,5	32.5	10.84	500	Slighthe tine; &
2	1630	17,46	1209	7.28	0,23	222.6	7.64	10,84	1000	clein
3	1635	17.28	1704	7,28	0,24	2223	3,28	10,84	500	di
4	1640	17,43	1703	7,7,8	0,22	221.9	2.06	10.84	500	Clear
5	1645	17,44	1709	7.29	0,20	221,0	1,90	10,84	500	de
6	1650	17:35	1708	7,29	0.19	220,4	1.93	10,84	500	Cler
7	<del>[[</del> -									
8										
9										
10		<								
Stabilized:	Yes	) No				Τc	otal Volume	Removed:	3500	mL
Comments	st. (									

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

# **Chain of Custody Record**

Project Name	e:		Event:				Work Order	Number:	00 100	21. \		
	MDU Lewis and Clark			J	une 2017				00-113	54		
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon Co Attn: Address:	ору:			Name of Sampler(s): Darren Micswaas					
Ciritan.	Sampl	le Informatio	on	E.S.	to settime the line	Bo	ttle Type	Fie	eld Parameters	Analysis		
Lab Number	Sample ID	Date	Time	Sample Type	1			Temp (°C)	Spec. Cond. PH	Analysis Required		
W2586	MW110	26 Junel 7	1444	GW	4			14.50	11/2 7.34			
W2587	MW119	26June 17	1735	GW	4			14,25	173 7.38			
W2588	MW210	26 Three 7	1935	GW	4			14.05	1438 7,61			
122589	MW102	27Junei7	0946	GW	4			12,61	6120 6.99			
W2590	MW118	2 TSynet	1510	GW	4		+ $+$ $+$ $+$	20,55	1698 7.41	Ded 000 % Ded 00%		
122591	MW111	27Junel7	1255	GW	4			15,43	3691 7.24	Rad 226 & Rad 228		
122592	MW117	27Junel7	1055	GW	4			13.88	8501 7,10			
122593	MW103	28 June 17	0850	GW	4			12,44	1573 7.42			
W2594	MW109	2754ne17	1650	GW	4			17.35	1708 7.29			
W2595	Dup 1	2754mel7	NA	GW	4			NA	NA NA			
110501	Field Blank (FB)	2.8 June 17	NA	W	4			NA	NA NA			

### Comments:

15 18	Relinguished By:	MON SELTION	Sample Condition:				
	Name:	Date/Time	Location:	Temp (°C)			
1	Jan Nim	28 Jul 7 - 1443	Log In Walk In #2	0.9 TM562/TM588			
2				0			

Receive	ed by:
Name:	Date/Time
Tain Olla	28, 422017
mann	1443



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



November 3, 2017

Montana Dakota Utilities Attn: Samantha Marshall 400 N. 4<sup>th</sup> St. Bismarck, ND 58501

RE: Groundwater Sampling Event - 2017 at MDU Lewis & Clark Site

Dear Ms. Marshall:

It was brought to MVTL's attention that some of the summary data in the Field Data Report did not match the Raw Data collected in the field. Attached to this letter is the corrected Field Data Report.

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



WO# 82-2765

## **MDU Lewis and Clark**

CCR Sampling

Attn: Samantha Marshall 400 North 4th St Bismarck, ND 58501

	DUDOE	START		TIME	WATER	WATER				FIELD R	EADINGS		
ID	DATE	TIME	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
MW110	2-Oct-17	14:31	2-Oct-17	16:36	8.94*	NR	12500.0	Bladder	13.07	1109	7.32	4.41	clear
MW119	2-Oct-17	16:59	2-Oct-17	17:59	8.72	8.81	6000.0	Bladder	13.58	1172	7.30	2.53	clear
MW210	2-Oct-17	18:15	2-Oct-17	19:30	8.96	NR	7500.0	Bladder	10.90	1447	7.59	4.37	clear
MW102	3-Oct-17	7:27	3-Oct-17	9:02	19.10	NR	9500.0	Bladder	9.45	6523	6.99	4.83	clear
MW118	3-Oct-17	11:42	3-Oct-17	12:42	8.57	8.60	6000.0	Bladder	12.25	1617	7.46	3.12	clear
MW111	3-Oct-17	10:15	3-Oct-17	11:20	7.96	8.00	6500.0	Bladder	12.05	3425	7.25	3.12	clear
MW117	2-Oct-17	13:25	3-Oct-17	9:36	6.27	8.52	6000.0	Bladder	10.48	7884	7.16	14.60	clear
MW103	3-Oct-17	14:25	3-Oct-17	16:10	10.38	10.43	10500.0	Bladder	13.54	1476	7.33	3.66	clear
MW109	3-Oct-17	13:15	3-Oct-17	14:00	10.36	10.41	4500.0	Bladder	12.01	1629	7.32	1.68	clear
MVV101	NA	NA	3-Oct-17	9:25	8.86	NA	NA	WL	NA	NA	NA	NA	Water Level
MW105	NA	NA	3-Oct-17	13:22	8.70	NA	NA	WL	NA	NA	NA	NA	Water Level
MVV106	NA	NA	3-Oct-17	11:23	9.51	NA	NA	WL	NA	NA	NA	NA	Water Level
MW107	NA	NA	3-Oct-17	9:27	4.37	NA	NA	WL	NA	NA	NA	NA	Water Level
MW108	NA	NA	3-Oct-17	10:09	16.44	NA	NA	WL	NA	NA	NA	NA	Water Level
MW116	NA	NA	3-Oct-17	16:37	9.84	NA	NA	WL	NA	NA	NA	NA	Water Level
	NR= Not Recorded on Field Sheet NA = Not Applicable												
		<u></u>			*	Amended o	n 3 Nov 17					*****	



Water Level After Sample:

Measurement Method:

# **Field Datasheet**

Groundwater Assessment

Company:	MDU Lewis and Clark	
Event:	2017	
Sample ID:	MWIID	
Sampling Per	sonal: Darren Niesmaas	

/Sunny/I Partly Cloudy / Cloudy

Purge:

PSI:

Pumping Rate: 100

Recover:

Time Purged Dry:

Time of Sampling:

1 Liter Raw

**Control Settings** 

5

5 5

143

70-15

sec

sec.

mUmin

ampm

am/pm

am/om

50 Weather Conditions: ٩F Wind: Sur 20 Temp: Precip: Well Information Sampling Information No/ Well Locked? Yes Purging Method: Bladder Yes Well Labeled? No Sampling Method: Bladder Casing Straight? Yes No Dedicated Equip?: No? Yes Yes Grout Seal Intact? No Not Visible **(N**o **Duplicate Sample?:** Yes Repairs Necessary: Duplicate Sample ID: Casing Diameter: 2" Water Level Before Purge: 0 Time Purging Began: ft Purge Date: Total Well Depth: ft Well Purged Dry? Yes No Well Volume: liters 2 Sample Date: out 30 Depth to Top of Pump: ft

ft

Electric Water Level Indicator

**Field Measurements** 

Bottle

List:

500 mL Nitric

500 mL Nitric (filtered)

zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
ecutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		člear, slightly turbid, turbid
1436	13.65	1130	7,33	3117	200,3	83,5	8.94	500	ashiphthe tubid
1456	13.64	110	7.32	2.45	210.6	32,1	8.98	\$2000	clea
1516	13,14	1108	7.31	2.42	219,1	24.2	8.98	2000	china .
1546	13,32	1108	7,32	2.45	230,2	14.6	8.98	3000	a .
1616	$i_{3,l}$	1110	7,31	2,74	238.6	6.24	8,98	3000	Ch-
1626	13,19	1109	7.31	2,70	242,0	4.18	8.98	1000	d
1631	13,16	1109	7,31	2.63	242,3	4.37	8.98	500	ch
1636	13,07	1109	7,32	2.53	243.1	4.41	5,28	500	ch.
						1	0		
$\bigcirc$									
Yes	No				Τc	otal Volume	Removed:	12500	mL
	zation Time 1436 1456 1566 1566 1616 1626 1636 1636 (Yes)	$\begin{array}{c c} zation & Temp \\ (°C) \\ \hline Time \\ 1436 13.65 \\ 1456 13.65 \\ 1456 13.69 \\ 1516 13.19 \\ 1516 13.18 \\ 1616 13.18 \\ 1626 13.19 \\ 1636 13.07 \\ \hline Yes No \\ \hline \end{array}$	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $	$\begin{array}{c c c c c c c c c c c c c c c c c c c $

Comments:



Groundwater Assessment

Company: MDU Lewis and Clark Event: 2017 mv Sample ID: 9 Namen Niesman Sampling Personal:

Phone: (701) 258-9720

Weather Conditions:		Temp:	<u>50 °F</u>		Wind:	542	0		Precip:	Sunr	y I Partly C	loudy,/Clo	udy
	Well Info	rmation	-		-			Sa	mpling l	nformatic	on (		
Weil Locked?	Yes	(No>				Purgir	ng Method:	Blac	der		Cor	ntrol Setting	IS
Well Labeled?	Yes	No				Samplir	ng Method:	Blac	der		Purge:	Ś	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	NO		Recover:	55	sec.
Grout Seal Intact?	1 Yes	No	Not Visit	ole		Duplicate	Sample?:	Yes	No		PSI:	<u> </u>	
Repairs Necessary:						Duplicate \$	Sample ID:				Pumping Ra	ate:/00	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:		8.72	ft		P	urge Date:	20ct	17	Time Purgi	ng Began:	1659	am/@n
Total W	/ell Depth:			ft		Well P	urged Dry?	Yes	No	Time P	urged Dry:		am/pm
We	ell Volume:			liters		Sa	mple Date:	2Oct	17	Time of	Sampling:	1759	am/pm
Depth to Top	o of Pump:		13,63	ft									
Water Level Afte	er Sample:		8281	ft		Bottle	500 m	L Nitric	1 Lite	r Raw			
Measuremen	t Method:	Electric	Water Level Ind	icator		List:	500 mL Nit	tric (filtered)					

Stabil	ization	Temp	Spec.	лЦ	DO (mg/l.)	ORP (m)()	Turbidity	Water	mL	Discription:
SEO #	Time	(0)	±5%	рп ±0.1	(119/L) ±10%	±20 mV	±10%	0.25 ft	Kentoveu	clear slightly turbid turbid
1	1704	1394	1167	7,33	7.82	2283	7.17	0.81	San	
2	1719	13,82	1168	7,31	1.08	2233	11.6	8,81	1500	cla
3	1734	13.80	1170	7,33	1.14	212,7	8.20	8.81	1500	a
4	1739	13.74	1171	7,32	1,12	01834	5.23	8.81	500	ch
5	1744	13.67	1173	7,30	1,10	132,3	3.43	8.81	500	ce
6	1749	1350	1172	7,30	1.06	96.7	2,77	881	500	ch_
7	175Y	13,45	1172	730	1.10	93,1	2.61	8.81	.500	a
8	1759	13,58	1172	7.30	1.07	87.0	2,53	8.81	500	Q-
9										
10	$\square$								/	
Stabilized: Comments	Yes	No Total Volume Removed: $(0.00)$ mL								

Field	Datas	heet
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Groundwater Assessment

Company:		MDU Lewis and	Clark
Event:		2017	۰
Sample ID:	Mu	1210	
Sampling Pe	rsonal: 🖌	Jamen 1	Viesnan

2616 E. Broadway Ave	e, Bismarck, ND

MVT

Phone: (701) 258-9720

Weather Conditions:		Temp:	50	°F	Wind:	SNE	÷ 10		Precip:	Suni	ny)Partly C	loudy / Clou	ıdy
	Well Info	rmation						Sa	mpling l	nformatio	on		
Well Locked?	Yes	NO				Purgi	ng Method:	Blac	lder		Co	ntrol Setting:	<u>s</u>
Well Labeled?	Yes	No				Sampli	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicat	ted Equip?:	Yes	<u>A</u>		Recover:	_55	sec.
Grout Seal Intact?	Yes	No	Not \	/isible		Duplicate	Sample?:	Ves	ENO-1		PSI:		
Repairs Necessary:	~					Duplicate	Sample ID:	Dup	-1		Pumping R	ate: 100	mL/min
Casing	Diameter:		2"					2 Gy	*				
Water Level Bef	ore Purge:		8,96	ft		F	Purge Date:	20ct.	17	Time Purg	ing Began:	1815	am/pm
Total V	Vell Depth:			ft		Well P	urged Dry?	Yes	(No	Time F	Purged Dry:	<u> </u>	-am/pm
We	Il Volume:		<u> </u>	liters		Sa	mple Date:	0 Act	17	Time o	f Sampling:	1930	am/pm
Depth to Top	o of Pump:	-	28,60	ft									
Water Level After	er Sample:			ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Water Leve	I Indicator		List:	500 mL Ni	tric (filtered)					
				Field	Measure	ements			L				
1 I	1		1	1	1	1	1		1				

Stabil	ization	Temp	Spec.		DO (mg/l )	ORP	Turbidity	Water	mL	Discription:
(3 cons	secutive)	(10)	Cond.	рп	(ing/L)				Removed	Clarity, Color, Cdor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1820	12,35	1452	7.64	4.03	-21,2	52,0	9.91	500	El Stightly Twisy
2	1840	11,65	1449	7.62	0.33	-108.0	24.6	10.81	2000	clear
3	19.00	11.32	1452	7.61	0.25	-110,2	9,27	Digy	2000	ch
4	1910	11,22	1451	7.60	0,21	-110.4	6.68	10,95	1000	iler
5	1920	11.12	1449	7.60	0,20	-110,6	4153	10,95	100 0.	du
6	1925	11.05	1451	7.60	0,21	-110.1	4,74	10,95	500	ch
7	1930	10,90	1447	PH -	0,22	-109.7	4,37	10,25	500	dr
8				7,59						
9										
10							<u> </u>			
Stabilized:	/ Yes	No				· To	otal Volume	Removed:	7500	_mL
Comment	\$:\		-						•	

2616 E. Broadway Ave, Bis	<b>atas</b> ter Assess	heet		Company: Event: Sample ID: Sampling F	Personal:	MDU Lewi 2017 N 1/0 David	s and Clark	swac				
Phone: (701) 258-9720					a					······································		
Weather Conditions:		Temp	: Stork F	Wind:	375	n 10		Precip	Sunr	ıy / Partly C	loudy / Cl	oudy
	Well Info	ormation			-		Sa	ampling I	nformatio	on		
Well Locked?	Yes	No			Purgi	ng Method:	Blac	lder		Co	ntrol Settir	igs
Well Labeled?	des	No			Sampli	ng Method:	Blac	lder	] [	Purge:	5	sec.
Casing Straight?	(¥es	No			Dedica	ted Equip?:	Yes	1102	] [	Recover:	55	` sec.
Grout Seal Intact?	47657/	<sup>2</sup> No	Not Visible	2	Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:					Duplicate	Sample ID:		ngelikter "		Pumping R	ate: , o 🕱	mL/min
Casing	Diameter:		<u>2"</u>								······	
Water Level Befo	ore Purge:	DACTIT .	+19,00	ft	F	Purge Date:	304	17	Time Purgi	ing Began:	5727	am/pm
Total W	/ell Depth:	76° A		ft	Well P	urged Dry?	Yes	No	Time P	urged Dry:	~	am/pm
, We	II Volume:		lite	ers	Sa	mple Date:	300t1	1	Time of	Sampling:	0902	(am/pm)
Depth to Top	of Pump:	2	0.97	ft								
Water Level After	er Sample:		- /	ft	Bottle	500 m	L Nitric	1 Lite	er Raw			
Measurement Method: Electric Water Level Indicator			r	List:	500 mL Ni	tric (filtered)						

Stabil (3 cons	lization secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	_±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	0732	8.98	6474	6.9.6	5.38	92.0	31.5	19.33	500	cles
2	0802	8.68	6538	699	0177	3,8	11.4	19.36	30000	di
3	0817	8.90	1529	6,98	0.52	=1.0	9.77	19137	1500	ce
4	0832	\$9.50	6526	6.98	0142	-4,4	8.32	19.39	1500	ch
5	0847	9,42	6522	\$ 7,00	0,35	-9,2	10.5,34	19,39	1500	ch_
6	0852	9,43	6521	7,00	0.35	-9.5	4,97	19.39	500	cl-
7	0857	9,52	15-18	7,00	0.34	-9.3	4.91	19.39	500	CL
8	0902	9,45	6523	6.99	0:33	-9.5	4.83	19.390	500	CG_
9										
10									~	
Stabilized: Comments	: (Yes) s:	No				Τc	otal Volume	Removed:	1500	.mL



# **Field Data**

**Groundwater Ass** 

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Weather Conditions:

Phone: (701) 258-9720

ach	noot	Company:	· · · · · · · · · · · · · · · · · · ·	MDU Lewis and Clark						
a31	ICCL	Event:		2017	<u>_</u>					
ssessr	nent	Sample ID: / h W / l K								
		Sampling I	Personal:	Darrey	Ni	Swaa	ç			
				· · · · · · · · · · · · · · · · · · ·						
Wind: 🔇	5 2/0-		Precip	Sun	ny / Partly C		udy			
		S	ampling l	nformati	on					
	Purging Method:	Bla	dder		Co	ntrol Setting	s			
	Sampling Method:	Bla	dder		Purge:	5	sec.			
	Dedicated Equip?:	Yes	No		Recover:	55	sec.			
	Duplicate Sample?:	Yes	No		PSI:					
	Duplicate Sample ID:	2			Pumping R	ate: / <i>0</i> 0	mL/min			
				-						
	Purge Date:	300+	47	Time Purg	ing Began:	1142	and/pm			

#### Well Information Well Locked? Yes No Well Labeled? Yes No Casing Straight? des No Nes Grout Seal Intact? No Not Visible Repairs Necessary: Casing Diameter: 2" Water Level Before Purge: ft Total Well Depth: ft Well Volume: liters 9 Depth to Top of Pump: XO ft Water Level After Sample: .60 ft Measurement Method: Electric Water Level Indicator

Temp: 7

Sampli	ng Method:	Blad	lder		Purge:	S	sec.		
Dedicat	ed Equip?:	Yes	Ro		Recover:	55	sec.		
Duplicate	Sample?:	Yes	No		PSI:	·			
Duplicate :	Sample ID:				Pumping R	late: / 00	mL/min		
P	urge Date:	300+	17	Time Purging Began: 11/2					
Well P	Well Purged Dry? Yes				Time Purged Dry:				
Sa	mple Date:	3 Oct 1	17	Time of	f Sampling:	1242	am/pm		
	-	0				-			
Bottle	ottle 500 mL Nitric 1 Lit								
List: 500 mL Nitric (filtered)									

Stabil (3 cons	ization secutive)	Temp (°C)	Spec. Cond.	pН	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
1	1147	11.92	1618	7,46	5,22	153,7	571	8,58	500	@Turbid
2	1207	12.64	1615	7,45	2.33	127,4	16.8	8.58	2000	c/ear
3	1222	-1228	1612	7,45	2,27	132,7	6,30	8,61	1500	ch
4	1227	12.46	1612	7.46	2,27	134,5	8,4,25	8.60	500	du-
5	1232	12,24	1617	7.46	2,29	13701	3.57	8.60	500	de
6	12207	12,13	1615	7.46	2.30	139,2	3,32	-8:60	500	a
7	1242	12,25	1617	7,46	2.29	141,4	3.12	8-61	500	dr
8	·									
9										
10	$\square$								1	
Stabilized Comments	( Yes/	No				To	otal Volume	Removed:	6000	DmL



Groundwater Assessment

Company:	MDU Lewis	and Clark
Event:	2017	
Sample ID:	nWIII	
Sampling Per	sonal: Darren	Vieswaag

Phone: (701) 258-9720

Weather Conditions:		Temp:	317 °F	:	Wind:	VNS	10		Precip	: Sun	ny / Partly C	Cloudy / Clo	oudy)
	Well Info	rmation	- /			Sampling Inform							
Weil Locked?	Yes	(No)				Purgi	ing Method:	Bla	adder		Co	ontrol Setting	ļs
Well Labeled?	Yes	No				Sampl	ing Method:	Bla	dder	]	Purge:	S	sec.
Casing Straight?	Hes	No				Dedica	ted Equip?:	Yes	No		Recover:	- 55	) sec.
Grout Seal Intact?	Xes	No	Not Vis	ible		Duplicate	e Sample?:	Yes	AND .		PSI:		
Repairs Necessary:		<b>`</b>				Duplicate	Sample ID:	<			Pumping R	late: 100	mL/min
Casing	Diameter:		2"									7	
Water Level Befo	ore Purge:		7. 26	ft		1	Purge Date:	3 007	17	Time Purg	jing Began:	1015	@m/pm
Total W	ell Depth:			ft		Well F	Purged Dry?	Yes	(No)	Time F	Purged Dry:	~	am/pm
We	Il Volume:			liters		Sa	ample Date:	3 00	+107	Time o	f Sampling:	1120	(am/pm
Depth to Top	of Pump:	/	5.29	ft								ı	
Water Level Afte	r Sample:		E.00	ft		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremen	t Method:	Electric	Water Level In	dicator		List:	500 mL Nit	tric (filtered	ť)				

### Field Measurements

Stabil	ization	Temp	Spec.		DO (mg/l)	ORP	Turbidity	Water	mL	Discription:
SFO #	Time	(0)	±5%	<u>рп</u> ±0.1	±10%	±20 mV	±10%	0.25 ft	to Removed	clear slightly turbid turbid
1	1020	11,57	Holy	7.07	5,35	1840	26.0	8:01	500	class
2	1040	12,34	3736	7.14	(169	171.9	16.07	8.00	2000	Clear
3	1100	1207	3466	7,23	2,76	188.9	7.71	100	2000	d
4	1105	12.62	34.52	7,24	2,87	192.6	3,86	8100	500.	ce-
5	11/0	12,27	3437.	7,24	2,94	193.9	3002	8100	500	ch.
6	1115	12.44	3418	1.25	3,00	19711	2,95	8.00	500	
7	1120	12.05	3425	7,25	3,10	200,9	3.12	8,00	500	d,
8					, •		-			
9										
10										
Stabilized	: /Yes/	No				Τc	otal Volume	Removed:	6500	mL

Comments:



**Groundwater Assessment** 

Company:	MDU Lewis and Clark							
Event:	2017							
Sample ID: M	w117	_						
Sampling Personal:	Parren	Niesaan						

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Phone: (701) 258-9720

Weather Conditions: Temp: 307 °F			307 °F	Wind:	1: SW5-60			Precip	: Sun	ny / Partly C	loudy	oudy
Well Information							Sa	ampling l	nformati	Iformation (		
Well Locked?	Yes	<b>€</b>		]	Purgi	ng Method:	Blac	lder		Co	ntrol Setting	js
Well Labeled?	Yes	No			Sampli	ng Method:	Blac	lder		Purge:	5	sec.
Casing Straight?	(es	No			Dedicat	ed Equip?;	2 Stest	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate	Sample?:	Yes	-NO		PSI:		
Repairs Necessary:					Duplicate	Sample ID:				Pumping R	ate: /oC	) m∐/min
Casing	Diameter:		2"						<b>_</b>		·	
Water Level Bef	ore Purge:	6.27 ft			F	Purge Date:	2004	-17	Time Purg	ging Began:	1325	am/pm
Total W	Vell Depth:	ft ft			Well P	urged Dry?	Yes	No	Time	Purged Dry:	<u>`</u>	am/pm_
We	ell Volume:	liters			Sa	mple Date:	nple Date: 30 J/7		Time c	of Sampling:	0936	(am)/pm
Depth to Top	o of Pump:	9	c 8,5f				/				<i>· · · · · · · · · · · · · · · · · · · </i>	
Water Level Afte	er Sample:	Ą	-52 f 8,52 f		Bottle	500 m	L Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Water Level Indicator		List:	500 mL Nit	tric (filtered)					
			Field	Moasura	omonte							

rieiu measurements

	Stabili	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
	(3 cons	ecutive)	(°C)	Cond.	рΗ	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #		Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
	1	1330	13.57	8085	7,06	6,76	137.4	40.3	6088	500	de
	2	1340	13184	\$ 7949	7,06	6.07	164.2	11:1	7.42	1000	ú
a del	3	1350	13.88	7878	7.10	6.26	185.6	13.7	7.23	1000	d
1	4	1400	13.al	7983	7.07	607	2049	7.81	8.54	1000	d
	5	1410	13.83	7997	7.06	5.29	216.5	7.00	9.07	1000	2
	6	1420	13.60	7934	7.07	4159	223.1	29.5	9.85	1000	ch
	7	<i>k</i>	12000						109		
	8									QUENAM	pi
	9	2931	Pura	150	nh bi	Fore S	mon		7.42	redage	
	10	1936	10,48	7884	7,16	7,51	133,5	14.6	7183	500	dr
	Stabilized:	Yes	/Ng/ /				To	otal Volume	Removed:	6000	mL
	Comments	S:									

There wasn't enough water in the used the stabilize

2616 E. Broadway Ave, Bis Phone: (701) 258-9	smarck, ND 9720		Field Ground	Da water	task Assessr	neet		Company: Event: Sample ID Sampling I	: M Personal:	MDU Lew 2017 ↓ / 0 Даухск	is and Clark	~449	
Weather Conditions:		Temp:	317 °F		Wind:	50/1	$\wedge$		Precip	: Sun	ny / Partly C	oudy// Clo	udy
	Well Info	rmation	- /				0	S	ampling	Informatio	on	$\sim$	- «الدافي
Well Locked?	Yes	No				Purgi	ng Method:	Bla	dder		Cor	trol Setting	s
Well Labeled?	Yes	No				Samplin	ng Method:	Bla	dder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicat	ed Equip?:	Yes	(No)		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Visibl	e		Duplicate	Sample?:	Yes	No		PSI:		
Repairs Necessary:						Duplicate	Sample ID:	<u> </u>			Pumping Ra	ite: / 20	mL/min
Casing	Diameter:		2''										
Water Level Bef	ore Purge:		10,38	ft		F	urge D <b>a</b> te:	3 DC-	+17	Time Purg	ing Began:	1425	am/pm
Total V		·	ft		Well P	urged Dry?	Yes	NO	Time F	Purged Dry:		am/pm	
Well Volume:			liters			Sa	mple Date:	3 OCT	-17	Time o	f Sampling:	1610	am/pm
Depth to Top	p of Pump:	1 \$	<u> </u>	ft				<u> </u>				•	
Water Level After Sample: 70.43				ft		Bottle	500 m	IL Nitric	1 Lite	er Raw			
Measuremer	nt Method:	Electric	Vater Level Indic	ator		List:	500 mL Ni	tric (filtered			]		

Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL	Discription:
(3 cons	ecutive)	(°C)	Cond.	pН	(mg/L)	(mV)	(NTU)	Level (ft)	Removed	Clarity, Color, Odor, Ect.
SEQ #	Time		±5%	±0.1	±10%	±20 mV	±10%.	0.25 ft		clear, slightly turbid, turbid
1	1430	13.04	6255	7,27	1,85	175.2	71000	10,43	500	Turkad
2	1500	13.72	61664	7.33	0138	145.1	81.7	10,43	3000	Slightly tuber
3	1530	13,39	[ <i>j51</i> ]	7,31	0,28	547,0	24.0	10,43	3000	Cler
4	1545	13,37	1486	7.31	0,37	146.1	10.2	10.43	1500	ch
5	1550	13,51	1485	7.32	0,27	145.5	5.91	10,43	500	d
6	1555	13.46	1485	7,32	0.26	145.7	5.01	10,43	500	d
7	1600	13,2	1481	7.33	0,25	145.0	3197	10043	500	Contraction and a second and a
8	1605	13.[]	1479	7.33	0.24	1)44,5	3.71	10,43	500	a
9	1610	13,54	11476	7.33	6,23	144.0	3.hb	10.43	500	CL/
10					, ,		7.0,0	/	r	
Stabilized: (Yes) No Total Volume Removed: (1) Soc mL									mL	
Comments	Comments: (									



**Groundwater Assessment** 

Phone: (701) 258-9720

Company:	MDU Lewis and Clark								
Event:	2017								
Sample ID:	Mn/09	,							
Sampling Per	sonal: Darna Niesmany								

Weather Conditions:	Temp:	37.	=	Wind:	54/1	2		Precip:	Sunr	ny / Partly C	Cloudy (Clo	udy )	
			Sampling Information						<u> </u>				
Well Locked?	Yes	40				Purgi	ing Method:	Blad	der		Co	ntrol Setting	S
Well Labeled?	Xes	No				Sampli	ing Method:	Blac	der	]	Purge:	5	sec.
Casing Straight?	Xes	No		<b>.</b>		Dedica	ted Equip?:	Yes	No		Recover:	55	sec.
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate	e Sample?:	Yes	No)		PSI:		
Repairs Necessary:						Duplicate	Sample ID:	<u> </u>	$\mathcal{L}$		Pumping R	ate: 100	mL/min
Casing	Diameter:		2" /							_			
Water Level Bef	ore Purge:		10,36	ft		F	Purge Date:	3 007	47	Time Purg	ing Began:	1315	am/pm
Total V	ell Depth:	/	•	ft		Well F	urged Dry?	Yes	No	Time F	ourged Dry:	· · · · · · · · · · · · · · · · · · ·	<u>am</u> /pm
We	ell Volume:		liters			Sa	Sample Date: 3 Oct		-17	Time of	Sampling:	1400	) am/m
Depth to Top	o of Pump:	)	3,90	ft									
Water Level After Sample:		$\int O(V) ft$			Bottle 500 mL		LNitric 1 Lite		er Raw				
Measurement Method:		Electric	Water Level Ir	dicator		List:	500 mL Nit	ric (filtered)					

	Stabilization		Temp (°C)	Spec. Cond.	Ha	DO (mg/L)	ORP (mV)	Turbidity (NTU)	Water	mL Removed	Discription: Clarity, Color, Odor, Ect
	SEQ #	Time	( )	±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear, slightly turbid, turbid
	1	1320	10,48	1755	7,34	5,36	210,0	16.2	10,39	500	den
ſ	2	1335	11.76	1624	7.33	0,54	201.3	-1.80	10,41	1500	ch
	3	1340	11.93	1620	7.33	0,41	200,6	3,36	10,41	500	d
	4	1345	11.86	1626	7,32	0,32	200,2	2.65	10.41	500	a
	5	1350	12.03	1631	7,32	0.21	199.7	1.70	10,41	500	a
	6	1355	11.98	1627	7.32	0.23	199,3	1,64	10.41	500	a
	7	1400	12,01	1629	7,32	0,22	199,2	1.68	10,41	500	
	8								1		
ſ	9										
	10	E									-
_	Stabilized:	(Yes)	No	-			Тс	otal Volume	Removed:	4500	mL
	Comments	*丶 /									
			· · · · · · · · · · · · · · · · · · ·								
---	---	--	---								
	MVTL	Calibration Worksheet									
Site: MDU Le	wis and Clark	Technician:	Parren Nieswaas								
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056								
Date: 20CF pH	Pre Site Calibr       17     Time:     0623       Temp °C     Pre Cal     Post Cal	mv Range +/- Post Cal Range 50	Post Site Check Time: ℓ935 pH Temp °C Reading								
Buffer 7 Buffer 10 <b>Conductivity</b> Buffer 1413	$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	Buffer 7 $[\underline{\mathcal{B}}, \underline{\mathcal{Q}}, \overline{\mathcal{J}}, \underline{\mathcal{O}}]$ Conductivity Buffer 1413 $[\underline{\mathcal{Q}}, \underline{\mathcal{O}}]$ $[\underline{\mathcal{U}}], \underline{\mathcal{B}}$								
ORP 231 mV @ 25C DO	20, 3 $219.7$ $231.0$	±10 mV Barometric Pressure (mm Hg)									
Date: <u>3 OC</u> <b>pH</b> Buffer 7	$\frac{17}{150} = \frac{1137}{150}$	$mg/L = \frac{705}{100} r^{2}$ $mv Range +/-$ $50$ $6.95-7.05 = -21.7$ $0 +/-50$ $165.4$	Time: $1615$ <b>pH</b> Temp °C Reading Buffer 7 $1602$ $702$								
Conductivity Buffer 1413	17:98 1424 1414	-180 + -50 $\pm 10\%$ Buffer 5000 $497/$	<b>Conductivity</b> Buffer 1413 16.00 14/6								
231 mV @ 25C	18:08 237.2 231.0 18:29 9123 8:67	±10 mV Barometric Pressure (mm Hg) mg/L									

# MVTL Calibration Workshe



# **Field Datasheet**

2616 E. Broadway Ave, Bismarck, ND Phone: (701) 258-9720 Water Level

Sampling Personnel:

Parren Nieswaas

Company:

MDU Lewis and Clark

r	-	1		
1				
Well ID	Date	Time	Depth to Water	Comments
MW101	300+17	0925	8.86	
MW105	3pc+17	1322	8,70	
MW106	3outly	1123	9,51	
MW107	300417	1927	4,37	
MW108	3pc+17	1009	16.44	
MW116	30ct (7	1637	9,84	
		,	~ 1	



# **Field Datasheet**

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

Sampling Personnel:

Darren Nieswaag

Water Level

Company:

MDU Lewis and Clark

· · · · · · · · · · · · · · · · · · ·	1			
Well ID	Date	Time	Gauge Reading	Comments
East Scrubber Pond Gauge	3 Oct 17	1435	2.42	
West Scrubber Pond Gauge	3 Oct 17	1436	3,40	
Stream behind Sewage Lagoon	300+17	74-16-22		Couldn's Verd guage
		/		It was blecked put the
				Over time of thas au

### 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



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#### CASE NARRATIVE - AMENDED 8 NOV 17 (FIELD DATA)

MVTL Lab Reference No/SDG: Client: Location: **Project Identification: MVTL Laboratory Identifications:** Page 1 of 2

201782-2765 Montana Dakota Utilities **MDU Lewis & Clark** October 2017 17-W4254 through 17-W4264

MDU Sample Identification	MVTL Laboratory #
MW110	17-W4254
MW119	17-W4255
MW210	17-W4256
MW102	17-W4257
MW118	17-W4258
MW111	17-W4259
MW117	17-W4260
MW103	17-W4261
MW109	17-W4262
Dup 1	17-W4263
Field Blank (FB)	17-W4264

#### RECEIPT I.

- All samples were received at the laboratory on 4 Oct 2017 at 0800. .
- 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.
  - Temperature of samples upon receipt was 0.5°C.
- All samples were properly preserved unless noted here and/or flagged on the individual analytical laboratory report.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.

#### п. HOLDING TIMES

With the exception of laboratory pH, all holding times were met for both preparation and analysis . unless noted here.

#### METHODS ш.

- Approved methodology was followed for all sample analyses.
  - Methods 6010D and Method 6020B were used to analyze the metals. 0





#### CASE NARRATIVE – AMENDED 8 NOV 17 (FIELD DATA)

MVTL Lab Reference No/SDG: Client: Location: Project Identification: MVTL Laboratory Identifications: Page 2 of 2 201782-2765 Montana Dakota Utilities MDU Lewis & Clark October 2017 17-W4254 through 17-W4264

#### IV. ANALYSIS

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

#### V. REPORTING

- Per email from Samantha Marshall with MDU dated 21 September 2017, both total and dissolved parameters would be analyzed on samples during the October 2017 round.
- 8 Nov 17: Per email dated 30 Oct 17 from Terri Olson with Barr Engineering, the field data summary was amended to correct for an error on a water level start for MW110.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

Paudette Canto

DATE: SNOVIT

Claudette Carroll - MVTL Bismarck Laboratory Manager

## **Claudette Carroll**

From:	Terri A. Olson <tolson@barr.com></tolson@barr.com>
Sent:	Monday, October 30, 2017 7:51 PM
То:	Claudette Carroll
Subject:	RE: 201782-2765 MDU L&C.pdf
Follow Up Flag:	Follow up
Flag Status:	Flagged

HI Claudette,

Please have the field sampler check the 'Water Level Start (Ft)' for MW110. Raw data lists 8.94, field data report = 9.84.

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

#### resourceful, naturally.

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 <u>communications@barr.com</u> and we will be happy to honor your request.

From: Claudette Carroll [mailto:ccarroll@mvtl.com]

Sent: Tuesday, October 24, 2017 12:37 PM

To: Barr Data Management <BarrDM@barr.com>; Jesse Hedlund <jhedlund@mvtl.com>; Julie Crispin <jcrispin@mvtl.com>; Marshall, Samantha <Samantha.Marshall@mdu.com>; Mary Hames <mhames@mvtl.com>; Steve Bowen <sbowen@mvtl.com>; Terri A. Olson <TOlson@barr.com>; Justin Soberaski <JSoberaski@barr.com> Subject: 201782-2765 MDU L&C.pdf

Hello all,

Please find attached the results for the Oct 2017 sampling done at MDU Lewis & Clark. As per Sam's instructions, the State and CCR results are being reported as one data package, although on two separate report pages. Hard copies of these reports will follow to Sam in the mail and EDDs to follow from our IT department.

Let me know if you have any questions.

Have a terrific rest of your day! Claudette **MVTL** 

**Ouality Control Report** 

## MINNESOTA VALLEY TESTING LABORATORIES, INC.

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MEMBER ACIL

Lab IDs: 17-W4254 to 17-	W4264	Pı	oject: MI	DU Lewis	s & Clark		Work Oi	<b>der:</b> 201	782-2765	5							
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
Boron - Dissolved mg/l	0.40 0.40	108 110	80-120 80-120	0.400 2.00	17-W4256 17-W4294	0.21 0.66	0.59 2.52	95 93	75-125 75-125	0.59 2.52	0.59 2.58	95 96	0.0 2.4	20 20	-		< 0.1 < 0.1 < 0.1 < 0.1
Boron - Total mg/l	0.40 0.40	110 110	80-120 80-120	0.400 8.00 0.400	17-W4256 17-W4262 17-W4264	0.24 2.48 < 0.1	0.60 10.8 0.44	90 104 110	75-125 75-125 75-125	0.60 10.8 0.44	0.61 10.7 0.43	92 103 108	1.7 0.9 2.3	20 20 20			<0.1 <0.1 <0.1 <0.1
Calcium - Dissolved mg/l	20.0 20.0	104 108	80-120 80-120	100 100	17W4263q 17W4299q	43.1 < 1	142 102	99 102	75-125 75-125	142 102	142 99.9	99 100	0.0 2.1	20 20			< 1 < 1
Calcium - Total mg/l	20.0 20.0	106 104	80-120 80-120	100 100	17W4219q 17W4263q	99.9 41.8	190 137	90 95	75-125 75-125	190 137	188 134	88 92	1.1 2.2	20 20			<1 <1 <1 <1
Chloride mg/l	30.0 30.0 30.0 30.0 30.0	90 90 89 91	80-120 80-120 80-120 80-120 80-120	30.0 30.0	17-W4198 17-W4261	5.8 24.6	32.9 53.6	90 97	80-120 80-120	32.9 53.6	32.9 52.8	90 94	0.0 1.5	20 20			<1 <1 <1 <1 <1
Fluoride mg/l	0.50 0.50 0.50	102 98 98	90-110 90-110 90-110	0.500 0.500 0.500	17-W4223 17-W4224 17-W4262	0.48 0.48 0.86	0.96 0.98 1.33	96 100 94	80-120 80-120 80-120	0.96 0.98 1.33	0.97 0.98 1.34	98 100 96	1.0 0.0 0.7	20 20 20			< 0.1 < 0.1 < 0.1 < 0.1
pH units	-		-	-	-	-			-	7.7 7.9	7.7 8.0	-	0.0	20 20	-	-	-
Sulfate mg/l	100 100	100 91	80-120 80-120	2000 200	17-W4197 17-W4255	57.6 168	2240 369	109 100	80-120 80-120	2240 369	2040 329	99 80	9.3 11.5	20 20	-	-	< 5 < 5

#### Page: 1 of 2

**MVTL** 

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MEMBER ACIL

## **Quality Control Report**

Lab IDs: 17-W4254 to 17-W4264		Project: MDU Lewis & Clark			Work Order: 201782-2765												
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 Dissolved Solids mg/l					-					1100 < 10 4820	1070 < 10 4830	-	2.8 0.0 0.2	20 * 20	- -	-	< 10 < 10

\* Due to result < 10 mg/L, data reported based on acceptance criteria of Relative % Difference of +/- 3 mg/L.

Approved by: \_\_\_\_\_\_

### Page: 2 of 2





Page: 1 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4254 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 16:36 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion		1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.		EPA 200.2	4 Oct 17	SVS
pH - Field	7.32	units	NA	SM 4500 H+ B	2 Oct 17 16:36	JSM
pH	* 7.7	units	0.1	SM4500 H+ B	5 Oct 17 17:00	SVS
Temperature - Field	13.1	Degrees C	NA	SM 2550B	2 Oct 17 16:36	JSM
Conductivity - Field	1109	umhos/cm	1	EPA 120.1	2 Oct 17 16:36	JSM
Fluoride	0.53	mg/l	0.10	SM4500-F-C	5 Oct 17 17:00	SVS
Sulfate	166	mg/l	5.00	ASTM D516-07	10 Oct 17 14:48	RAG
Chloride	21.4	mg/l	1.0	SM4500-C1-E	11 Oct 17 13:55	RAG
Total Dissolved Solids	645	mg/l	10	I1750-85	6 Oct 17 14:32	SVS
Calcium - Total	84.8	mg/l	1.0	6010D	11 Oct 17 16:26	SZ
Boron - Total	0.30	mg/l	0.10	6010D	12 Oct 17 13:20	SZ

\* Holding time exceeded

Approved by:

1C Claudette K. Canrep 410117

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





Page: 2 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4255 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 17:59 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
pH - Field	7.30	units	NA	SM 4500 H+ B	2 Oct 17 17:59	JSM
pH	* 7.7	units	0.1	SM4500 H+ B	5 Oct 17 17:00	SVS
Temperature - Field	13.6	Degrees C	NA	SM 2550B	2 Oct 17 17:59	JSM
Conductivity - Field	1172	umhos/cm	1	EPA 120.1	2 Oct 17 17:59	JSM
Fluoride	0.49	mg/l	0.10	SM4500-F-C	5 Oct 17 17:00	SVS
Sulfate	168	mg/l	5.00	ASTM D516-07	10 Oct 17 15:06	RAG
Chloride	24.7	mg/l	1.0	SM4500-C1-E	11 Oct 17 13:55	RAG
Total Dissolved Solids	698	mg/l	10	I1750-85	6 Oct 17 14:32	SVS
Calcium - Total	91.3	mg/l	1.0	6010D	11 Oct 17 16:26	SZ
Boron - Total	0.31	mg/l	0.10	6010D	12 Oct 17 13:20	SZ

\* Holding time exceeded

Approved by:

Clauditte K. Cantle 240(177

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW210

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4256 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 19:30 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
pH - Field	7.59	units	NA	SM 4500 H+ B	2 Oct 17 19:30	JSM
pH	* 7.9	units	0.1	SM4500 H+ B	5 Oct 17 17:00	SVS
Temperature - Field	10.9	Degrees C	NA	SM 2550B	2 Oct 17 19:30	JSM
Conductivity - Field	1447	umhos/cm	1	EPA 120.1	2 Oct 17 19:30	JSM
Fluoride	0.98	mg/l	0.10	SM4500-F-C	5 Oct 17 17:00	SVS
Sulfate	314	mg/l	5.00	ASTM D516-07	10 Oct 17 15:06	RAG
Chloride	4.6	mg/l	1.0	SM4500-C1-E	11 Oct 17 13:55	RAG
Total Dissolved Solids	882	mg/1	10	11750-85	6 Oct 17 14:32	SVS
Calcium - Total	44.0	mg/1	1.0	6010D	11 Oct 17 16:26	SZ
Boron - Total	0.24	mg/l	0.10	6010D	12 Oct 17 13:20	SZ

\* Holding time exceeded

Approved by:

(c Clauditte 24OCTIT K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 4 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW102

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4257 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 9:02 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Da An	te alyz	Analyst			
Metal Digestion				EPA 200.2	4	Oct	17		SVS	-
pH - Field	6.99	units	NA	SM 4500 H+ B	3	Oct	17	9:02	JSM	
pH	* 7.3	units	0.1	SM4500 H+ B	5	Oct	17	17:00	SVS	
Temperature - Field	9.45	Degrees C	NA	SM 2550B	3	Oct	17	9:02	JSM	
Conductivity - Field	6523	umhos/cm	1	EPA 120.1	3	Oct	17	9:02	JSM	
Fluoride	1.78	mg/l	0.10	SM4500-F-C	5	Oct	17	17:00	SVS	
Sulfate	4380	mg/l	5.00	ASTM D516-07	10	Oct	17	15:06	RAG	
Chloride	56.0	mg/l	1.0	SM4500-Cl-E	11	Oct	17	13:55	RAG	
Total Dissolved Solids	7090	mg/l	10	I1750-85	6	Oct	17	14:32	SVS	
Calcium - Total	298	mg/l	1.0	6010D	16	Oct	17	11:30	SZ	
Boron - Total	24.8	mg/l	0.10	6010D	12	Oct	17	13:20	SZ	

\* Holding time exceeded

Approved by:

Clauditte MOCT K. Canteo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4258 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 12:42 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece	lved	Method RL	Method	Date		
	Result			Reference	Analyzed	Analyst	
Metal Digestion				EPA 200.2	4 Oct 17	SVS	
pH - Field	7.46	units	NA	SM 4500 H+ B	3 Oct 17 12:42	JSM	
pH	* 7.8	units	0.1	SM4500 H+ B	5 Oct 17 17:00	SVS	
Temperature - Field	12.2	Degrees C	NA	SM 2550B	3 Oct 17 12:42	JSM	
Conductivity - Field	1617	umhos/cm	l	EPA 120.1	3 Oct 17 12:42	JSM	
Fluoride	1.40	mg/l	0.10	SM4500-F-C	5 Oct 17 17:00	SVS	
Sulfate	473	mg/l	5.00	ASTM D516-07	10 Oct 17 15:06	RAG	
Chloride	20.6	mg/l	1.0	SM4500-Cl-E	11 Oct 17 13:55	RAG	
Total Dissolved Solids	1070	mg/l	10	11750-85	6 Oct 17 14:32	SVS	
Calcium - Total	77.8	mg/l	1.0	6010D	16 Oct 17 11:30	SZ	
Boron - Total	2.01	mg/l	0.10	6010D	12 Oct 17 13:20	SZ	

\* Holding time exceeded

Approved by:

10 Claudette K. Canto 24OCTIT

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





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4259 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 11:20 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece: Result	ived	Method RL	Method Reference	Dat Ana	e lyzed	1	Analyst
Metal Digestion			10000000	EPA 200.2	4	Oct :	L7	SVS
pH - Field	7.25	units	NA	SM 4500 H+ B	3	Oct :	L7 11:20	JSM
pH	* 7.6	units	0.1	SM4500 H+ B	5	Oct :	L7 17:00	SVS
Temperature - Field	12.0	Degrees C	NA	SM 2550B	3	Oct :	17 11:20	JSM
Conductivity - Field	3425	umbos/cm	1	EPA 120.1	3	Oct :	17 11:20	JSM
Fluoride	2.42	mg/l	0.10	SM4500-F-C	5	Oct :	17 17:00	SVS
Sulfate	1590	mg/l	5.00	ASTM D516-07	10	Oct :	17 15:06	RAG
Chloride	34.7	mg/l	1.0	SM4500-C1-E	11	Oct :	17 13:55	RAG
Total Dissolved Solids	2600	mg/l	10	11750-85	6	Oct :	17 14:32	SVS
Calcium - Total	164	mg/l	1.0	6010D	16	Oct :	17 11:30	SZ
Boron - Total	7.94	mg/l	0.10	6010D	. 12	Oct :	17 14:40	SZ

\* Holding time exceeded

Approved by:

LC 240CTIT Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 7 of 11

CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4260 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 9:36 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.5C

	As Recei Result	ived	Method RL	Method Reference	Da Ar		Date Analyzed				Analyst
Metal Digestion				EPA 200.2	4	Oct	17		SVS		
pH - Field	7.16	units	NA .	SM 4500 H+ B	3	Oct	17	9:36	JSM		
pH	* 7.6	units	0.1	SM4500 H+ B	5	Oct	17	17:00	SVS		
Temperature - Field	10.5	Degrees C	NA	SM 2550B	3	Oct	17	9:36	JSM		
Conductivity - Field	7884	umhos/cm	1	EPA 120.1	3	Oct	17	9:36	JSM		
Fluoride	0.28	mg/l	0.10	SM4500-F-C	5	Oct	17	17:00	SVS		
Sulfate	5500	mg/l	5.00	ASTM D516-07	10	Oct	17	15:06	RAG		
Chloride	46.7	mg/l	1.0	SM4500-C1-E	11	Oct	17	14:40	RAG		
Total Dissolved Solids	8650	mg/l	10	I1750-85	6	Oct	17	14:32	SVS		
Calcium - Total	427	mg/l	1.0	6010D	16	Oct	17	11:30	SZ		
Boron - Total	10.2	mg/l	0.10	6010D	12	Oct	17	14:40	SZ		

\* Holding time exceeded

Approved by:

DHOCT17 Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4261 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 16:10 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece: Result	ived	Method RL	Method Reference	Da An	Analys	t			
Metal Digestion				EPA 200.2	4	Oct	17		SVS	
pH - Field	7.33	units	NA	SM 4500 H+ B	3	Oct	17	16:10	JSM	
pH	* 7.7	units	0.1	SM4500 H+ B	5	Oct	17	17:00	SVS	
Temperature - Field	13.5	Degrees C	NA	SM 2550B	3	Oct	17	16:10	JSM	
Conductivity - Field	1476	umhos/cm	1	EPA 120.1	3	Oct	17	16:10	JSM	
Eluoride	0.87	mg/l	0.10	SM4500-F-C	5	Oct	17	17:00	SVS	
Sulfate	353	mg/1	5.00	ASTM D516-07	10	Oct	17	15:06	RAG	
Chloride	24.6	mg/1	1.0	SM4500-C1-E	11	Oct	17	14:40	RAG	
Total Dissolved Solida	985	mg/1	10	11750-85	6	Oct	17	14:32	SVS	
Calcium - Total	89.7	mg/1	1.0	6010D	16	Oct	17	11:30	SZ	
Boron - Total	1.90	mg/l	0.10	6010D	12	Oct	17	14:40	SZ	

\* Holding time exceeded

Approved by:

Clauditte HOCT17 K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW109

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4262 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 14:00 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method Method RL Reference		Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
pH - Field	7.32	units	NA	SM 4500 H+ B	3 Oct 17 14:00	JSM
PH	* 7.7	units	0.1	SM4500 H+ B	5 Oct 17 18:00	SVS
Temperature - Field	12.0	Degrees C	NA	SM 2550B	3 Oct 17 14:00	JSM
Conductivity - Field	1629	umhos/cm	1	EPA 120.1	3 Oct 17 14:00	JSM
Fluoride	0.86	mg/l	0.10	SM4500-F-C	5 Oct 17 18:00	SVS
Sulfate	462	mg/l	5.00	ASTM D516-07	10 Oct 17 15:06	RAG
Chloride	23.8	mg/l	1.0	SM4500-Cl-E	11 Oct 17 14:40	RAG
Total Dissolved Solids	1100	mg/l	10	I1750-85	6 Oct 17 14:32	SVS
Calcium - Total	96.3	mg/l	1.0	6010D	16 Oct 17 11:30	SZ
Boron - Total	2.48	mg/l	0.10	6010D	12 Oct 17 14:40	SZ

\* Holding time exceeded

Approved by:

15 MOCTIT Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4263 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
pH	* 7.9	units	0.1	SM4500 H+ B	5 Oct 17 18:00	SVS
Fluoride	0.97	mg/l	0.10	SM4500-F-C	5 Oct 17 18:00	SVS
Sulfate	281	mg/l	5.00	ASTM D516-07	10 Oct 17 15:06	RAG
Chloride	5.0	mg/l	1.0	SM4500-C1-E	11 Oct 17 14:40	RAG
Total Dissolved Solids	871	mg/l	10	I1750-85	6 Oct 17 14:32	SVS
Calcium - Total	41.8	mg/l	1.0	6010D	16 Oct 17 11:30	SZ
Boron - Total	0.23	mg/l	0.10	6010D	12 Oct 17 14:40	SZ

\* Holding time exceeded

Approved by:

10 Clauditte K. Cantlo J4OCTIT

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - CCR

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4264 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
pH	* 6.7	units	0.1	SM4500 H+ B	5 Oct 17 17:00	SVS
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	5 Oct 17 17:00	SVS
Sulfate	< 5	mg/l	5.00	ASTM D516-07	10 Oct 17 15:06	RAG
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	11 Oct 17 14:40	RAG
Total Dissolved Solids	< 10	mg/l	10	I1750-85	6 Oct 17 14:32	SVS
Calcium - Total	< 1	mg/l	1.0	6010D	16 Oct 17 11:30	SZ
Boron - Total	< 0.1	mg/l	0.10	6010D	12 Oct 17 14:40	SZ
Boron - Total	< 0.1	mg) T	0.10	60100	12 000 17 14:40	55

\* Holding time exceeded

Approved by:

CC Claudette 240CTT7 K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





Page: 1 of 11

CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW110

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4254 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 16:36 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Dat Ana	e lyzed		Analyst	
Metal Digestion				EPA 200.2	4	Oct 17	,	SVS	
pH - Field	7.32	units	NA	SM 4500 H+ B	2 (	Oct 17	16:36	JSM	
Temperature - Field	13.1	Degrees C	NA	SM 2550B	2	Oct 17	16:36	JSM	
Conductivity - Field	1109	umhos/cm	l	EPA 120.1	2	Oct 17	16:36	JSM	
Calcium - Dissolved	89.5	mg/l	1.0	6010D	23	Oct 17	14:40	SZ	
Boron - Dissolved	0.26	mg/l	0.10	6010D	13	Oct 17	11:23	SZ	

\* Holding time exceeded

Approved by:

Clauditte K. Cantep HOCTI

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 1 = Due to sample quantity + = Due to internal standard response CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW119

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4255 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 17:59 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece: Result	lved	Method RL	Method Reference	Dat Ana		Analyst	
Metal Digestion				EPA 200.2	4	Oct 17	,	SVS
pH - Field	7.30	units	NA	SM 4500 H+ B	2	Oct 17	17:59	JSM
Temperature - Field	13.6	Degrees C	NA	SM 2550B	2	Oct 17	17:59	JSM
Conductivity - Field	1172	umhos/cm	1	EPA 120.1	2	Oct 17	17:59	JSM
Calcium - Dissolved	95.4	mg/l	1.0	6010D	23	Oct 17	14:40	SZ
Boron - Dissolved	0.27	mg/l	0.10	6010D	13	Oct 17	11:23	SZ

\* Holding time exceeded

Approved by:

Clauditte HOCTIT K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

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





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW210

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4256 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 19:30 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece: Result	ived	Method RL	Method Reference	Dat Ana		Analyst		
Metal Digestion				EPA 200.2	4	Oct	17		SVS
pH - Field	7.59	units	NA	SM 4500 H+ B	2	Oct	17	19:30	JSM
Temperature - Field	10.9	Degrees C	NA	SM 2550B	2	Oct	17	19:30	JSM
Conductivity - Field	1447	umhos/cm	1	EPA 120.1	2	Oct	17	19:30	JSM
Calcium - Dissolved	45.6	$m\alpha/1$	1.0	6010D	23	Oct	17	14:40	SZ
Boron - Dissolved	0.21	mg/l	0.10	6010D	13	Oct	17	11:23	SZ

\* Holding time exceeded

10 Approved by: Claudette K. Cantle Hacta

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016

# MIVIL

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



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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW102

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4257 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 9:02 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

ŝ.	As Rece: Result	ived	Method RL	Method Reference	Dat Ana	te alyze	ed		Analyst
Metal Digestion				EPA 200.2	4	Oct	17		SVS
pH - Field	6.99	units	NA	SM 4500 H+ B	3	Oct	17	9:02	JSM
Temperature - Field	9.45	Degrees C	NA	SM 2550B	3	Oct	17	9:02	JSM
Conductivity - Field	6523	umhos/cm	1	EPA 120.1	3	Oct	17	9:02	JSM
Calcium - Dissolved	306	mg/l	1.0	6010D	23	Oct	17	14:40	SZ
Boron - Dissolved	24.0	mg/l	0.10	6010D	13	Oct	17	11:23	SZ

\* Holding time exceeded

Approved by: Claudette HOCTIT K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW118

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4258 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 12:42 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece: Result	ived	Method RL	Method Reference	Da An	Analyst			
Metal Digestion			1.1342.04	EPA 200.2	4	Oct	17		SVS
pH - Field	7.46	units	NA	SM 4500 H+ B	3	Oct	17	12:42	JSM
Temperature - Field	12.2	Degrees C	NA	SM 2550B	3	Oct	17	12:42	JSM
Conductivity - Field	1617	umhos/cm	1	EPA 120.1	3	Oct	17	12:42	JSM
Calcium - Dissolved	82.2	mg/l	1.0	6010D	23	Oct	17	14:40	SZ
Boron - Dissolved	2.00	mg/l	0.10	6010D	13	Oct	17	12:23	SZ

\* Holding time exceeded

Approved by:

10 240CT17 Claudette K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW111

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4259 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 11:20 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece Result	ived	Method RL	Method Reference	Dat Ani	Analyst			
Metal Digestion				EPA 200.2	4	Oct	17		SVS
pH - Field	7.25	units	NA	SM 4500 H+ B	3	Oct	17	11:20	JSM
Temperature - Field	12.0	Degrees C	NA	SM 2550B	3	Oct	17	11:20	JSM
Conductivity - Field	3425	umhos/cm	1	EPA 120.1	3	Oct	17	11:20	JSM
Calcium - Dissolved	169	mg/1	1.0	6010D	23	Oct	17	14:40	SZ
Boron - Dissolved	7.73	mg/l	0.10	6010D	13	Oct	17	12:23	SZ

\* Holding time exceeded

Claudette Approved by: K. Cantle 24

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW117

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4260 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 9:36 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Received Result		Method RL	Method Reference	Date Analyzed				Analyst
Metal Digestion				EPA 200.2	4	Oct	17		SVS
pH - Field	7.16	units	NA	SM 4500 H+ B	3	Oct	17	9:36	JSM
Temperature - Field	10.5	Degrees C	NA	SM 2550B	3	Oct	17	9:36	JSM
Conductivity - Field	7884	umhos/cm	1	EPA 120.1	3	Oct	17	9:36	JSM
Calcium - Dissolved	442	mg/l	1.0	6010D	23	Oct	17	14:40	SZ
Boron - Dissolved	10.3	mg/l	0.10	6010D	13	Oct	17	12:23	SZ

\* Holding time exceeded

Approved by:

10 240CTI7 Clauditte K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

CERTIFICATION: ND # ND-00016





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW103

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4261 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 16:10 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

#### PO #: 165273 OP

Temp at Receipt: 0.5C

	As Received Result		Method RL	Method Reference	Date Analyzed				Analyst
Metal Digestion			NO.111	EPA 200.2	4	Oct	17	10.000 FM.100	SVS
pH - Field	7.33	units	NA	SM 4500 H+ B	3	Oct	17	16:10	JSM
Temperature - Field	13.5	Degrees C	NA	SM 2550B	3	Oct	17	16:10	JSM
Conductivity - Field	1476	umhos/cm	1	EPA 120.1	3	Oct	17	16:10	JSM
Calcium - Dissolved	89.6	mg/l	1.0	6010D	23	Oct	17	14:40	SZ
Boron - Dissolved	1.74	mg/l	0.10	6010D	13	Oct	17	12:23	SZ

\* Holding time exceeded

Approved by:

Clauditte 340CTT7 K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: MW109

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4262 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 14:00 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Rece: Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
pH - Field	7.32	units	NA	SM 4500 H+ B	3 Oct 17 14:0	JSM
Temperature - Field	12.0	Degrees C	NA	SM 2550B	3 Oct 17 14:0	JSM
Conductivity - Field	1629	umhos/cm	1	EPA 120.1	3 Oct 17 14:0	JSM
Calcium - Dissolved	99.0	mg/l	1.0	6010D	23 Oct 17 14:4	) SZ
Boron - Dissolved	2.02	mg/l	0.10	6010D	13 Oct 17 12:2	3 SZ

\* Holding time exceeded

Approved by:

10 Claudette 240CT17 K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit





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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Dup 1

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4263 Work Order #: 82-2765 Account #: 002800 Date Sampled: 2 Oct 17 Date Received: 4 Oct 17 8:00 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	4 Oct 17	SVS
Calcium - Dissolved	43.1	mg/l	1.0	6010D	23 Oct 17 14:40	SZ
Boron - Dissolved	0.21	mg/l	0.10	6010D	13 Oct 17 12:23	SZ

\* Holding time exceeded

Approved by:

tocTT7 Claudette K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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CERTIFICATE of ANALYSIS - STATE

Samantha Marshall Montana Dakota Utilities 400 N 4th St Bismarck ND 58501

Project Name: MDU Lewis & Clark

Sample Description: Field Blank

Event and Year: October 2017

Report Date: 23 Oct 17 Lab Number: 17-W4264 Work Order #: 82-2765 Account #: 002800 Date Sampled: 3 Oct 17 8:00 Date Received: 4 Oct 17 Sampled By: MVTL Field Services

PO #: 165273 OP

Temp at Receipt: 0.5C

	As Received Result		Method RL	Method Reference	Dat Ana	Analyst	
Metal Digestion				EPA 200.2	4	Oct 17	SVS
Calcium - Dissolved	< 1	mg/l	1.0	6010D	23	Oct 17 15:50	SZ
Boron - Dissolved	< 0.1	mg/l	0.10	6010D	13	Oct 17 12:23	SZ

\* Holding time exceeded

Approved by:

Clauditte K. Cantle MACTIT

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



Phone (701) 258-9720

# **Chain of Custody Record**

Project Name:	· · · · · · · · · · · · · · · · · · ·		Event:			Work Or	der Number:			
N	IDU Lewis and Clarl	ĸ		Octobe	r 2017			82-	A765	5
Report To: Attn: Address: phone: email:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon C Attn: Address:	ору:		Name of	Sampler(s): )a <i>rren</i>	Nie	swai	a ĝ
· · ·	Samp	le Informatio	n		Bo	tle Type	Fi	ield Para	ameters	Analysis
Lab Number W4254 W4255 W4255 W4255 W4255	Sample ID MW110 MW119 MW210 MW102	200717 200717 200717 200717 300717	9 1636 1759 1930 0902	A A A Sample Type	X X X X X X X X X X X X X X X X X X X	Com Nitric (fillered)	(C) dway 13.07 13.58 10,90 9.45	1109 1172- 1447 6523	Ha 7,32 7.30 7.59 6,99	Analysis Required
634259 634269 634260 634261 634262 604262	MW118 MW111 MW117 MW103 MW109 Dup 1 Field Blank (FB)	300+17 300+17 300+17 300+17 300+17 200+17 300+17	1242 1120 0136 1610 1400 NA	GW GW GW GW 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		12,25 12,05 10.48 13,54 12,01 1 NA	1617 3425 7884 1476 1629 NA	7,46 7,25 7,16 7,33 17,32 NA	MDU Apendix III

Comments:

Name: Date/Time Location: Temp (°C)	
	ie: Date/Time
1 Dan Nin 400717 Cog D 0.5 2 Dan Nin 20730 Walk In #2 Lind 17TM562/(TM588) [110/94/94	~ <u>4 0,12017</u> 03(0