

Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2016
0 1 10	1 2 22

Sample ID: M

Sampling Personal:

Phone: (701) 258-9	720							ounipinig i	oroonar.	J 31 7 7 7	10/1	- 1 W W. O.	
1 Hone. (701) 230-8	7720												
Weather Conditions:		Temp:	27.	=	Wind:	1.3h	+		Precip	: Sunr	ny / Partly C	loudy / Clou	ıdy
	Well Info	rmation	1				7	Sa	mpling	Informatio	on		
Well Locked?	Yes	ØN€				Purgin	g Method:	Blad	der		Co	ntrol Setting	S
Well Labeled?	Kes	No				Samplin	g Method:	Blad	der		Purge:	<u>ر-</u>	sec
Casing Straight?	Yes	No		7		Dedicate	ed Equip?:	Yes	No		Recover:		sec
Grout Seal Intact?	Yes	No	(Not Vis	sible		Duplicate		Yes	₩6		PSI:		
Repairs Necessary:						Duplicate S	Sample ID:			7	Pumping R	ate: 100	mL/mir
Casing	Diameter:		2"							_	· · · · · · · · · · · · · · · · · · ·		
Water Level Bef	ore Purge:		19.55	ft		Р	urge Date:	12007	4/6	Time Purg	ing Began:	0947	@m/pn
Total V	Vell Depth:			ft		Well Pu	rged Dry?	Yes	(No		urged Dry:		am/pn
We	ell Volume:		4	liters		Sar	nple Date:	12oct		Time of	Sampling:	1017	am/pn
Depth to Top	o of Pump:		20,16	ft				·	- /			1010	
Water Level Afte	er Sample:		19,63	ft		Bottle	CCI	R: 1L Raw.	500mL Ni	tirc. 500mL	Nitric (filtere	ed), 4-1L Nitri	ic
Measuremer	nt Method:	Electric	Water Level In	ndicator		List:					(,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	-/,	
						l							

Field Measurements

						mododic	***************************************			
Stabili (3 cons SEQ #	zation ecutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft) 0.25 ft	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	0952	-8.08	5287	6,80	2.82-	-34.1	2.02	19,73	500	de
2	0957	7,55	5295	6180	2.80	-18.5	0.95	19,68	500	Ch
3	1002	7.87	5297	6.79	2:83	-14,4	0,72	19165	500	α
4	1007	7,58	5299	6,79	2.81	818	0,66	19,62	500	d
5	1012	7,60	5289	6,79	2.85	-4.5	0.68	19.64	Súc	a
6								•		
7							·			
8										
9										
10	Não I	N					<u> </u>		0 :	

Stabilized: /Yes No
Comments/

Total Volume Removed: 2500 mL



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	
Sample ID:	10,4	
Sampling Porconal:	Acces.	A FIRE IACE

Phone: (701) 258-9720

							_					
Weather Conditions:		Temp:	50 °F		Wind:	Ligh	7-	Precip:	Suni	ny∕l Partly C	loudy / Clo	udy
	Nell Info	rmation						Sampling I	nformatio	on		
Well Locked?	Yes	(N ₉)				Purging I	Method:	Bladder		l	ntrol Setting	s
Well Labeled?	Nes	No				Sampling I	Method:	Bladder		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicated	Equip?:	(Yes) No		Recover:	5.5	sec.
Grout Seal Intact?	(Yes)	No	Not Visi	ble		Duplicate Sa		Z-Yes (No)		PSI:		
Repairs Necessary:						Duplicate Sar	nple ID:		1	Pumping R	ate: [/) 🖒	mL/min
Casing I	Diameter:		2"				<u> </u>		1		700	
Water Level Befo	re Purge:		4,46	ft		Purg	ge Date:	1382+16	Time Purg	ing Began:	1250	am fim
Total W	ell Depth:	•	·`	ft		Well Purg	ed Dry?	Yes (No)	Time F	urged Dry:	-	am/pm
Wel	l Volume:			liters		Samp	le Date:	130ct//	Time or	f Sampling:	1315	am∤pm
Depth to Top	of Pump:	2	2.15	ft			1		·			$-$ (\cup
Water Level Afte	r Sample:	j	1.67	ft		Bottle	CC	R: 1L Raw, 500mL Nit	irc, 500mL	Nitric (filtere	d). 4-1L Nitr	ic
Measurement	: Method:	Electric V	Vater Level Inc	dicator		List:						
				Field I	Measure	ements						

Stabili	zation	Temp	Spec.		DO	ORP	Turbidity	Water	mL.	Discription:
(3 conse	ecutive)	(°C)	Cond.	Нq	(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	1255	10,83	14285	691	5,30	74,7	1,29	14.59	500	clen-
21300	+210	10,54	14313	6.89	4,26	71,8	2,50	14.64	500	di
3	1305	10.55	14283	6,90	3,95	70,7	1.70	14.65	500	Cl.
4	1310	10,65	14 279	6.89	3,73	76,4	1,64	14.67	500	Ch
5	1315	10,56	14302	6,89	3,72	70,3	1061	14,69	500	Ch
6										7
7										
8										
9										
10 Stabilized:	Yes) No								

Comments:

Total Volume Removed: 2500 mL

MVTL Calibration Worksheet

Site: MDU He	skett	Technician: Javian Presnan										
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056									
pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C DO	Pre Site Calibration: 7/1 Temp°C Pre Cal Post Cal [6.15 6-97 7.00 [6.12 1008 10007 [6.12 232,9 231,0	Post Cal Range mv 50 6.95-7.05	Post-Site Check Time: 1330 pH Temp °C Reading Buffer 7 14,50 6,97 Conductivity Buffer 5000 12,77 4975									
	16,61 7,52 9,02	mg/L 7/3,7	· ·									
pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C DO		Post Cal Range mv 50 6.95-7.05 0 +/- 50 9.95-10.05 -180 +/- 50 Check ±10% Buffer 5000 ±10 mV Barometric Pressure (mm Hg) mg/L	pH Temp °C Reading Buffer 7 Conductivity Buffer 5000									



Field Datasheet

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

ersonnel:	Viesn	nez	Company: MDU Heskett
Date (30cH)	Time	Depth to Water	Comments
	Date	Date Time	Date Time Depth to Water (300-16) (235) (1179)



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

Chain of Custody Record

Projec	ct Name:			Name of County (1)
MDU	Heskett	CCR Groundwater	October 2016	Name of Sampler(s): Jereny Mys Darren Vierwasa
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	Carbon Copy Attn: Address:	<u>(</u> :	Work Order Number: 80-3373

	Sampl	e Informat	ion				В	ottle Type	Fi	eld Para	meters	Analysis
Lab Number	Sample ID	D_{ate}	Time	Sample Type	$G_{radlent}$	500 ml HNO		500 ml HNO3 (fillered)	Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
W4715	Field Blank (FB)	12 oct 16	NA	W		X	Х	X	NA	i	NA	
WYTIG		120c+16	NA	w		X	Х	X	NA	NA	NA	
NPW	Mulol	120cf16	1555	GW			\sim		9.12	4690	6:76	
BILKM	MWWZ	120ct1/6	1141	60		\sim		8	8.82	7677		
121719	MW103	120c+16	0942	Gw		X	\overline{X}	X	7.63	4871	6.74	
OCTUW	MW44R	1200+160	0807	6W		12	স	X	752	EB3 8	<u> </u>	MDU CCR List with TSS and
MAJOI	MW70	1200-16	1347	Gw		8	X	8	8.32	3932		Dissolved CCR Metals. No RadChem.
Comments											·	

Comments:

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C
1	Jely-	Log in	136c+16 143a	- Ina XUN		13 ()42016	6.3°C ROI
2							SBENT.
3							



Chain of Custody Record

Projec	ct Name:			Name of Sampler(s):
MDU	Heskett	CCR Groundwater	October 2016	Jampleys Doven Nies wood
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	Carbon Cop Attn: Address:	y :	Work Order Number: 89-3373

f	Sampl	e Informat	ion				Bottle	Э Туре	F	eld Para	ameters	Analysis
Lab Number	Sample ID	D_{ale}	7 _{lme}	Sample Type	Gradient	500 ml HNO,			Field Temperature °C	Field Spec, Cond.	Fleld pH	Analysis Required
W4722	Field Blank (FB)2	13 oct 16	NA	W		1 1	x x		NA NA	NA	NA	7 Maryele Mequiled
W4723	Dup 2	130cH6	NA	w			x x		NA.	NA	NA	
WY724	MW13	130ct16	0813	GW			X X		739	1050%	6.86	
W4725	* HWBR MWBOR	13 oct 16	0952	Gw					9.3%	5683	7,12	
104726	MW105	13 Oct16	1157	GW		10-1	78		8.82	7202		
<u> </u>	MW 33	13 Oct 16	0845	Gw					7.32			MDU CCR List with TSS and
WY728	Mw 2-90	13 Oct 16	1149	0 W			XX		8.29	1,00	107	Dissolved CCR Metals. No
W4729	4w3-90 ×	13-0c+16	1012	60			XX		7,60		6,79	RadChem.
W4730	4W 604	13 Oct 16	12	CW		17/2			10.56	14302	1000	
	,						1		1000	1.1702	Orn (
Commonte	× 120 5 16 11											

Comments: * 130cf 16 16

* Amended 1840 VIG/CC

	Transferred by:	Sample Condition	Date/Time	Received-by:	Sample Condition	Date/Time	°C
1 (Long in	17 oc+16 1430	Mockey	-	1300000	6.3°C ROIL
2	· ·						TMS8
3							





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 13 DECEMBER 16 (SELENIUM QUALIFIERS)

MVTL Lab Reference No/SDG:

201682-3373

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR October 2016

MVTL Laboratory Identifications:

16-W4715 through **16-W4730**

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
Field Blank (FB) 1	16-W4715
Dup 1	16-W4716
MW101	16-W4717
MW102	16-W4718
MW103	16-W4719
MW44R	16-W4720
MW70	16-W4721
Field Blank (FB) 2	16-W4722
Dup 2	16-W4723
MW13	16-W4724
MW80R	16-W4725
MW105	16-W4726
MW33	16-W4727
MW2-90	16-W4728
MW3-90	16-W4729
MW104	16-W4730

I. RECEIPT

- All samples were received at the laboratory on 13 Oct 2016 at 1430.
- 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 6.3°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.



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Client:

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Location:

MDU Heskett

Project Identification:

CCR October 2016

MVTL Laboratory Identifications:

16-W4715 through 16-W4730

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III. METHODS

- Approved methodology was followed for all sample analyses.
 - o 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.
 - 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.
 - The recoveries for one selenium dissolved matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. High 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 total matrix spike duplicate recovery was outside the acceptable limits.
 Recovery for the matrix spike duplicate was acceptable.
 RPD for the recoveries of the matrix spike duplicate and the matrix spike was within limits.
 No further action was taken.
 - Recovery for one mercury 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.

SIGNED: DATE: 13 Dell

Claudette Carroll - MVTL Bismarck Laboratory Manager

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Quality Control Report

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Lab IDs: 16-W4715 to 16-V	N4730	P	roject: M	DU Hesk	ett CCR							Wo	rk Ord	er: 201682	2-3373		
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	111	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.001 < 0.001	0.1056 0.1056	106 106	75-125 75-125	0.1056 0.1056	0.1054 0.0976	105 98	0.2 7.9	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000 0.1000	108 102	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.001 < 0.001 < 0.001	0.1071 0.4464 0.4302	107 112 108	75-125 75-125 75-125	0.1071 0.4464 0.4302	0.1036 0.4524 0.4436	104 113 111	3.3 1.3 3.1	20 20 20			< 0.001 < 0.001
Arsenic - Dissolved mg/l	0.1000	115	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.002 < 0.002	0.1127 0.1126	113 113	75-125 75-125	0.1127 0.1126	0.1124 0.1060	112 106	0.3	20 20	-	-	< 0.002
Arsenic - Total mg/l	0.1000 0.1000	109 107	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.002 < 0.002 < 0.002	0.1066 0.4672 0.4536	107 117 113	75-125 75-125 75-125	0.1066 0.4672 0.4536	0.1102 0.4512 0.4682	110 113 117	3.3 3.5 3.2	20 20 20	-	_	< 0.002 < 0.002
Barium - Dissolved mg/l	0.1000	106	80-120	0.100 0.100	16W4560Q 16W4730q	0.0623 0.0080	0.1642 0.1066	102 99	75-125 75-125	0.1642 0.1066	0.1626 0.0987	100 91	1.0	20 -	-	-	< 0.002
Barium - Total mg/l	0.1000 0.1000	105 99	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.002 0.0178 0.0121	0.1015 0.4374 0.4190	102 105 102	75-125 75-125 75-125	0.1015 0.4374 0.4190	0.1002 0.4256 0.4334	100 102 105	1.3 2.7 3.4	20 20 20	-		< 0.002 < 0.002
Beryllium - Dissolved mg/l	0.1000 0.1000	91 99	80-120 80-120	0.100 0.100	16W4563Q 16-W4730	< 0.0005 < 0.0005	0.0881 0.0902	88 90	75-125 75-125	0.0881 0.0902	0.0872 0.0941	87 94	1.0	20 20	-	_	< 0.0005 < 0.0005
Beryllium - Total mg/l	0.1000 0.1000	100 94	80-120 80-120	0.100 0.400 0.400	16-W4715 16-W4717 16-W4725	< 0.0005 < 0.0005 < 0.0005	0.0954 0.4006 0.3918	95 100 98	75-125 75-125 75-125	0.0954 0.4006 0.3918	0.0895 0.4078 0.3932	89 102 98	6.4 1.8 0.4	20 20 20		-	< 0.0005 < 0.0005
Boron - Dissolved mg/l	0.40	115	80-120	0.600 1.50	16-W4720 16-W4730	0.46 1.04	1.00 2.36	90 88	75-125 75-125	1.00 2.36	0.98 2.40	87 91	2.0	20 20	-	-	< 0.1 < 0.1 < 0.1

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Quality Control Report

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Lab IDs: 16-W4715 to 16-	W4730	Pı	roject: M	DU Hesk	ett CCR							Wo	rk Ord	er: 201682	2-3373		
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	RPD	Known Rec (%)	Known % Rec Limits	Method Blank
Boron - Total mg/l	0.40 0.40 0.40 0.40	112 100 110 115	80-120 80-120 80-120 80-120	0.400 0.400	16-W4717 16-W4725	1.03 0.39	1.38 0.80	88 102	75-125 75-125	1.38 0.80	1.35 0.76	80 92	2.2 5.1	20 20	- - - - - -		< 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.1000	111	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.0005 < 0.0005	1	105 95	75-125 75-125	0.1050 0.0950	0.1052 0.0900	105 90	0.2 5.4	20 20	-	_	< 0.0005
Cadmium - Total mg/l	0.1000 0.1000	108 103	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.0005 < 0.0005 < 0.0005	0.4308	107 108 107	75-125 75-125 75-125	0.1068 0.4308 0.4290	0.1057 0.4382 0.4352	106 110 109	1.0 1.7 1.4	20 20 20	-		< 0.0005 < 0.0005
Calcium - Dissolved mg/l	20.0	108	80-120	100 500	16W4680q 16W4729q	91.2 600	181 1100	90 100	75-125 75-125	181 1100	183 1160	92 112	1.1 5.3	20 20		-	<1 <1
Calcium - Total mg/l	20.0 20.0 20.0	102 106 110	80-120 80-120 80-120	500 500 500 500	16W4681q 16W4717q 16W4725q 16W4753q	149 346 274 108	610 845 760 580	92 100 97 94	75-125 75-125 75-125 75-125	610 845 760 580	610 845 755 585	92 100 96 95	0.0 0.0 0.7 0.9	20 20 20 20 20	- - - - -	-	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1
Chloride mg/l	30.0 30.0	96 96	80-120 80-120	30.0 30.0	16-W4677 16-W4729	30.5 34.8	59.5 66.2	97 105	80-120 80-120	59.5 66.2	60.9 66.4	101 105	2.3 0.3	20 20	-	-	<1 <1 <1 <1 <1 <1
Chromium - Dissolved mg/l	0.1000	109	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.002 < 0.002	0.1037 0.1081	104 108	75-125 75-125	0.1037 0.1081	0.1046 0.1022	105 102	0.9 5.6	20 20	_	-	< 0.002

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Quality Control Report

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			roject: M		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Matrix	i em stituis e	Matrix	Matrix	MSD/	e iganes perces co	77 0.	ik Ora	er: 201682 MSD /	<u> </u>		al zamitySurvive in
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
Chromium - Total mg/l	0.1000 0.1000	107 98	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.002 < 0.002 < 0.002	0.1034 0.4194 0.4080	103 105 102	75-125 75-125 75-125	0.1034 0.4194 0.4080	0.1030 0.4108 0.4244	103 103 106	0.4 2.1 3.9	20 20 20	-	-	< 0.002 < 0.002
Cobalt - Dissolved mg/l	0.1000	110	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.002 0.0023	0.1028 0.1074	103 105	75-125 75-125	0.1028 0.1074	0.1030 0.1014	103 99	0.2	20 20	-	_	< 0.002
Cobalt - Total mg/l	0.1000 0.1000	107 99	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.002 < 0.002 < 0.002	0.1038 0.4310 0.4172	104 108 104	75-125 75-125 75-125	0.1038 0.4310 0.4172	0.1030 0.4144 0.4226	103 104 106	0.8 3.9 1.3	20 20 20		-	< 0.002 < 0.002
Fluoride mg/l	0.50	104	90-110	0.500 0.500	16-W4719 16-W4724	0.19 0.74	0.65 1.20	92 92	80-120 80-120	0.65 1.20	0.66 1.21	94 94	1.5 0.8	20 20	-	-	< 0.1
Lead - Dissolved mg/l	0.1000	106	80-120	0.100 0.100	16W4560Q 16W4730q	0.0022 < 0.0005	0.1022 0.0917	100 92	75-125 75-125	0.1022 0.0917	0.1013 0.0835	99 84	0.9	20 20	-	_	< 0.0003
Lead - Total mg/l	0.1000 0.1000	107 101	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.0005 < 0.0005 < 0.0005	0.4152	104 104 99	75-125 75-125 75-125	0.1037 0.4152 0.3976	0.1034 0.4008 0.4108	103 100 103	0.3 3.5 3.3	20 20 20	-	-	< 0.0005 < 0.0005
Lithium - Dissolved mg/l	0.40	95	80-120	0.200 0.200 1.00	16-W4680 16-W4722 16-W4730	0.06 < 0.1 1.87	0.29 0.23 2.99	115 115 112	75-125 75-125 75-125	0.29 0.23 2.99	0.30 0.23 2.96	120 115 109	3.4 0.0 1.0	20 20 20 20	-	- - - -	< 0.1 < 0.1 < 0.1 < 0.1 < 0.1
Lithium - Total mg/l	0.40 0.40 0.40	95 100 88	80-120 80-120 80-120	0.400 0.400 0.400	16-W4681 16-W4717 16-W4725	0.15 0.54 0.67	0.56 1.00 1.14	102 115 118	75-125 75-125 75-125	0.56 1.00 1.14	0.57 0.98 1.03	105 110 90	1.8 2.0 10.1	20 20 20			<0.1 <0.1 <0.1 <0.1 <0.1 <0.1
Magnesium - Dissolved mg/l	20.0	106	80-120	100 500	16W4680q 16W4729q	137 279	225 805	88 105	75-125 75-125	225 805	228 845	91 113	1.3	20 20	-	-	<1 <1

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Quality Control Report

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	8 Sept. 2007		i i i i i i i i i i i i i i i i i i i	\$200 kg (1.1	Section Charles	Matrix	Section 5	Matrix	Matrix	MSD/	. The same	1701	K OI W	er: 201682	1-3313		Т.
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	MSD/ Dup RPD Limit (<)	Known Rec (%)	Known % Rec Limits	Method Blank
Magnesium - Total mg/l	20.0 20.0 20.0	104 109 112	80-120 80-120 80-120	500 500 500 500	16W4681q 16W4717q 16W4725q 16W4753q	402 276 545 280	845 790 1030 760	89 103 97 96	75-125 75-125 75-125 75-125	845 790 1030 760	855 795 1020 765	91 104 95 97	1.2 0.6 1.0 0.7	20 20 20 20 20	-	-	<1 <1 <1 <1 <1 <1 <1 <1
Mercury - Dissolved mg/l	0.0020 0.0020	100 95	85-115 85-115	0.002 0.002 0.002	16-W4678 16-W4720 16-W4730	< 0.0002 < 0.0002 < 0.0002	0.0017 0.0017 0.0016	85 85 80	70-130 70-130 70-130	0.0017 0.0017 0.0016	0.0018 0.0017 0.0016	90 85 80	5.7 0.0 0.0	20 20 20	- - -		< 1 < 0.0002 < 0.0002
Mercury - Total mg/l	0.0020 0.0020	105 100	85-115 85-115	0.002 0.002 0.002 0.002	16-W4697 16-W4716 16-W4726 16-W4822	< 0.0002 < 0.0002 < 0.0002 < 0.0002	0.0020 0.0018	65 100 90 100	70-130 70-130 70-130 70-130	0.0013 0.0020 0.0018 0.0020	0.0014 0.0020 0.0019 0.0020	70 100 95 100	7.4 0.0 5.4 0.0	20 20 20 20 20	-	-	< 0.0002 < 0.0002
Molybdenum - Dissolved mg/l	0.1000	99	80-120	0.100 0.100	16W4560q 16W4730q	< 0.002 < 0.002	0.0976 0.1059	98 106	75-125 75-125	0.0976 0.1059	0.0963 0.0980	96 98	1.3 7.7	20 20	-		< 0.002
Molybdenum - Total mg/l	0.1000 0.1000	97 89	80-120 80-120	0.100 0.400 0.400	16W4715q 16W4717q 16W4725q	< 0.002 < 0.002 0.0034	0.0954 0.4270 0.4158	95 107 103	75-125 75-125 75-125	0.0954 0.4270 0.4158	0.0942 0.4050 0.4378	94 101 109	1.3 5.3 5.2	20 20 20	- -	-	< 0.002 < 0.002
pH units	-	-	-	_	-	-	-	-	-	7.0 7.3	7.0 7.3	-	0.0	20 20	-	-	-
Potassium - Dissolved mg/l	10.0	91	80-120	20.0 100	16W4680q 16W4729q	8.4 13.8	27.4 120	95 106	75-125 75-125	27.4 120	27.6 126	96 112	0.7 4.9	20 20			< 1 < 1
Potassium - Total mg/l	10.0 10.0 10.0	91 97 98	80-120 80-120 80-120	100 100 100 100	16W4681q 16W4717q 16W4725q 16W4753q	10.0 19.3 < 5 620	100 122 102 710	90 103 102 90	75-125 75-125 75-125 75-125	100 122 102 710	100 122 104 710	90 103 104 90	0.0 0.0 1.9 0.0	20 20 20 20 20	- - -	-	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1

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Quality Control Report

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Lab IDs: 16-W4715 to 16-V	1.750		roject: M	JU IIESK	CII CCK	3.6.4.	T			T		Wo	rk Ord	er: 201682	2-3373		
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 - Dissolved mg/l	0.1000	114	80-120	0.100 0.100	16-W4563 16-W4730	< 0.002 0.1792	0.1046 0.3058	105 127	75-125 75-125	0.1046 0.3058	0.1012 0.3324	101 153	3.3 8.3	20 20	-	-	< 0.002
Selenium - Total mg/l	0.1000 0.1000	108 110	80-120 80-120	0.100 0.400 0.400	16-W4715 16W4717q 16W4725q	< 0.002 < 0.002 0.0576	0.0977 0.4756 0.5540	98 119 124	75-125 75-125 75-125	0.0977 0.4756 0.5540	0.0943 0.4586 0.5684	94 115 128	3.5 3.6 2.6	20 20 20	-	-	< 0.002 < 0.002
Sodium - Dissolved mg/l	20.0	102	80-120	100 500	16W4680q 16W4729q	79.4 635	173 1120	94 97	75-125 75-125	173 1120	174 1170	95 107	0.6 4.4	20 20	-	_	< 1 < 1
Sodium - Total mg/l	20.0 20.0 20.0	100 107 110	80-120 80-120 80-120	500 500 500 500	16W4681q 16W4717q 16W4725q 16W4753q	122 575 585 510	600 1100 1090 995	96 105 101 97	75-125 75-125 75-125 75-125	600 1100 1090 995	600 1110 1060 995	96 107 95 97	0.0 0.9 2.8 0.0	20 20 20 20 20	-	- - - -	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1
Sulfate mg/l	100 100 100	93 95 94	90-110 90-110 90-110	100 100 500 4000	16-W4682 16-W4722 16-W4663 16-W4729	< 5 < 5 357 2730	92.2 92.6 801 6350	92 93 89 90	80-120 80-120 80-120 80-120	92.2 92.6 6350 801	92.2 91.6 6350 800	92 92 89 90	0.0 1.1 0.0 0.1	20 20 20 20 20		-	< 5 < 5 < 5
Thallium - Dissolved mg/l	0.1000	106	80-120	0.100 0.100	16W4560Q 16W4730q	< 0.0005 < 0.0005	0.0998 0.0930	100 93	75-125 75-125	0.0998	0.0994 0.0875	99 88	0.4	20 20	_	100 Marie 1	< 0.0005
Thallium - Total mg/l	0.1000 0.1000	105 100	80-120 80-120	0.100 0.400 0.400	16W4715Q 16W4717q 16W4725q	< 0.0005 < 0.0005 < 0.0005	0.1032 0.4102 0.3956	103 103 99	75-125 75-125 75-125	0.1032 0.4102 0.3956	0.1029 0.3946 0.4106	103 99 103	0.3 3.9 3.7	20 20 20	-	-	< 0.0005 < 0.0005
Total Alkalinity mg/l CaCO3	410	98	90-110	410 410	16-W4717 16-W4727	462 488	853 876	95 95	80-120 80-120	853 876	850 878	95 95	0.4	20 20	94	80-120	< 20 < 20
Total Dissolved Solids mg/l	-	-	-	-	_	-	-	-	-	9640 23200	9670 23400	-	0.3	20 20	_	-	< 5

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Quality Control Report Lab IDs: 16-W4715 to 16-W4730 Page: 6 of 6

Lab 1D5: 10-W4/13 to 16-W	4/30	P	roject: M	DU Hesk	ett CCR			•••				Wo	rk Ord	er: 201682	2-3373		
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	MSD/	Known Rec	Known % Rec Limits	Method Blank
Total Suspended Solids mg/l	-	-	-	-	-	-	-		-	154	149	_	3.3	20	_	-	< 1
	-	-	-	-	-	-	-	-	-	3	3	-	0.0	*	_	_	< 1
		_	-	-	-	-	-	-	-	297	316	-	6.2	20	-	-	_
	J		-					~	_	174	188	-	7.7	20	-	-	

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

Approved by: _____ Z NV16



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: Field Blank 1

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4715 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 7.3	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
Total Alkalinity	< 20	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	< 5	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	< 1	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	24 Oct 16 12:33	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	< 5	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	< 1	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	< 0.1	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	< 0.1	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	< 1	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	< 0.1	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	< 0.1	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 13:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Barium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 13:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 13:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 13:25	KMD
Selenium - Total	< 0.002	mg/l	0.0020	6020	21 Oct 16 16:25	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 13:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to conduct to sample quantity + = Due to in

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



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Report Date: 27 Oct 16 Lab Number: 16-W4715 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

Project Name: MDU Heskett CCR

Amended 18 Nov 16 (Sampled By)

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Sample Description: Field Blank 1

Event and Year: Oct 2016

400 N. 4th

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: Dup 1

Event and Year: Oct 2016

1 of 2 Page:

Report Date: 27 Oct 16 Lab Number: 16-W4716 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
На	* 6.9	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	13	mg/l	1	13765-85	14 Oct 16 13:24	ML
Total Alkalinity	533	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	0.20	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4350	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	7.8	mg/l	1.0	SM4500-C1-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	24 Oct 16 12:33	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	7470	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	426	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	360	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	1360	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	18.0	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.71	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	1.16	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	441	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	378	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	1460	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	18.7	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.70	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.28	mg/1	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/1	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	0.0029	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0217	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/1	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0033	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
	0.0023	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Molybdenum - Total Selenium - Total	< 0.0023	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
	< 0.005	mg/1	0.0005	6020	22 Oct 16 11:25	KMD
Thallium - Total	< 0.0003	mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Antimony - Dissolved	0.0028	mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	0.0020	g/ ±	0.0020			

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to come to sample quantity # = Due to in

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: Dup 1

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4716 Work Order #:82-3373

Date Sampled: 12 Oct 16

Account #: 002800

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0210 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	0.0038 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	$< 0.005 ^ mg/1$	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Cantlo 29NNIL

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: Θ = Due to sample matrix # = Due to co

! = Due to sample quantity

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

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW101

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4717 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 15:55 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
Hq	* 6.7	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.76	units	NA	SM 4500 H+ B	12 Oct 16 15:55	JSM
Temperature - Field	9.12	Degrees C	NA	SM 2550B	12 Oct 16 15:55	JSM
Total Alkalinity	462	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	4690	umhos/cm	1	EPA 120.1	12 Oct 16 15:55	JSM
Fluoride	< 0.1	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2600	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	18.1	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	4170	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	346	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	276	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	575	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	19.3	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.54	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	1.03	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	358	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	286	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	595	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	19.6	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.50	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.05	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0178	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

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



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Page:

Report Date: 27 Oct 16 Lab Number: 16-W4717 Work Order #:82-3373

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Date Sampled: 12 Oct 16 15:55 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

Montana Dakota Utilities Account #: 002800 400 N. 4th Bismarck ND 58501

Project Name: MDU Heskett CCR

Amended 18 Nov 16 (Sampled By)

Samantha Marshall

Sample Description: MW101

Event and Year: Oct 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0166 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	$< 0.005 ^ mg/1$	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	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 con
! = Due to sample quantity + = Due to int

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

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

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



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

Project Name: MDU Heskett CCR

Amended 18 Nov 16 (Sampled By)

Sample Description: MW102

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4718 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 11:41 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
Hq	* 6.9	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	13	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.86	units	NA	SM 4500 H+ B	12 Oct 16 11:41	JSM
Temperature - Field	8.82	Degrees C	NA	SM 2550B	12 Oct 16 11:41	JSM
Total Alkalinity	533	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	7677	umhos/cm	1	EPA 120.1	12 Oct 16 11:41	JSM
Fluoride	0.21	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4810	mg/l	5.00	ASTM D516-07	14 Oct 16 14:30	EMS
Chloride	7.7	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/1	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	7430	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	456	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	379	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	1440	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	19.0	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.74	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	1.18	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	436	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	385	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	1540	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	19.6	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.76	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.31	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	0.0028	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0216	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0033	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0027	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
DCTCIII am Total						

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



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Page:

Report Date: 27 Oct 16 Lab Number: 16-W4718 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 11:41 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

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Project Name: MDU Heskett CCR

Amended 18 Nov 16 (Sampled By)

Samantha Marshall

Bismarck ND 58501

Montana Dakota Utilities

Sample Description: MW102

400 N. 4th

Event and Year: Oct 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total Antimony - Dissolved Arsenic - Dissolved Barium - Dissolved Beryllium - Dissolved Cadmium - Dissolved Chromium - Dissolved Cobalt - Dissolved Lead - Dissolved	< 0.0005 mg/ < 0.001 mg/ 0.0033 mg/ 0.0208 mg/ < 0.0005 mg/ < 0.0002 mg/ < 0.0039 mg/ < 0.0005 mg/	/1 0.0010 /1 0.0020 /1 0.0020 /1 0.0005 /1 0.0005 /1 0.0020 /1 0.0020	6020 6020 6020 6020 6020 6020 6020 6020	22 Oct 16 11:25 22 Oct 16 12:25 22 Oct 16 12:25 22 Oct 16 12:25 24 Oct 16 8:20 22 Oct 16 12:25	KMD KMD KMD KMD CC KMD KMD KMD KMD KMD KMD KMD
Molybdenum - Dissolved Selenium - Dissolved Thallium - Dissolved	< 0.002 mg/ < 0.005 mg/ < 0.005 mg/	/1 0.0020 /1 0.0020	6020 6020 6020	22 Oct 16 12:25 21 Oct 16 15:25 22 Oct 16 12:25	KMD KMD KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW103

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4719 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 9:42 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	6.8	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	3	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.74	units	NA	SM 4500 H+ B	12 Oct 16 9:42	JSM
Temperature - Field	7.83	Degrees C	NA	SM 2550B	12 Oct 16 9:42	JSM
Total Alkalinity	444	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	4871	umhos/cm	1	EPA 120.1	12 Oct 16 9:42	JSM
Fluoride	0.19	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2660	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	136	mg/l	1.0	SM4500-C1-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	4460	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	525	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Magnesium - Total	456	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Sodium - Total	246	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Potassium - Total	18.8	mg/l	1.0	6010	17 Oct 16 12:57	SZ
Lithium - Total	0.56	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.15	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	530	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	464	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	242	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	19.0	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.56	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.14	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0076	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.1468	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW103

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4719 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 9:42 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0068 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.1121 mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudite 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 con ! = Due to sample quantity + = Due to int

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



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1 of 2 Page:

Amended 18 Nov 16 (Sampled By)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW44R

Event and Year: Oct 2016

Report Date: 27 Oct 16

Lab Number: 16-W4720 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 8:07 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 6.7	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.58	units	NA	SM 4500 H+ B	12 Oct 16 8:07	JSM
Temperature - Field	7.52	Degrees C	NA	SM 2550B	12 Oct 16 8:07	JSM
Total Alkalinity	453	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	8838	umhos/cm	1	EPA 120.1	12 Oct 16 8:07	JSM
Fluoride	0.65	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	5490	mg/1	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	240	mg/l	1.0	SM4500-C1-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 12:41	EV
Total Dissolved Solids	8980	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	413	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	975	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	1020	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	33.2	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	1.22	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.47	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	419	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	985	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	1020	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	32.2	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	1.21	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.46	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0072	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0889	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: Θ = Due to sample matrix # = Due to cor ! = Due to sample quantity + = Due to int

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW44R

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4720 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 8:07 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0066 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 8:20	CC
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0926 mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Clauditte Approved by: 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: θ = Due to sample matrix # = Due to code in # = Due to in

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW70

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4721 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 13:47 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 7.0	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	7.01	units	NA	SM 4500 H+ B	12 Oct 16 13:47	JSM
Temperature - Field	8.32	Degrees C	NA	SM 2550B	12 Oct 16 13:47	JSM
Total Alkalinity	426	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	3932	umhos/cm	1	EPA 120.1	12 Oct 16 13:47	JSM
Fluoride	0.33	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	1830	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	34.1	mg/l	1.0	SM4500-C1-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	3320	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	353	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	144	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	488	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	12.2	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.29	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.41	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	366	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Magnesium - Dissolved	147	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Sodium - Dissolved	486	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Potassium - Dissolved	12.2	mg/l	1.0	6010	21 Oct 16 10:19	SZ
Lithium - Dissolved	0.28	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.40	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0099	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/1	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.002	mg/1	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0045	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0132	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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 inf

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW70

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4721 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 13:47 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0090 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	0.0040 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0125 mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canteo

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 constant to sample quantity + = Due to in the property of the sample quantity

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: Field Blank 2

Event and Year: Oct 2016

Page: 1 of 2

Report Date: 27 Oct 16 Lab Number: 16-W4722 Work Order #:82-3373 Account #: 002800 Date Sampled: 13 Oct 16

Date Received: 13 Oct 16 14:30

Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

As Received Method Method Date Result RL Reference Analyzed	Analyst
Metal Digestion EPA 200.2 13 Oct 16	ML
pH * 6.0 units N/A SM4500 H+ B 13 Oct 16 18:00	ML
Total Suspended Solids < 1 mg/l 1 I3765-85 14 Oct 16 13:24	ML
Total Alkalinity < 20 mg/l CaCO3 20 SM2320-B 13 Oct 16 18:00	ML
Fluoride $< 0.1 mg/l 0.10 SM4500-F-C 13 \; Oct \; 16 \; 18:00 \; Mg = 10 \; Mg = 1$	ML
Sulfate < 5 mg/l 5.00 ASTM D516-07 14 Oct 16 14:49	EMS
Chloride < 1 mg/l 1.0 SM4500-Cl-E 20 Oct 16 14:22	EMS
Mercury - Total < 0.0002 mg/l 0.0002 EPA 245.1 26 Oct 16 13:00	EV
Mercury - Dissolved < 0.0002 mg/l 0.0002 EPA 245.1 20 Oct 16 13:40	EV
Total Dissolved Solids < 5 mg/l 5 I1750-85 17 Oct 16 14:49	ML
Calcium - Total < 1 mg/l 1.0 6010 17 Oct 16 14:00	SZ
Magnesium - Total < 1 mg/l 1.0 6010 17 Oct 16 14:00	SZ
Sodium - Total < 1 mg/l 1.0 6010 17 Oct 16 14:00	SZ
Potassium - Total < 1 mg/l 1.0 6010 17 Oct 16 14:00	SZ
Lithium - Total < 0.1 mg/l 0.10 6010 19 Oct 16 10:59	KMD
Boron - Total < 0.1 mg/l 0.10 6010 18 Oct 16 13:20	KMD
Calcium - Dissolved < 1 mg/l 1.0 6010 21 Oct 16 11:19	SZ
Magnesium - Dissolved < 1 mg/l 1.0 6010 21 Oct 16 11:19	SZ
Sodium - Dissolved < 1 mg/l 1.0 6010 21 Oct 16 11:19	SZ
Potassium - Dissolved < 1 mg/l 1.0 6010 21 Oct 16 11:19	SZ
Lithium - Dissolved < 0.1 mg/l 0.10 6010 19 Oct 16 12:59	KMD
Boron - Dissolved < 0.1 mg/l 0.10 6010 18 Oct 16 15:20	KMD
Antimony - Total < 0.001 mg/l 0.0010 6020 22 Oct 16 11:25	KMD
Arsenic - Total < 0.002 mg/l 0.0020 6020 22 Oct 16 11:25	KMD
Barium - Total $< 0.002 mg/l 0.0020 6020 22 \text{ Oct } 16 \cdot 11:25$	KMD
Beryllium - Total $< 0.0005 \text{ mg/l}$ 0.0005 6020 24 Oct 16 11:14	CC
Cadmium - Total < 0.0005 mg/l 0.0005 6020 22 Oct 16 11:25	KMD
Chromium - Total < 0.002 mg/l 0.0020 6020 22 Oct 16 11:25	KMD
Cobalt - Total < 0.002 mg/l 0.0020 6020 22 Oct 16 11:25	KMD
Lead - Total $< 0.0005 \text{ mg/l}$ 0.0005 6020 22 Oct 16 11:25	KMD
Molybdenum - Total < 0.002 mg/l 0.0020 6020 22 Oct 16 11:25	KMD
Selenium - Total < 0.005 ^ mg/l 0.0020 6020 22 Oct 16 11:25	KMD
Thallium - Total < 0.0005 mg/l 0.0005 6020 22 Oct 16 11:25	KMD
Antimony - Dissolved < 0.001 mg/l 0.0010 6020 22 Oct 16 12:25	KMD
Arsenic - Dissolved < 0.002 mg/l 0.0020 6020 22 Oct 16 12:25	KMD

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @= Due to sample matrix #= Due to cor != Due to sample quantity += Due to int

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: Field Blank 2

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4722 Work Order #:82-3373 Account #: 002800 Date Sampled: 13 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	$< 0.005 ^ mg/1$	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to conduct to sample quantity + = Due to information with the code of the conduct to the code of the c

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

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: Dup 2

Event and Year: Oct 2016

rage. I of Z

Report Date: 27 Oct 16 Lab Number: 16-W4723 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
	7.2	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
Total Alkalinity	540	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Fluoride	0.32	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2940	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	166	mg/l	1.0	SM4500-C1-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	5080	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	274	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	540	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	585	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	< 5 @	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.67	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.40	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	291	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	575	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	610	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	< 5 @	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.64	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.43	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0114	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0033	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0566	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Thallium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD

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

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



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: Dup 2

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4723 Work Order #:82-3373 Account #: 002800

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Date Sampled: 13 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Barium - Dissolved	0.0104	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005	mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	0.0032	mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0590	mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005	mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to con
! = Due to sample quantity + = Due to int

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



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW13

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4724 Work Order #:82-3373

Account #: 002800 Date Sampled: 13 Oct 16 8:13 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 7.1	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	2	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.86	units	NA	SM 4500 H+ B	13 Oct 16 8:13	JSM
Temperature - Field	7.39	Degrees C	NA	SM 2550B	13 Oct 16 8:13	JSM
Total Alkalinity	503	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	10508	umhos/cm	1	EPA 120.1	13 Oct 16 8:13	JSM
Fluoride	0.74	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	6220	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	90.3	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	9640	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	392	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	605	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	1880	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	24.8	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.65	mg/l	0.10	6010	19 Oct 16 10:59	KMD
Boron - Total	0.69	mg/l	0.10	6010	18 Oct 16 13:20	KMD
Calcium - Dissolved	404	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	625	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	1880	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	25.0	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.60	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.68	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0084	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 11:14	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0503	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: \emptyset = Due to sample matrix # = Due to core ! = Due to sample quantity + = Due to int

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

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW13

Event and Year: Oct 2016

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Report Date: 27 Oct 16 Lab Number: 16-W4724 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 8:13 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total Antimony - Dissolved Arsenic - Dissolved Barium - Dissolved Beryllium - Dissolved Cadmium - Dissolved Chromium - Dissolved	<pre>< 0.0005 mg/1 < 0.001 mg/1 < 0.002 mg/1 0.0062 mg/1 < 0.0005 mg/1 < 0.0005 mg/1 < 0.0002 mg/1</pre>	0.0005 0.0010 0.0020 0.0020 0.0005 0.0005	6020 6020 6020 6020 6020 6020 6020	22 Oct 16 11:25 22 Oct 16 12:25 22 Oct 16 12:25 22 Oct 16 12:25 24 Oct 16 10:20 22 Oct 16 12:25 22 Oct 16 12:25	KMD KMD KMD KMD CC KMD KMD
Cobalt - Dissolved Lead - Dissolved Molybdenum - Dissolved Selenium - Dissolved Thallium - Dissolved	< 0.002 mg/l < 0.0005 mg/l < 0.002 mg/l 0.0495 mg/l < 0.0005 mg/l	0.0020 0.0005 0.0020 0.0020 0.0005	6020 6020 6020 6020 6020	22 Oct 16 12:25 22 Oct 16 12:25 22 Oct 16 12:25 21 Oct 16 15:25 22 Oct 16 12:25	KMD KMD KMD KMD KMD

* Holding time exceeded

Claudite K. Canto 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 conduct to sample quantity # = Due to interport to the conduct to the conduct

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW80R

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4725 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 9:52 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed .	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 7.3	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	5	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	7.12	units	NA	SM 4500 H+ B	13 Oct 16 9:52	JSM
Temperature - Field	9.38	Degrees C	NA	SM 2550B	13 Oct 16 9:52	JSM
Total Alkalinity	542	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	5683	umhos/cm	1	EPA 120.1	13 Oct 16 9:52	JSM
Fluoride	0.32	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2810	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	168	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	5050	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	274	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	545	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	585	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	< 5 @	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.67	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.39	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	291	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	575	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	610	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	< 5 @	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.66	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.38	mg/1	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0121	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/1	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	0.0034	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0576	mg/1	0.0020	6020	22 Oct 16 11:25	KMD

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 into the control of t

CERTIFICATION: ND # ND-00016

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW80R

Event and Year: Oct 2016

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Report Date: 27 Oct 16 Lab Number: 16-W4725 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 9:52 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0103 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	0.0033 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0596 mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canteo

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

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW105

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4726 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 11:57 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion			0.00	EPA 200.2	13 Oct 16	ML
1	* 6.9	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	7	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.77	units	NA	SM 4500 H+ B	13 Oct 16 11:57	JSM
Temperature - Field	8.85	Degrees C	NA	SM 2550B	13 Oct 16 11:57	JSM
Total Alkalinity	449	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	7202	umhos/cm	1	EPA 120.1	13 Oct 16 11:57	JSM
Fluoride	0.26	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4140	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	378	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	6700	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	383	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	765	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	785	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	20.0	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	1.01	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.41	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	401	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	795	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	795	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	20.0	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.95	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.39	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0212	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/1	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW105

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4726 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 11:57 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	0.0006 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0183 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

^{*} Holding time exceeded

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW33

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4727 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 8:45 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 6.8	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	5	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.50	units	NA	SM 4500 H+ B	13 Oct 16 8:45	DJN
Temperature - Field	7.32	Degrees C	NA	SM 2550B	13 Oct 16 8:45	DJN
Total Alkalinity	488	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	5399	umhos/cm	1	EPA 120.1	13 Oct 16 8:45	DJN
Fluoride	0.20	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	3010	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	12.2	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	5030	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	481	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	484	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	479	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	22.3	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.65	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.40	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	474	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	474	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	467	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	21.2	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.65	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0168	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0027	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	< 0.005 ^	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

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

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW33

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4727 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 8:45 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0162 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	0.0024 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	< 0.005 ^ mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	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: θ = 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

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



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Page: 1 of 2

Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW2-90

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4728 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 11:49 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рн	* 7.2	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	< 1	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.87	units	NA	SM 4500 H+ B	13 Oct 16 11:49	DJN
Temperature - Field	8.29	Degrees C	NA	SM 2550B	13 Oct 16 11:49	DJN
Total Alkalinity	503	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	7601	umhos/cm	1	EPA 120.1	13 Oct 16 11:49	DJN
Fluoride	0.99	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	4390	mg/l	5.00	ASTM D516-07	14 Oct 16 14:49	EMS
Chloride	86.3	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:22	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	6960	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	480	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	730	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	805	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	25.4	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	0.87	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.38	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	496	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	730	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	790	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	24.6	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	0.86	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	0.38	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0104	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.1396	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to conduct to sample quantity # = Due to interport to the conduct to the conduct

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW2-90

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4728 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 11:49 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0101 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.1558 mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudite K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to con
! = Due to sample quantity + = Due to in

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



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Amended 18 Nov 16 (Sample date)

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

Project Name: MDU Heskett CCR

Sample Description: MW3-90

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4729 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 10:12 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 7.1	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	3	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.79	units	NA	SM 4500 H+ B	13 Oct 16 10:12	DJN
Temperature - Field	7.60	Degrees C	NA	SM 2550B	13 Oct 16 10:12	DJN
Total Alkalinity	541	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	5289	umhos/cm	1	EPA 120.1	13 Oct 16 10:12	DJN
Fluoride	0.13	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	2730	mg/l	5.00	ASTM D516-07	14 Oct 16 15:28	EMS
Chloride	34.8	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	4940	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	570	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Magnesium - Total	266	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Sodium - Total	615	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Potassium - Total	13.8	mg/l	1.0	6010	17 Oct 16 14:00	SZ
Lithium - Total	< 0.2 @	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	< 0.2 @	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	600	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	279	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	635	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	13.8	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	< 0.2 @	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	< 0.2 @	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0131	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.0445	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @= Due to sample matrix #= Due to core \$:= Due to sample quantity \$+= Due to into

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



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Amended 18 Nov 16 (Sample date)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW3-90

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4729 Work Order #:82-3373 Account #: 002800

Date Sampled: 12 Oct 16 10:12 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0124 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	< 0.002 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.0461 mg/l	0.0020	6020	21 Oct 16 15:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Claudite 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: Θ = 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



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Amended 18 Nov 16 (Sampled By)

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW104

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4730 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 13:15 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Receive Result	ed	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	13 Oct 16	ML
рН	* 7.3	units	N/A	SM4500 H+ B	13 Oct 16 18:00	ML
Total Suspended Solids	4	mg/l	1	I3765-85	14 Oct 16 13:24	ML
pH - Field	6.89	units	NA	SM 4500 H+ B	13 Oct 16 13:15	DJN
Temperature - Field	10.6	Degrees C	NA	SM 2550B	13 Oct 16 13:15	DJN
Total Alkalinity	575	mg/l CaCO3	20	SM2320-B	13 Oct 16 18:00	ML
Conductivity - Field	14302	umhos/cm	1	EPA 120.1	13 Oct 16 13:15	DJN
Fluoride	0.53	mg/l	0.10	SM4500-F-C	13 Oct 16 18:00	ML
Sulfate	10100	mg/l	5.00	ASTM D516-07	14 Oct 16 15:28	EMS
Chloride	102	mg/l	1.0	SM4500-Cl-E	20 Oct 16 14:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	26 Oct 16 13:00	EV
Mercury - Dissolved	< 0.0002	mg/l	0.0002	EPA 245.1	20 Oct 16 13:40	EV
Total Dissolved Solids	14300	mg/l	5	I1750-85	17 Oct 16 14:45	ML
Calcium - Total	422	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Magnesium - Total	1540	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Sodium - Total	1990	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Potassium - Total	36.2	mg/l	1.0	6010	17 Oct 16 15:00	SZ
Lithium - Total	1.78	mg/l	0.10	6010	19 Oct 16 11:59	KMD
Boron - Total	0.99	mg/l	0.10	6010	18 Oct 16 14:20	KMD
Calcium - Dissolved	448	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Magnesium - Dissolved	1620	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Sodium - Dissolved	2040	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Potassium - Dissolved	38.2	mg/l	1.0	6010	21 Oct 16 11:19	SZ
Lithium - Dissolved	1.87	mg/l	0.10	6010	19 Oct 16 12:59	KMD
Boron - Dissolved	1.04	mg/l	0.10	6010	18 Oct 16 15:20	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	22 Oct 16 11:25	KMD
Arsenic - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Barium - Total	0.0082	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	24 Oct 16 12:50	CC
Cadmium - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Chromium - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Cobalt - Total	0.0023	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Lead - Total	< 0.0005	mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Selenium - Total	0.1441	mg/l	0.0020	6020	22 Oct 16 11:25	KMD

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @ = Due to sample matrix # = Due to code in the property # = Due to sample quantity # = Due to integrate # =

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



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Amended 18 Nov 16 (Sampled By)

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

Project Name: MDU Heskett CCR

Sample Description: MW104

Event and Year: Oct 2016

Report Date: 27 Oct 16 Lab Number: 16-W4730 Work Order #:82-3373 Account #: 002800

Date Sampled: 13 Oct 16 13:15 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Thallium - Total	< 0.0005 mg/l	0.0005	6020	22 Oct 16 11:25	KMD
Antimony - Dissolved	< 0.001 mg/1	0.0010	6020	22 Oct 16 12:25	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Barium - Dissolved	0.0080 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Beryllium - Dissolved	< 0.0005 mg/1	0.0005	6020	24 Oct 16 10:20	CC
Cadmium - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Chromium - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Cobalt - Dissolved	0.0023 mg/l	0.0020	6020	22 Oct 16 12:25	KMD
Lead - Dissolved	< 0.0005 mg/1	0.0005	6020	22 Oct 16 12:25	KMD
Molybdenum - Dissolved	< 0.002 mg/1	0.0020	6020	22 Oct 16 12:25	KMD
Selenium - Dissolved	0.1590 mg/l	0.0020	6020	22 Oct 16 11:25	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	22 Oct 16 12:25	KMD

* Holding time exceeded

Approved by:

Clauditte K. Canteo

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 conduct to sample quantity + = Due to interpolated to the sample quantity + = Due to inter

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

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



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CASE NARRATIVE

MVTL Lab Reference No/SDG:

201682-3374

IML Lab Reference No/SDG:

S1610252

Client:

Montana Dakota Utilities

Location: N

MDU Heskett Ash Site

Project Identification:

CCR October 2016

MVTL Laboratory Identifications:

16-W4731 through **16-W4746**

IML Laboratory Identifications:

S1610252-001 through S1610252-016

Page 1 of 2

MDU Sample Identification	IML Laboratory #	MVTL Laboratory #
Field Blank (FB) 1	S1610252-001	16-W4731
Dup 1	S1610252-002	16-W4732
MW101	S1610252-003	16-W4733
MW102	S1610252-004	16-W4734
MW103	S1610252-005	16-W4735
MW44R	S1610252-006	16-W4736
MW70	S1610252-007	16-W4737
Field Blank (FB) 2	S1610252-008	16-W4738
Dup 2	S1610252-009	16-W4739
MW13	S1610252-010	16-W4740
MW80R	S1610252-011	16-W4741
MW105	S1610252-012	16-W4742
MW33	S1610252-013	16-W4743
MW2-90	S1610252-014	16-W4744
MW3-90	S1610252-015	16-W4745
MW104	S1610252-016	16-W4746

I. RECEIPT

- All samples were received at the laboratory on 13 October 2016 at 1430.
- 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 6.3°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 18 October 2016.
 - o All samples were properly preserved 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:

IML Laboratory Identifications:

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201682-3374

S1610252

Montana Dakota Utilities MDU Heskett Ash Site

CCR October 2016

16-W4731 through **16-W4746**

S1610252-001 through **S1610252-016**

II. HOLDING TIMES

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

III. METHODS

- Approved methodology was followed for all sample analyses.
 - o 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 from Barr Engineering dated 10 March 2016, IML was directed to report numerical values, including negative results for both the sample results and the method analyte precision.
- Per email from Samantha Marshall with MDU, MVTL was directed to report the radium 226 and radium 228 values individually and then MDU would calculate the summation result using their database tabulations.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Claudette Carroll - MVTL Bismarck Laboratory Manager



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: Field Blank 1

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4731 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226 Radium 228	See Attached Report See Attached Report			28 Oct 16 12 Nov 16	OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

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Page:

1 of 1

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

Report Date: 30 Nov 16 Lab Number: 16-W4732 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16

Temp at Receipt: 6.3C ROI

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

12 Nov 16

PO #: 160249

Project Name: MDU Heskett CCR Radiochem Oct 2016

See Attached Report

Sample Description: Dup 1

Radium 228

As Received Method Method Date Result Reference Analyst Analyzed Radium 226 28 Oct 16 See Attached Report OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Cantep

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW101

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4733 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16 15:55 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Rece: Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.76	units	NA	SM 4500 H+ B	12 Oct 16 15:55	JSM
Temperature - Field	9.12	Degrees C	NA	SM 2550B	12 Oct 16 15:55	JSM
Conductivity - Field	4690	umhos/cm	1	EPA 120.1	12 Oct 16 15:55	JSM
Radium 226	See Attached Report				31 Oct 16	OL
Radium 228	See Attached Report				12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto 30NOV 16

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:

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Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW102

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4734 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16 11:41 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Recei Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.86	units	NA	SM 4500 H+ B	12 Oct 16 11:41	JSM
Temperature - Field	8,82	Degrees C	NA	SM 2550B	12 Oct 16 11:41	JSM
Conductivity - Field	7677	umhos/cm	1	EPA 120.1	12 Oct 16 11:41	JSM
Radium 226	See Atta	ached Report			31 Oct 16	OL
Radium 228	See Atta	See Attached Report			12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canto

Claudette K. Carroli, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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! = Due to sample quantity

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



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW103

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4735 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16 9:42 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.74	units	NA	SM 4500 H+ B	12 Oct 16	9:42	JSM
Temperature - Field	7.83	Degrees C	NA	SM 2550B	12 Oct 16	9:42	JSM
Conductivity - Field	4871	umhos/cm	1	EPA 120.1	12 Oct 16	9:42	JSM
Radium 226	See Atta	ached Report			31 Oct 16		OL
Radium 228	See Attached Report				12 Nov 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canitle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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! = Due to sample quantity

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



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW44R

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4736 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16 8:07 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

рн - Field	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
	6.58	units	NA	SM 4500 H+ B	12 Oct 16	8:07	JSM
Temperature - Field	7.52	Degrees C	NA	SM 2550B	12 Oct 16	8:07	JSM
Conductivity - Field	8838	umhos/cm	1	EPA 120.1	12 Oct 16	8:07	JSM
Radium 226	See Attached Report				31 Oct 16		OL
Radium 228	See Attached Report				12 Nov 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Cantle

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW70

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4737 Work Order #:82-3374 Account #: 002800

Date Sampled: 12 Oct 16 13:42 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

pH - Field	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
	7.01	units	NA	SM 4500 H+ B	12 Oct 16 13:42	JSM
Temperature - Field	8.32	Degrees C	NA	SM 2550B	12 Oct 16 13:42	JSM
Conductivity - Field	3932	umhos/cm	1	EPA 120.1	12 Oct 16 13:42	JSM
Radium 226	See Attached Report				31 Oct 16	OL
Radium 228		ached Report			12 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte 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:

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



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: Field Blank 2

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4738 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226 Radium 228	See Attached Report See Attached Report			31 Oct 16 13 Nov 16	OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to conduct to sample quantity # = Due to interport to the conduct to the conduct

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



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Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: Dup 2

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4739 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16

Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result		Method Reference	Date Analyzed	Analyst
Radium 226	See Attached Report			31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Cantlo

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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! = Due to sample quantity + = Due to in

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



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW13

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4740 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 8:13 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
pH - Field	6.86	units	NA	SM 4500 H+ B	13 Oct 16	8:13	JSM
Temperature - Field	7.39	Degrees C	NA	SM 2550B	13 Oct 16	8:13	JSM
Conductivity - Field	10508	umhos/cm	1.	EPA 120.1	13 Oct 16	8:13	JSM
Radium 226	See Attached Report				31 Oct 16		OL
Radium 228	See Attached Report				13 Nov 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canto

30 NOV 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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= Due to concentration of other analytes

! = Due to sample quarterification: ND # ND-00016

+ = Due to internal standard response



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Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4741 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 9:52 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW80R

pH - Field Temperature - Field	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
	7.12 9.38	units Degrees C	NA NA	SM 4500 H+ B SM 2550B	13 Oct 16 13 Oct 16		JSM JSM
Conductivity - Field Radium 226 Radium 228	5683 See Atta	umhos/cm ached Report ached Report	1	EPA 120.1	13 Oct 16 31 Oct 16 13 Nov 16		JSM OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto 30NOV16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW105

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4742 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 11:57 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Received Result		Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.77	units	NA	SM 4500 H+ B	13 Oct 16 11:57	JSM
Temperature - Field	8.85	Degrees C	NA	SM 2550B	13 Oct 16 11:57	JSM
Conductivity - Field	7202	umhos/cm	1	EPA 120.1	13 Oct 16 11:57	JSM
Radium 226	See Attached Report				31 Oct 16	OL
Radium 228	See Attached Report				13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Cantep 30 NN 16

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW33

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4743 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 8:45 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

pH - Field	As Received Result		Method RL	Method Reference	Date Analyzed		Analyst
	6.50	units	NA	SM 4500 H+ B	13 Oct 16	8:45	JSM
Temperature - Field	7.32	Degrees C	NA	SM 2550B	13 Oct 16	8:45	JSM
Conductivity - Field	5399	umhos/cm	1	EPA 120.1	13 Oct 16	8:45	JSM
Radium 226	See Attached Report				31 Oct 16		OL
Radium 228	See Attached Report				13 Nov 16		OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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! = Due to sample quantity + = Due to int

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+ = Due to internal standard response



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

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW2-90

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4744 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 11:49 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Recei Result	lved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.87	units	NA	SM 4500 H+ B	13 Oct 16 11:49	JSM
Temperature - Field	8.29	Degrees C	NA	SM 2550B	13 Oct 16 11:49	JSM
Conductivity - Field	7601	umhos/cm	1	EPA 120.1	13 Oct 16 11:49	JSM
Radium 226	See Attached Report				31 Oct 16	OL
Radium 228	See Attached Report			13 Nov 16	OL	

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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



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Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR Radiochem Oct 2016

Sample Description: MW3-90

Page: 1 of 1

Report Date: 30 Nov 16 Lab Number: 16-W4745 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 10:12 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 6.3C ROI

	As Recei Result	ived	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.79	units	NA	SM 4500 H+ B	13 Oct 16 10:12	JSM
Temperature - Field	7.60	Degrees C	NA	SM 2550B	13 Oct 16 10:12	JSM
Conductivity - Field	5289	umhos/cm	1	EPA 120.1	13 Oct 16 10:12	JSM
Radium 226	See Atta	ached Report			31 Oct 16	OL
Radium 228	See Atta	ached Report			13 Nov 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Claudite K. Canto 30 NOV/6

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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! = Due to sample quantity

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+ = Due to internal standard response



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1 of 1

Samantha Marshall Montana Dakota Utilities 400 N. 4th

Project Name: MDU Heskett CCR Radiochem Oct 2016

Bismarck ND 58501

Report Date: 30 Nov 16 Lab Number: 16-W4746 Work Order #:82-3374 Account #: 002800

Date Sampled: 13 Oct 16 13:15 Date Received: 13 Oct 16 14:30 Sampled By: MVTL Field Services

PO #: 160249

Sample Description: MW104

Temp at Receipt: 6.3C ROI

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.89	units	NA	SM 4500 H+ B	13 Oct 16 13:15	JSM
Temperature - Field	10.6	Degrees C	NA	SM 2550B	13 Oct 16 13:15	JSM
Conductivity - Field	14302	umhos/cm	1	EPA 120.1	13 Oct 16 13:15	JSM
Radium 226	See Atta	ched Report			31 Oct 16	OL
Radium 228	See Atta	ched Report			14 Nov 16	$oldsymbol{L}$

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

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



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

Date: 11/16/2016

CLIENT:

MVTL Laboratories, Inc.

Project: 201682-3374

Lab Order:

S1610252

ASTM approved and recognized standards

CASE NARRATIVE

Report ID: S1610252001

Samples 16-W4731 Field Blank 1, 16-W4732 Dup 1, 16-W4733 MW101, 16-W4734 MW102, 16-W4735 MW103, 16-W4736 MW44R, 16-W4737 MW70, 16-W4738 Field Blank 2, 16-W4739 Dup 2, 16-W4740 MW13, 16-W4741 MW80R, 16-W4742 MW105, 16-W4743 MW33, 16-W4744 MW2-90, 16-W4745 MW3-90, and 16-W4746 MW104 were received on October 18, 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

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

Reviewed by: All



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID: ClientSample ID: 16-W4731 Field Blank 1

S1610252-001

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	10/28/2016 1713	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/28/2016 1713	MB
Radium 228	-2.7	pCi/L		1	Ga-Tech	11/12/2016 444	MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	11/12/2016 444	MB

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-002 ClientSample ID: 16-W4732 Dup 1

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Comments

Units Qual R	RL Method	Date Analyzed/Init
pCi/L 0	.2 SM 7500 Ra-B	10/28/2016 1713 MB
pCi/L	SM 7500 Ra-B	10/28/2016 1713 MB
pCi/L	1 Ga-Tech	11/12/2016 748 MB
pCi/L	Ga-Tech	11/12/2016 748 MB
p p	Ci/L 0 Ci/L Ci/L	Ci/L 0.2 SM 7500 Ra-B Ci/L SM 7500 Ra-B Ci/L 1 Ga-Tech

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Ε Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-003 ClientSample ID: 16-W4733 MW101

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016 3:55:00 PM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commonte

Result	Units	Qual	RL	Method	Date Analyzed/Init	
0.9	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551	MB
0.2	pCi/L			SM 7500 Ra-B	10/31/2016 1551	MB
0.8	pCi/L		1	Ga-Tech	11/12/2016 1053	MB
3.1	pCi/L			Ga-Tech	11/12/2016 1053	MB
	0.9 0.2 0.8	0.9 pCi/L 0.2 pCi/L 0.8 pCi/L	0.9 pCi/L 0.2 pCi/L 0.8 pCi/L	0.9 pCi/L 0.2 0.2 pCi/L 0.8 pCi/L 1	0.9 pCi/L 0.2 SM 7500 Ra-B 0.2 pCi/L SM 7500 Ra-B 0.8 pCi/L 1 Ga-Tech	0.9 pCi/L 0.2 SM 7500 Ra-B 10/31/2016 1551 0.2 pCi/L SM 7500 Ra-B 10/31/2016 1551 0.8 pCi/L 1 Ga-Tech 11/12/2016 1053

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 3 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-004

COC:

ClientSample ID: 16-W4734 MW102 201682-3374

Date Reported

11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016 11:41:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler: Matrix:

Water

Comments

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1551	MB
Radium 228	-1.6	pCi/L		1	Ga-Tech	11/12/2016 1357	MB
Radium 228 Precision (±)	3.4	pCi/L			Ga-Tech	11/12/2016 1357	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 4 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-005 ClientSample ID: 16-W4735 MW103

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016 9:42:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commente

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.2	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1551	MB
Radium 228	-5.1	pCi/L		1	Ga-Tech	11/12/2016 1701	MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	11/12/2016 1701	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 5 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-006 ClientSample ID: 16-W4736 MW44R

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016 8:07:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Ini	
Radionuclides - Total							•
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1551	МВ
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1551	MB
Radium 228	-6.4	pCi/L		1	Ga-Tech	11/12/2016 2005	МВ
Radium 228 Precision (±)	3.6	pCi/L			Ga-Tech	11/12/2016 2005	МВ

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory 1

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 6 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-007 ClientSample ID: 16-W4737 MW70

COC:

201682-3374

Date Reported

11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016 1:42:00 PM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	2.4	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	МВ
Radium 226 Precision (±)	8.0	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-3.0	pCi/L		1	Ga-Tech	11/12/2016 2310	MB
Radium 228 Precision (±)	3.0	pCi/L			Ga-Tech	11/12/2016 2310	MB

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 7 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-008 ClientSample ID: 16-W4738 Field Blank 2

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.15	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB	
Radium 228	0.2	pCi/L		1	Ga-Tech	11/13/2016 214	MB	
Radium 228 Precision (±)	2.3	pCi/L			Ga-Tech	11/13/2016 214	МВ	

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 8 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-009 ClientSample ID: 16-W4739 Dup 2

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commente

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.1	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB	
Radium 228	-3.0	pCi/L		1	Ga-Tech	11/13/2016 519	MB	
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	11/13/2016 519	MB	

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

Calculated Value С

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 9 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-010 ClientSample ID: 16-W4740 MW13

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016 8:13:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler: Matrix:

Water

Commonte

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	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-1.8	pCi/L		1	Ga-Tech	11/13/2016 823	MB
Radium 228 Precision (±)	2.8	pCi/L			Ga-Tech	11/13/2016 823	MB
radian 220 radision (±)	2.0	POIL			Ga-Tech	11/13/2010 0	120

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 10 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc. 2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-011 ClientSample ID: 16-W4741 MW80R

COC:

201682-3374

Date Reported

11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016 9:52:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commente

Result	Units	Qual	RL	Method	Date Analyzed/Init		
0.16	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	МВ	
0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB	
-2.8	pCi/L		1	Ga-Tech	11/13/2016 1127	MB	
3.4	pCi/L			Ga-Tech	11/13/2016 1127	MB	
	0.16 0.1 -2.8	0.16 pCi/L 0.1 pCi/L -2.8 pCi/L	0.16 pCi/L 0.1 pCi/L -2.8 pCi/L	0.16 pCi/L 0.2 0.1 pCi/L -2.8 pCi/L 1	0.16 pCi/L 0.2 SM 7500 Ra-B 0.1 pCi/L SM 7500 Ra-B -2.8 pCi/L 1 Ga-Tech	0.16 pCi/L 0.2 SM 7500 Ra-B 10/31/2016 1552 0.1 pCi/L SM 7500 Ra-B 10/31/2016 1552 -2.8 pCi/L 1 Ga-Tech 11/13/2016 1127	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range

Analyte detected below quantitation limits

М Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value С

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

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 11 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc. 2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-012 ClientSample ID: 16-W4742 MW105

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016 11:57:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler: Matrix:

Water

Commente

Comments								
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB	
Radium 228	0.2	pCi/L		1	Ga-Tech	11/13/2016 1432	MB	
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	11/13/2016 1432	MB	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank В

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 12 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID: ClientSample ID: 16-W4743 MW33

S1610252-013

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016 8:45:00 AM

DateReceived: 10/18/2016 11:43:00 AM FieldSampler:

Matrix:

Water

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/I	nit
Radionuclides - Total							
Radium 226	0.5	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-0.6	pCi/L		1	Ga-Tech	11/13/2016 1736	MB
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	11/13/2016 1736	MB

These results apply only to the samples tested.

Qualifiers:

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

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory 1

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 13 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-014 ClientSample ID: 16-W4744 MW2-90

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016 11:49:00 AM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Commonte

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init	
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1552	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1552	MB
Radium 228	-4.3	pCi/L		1	Ga-Tech	11/13/2016 2040	MB
Radium 228 Precision (±)	3.3	pCi/L			Ga-Tech	11/13/2016 2040	MB

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

М Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 14 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-015 ClientSample ID: 16-W4745 MW3-90

COC:

201682-3374

Date Reported

11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/12/2016 10:12:00 AM

DateReceived: 10/18/2016 11:43:00 AM

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	10/31/2016 1831	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1831	MB	
Radium 228	-0.2	pCi/L		1	Ga-Tech	11/13/2016 2344	MB	
Radium 228 Precision (±)	3.2	pCi/L			Ga-Tech	11/13/2016 2344	MB	

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

Page 15 of 16



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

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-3374

Lab ID:

S1610252-016 ClientSample ID: 16-W4746 MW104

COC:

201682-3374

Date Reported 11/16/2016

Report ID

S1610252001

WorkOrder:

S1610252

CollectionDate: 10/13/2016 1:15:00 PM

DateReceived: 10/18/2016 11:43:00 AM

FieldSampler:

Matrix:

Water

Comments

Analyses	Result	Units	Qual	RL	Method	Date Analyzed/Init		
Radionuclides - Total								
Radium 226	0.5	pCi/L		0.2	SM 7500 Ra-B	10/31/2016 1831	MB	
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	10/31/2016 1831	MB	
Radium 228	-0.7	pCi/L		1	Ga-Tech	11/14/2016 249	МВ	
Radium 228 Precision (±)	2.9	pCi/L			Ga-Tech	11/14/2016 249	MB	

These results apply only to the samples tested.

Qualifiers:

В Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

С Calculated Value

Holding times for preparation or analysis exceeded Н

Analyzed by another laboratory

Not Detected at the Reporting Limit ND

Spike Recovery outside accepted recovery limits

Reviewed by:

Wade Nieuwsma, Assistant Laboratory Manager

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

ANALYTICAL QC SUMMARY REPORT

CLIENT:

Project:

Work Order:

MVTL Laboratories, Inc.

S1610252

201682-3374

Date: 11/16/2016

Report ID: S1610252001

Radium 228 by Ga/Tech	Sample Type MBLK		Units	: pCi/L					
MB-396 (11/15/16 10:41)	RunNo: 140855	PrepI	Date: 10/2	26/16 14:00	Bato	chID: 12533			
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua		
Total Radium 228	ND	1							
Radium 228 by Ga/Tech	Sample Type LCS			Units: pCi/L					
LCS-396 (11/11/16 16:26)	RunNo: 140855	PrepD	Date: 10/2	6/16 14:00	Bato	chID: 12533			
Analyte	Result	Result RL Spike Ref S					Qua		
Total Radium 228	38					61.3 - 120			
Radium 228 by Ga/Tech	Sample Type MS		Units	: pCi/L					
MS-396 (11/11/16 22:35)	RunNo: 140855	PrepD	Date: 10/2	6/16 14:00	Bato	hID: 12533			
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua		
Total Radium 228	37	1	39.1	ND	93.3	64.3 - 120			
Radium 228 by Ga/Tech	Sample Type MSD		Units	: pCi/L					
MSD-396 (11/12/16 01:39)	RunNo: 140855	PrepE	Date: 10/2	6/16 14:00	Bato	:hID: 12533			
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qua		
Total Radium 228	40	40 1 37 8			101	20			
Radium 226 in Water -	Sample Type MBLK		Units	: pCi/L					
MB-1678 (10/28/16 14:58)	RunNo: 140308	PrepD	Date: 10/2	4/16 0:00	Bato	:hID: 12475			
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-1678 (10/28/16 14:58)	RunNo: 140307	PrepD	Date: 10/2	4/16 0:00	Bato	hlD: 12475			
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua		
Radium 226	5.7	0.2	5.99		95.7	67.1 - 122			
Radium 226 in Water -	Sample Type LCSD		Units	: pCi/L					
LCSD-1678 (10/28/16 14:58)	RunNo: 140307	PrepD	ate: 10/2	4/16 0:00	Bato	hID: 12475			
Analyte	Result	RL	Conc	%RPD	%REC	% RPD Limits	Qual		
Radium 226	6.1	0.2	5.7	6.41	102	20			
Radium 226 in Water -	Sample Type MS		Units	: pCi/L					
S1610252-003AMS (10/31/16 15:51)	RunNo: 140414	PrepD	Pate: 10/2	6/16 0:00	Bato	hID: 12480			
Analyte	Result	RL	Spike	Ref Samp	%REC	% Rec Limits	Qua		
Radium 226	10.6	0.2	12	0.9	80.8	65 - 131			

Qualifiers:

- Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect



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

Chain of Custody Record

Page_	1	of	2	
	4	O,	-	

	Phone: (701) 2	258-9720												
	Toll Free: (800) 279-6885 Fax: (701) 258-9724 Company Name and Address: Account #:											201682-3374		
Company Nam	e and Address:			Account #	t:						Ph	one #:		
												701-258-9720		
		<u>VTL</u>		Contact:							Fa	x #:		
		Broadway			Claud	lette	e				<u> </u>	For faxed report check box		
Bismarck, ND 58501 Name of Billing Address (indicate if different from above):				Name of S	Sampler:						E	-mail: ccarroll@mvtl.com		
billing Address	s (indicate if differen	t from above):										For e-mail report check box		
	20.0			Quote Nu	mber						Da	te Submitted:		
<u>PO Box 249</u> <u>New Ulm, MN 56073</u>												10/13/2016		
	New Ulm	, IVIN 56073		Project Na	ame/Numb	er:					Pu	rchase Order #:		
		0		<u> </u>						BL5688				
		Sample Information	·	1	T	Bottle Type					Analysis			
\$161025	2					þ	HN03	VOC Vials Umpreserved						
IML Lab			Sample	Date	Time	Untreated	E	Via	Glass Jar					
Number	MVTL Lab Number	Client Sample ID	Туре	Sampled		ntre	00	S E	las	Other		Analysis Degrined		
001	16-W4731	Field Blank 1	1900	· · · · · · · · · · · · · · · · · · ·	Jampieu	尸	-	>	19	10	┼	Analysis Required		
				10/12/16		ļ	-	<u> </u>	ļ	├	<u> </u>	Ra226 & Ra228 on all		
002	16-W4732	Dup 1		10/12/16		<u> </u>								
003	16-W4733	MW101		10/12/16	1555									
an4	16-W4734	MW102		10/12/16	1141									
<u></u> 005	16-W4735	MW103		10/12/16	942									
	16-W4736	MW44R		10/12/16	807									
<u></u>	16-W4737	MVV70		10/12/16	1342									
රුර	16-W4738	Field Blank 2		10/13/16										
009	16-W4739	Dup 2		10/13/16										
010	16-W4740	MW13		10/13/16	813									
Comments: All	results must be rep	orted as a numerical value									-	<u> </u>		

4coler5

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
C. Jackson	10/13/16	1700		Kathu Boup	15.18.16	11:43	13.6
							13.2



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

Chain of Custody Record

Page 2 of 2 .

	Phone: (701) : 300) 279-6885	258-9720 Fax: (701) 258-9724									201682-3374		
Company Nam	e and Address:			Account #	t :						Phone #:		
	NΛ	VTL		Contact:							701-258-9720		
		v r∟ Broadway		Contact:	Claud	latte					Fax #:		
		k, ND 58501		Name of S		ielle					For faxed report check box E-mail: ccarroll@mvtl.com		
Billing Address	s (indicate if differen	t from above):	·		ampion.						For e-mail report check box		
				Quote Nui	mber						Date Submitted:		
		ox 249									10/13/2016		
	New Ulm	<u>, MN 56073</u>		Project Na	ame/Numbe	/Number:					Purchase Order #:		
		Sample Information				T	D		т.,		BL5688		
		Cample information					-	ottle	<u>' y</u>	pe	Analysis		
IML Lab Number	MVTL Lab Number	Client Sample ID	Sample Type	Date Sampled	Time Sampled	Untreated	1000 ml HNO3	VOC Vials Umpreserved	Glass Jar	Other	Analysis Required		
011	16-W4741	MW80R		10/13/16	952						Ra226 & Ra228 on all		
015	16-W4742	MW105		10/13/16	1157								
03	16-W4743	MW33		10/13/16	845								
014	16-W4744	MW2-90		10/13/16	1149								
									-	 			
015	16-W4745	MW3-90	0/12/16.	10/13/16	1012								
015	16-W4745 16-W4746	MW3-90 MW104	0/12/16. Aa	10/13/16 10/13/16	1012 1315								
				10/13/16									
			AL	10/13/16									
			AL	10/13/16									

Transferred by:	Date:	Time:	Sample Condition:	Received by:	Date:		Temp:
C. Jackson	10/13/16	1700		Rathy Boro	10.18.16	11:43	12.10

13.6

MVTL Calibration Worksheet

Site: MDU He	skett	<u>Technician</u>	: Darry Mesnay
Instrument (Circle One):	#1 650 MDS 08F100203	#2 650 MDS 04H14736	#3 556 MPS 12E102056
pH Buffer 7 Buffer 10 Conductivity Buffer 10000	Pre Site Calibration Pre Site Calibration	mv Range +/ Post Cal Range mv 50 6.95-7.05	pH Temp °C Reading Buffer 7 14,50 6,97
ORP 231 mV @ 25C DO	[6:24] 232,9 231,0 [6:6] 7.52 9,02	±10 mV Barometric Pressure (mm Hg) mg/L 7 (3, 7	
pH Buffer 7 Buffer 10 Conductivity Buffer 10000 ORP 231 mV @ 25C DO	Time: Temp °C Pre Cal Post Cal	Post Cal Range mv 50 6.95-7.05 0 +/- 50 9.95-10.05 -180 +/- 50 Check ±10% Buffer 5000 ±10 mV Barometric Pressure (mm Hg)	pH Temp °C Reading Buffer 7
		mg/L	

MVTL Calibration Worksheet

Site: MDU Hes	skett					Technician:	Jerem	i Pleye		
Instrument (Circle One):	#1 65	50 MDS 08F10	0203	#2 65	60 MDS 04H14			l v	6 MPS 12E102	.056
		Pre	Site Calibra	ation			Γ	Po	st Site Chec	k
Date: (2 Oct 1)	6	Time: 064	О	,			-	rime: 170	6	
						mv Range +/-	l f			
На	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	50		рН	Temp °C	Reading
Buffer 7	[9,(5	7.03	7.00	6.95-7.05	-29.5	0 +/- 50		Buffer 7	19,02	7.02
Buffer 10	19,19	10.07	(0,00	9.95-10.05	-205,9	-180 +/- 50				
Conductivity						Check		Conductivity		
Buffer 10000	7.64	10414	(0000	±10%	Buffer 5000	4995		Buffer 5000	16:11	4998
ORP										
231 mV @ 25C	18.67	226.4	237.5	±10 mV						
DO				Barometr	ic Pressure (m	nm Ha)				ļ
	15,70	144.4%	101.5%	mg/L	771.08					
										•
Date: 13 Oc	f 16	Time: 070	0					Time: 1330		
pН	Temp °C	Pre Cal	Post Cal	Post Cal Range	mv	mv Range +/- 50		рН	Temp °C	Reading
Buffer 7	20,07	6.99	7.00	6.95-7.05	-28,8	0 +/- 50		Buffer 7	19.96	7.01
Buffer 10	[9,83	(D,00	(O,DO	9.95-10.05	-205.7	-180 +/- 50				
Conductivity						Check		Conductivity		
Buffer 10000	20,54	9781	9999	±10%	Buffer 5000	4989		Buffer 5000	19.87	5002
ORP										
231 mV @ 25C	20,51	232,9	237.5	±10 mV						
DO			<u></u>	Baromet	ric Pressure (n	nm Hg)		•		
	27.93	92.4%	99.8%	mg/L	758,1	7				



Water Level

Phone: (701) 258-9720

Sampling Pe	ersonnel:	Viesn	vez	Company: MDU Heskett
Well ID MW1-90	Date (30efl (Time 1235	Depth to Water	Comments



Groundwater Assessment

Company:	MDU Heskett
Event:	2016
Sample ID:	MW 101
Sampling Personal:	and . Id.

2616 E. Broadway Ave, Bis	marck, ND					Sampling F	ersonal:	Jerre	in Mens	_	
Phone: (701) 258-97	720								t		
Veather Conditions:		Temp:	45 °F	Wind:	S @ 5-10		Precip	: Sunn	ıy /Partİy C	loualy / Clo	udy
•	Well Info	rmation				Sa	ampling I	nformatio			
Well Locked?	Yes	4			Purging Method	i: Blac	der		Coi	ntrol Setting	s
Well Labeled?	yes	No			Sampling Method	i: Blad	lder	1		i4	sec.
Casing Straight?	Ves	No			Dedicated Equip?	: Yes	No	1	Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Visible		Duplicate Sample?	Yes	₫₽	1 1	PSI:	35	
Repairs Necessary:					Duplicate Sample ID):			Pumping Ra	ate: / ට	m∐min
Casing	Diameter:		2"								
Water Level Befo	ore Purge:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	3712 ft		Purge Date	: 12 oct	<i>'b</i>	Time Purgi	ing Began:	1435	am/pm
Total W	ell Depth:	-	ft		Well Purged Dry	? Yes	(No)	Time P	urged Dry:	6	am/pm
Wel	li Volume:	-	liters		Sample Date	e: 120ct1	6	Time of	Sampling:	1555	am/pm
Depth to Top	of Pump:		ft		-				·····		
Water Level Afte	r Sample:		42.60 ft		Bottle (CCR: 1L Raw	, 500mL Ni	tirc, 500mL 1	Vitric (filtere	d), 4-1L Nitr	ic
Measuremen	t Method:	Electric V	Vater Level Indicator		List:				· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	
			Field	Measura	amente			***************************************			

Stabili:		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	1440	9,14	4673	6.77	3.35	34,6	212.0	38,35	500	Clear
2	1455	<i>8:</i> 93	4654	6.76	2.41	12.8	31.7	39,58	1500	Clear
3	4450 1510	8.97	4646	6.76	2,53	16.3	13.2	40.07	iSão	Clear
4	1455 ₁₅₂		4662	6.76	2,70	21.3	14.6	40.73	1500	Clar
5	1530	9,07	4676	6,75	2.72	25,2	11.5	40.89	500	Clea
6	1535	8.99	4680	6.75	2.67	24.2	8,75	41.05	500	. cle
7	1540	9.05	4678	6.76	2,68	21.4	723	41.24	500	Clear
8	1545	વ.૭ા	4682	6,76	2.64	18.4	5.92	41.40	500	Cles
9	1550	9.04	4687	6.76	2.62	15,2	4,70	41.48	500	Cles
10	1555	9.12	4690	6,76	2.60	13.6	408	41.58	500 ~	cles
Stabilized:	/Yes	No				T	ntal Volume	Removed:	REPORT	ml

Total Volume Removed: 8.000 mL

Comments:



Groundwater Assessment

Company:	MDU Heskett
Event:	2016
Sample ID:	MW 102
Sampling Personal:	lad - Ed

2010 L. Bicadway Ave, Bi	Sinaick, ND							Sampling Pe	ersonal:	Jegen	7 Flyre		
Phone: (701) 258-9	720			•			_				1 1 1 1		
Weather Conditions:		Temp:	·45 °1	F	Wind:	N 05-	10		Precip	: Sun	ny / Partly C	loudy/Clo	บ๊เปิง
	Well Info	rmation						Sa	mpling l	nformation			<i></i>
Well Locked?	Yes	No				Purgir	ng Method:	Blad	der		Co	ntrol Setting	s
Well Labeled?	Ø¥ê\$	No				Samplir	ng Method:	Blad	der		Purge:	4	sec
Casing Straight?	Yes	No				Dedicat	ed Equip?:	(Yes)	No		Recover:	56	sec
Grout Seal Intact?	Øes .	No	Not Vis	sible		Duplicate	Sample?:	Y.ES)	No	1	PSI:	20	
Repairs Necessary:						Duplicate :	Sample ID:	Dy	1		Pumping R	ate: /07	mL/mir
Casing	Diameter:		2"							J			
Water Level Bef	ore Purge:		18,13	ft		Р	urge Date:	12 Oct 1	6	Time Purg	ing Began:	1051	@in/pn
Total V	Vell Depth:			ft		Well Pr	urged Dry?	Yes	(ND)	Time F	urged Dry:	/	am/pn
We	ell Volume:			liters		Sa	mple Date:	12 Oct 10	2		f Sampling:	1141	am/pn
Depth to Top	o of Pump:		The same of the sa	ft			,			· l			- CLLAT PIT
Water Level After	er Sample:	Z	2.81	ft		Bottle	CC	R: 1L Raw.	500mL Ni	tire, 500ml	Nitric (filtere	d) 4-11 Nitr	ic
Measuremer	nt Method:	Electric	Water Level Ir	ndicator		List:					(III.O.O	α), IL INILI	10

Field Measurements

						1				
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	1056	8,74	9510	6,91	2.44	-46.4	3,3g	19,16	500	Clean
2	1601	8,77	9438	6.87	2.44	-43.8	3,62	19,49	Soo	Clean
3	1106	8,64	9179	6.83	2.49	-3 D.6	2.32	14.64	São	Clear
4	411	6.CB	8914	6:32	2,51	-27.8	1,93	19.94	500	cles
5	11160	8,90	8681	6.81	2,52	-270	1.44	20,04	500	Clear
6	1121	8.93	8377	6.81	2,56	- 28,1	0,85	20,26	500	Clear
7	1126	8,97	E9 02	6.82	2,61	-29.9	0.63	20,56	500	Clear
8	1131	8.86	7573	6.89	3:07	-27.1	0.52	20,72	500	Cles
9	1136	8,83	7559	6.85	3,28	-24.6	0.48	20,80	500	Clear
10	1141	8.62	7677	6.86	3,27	-25,7	0.46	20.88	500	clear
Stabilized:	Yes7	No				To	otal Volume	Removed:	Samo	ml

Total Volume Removed: 5000 mL



Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	
Sample ID:	MW 103	_
Sampling Personal:	la a color	_

Phone: (701) 258-9	720						-	Sampling Fi	ersoriai.		- Pen-		
Weather Conditions:		Temp:	40 .	=	Wind:	NOS.	-16		Precip	: Sunr	ny / Partly C	loudy (Clo	udv
	Well Info	rmation				,		Sa	mpling l	nformatio			
Well Locked?	Yes	· Wo				Purgi	ng Method:	Blad				ntrol Setting	is
Well Labeled?	Xes	No				Sampli	ng Method:	Blad	der		Purge:		sec
Casing Straight?	(Yes)	No				Dedicat	ted Equip?:	(Yes)	No	1	Recover:		sec
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate	Sample?:	Yes	No	1	PSI:	25	
Repairs Necessary:						Duplicate	Sample ID:				Pumping R	ate: 100	mL/mii
Casing	Diameter:		2"							_	<u> </u>		
Water Level Bef	ore Purge:		3,25	ft		F	ourge Date:	12 Oct 16	9	Time Purg	ing Began:	r2907	- am/pn
Total W	Vell Depth:			ft		Well P	urged Dry?	Yes	(NO)		urged Dry:		am/pn
We	ell Volume:	<		liters		Sa	mple Date:	12 Octle		Time of	Sampling:	0942	
Depth to Top	o of Pump:	. ~	Company of the last of the las	ft						-1		, , ,	70.00
Water Level After	er Sample:	3	7.36	ft		Bottle	CC	R: 1L Raw,	500mL Nit	tirc. 500mL	Nitric (filtere	d) 4-11 Niti	ric.
Measuremen	nt Method:	Electric W	ater Level Ir	ndicator		List:		<u> </u>			(1110)		
				<u></u>		,							

Field Measurements

Stabili		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	0912	7.80	4849	6.74	5.21	232,8	2,72	34,21	500	Clea
2	0917	7.76	4683	6,75	5,63	231.7	2.81	34,43	500	Clear
3	0922	7.84	4891	6.75	5,69	230.8	1.92	34.81	500	Clea
4	0927	7.81	4891	6,75	5.66	230,3	1.07	35,06	500	Clea
5	0932	7.79	4887	6.74	5,63	229.8	1.21	35.35	500	Clear
	0937	7.76	4883	6,74	5.59	279,3	1.38	35.39	500	Cles
7	0942	7.83	4871	6.74	5.44	227.8	1.47	35.52	500	Clear
8										
9										
10										



Company:	MDU Heskett
Event:	2016
Sample ID:	MWYYR

Phone: (701) 258-9720

Groundwater Assessment	Sample ID:	MWYYR	
	Sampling Personal:	Jeremy then	
,			

Weather Conditions:		Temp:	40 °F		Wind:	NO5-10		Precip	: Sunn	v /cPartly C	loudy / Clou	ıdv
•	Well Info	rmation					Sa	ampling I	nformatio			
Well Locked?	O PES	(No)				Purging Method		dder			ntrol Setting	
Well Labeled?	(es)	No				Sampling Method	Blac	dder	1	Purge:	- · ·	sed
Casing Straight?	Yes	No				Dedicated Equip?	Yes	No	1	Recover:	56	sec
Grout Seal Intact?	(Yes)	No	Not Visib	ie		Duplicate Sample?:	Yes	(No)	1	PSI:	20	
Repairs Necessary:						Duplicate Sample ID		•	1	Pumping R		mL/mi
Casing	Diameter:		2"							1		
Water Level Bef	ore Purge:		26,71	ft		Purge Date	120ct1	6	Time Purgi	ng Began:	0747	am/pr
Total V	Vell Depth:			ft		Well Purged Dry?	Yes	40	Time Pu	urged Dry:	7	am/pr
We	ell Volume:			liters		Sample Date	: 12 Oct 1	6	Time of	Sampling:	0807	am/pr
Depth to Tor	o of Pump:		-	ft								
Water Level After	er Sample:		28,62	ft		Bottle C	CR: 1L Raw	, 500mL Nit	tirc, 500mL N	litric (filtere	ed), 4-1L Nitr	ic
Measuremer	nt Method:	Electric V	later Level Indi	cator		List:			-	······································		

Field Measurements

C4_LIII	izatîon									
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	0752	7.54	8684	6.56	28,5	252.6	1.05	28.81	500	Clear
2	0757	7.70	8849	6.57	2.89	251.3	0.63	28.82	500	Clear
3	0802	7.61	8635	6,58	2.80	249,7	0,35	28.81	500	Clean
4	0807	7.52	පිරි3පි	6.58	2.71	248.5	0,33	28,82	50	Clea
5										
6										
7										
8										
. 9										
10	(2)									
Stabilized:	/Yes/	No				To	otal Volume	Removed:	7 200	mi

Comments:



Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	
Sample ID:	Mw70	
Sampling Personal:	Seren plan	

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

						-					·
Veather Conditions:		Temp:	45 °F		Wind:	5 05-10	Precip	: Sunr	ny / Partly C	loudy / Clou	dy
	Well Info	rmation				_	Sampling	Informatio	n		
Well Locked?	Yes	No				Purging Method:	Bladder		Cor	ntrol Settings	
Well Labeled?	Yes	No				Sampling Method:	Bladder		Purge:	2	sec.
Casing Straight?	Yes	No				Dedicated Equip?:	∕Yesy No		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Vis	ible		Duplicate Sample?:	Yes (No)		PSI:	25	
Repairs Necessary:			•			Duplicate Sample ID:			Pumping Ra	ate: 100	mL/min
Casing	Diameter:		2"								
Water Level Bef	ore Purge:	2	1:62	ft		Purge Date:	12 Oct. 16	Time Purg	ing Began:	1322	am/pm
Total V	Vell Depth:	0-	Constitution of the Consti	ft		Well Purged Dry?		Time F	Purged Dry:		am/pm
We	ell Volume:	٠		liters		Sample Date:	12 Oct 16	Time of	f Sampling:	1347	am/pm
Depth to Top	o of Pump:	,		ft							
Water Level After	er Sample:	7	.પ.૩ <i>૦</i>	ft		Bottle CC	CR: 1L Raw, 500mL N	itirc, 500mL	Nitric (filtere	d), 4-1L Nitri	3
Measuremer	nt Method:	Electric \	Water Level In	dicator		List:					
					-						

Field Measurements

Stabili (3 cons	zation 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	1327	8.52	3942	7.02	2,55	43.7	3.86	22,09	500	Clear
2	1332	8.3 <i>0</i>	3940	7.02	2,37	46.9	2.27	22,15	500	Clear
3	1337	8.33	3927	7.01	2.36	51.5	1,37	22,20	Seo	Cler
4	1342	8.26	3935	7,02	2.36	54.3	0,60	22,23	SOO	Cles
5	1347	8,32	3932	7.01	2.34	56.5	0.63	22.33	500	Clear
6										
7										
8										
9										
10	(C)	NI					otal Valuma	<u> </u>	2 - 4/2	mi

Stabilized: (Yès) No

Total Volume Removed: 2500 mL

Comments:



Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	
Sample ID:	Mw i?	
Sampling Personal:	lan edi	

Phone: (701) 258-9	9720							Sampling Pe	ersonal:	Jery	lin		······
Weather Conditions:		Temp:	30 ·	F	Wind:	NOS-10	-	·	Precip:	Sunr	1 Daniel 1	Cloudy PCIo	
	Well Info					Sampling Information						aouey/ Cic	oudy
Well Locked?	Yes	(6))				Purging M	lethod:	Blade				ntrol Setting	
Well Labeled?	(7es)	No				Sampling M		Blade			Purge:	muor setung	
Casing Straight?	Yes)	No				Dedicated E		Xes)	No		Recover:	56	sec.
Grout Seal Intact?	Yes	No	Not Vis	sible		Duplicate San		Yes	(No)		PSI:		sec.
Repairs Necessary:						Duplicate Sam			(19)				
Casing	Diameter:		2"				7-1-1		,		Pumping R	ate: 100	mL/min
Water Level Befo	ore Purge:	ં3	0.52	ft		Purae	Date:	13. Oct 16		Time Purgi	ing Began:	AT 50	
Total W	/ell Depth:			ft		Well Purge		Yes	No		urged Dry:	6753	@m/pm
We	ell Volume:			liters				13 Oct 16	(NO)			· · · · · ·	am/pm
Depth to Top	of Pump:	*****		ft			Date.	12 001 0	· · · · · · · · · · · · · · · · · · ·	THITIE OF	Sampling:	0813	am/pm
Water Level Afte	er Sample:	Ē	1.13	ft		Bottle	<u></u>	D: 11 Dow 4	EOOmal Nitt	500 ! 1	111 1 /84		
Measuremen	t Method:		Vater Level Ir	ndicator		List:	- 00	R: 1L Raw, 5	DUUITIL INIT	rc, 500ml i	Nitric (filtere	d), 4-1L Nit	ric
						L							
				Field N	/leasure	ments							

	ization secutive) Time	Temp (°C)	Spec. Cond. ±5%	pH ±0.1	DO (mg/L) ±10%	ORP (mV) ±20 mV	Turbidity (NTU) ±10%	Water Level (ft)	mL Removed	Discription: Clarity, Color, Odor, Ect. clear, slightly turbid, turbid
1	07-58	6.70	10513	6.85	3,04	240,8	4.88	31,00	500	Clay
2	0803	7.03	16540	6,90	2.43	239,9	3,58	31,07	500	Clear
3	OBOB	7,35	10509	6,88	2.42	238,0	2,57	31,07	500	clear .
4	0813	7,39	1050B	6.86	2,44	2383	1,50	31,08	São	Clen
5										~~~
6										
7										,
8										
9										
10										
Stabilized: Comments		No	•			To	tal Volume	Removed:	Zeco	mL.



Groundwater Assessment

Company:	MDU Heskett		
Event:	2016		
Sample ID:	HW8R.	MW80R	RE
Sampling Personal:	Jan W.		13No/10

Phone: (701) 258-9720

Weather Conditions:		Temp:	40 .	F	Wind:	809-11	5		Precip	: Sun	ny /(Partly C	Loudy / Clo	udv
	Well Info	rmation						Sa	mpling	Informati		<u>-</u>	
Well Locked?	Yes	No				Purgir	ng Method:	Blad				ntrol Setting	s
Well Labeled?	<u> Ağş</u>	No				Samplin	ng Method:	Blad	der	7	Purge:		sec
Casing Straight?	(G }	No	****			Dedicat	ed Equip?:	(Fes	No	1	Recover:	56	sec
Grout Seal Intact?	Ŷ e9	No	Not Vi	sible		Duplicate	Sample?:	(Yes	No	1	PSI:	20	300
Repairs Necessary:						Duplicate (Sample ID:	Ding!	2_	1	Pumping R		mL/mir
Casing	Diameter:		2"					t			, amping it	a.c. 700	11111/11111
Water Level Befo	ore Purge:	M.	71	ft		Р	urge Date:	13 Oct 1.	6	Time Puro	ing Began:	0922	@m/pm
Total W	'ell Depth:			ft		Well Pr	urged Dry?	Yes	(No)		ourged Dry:	<u> </u>	am/pm
Wel	ll Volume:			liters			mple Date:	13 Oct 10					@n/pm
Depth to Top	of Pump:			ft					<u> </u>		p	<u> </u>	(ani) pti
Water Level Afte	r Sample:	15	rðO	ft		Bottle	CC	R: 1L Raw	500ml Ni	fire 500ml	Nitric (filtere	d\	
Measurement Method:		Electric Water Level Indicator			List:				are, courie	TARIO (IIIGIE	u), +- (∟ !\lu	10	
						<u></u>							

Field Measurements

		T								
	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	2927	9.33	5693	7, 4	2:86	230.3	7.8 3	14.98	500	Clear
2	0932	9.35	5701	7.12	20 0B	228.6	1.51	15.02	550	Clear
3	0937	9,44	5688	7,12	1.96	227.3	1,24	15,04	SBD	Clea
4	0942	9,43	5884	7,12	1.83	225.9	(.53	19.06	500	Cles
5	0947	9,35	569%	7,12	le75	724.4	1.58	15.04	500	Clear
6	0952	9,38	5683	7,12	1.74	223.0	1,62	15.05	500	Clea
7										
8										
9										
10		<u> </u>								
tabilized	: <i>[</i> (es)	No				To	otal Volume	Removed:	2020	ml

Comments:



Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	
Sample ID:	MWIOS	
Sampling Personal:	frem Els	

Phone: (701) 258-9720

							_						
Weather Conditions:		Temp:	40 ·	-	Wind:	5 @ 5~	O		Precip	: Sun	ny Partiv C	Houdy / Clo	udv
1	Well Info	rmation						Sa	mpling	Informati			· · · · · · · · · · · · · · · · · · ·
Well Locked?	Yes	10				Purging	Method:	Blad	lder		Co	ntrol Setting	ıs
Well Labeled?	<u>Yes)</u>	No				Sampling	Method:	Blac	lder		Purge:	4	sec
Casing Straight?		No				Dedicate	d Equip?:	(Tes)	No		Recover:	56	sec
Grout Seal Intact?	Yes)	No	Not Vis	sible		Duplicate S	Sample?:	Yes	NO		PSI:	15	
Repairs Necessary:						Duplicate Sa	ample ID:	<u> </u>	_		Pumping R	ate: /00	mL/mir
Casing	Diameter:		2"							!			
Water Level Befo	re Purge:	1	3,44	ft		Pu	rge Date:	13 Oct 1	6	Time Purg	ing Began:	1122	am/pn
Total W	'ell Depth:	_		ft		Well Pur	ged Dry?	Yes	(6N)	Time F	urged Dry:		am/pn
We	ll Volume:	***		liters		Sam	ple Date:	13 Oct	16	Time o	f Sampling:	1157	(añ)/pn
Depth to Top	of Pump:	water	Particular Section 1	ft									(C. 3.) D.
Water Level Afte	r Sample:	13	70	ft		Bottle	CCF	R: 1L Raw.	500mL Ni	fire, 500ml	Nitric (filtere	d), 4-1L Nitr	ic
Measurement Method: Electric Water		Vater Level Ir	ndicator		List:				, 0001172	ruaro (mero	·u), 11. 1111	10	
						1							

Field Measurements

	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	1127	9,06	6314	6.80	3,13	231.7	7.69	13,74	500	Clear		
2	(132	8.91	6287	6,80	1.64	228,4	4.14	13,76	500	Clear		
.3	1137	8,83	6465	6.20	649	2523	3,11	13.76	500	Ckar		
4	1145	8,87	6768	6.79	1.45	222.9	2,94	13.76	500	Clean		
5	1147	8.87	6935	6.78	1.46	221.3	3,61	13.77	500	Class		
6	lisz	8.84	7091	6.77	li4S	219.5	3,92	13.79	500	Cles		
7	lis7	8:85	7202	6.77	1.45	218.0	3,83	13,80	500	Cles		
8.								-				
9												
10												

Stabilized: (Yes) No Comments:

Total Volume Removed: 3500 . mL



Field Datasheet

Groundwater Assessment

Temp: 2-3

Company:	MDU Heskett	
Event:	2016	
Sample ID: hw	-33	
Sampling Persor	al: Darren Nierwan	

sec. sec.

m∐min

√am/pm am/pm

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

Weather C	Conditions:		Temp:	23	°F	Wind:	Ligh	1		Precip:	Sunny / Partly (Cloudy / Cloudy
		Well Info	rmation					,	Sa	mpling l	nformation	
We	ell Locked?	Yes	/Ño				Purgir	ng Method:	Blad			ontrol Settings
We	ll Labeled?	Yes	No				Samplir	ng Method:	Blad	der	Purge:	5
Casin	ig Straight?	γes	No		Well-state street		Dedicat	ed Equip?:	(Yes)	NO-12	Recover:	55
Grout S	Seal Intact?	Yes	No	Not.V	isible		Duplicate	Sample?:	Yes	<u> </u>	PSI:	- 25
Repairs N							Duplicate:	Sample ID:			Pumping F	Rate: 100 m
		Diameter:		2"								
Wat	er Level Bet		4	2,32	ft			urge Date:	130ct	<u> 16</u>	Time Purging Began:	8805 Par
		Vell Depth:			ft		Well Purged Dry?		Yes No		Time Purged Dry:	and an
		ell Volume:		. / ; = 5	liters		Sample Date: 130 Ut 16 Time of Samp					0845 pár
Depth to Top of Pump: 44.53 t											· · · · · · · · · · · · · · · · · · ·	
Water Level After Sample: 42 Measurement Method: Electric Wate					ft		Bottle	CC	CR: 1L Raw,	500mL Nit	irc, 500mL Nitric (filter	∍d), 4-1L Nitric
[Measuremer	nt Method:	Electric V	Vater Level	Indicator		List:					
Field Measurements												
Stabi	lization	Temp	Spec. DO		ORP	Turbidity	Water	mL		Discription:		
(3 cons	secutive)	(°C)	Cond.	рН	(mg/L)	(mV)	(NTU)	Level (ft)	1	Clarity	, Color, Odor, Ect.	
SEQ#	Time		±5%	±0.1	±10%	±20 mV	±10%	0.25 ft		clear,	slightly turbid, turbid	1
1	0810	7.05	5586	6.56	3,81	3.2	6.20	42,90	500	12		
2	0815	6,79	5487	6.53	3,05	276	7,93	42,82	-500	de	_	1
3	1825	6,55	5454	6.52	3.18	45.3	4.84	42:82	1000	cl		-
4	0630	6.67	544/	6.51	3006	46.1	3.30	42.82	500	01		1
5	0835	6,80	5-427	150	2.80	47.0	r. 5 3	4282	500	18		-
6	0840	6.96	5412	6.50	2,92	17.0	1.52	4282	500	11		1
7	6845	7,32	5399	6,50	2,98	40 in	1.41	42.82		10		†
8	70 10	1.70	12201	10130		19:0	13 61	(Lul) U	1 3.00	CC		1
9			-			 						-
10												1
Stabilized	: Yes	No		I	l .	T	otal Volume	Removed:	41100	mL		J
Comment	ts: \		=						7	-		



Phone: (701) 258-9720

Field Datasheet

Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	

Sample ID:

Sampling Personal:

sec. sec.

mL/min

am/pm am/pm

				u u									
Weather C	Conditions	:	Temp:	40	°F	Wind:	Ligh	7	· · · · · · · · · · · · · · · · · · ·	Precip:	Sun	nv// Partly (Cloudy / Clou
		Well Info	ormation	, -			700		Sa		nformatio	/	noddy r Olol
We	ell Locked?	Yes	NGO				Purgi	ng Method:	Blac		Indination		ntrol Setting
We	II Labeled?	yeş	No					ng Method:	Blac			Purge:	がい Setting: ちら
Casin	g Straight?	Yes	No	- Alexander				ted Equip?:	Yes	Nó		Recover:	
Grout S	Seal Intact?	Yes	No	Not V	/isible			Sample?:	Yes	√No		PSI:	
Repairs No	ecessary:		نــــــن					Sample ID:				Pumping R	(ato: 100)
	Casing	g Diameter:		2"				·		_	J.	i umping iv	ate. 700
Wate	er Level Be	fore Purge:		2107	Z ft		F	Purge Date:	13 Oct	-16	Time Pura	ing Began:	1119
		Well Depth:			ft			urged Dry?		(Ng)		urged Dry:	
					liters		Sa	mple Date:	130ct	-17		f Sampling:	1149
		p of Pump:		.2.3 <i>0</i>	ft				1				-/// (`
		ter Sample:			ft		Bottle	CC	CR: 1L Raw,	500mL Nit	irc. 500mL	Nitric (filtere	ed), 4-1L Nitri
N	<i>Measureme</i>	nt Method:	Electric \	Water Level	Indicator		List:		·			· · · · · · · · · · · · · · · · · · ·	α/, 1 12 I (III)
					Fiold	Measure	monto						
		<u> </u>		T	i ieiu	· ·	ments		T				
Stabil	ization	T	0								D:		
(3 cons	secutive)	Temp (°C)	Spec. Cond.	рН	DO (mg/L)	ORP (mV)	Turbidity	Water	mL_		Discription:		
SEQ#	Time	1 (0)	±5%	±0.1	±10%	1	(NTU)	Level (ft)	Removed		, Color, Od		
	 	1/51	2070			±20 mV	±10%	0.25 ft		clear,	slightly turbid,	turbid	
1	1124	131/1	1677	693	5.40	57.1	0,76	21.92	500	ہے ج			
2	1129	830	7680	6,87	56.88	661.0	0.47	21.93	500	18			
3	1134	8:28	7649	6.88	4.28	62.0	0052	22.10	500	r.l.			
4	1139	8,09	7639	6.87	3,75	632	0,29	72:04	500	- 0 -			
5	1144	807	7623	6.87	3,63	62 -	0.30	22.00	500	-0			
6	1149	820	7601	600	3,57	63,9	0.24	22,04	500	a			
7	7 1 1	10101	1001	1218 (7672	6 16	0021	209	300	- Ca			
8													
9												-	<u>;</u>
10													i
Stabilized:	Yes	No	<u> </u>	1	[Т _г	ı otal Volume	Removed:	3000	mL			i
Comments			•			, ,	- SI VOIGITIO	· · · · · · · · · · · · · · · · · · ·		1111			



Groundwater Assessment

Company:	MDU Heskett
Event:	2016
Sample ID: //	3-90 0
Sampling Person	ial: Da Car Miora

Phone: (701) 258-9720

							_						
Weather Conditions:		Temp:	27 °F		Wind:	1,76h	1		Precip:	//Suni	ny) / Partly C	loudy / Clo	udy
Ţ	Well Info	rmation					•	Sa	mpling lr	nformatio	on		
Well Locked?	Yes	(A)A				Purgin	g Method:	Blad			[ntrol Setting	s
Well Labeled?	Kes	No				Samplin	g Method:	Blad	der		Purge:	<u>ر-</u>	sec.
Casing Straight?	√es	No		> .		Dedicate	ed Equip?:	Yes	No		Recover:		sec.
Grout Seal Intact?	Yes	No	(Not Visit	le		Duplicate	Sample?:	Yes	₩ 6		PSI:		
Repairs Necessary:						Duplicate S	Sample ID:	170			Pumping R	ate: 180	mL/min
Casing	Diameter:		2"										
Water Level Befo	ore Purge:	/	9.55	ft		Pt	urge Date:	1200	4/6	Time Purg	ing Began:	0947	@m/pm
Total W	ell Depth:		·	ft		Well Pu	rged Dry?	Yes	(NO)	Time F	Purged, Dry:		am/pm
We	II Volume:		10.000	liters		Sar	nple Date:	120ct				1012	am/pm
Depth to Top	of Pump:	1	20,16	ft								101	
Water Level Afte	r Sample:		19,63	ft		Bottle	CCI	R: 1L Raw,	500mL Niti	rc, 500mL	Nitric (filtere	ed), 4-1L Nitr	ic
Measuremen	t Method:	Electric V	Vater Level Indi	cator		List:							

Field Measurements

	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	0952	-8.08	5287	6,80	2.82.	-34./	2,02	19,73	500	ch
2	0957	7,55	5295	6,80	2.80	-18.5	0.95	19,68	500	Ch
3	1002	7.87	5297	6.79	2:83	-14,4	0,72	19165	500	a
4	1007	7,58	5299	6,79	2.81	808	0,66	19,62	500	d
5	1012	7,60	5289	6,79	2.85	-4.5	0.68	19.64	500	CC
6				•			-	•		
7										
8										
9										
10										
Stabilized:		No	•	·		To	otal Volume	Removed:	2500	mL



Groundwater Assessment

Company:	MDU Heskett	
Event:	2016	
Sample ID:	10,4	
Sampling Personal:	Vallen	Mieswaac

sec. sec.

m∐min

am/pm am/pm am/pm

Phone: (701) 258-9720

Weather C	onditions:		Temp:	50	°F	Wind:	Lig	nt		Precip: Sunny/ Partly Clo						
•		Well Info	rmation	•			· J		Sa							
We	ell Locked?	Yes	(No)				Purgir	ng Method:	Blad	der		Co	ntrol Setting	js_		
Wel	ll Labeled?	Yes	No	· · · · · · · · · · · · · · · · · · ·			Samplir	ng Method:	Blad			Purge:	5			
	g Straight?	Yes_	No					ed Equip?:	(Yes)	(No)	<u> </u>	Recover:	_55_			
	eal Intact?	(es)	No	Not V	'isible		<u> </u>	Sample?:,	1 Yes	No		PSI:				
Repairs No							Duplicate :	Sample ID:] [Pumping R	ate: / <u>/</u>) 🛇	m		
		Diameter:		2"					7	- / /	1					
Wate	er Level Bef			9096	ft			urge Date:	1382t	16		ing Began:	1250	a		
		Vell Depth:		<u> </u>	ft			urged Dry?	Yes	<u> </u>		urged Dry:		a		
		ell Volume:		-	liters		Sa	mple Date:	130ct	<u>/</u>	I ime of	Sampling:	1315	а		
	Depth to Top		<u>"]</u>	17:15	ft		D - 141 -		ND 41 D							
	er Level Afte		Flooring	7,6/	ft		Bottle List:		CR: 1L Raw,	500mL Nit	irc, 500mL I	Nitric (filtere	d), 4-1L Nit	ric		
I N	/leasuremer	it ivietnoa:	Electric	Water Level	indicator	I	L List.			X						
					Field	Measure	ements									
Stabil	ization	Temp	Spec.		DO	ORP	Turbidity	Water	mL		Discription:	:	i			
(3 cons	secutive)	(°C)	Cond.	рН	(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,	, turbid				
1	1255	10,83	14285	191	5,30	74,7	1,29	14.59	500	~ Ca	2-91					
2130	1216	10,54	14313	6.89	4,26	71.8	2,50	14.64	500	d						
3	1305	10,55	1428	6.90	3,95	70,7	1.70	14.65	00	72						
4	1310	10,65	14 279	6.89	3,73	76,4	1.64	14.67	500	Ch						
5	1315	10,56	14 302	6.89	3,72	70.3	1061	14,69	500	cei						
6		,														
7																
8																
9	_															
10		\														
Stabilized) No	_			T	otal Volume	Removed	2500	mL			•			
Comment	s: (\ /	•							-							



Chain of Custody Record

Projec	ot Name:			Name of Sampler(s):
MDU	Heskett	CCR Radiochem	October 2016	Jerry My Darren Nieswag
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829	<u>Carbon Cop</u> <u>Attn</u> : <u>Address</u> :	Υ :	Work Order Number: \$2-3374

	Samp	le Informat	ion				3ottle Ty	ameters	s Analysis		
Lab Number	Sample ID	Date	Time	Sample Type	Gradient	1000 ml HNO ₃		Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
104731	Field Blank (FB) /	120ef16	NA	W		4		NA	NA	NA	
634732	Dup (120ct16	NA	W		4		NA	NA	NA	
W4733	HW101	120c+16	1555	GW		i.p		9,12	4690	6.76	
w4134	Mw 102	12 Oct 16	1141	GW		4		8.82	7672	6.86	
W4735	MW103	1200f(6	0942	GW		4		7.83	4871	6.74	
W4736	MW 44R	120216	0807	GW		4		7.52	8838		MDU CCR Numerical
w4737	MW70	120c+16	1347	GW		4		B.32	3932	7.01	RadChem

Comments:

	Transferred by:	Sample Condition	Date/Time	Received/by:	Sample Condition	Date/Time	°C
1 (Joeh-	login	12 Oct 16 1430	TUNXUL		130d 2016 1480	63°C POI
2		•					BEZMT
3							



Chain of Custody Record

	Thomas (01) 258-9720 							
Projec	ct Name:					Name of Sam	pler(s):		
MDU	Heskett	CCR Rad	liochem	October 2016		<u> </u>	in the	Darren A) ies wazzy
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon Copy Attn: Address:	:		Work Order N	lumber: \$2	-3374	
	San	nple Informat	ion		Bot	tle Type	Field Par	ameters	Analysis
b Number	Ol eldm	it e		adient	O MI HNO3		^{rld} Temperature °C ^{rld} Spec. Cond.	Hdp	

Lab Number	Sample ID	Date	Time	Sample Typ	Gradient	1000 ml HNO ₃	/ ·/ ,	Field Tempera	Field Spec. Cor	Field pH	Analysis Required
64738	Field Blank (FB)2	13 oct 16	NA	W		4		NA	NA	NA	
w4739	Dup Z	130ct/6	NA	W		4		NA	NA	NA	
w4740	MWi3	13 Oct 16	08(3	GW		4		7.30	10509	6.86	
w4741	* HWBR MUBOR	13 Oct16	0952	GW		4		9.3	3 5683	7.12	
W4742	Musios	13 Oct 16	IIS7	OW		4		8,8		6.77	
W4743	MW 33	13 Oct 16	0845	600		4		7,3	2 5399	6.50	MDU CCR Numerical
w4744	MW 2-90	130c+16	1149	Gv		4		8,2	9 7601	6.87	RadChem
w4745	Mw 3-90 *.	130et 16	1012	6 W		4		7,6	j 5280	16,79	
W4746	MW 104	(3 Oct 16	1315	6~		14		10,5,	6 14302	6,89	

Comments: * - 130cf 16

XO 10/12/16

moldeylyr ce 30NNIL

	Transferred by:	Sample Condition	Date/Time	> Received by:	Sample Condition	Date/Time	°C
1 (774m	log in	1300+16	Text XV		1304 30h	6.3°C ROT
2	. , ,	J		.)			TMSET
3							



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CASE NARRATIVE - AMENDED 22 FEB 2017

MVTL Lab Reference No/SDG:

201682-4078

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR December 2016

MVTL Laboratory Identifications:

16-W6008 through 16-W6009

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
Dup 1	16-W6008
MW13	16-W6009

I. RECEIPT

- All samples were received at the laboratory on 19 Dec 2016 at 1455.
- 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 5.1°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.

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).
 - The recoveries for two selenium dissolved 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.



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CASE NARRATIVE – AMENDED 22 FEB 2017

MVTL Lab Reference No/SDG:

201682-4078

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR December 2016

MVTL Laboratory Identifications:

16-W6008 through 16-W6009

Page 2 of 2

- o The recoveries for one fluoride matrix spike/matrix spike duplicate were outside the acceptable limits. RPD for the recoveries was within limits. Poor recoveries were determined to be due to sample matrix. Data was accepted based on acceptable recovery of the LCS. No further action was taken.
- o Recovery for one molybdenum total matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
- The recoveries for two beryllium total matrix spikes duplicates were outside the acceptable Recoveries of the matrix spikes were acceptable. RPD for the recoveries was within Data was accepted based on acceptable recovery of the LCS. No further action was limits. taken.

REPORTING ٧.

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.

All laboratory data has been approved by MVTL Laboratories.

SIGNED:

lauditle Cant CD DATE: 22 FE 517

Claudette Carroll - MVTL Bismarck Laboratory Manager

MVTL

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Quality Control Report – Amended 22 Feb 2017

Lab IDs: 16-W6008 to 16-W6009 Project: MDU Heskett CCR

Work Order: 201682-4078

Lab IDS: 10-W 6008 to 16-W	Work Order: 201682-4078																
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	0.0160	104	80-120	0.100 0.100	16W6027q 16W6119q	< 0.001 < 0.001	0.1074 0.1120	107 112	75-125 75-125	0.1074 0.1120	0.1056 0.1136	106 114	1.7 1.4	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000 0.1000 0.1000	115 107 111	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.001 < 0.001 < 0.001	0.5586 0.4106 0.4598	112 103 115	75-125 75-125 75-125	0.5586 0.4106 0.4598	0.5452 0.4476 0.4642	109 112 116	2.4 8.6 1.0	20 20 20	-		< 0.001
Arsenic - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 < 0.002	0.1154 0.1182	115 118	75-125 75-125	0.1154 0.1182	0.1112 0.1193	111 119	3.7 0.9	20 20	-	-	< 0.002
Arsenic - Total mg/l	0.1000 0.1000 0.1000	112 108 112	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5784 0.4088 0.4748	116 102 119	75-125 75-125 75-125	0.5784 0.4088 0.4748	0.5630 0.4568 0.4778	113 114 119	2.7 11.1 0.6	20 20 20	-	-	< 0.002
Barium - Dissolved mg/l	0.0160	100	80-120	0.100 0.100	16W6027q 16W6119q	0.0065 0.0089	0.1104 0.1267	104 118	75-125 75-125	0.1104 0.1267	0.1002 0.1266	94 118	9.7 0.1	20 20	-	-	< 0.002
Barium - Total mg/l	0.1000 0.1000 0.1000	105 99 101	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	0.0070 < 0.002 0.0232	0.5200 0.3976 0.4460	103 99 106	75-125 75-125 75-125	0.5200 0.3976 0.4460	0.5306 0.4676 0.5030	105 117 120	2.0 16.2 12.0	20 20 20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	< 0.0005	0.1235	124	75-125	0.1235 0.1312	0.1122 0.1322	112	9.6 0.8	20 20	-	-	< 0.0005
Beryllium - Total mg/l	0.1000 0.1000 0.1000	115 108 111	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.5952 0.4442 0.4942	119 111 124	75-125 75-125 75-125	0.5952 0.4442 0.4942	0.5908 0.5184 0.5346	118 130 134	0.7 15.4 7.9	20 20 20	1	1 1	< 0.0005
Boron - Dissolved mg/l	0.40 0.40	115 115	80-120 80-120	0.400	16-W5963	< 0.1	0.45	112	75-125	0.45	0.46	115	2.2	20	-	-	< 0.1
Boron - Total mg/l	0.40 0.40	115 115	80-120 80-120	0.400	16-W5963	0.12	0.51	97	75-125	0.51	0.51	97	0.0	20	- - -	-	< 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.0160	103	80-120	0.100 0.100	16W6027q 16W6119q	< 0.0005 < 0.0005	0.1002 0.1060	100 106	75-125 75-125	0.1002 0.1060	0.1006 0.1079	101 108	0.4 1.8	20 20	<u>-</u>	-	< 0.0005



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Quality Control Report
Lab US: 16-W6008 to 16-W6009

Lab IDs: 16-W6008 to 16-V	V6009						Work Order: 201682-4078										,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
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 - Total mg/l	0.1000 0.1000 0.1000	119 110 116	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005		116 107 117	75-125 75-125 75-125	0.5794 0.4290 0.4688	0.5494 0.4758 0.4662	110 119 117	5.3 10.3 0.6	20 20 20			< 0.0005
Calcium - Dissolved mg/l	20.0	100	80-120	1000 100	16W6027q 16D5134q	431 61.5	1340 154	91 92	75-125 75-125	1340 154	1340 153	91 92	0.0	20 20	-	_	< 1
Calcium - Total mg/l	20.0	100	80-120	500	16W6022q	545	990	89	75-125	990	1000	91	1.0	20	- - -	- -	< 1 < 1 < 1
Chloride mg/l	30.0 30.0 30.0	83 88 89	80-120 80-120 80-120	300	16-D5069	34.4	294	87	80-120	294	285	84	3.1	20	- - -		1.7 <1 <1 <1
Chromium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 0.0024	0.1086 0.1142	109 112	75-125 75-125	0.1086 0.1142	0.1057 0.1165	106 114	2.7 2.0	20 20	-	-	< 0.002
Chromium - Total mg/l	0.1000 0.1000 0.1000 0.1000	107 101 103 102	80-120 80-120 80-120 80-120	0.500 0.400 0.400 0.100	16W6027q 16W6126q 16W6132q 16W6128Q	< 0.002 < 0.002 < 0.002 < 0.0048	0.5284 0.3858 0.4302 0.1013	106 96 108 96	75-125 75-125 75-125 75-125	0.5284 0.3858 0.4302 0.1013	0.5096 0.4254 0.4292 0.1015	102 106 107 100	3.6 9.8 0.2 3.59	20 20 20 20 20	-	-	< 0.002
Cobalt - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 < 0.002	0.1050 0.1060	105 106	75-125 75-125	0.1050 0.1060	0.1021 0.1088	102 109	2.8 2.6	20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000 0.1000 0.1000	108 101 105	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5316 0.3908 0.4316	106 98 108	75-125 75-125 75-125	0.5316 0.3908 0.4316	0.5120 0.4402 0.4326	102 110 108	3.8 11.9 0.2	20 20 20	-	-	< 0.002
Fluoride mg/l	0.50 0.50	102 98	90-110 90-110	0.500	16-W6009	0.93	1.26	66	80-120	1.26	1.29	72	2.4	20	_	-	< 0.1 < 0.1
Lead - Dissolved mg/l	0.0160 0.0160	106 100	80-120 80-120	0.100 0.100	16W6027q 16W6119q	0.0007 < 0.0005	0.0958 0.1048	95 105	75-125 75-125	0.0958 0.1048	0.0872 0.1070	86 107	9.4 2.1	20 20	-	-	< 0.0005

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Quality Control Report

Lab IDs: 16-W6008 to 16-W	6009	Project: MDU Heskett CCR					Work Order: 201682-4078										
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
Lead - Total mg/l	0.1000 0.1000 0.1000	104 97 101	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.4706 0.3828 0.3892	94 96 97	75-125 75-125 75-125	0.4706 0.3828 0.3892	0.4902 0.4424 0.4374	98 111 109	4.1 14.4 11.7	20 20 20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.40 0.40	105 105	80-120 80-120	0.400	16-W5963	< 0.1	0.38	95	75-125	0.38	0.37	92	2.7	20	-	-	< 0.1
Lithium - Total mg/l	0.40	105	80-120	0.400	16-W5963	< 0.1	0.42	105	75-125	0.42	0.43	108	2.4	20	-	-	< 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	104	80-120	1000 100	16W6027q 16D5134q	1010 26.4	1890 123	88 97	75-125 75-125	1890 123	1880 123	87 97	0.5	20 20	-	-	< 1
Magnesium - Total mg/l	20.0	104	80-120	500	16W6022q	477	940	93	75-125	940	950	95	1.1	20	-	-	<1 <1 <1
Mercury - Dissolved mg/l	0.0020	100	85-115	0.002 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 0.0019	90 95	5.4 0.0	20 20	-	-	< 0.0002
Mercury - Total mg/l	0.0020	95	85-115	0.002 0.002	AA66354 16-W6113	< 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	1 1	-	< 0.0002
Molybdenum - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 0.0033	0.1150 0.1274	115 124	75-125 75-125	0.1150 0.1274	0.1090 0.1254	109 122	5.4 1.6	20 20	-		< 0.002
Molybdenum - Total mg/l	0.1000 0.1000 0.1000	104 98 99	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5704 0.4002 0.4614	114 100 115	75-125 75-125 75-125	0.5704 0.4002 0.4614	0.5564 0.4632 0.5072	111 116 127	2.5 14.6 9.5	20 20 20		-	< 0.002
pH units	-	-	_	-	-	-	-	-	-	7.1	7.2	-	1.4	20	-		-
Potassium - Dissolved mg/l	10.0	88	80-120	200 20.0	16W6027q 16D5134q	25.7 5.1	217 24.2	96 96	75-125 75-125	217 24.2	220 24.3	97 96	1.4 0.4	20 20	-	-	< 1
Potassium - Total mg/l	10.0	93	80-120	100	16W6022q	20.2	118	98	75-125	118	119	99	0.8	20	-	-	<1 <3 <1



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Quality Control Report

Lab IDs: 16-W6008 to 16-W6009

Project: MDU Heskett CCR

Work Order: 201682-4078

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 - Dissolved mg/l	0.0160	103	80-120	0.100 0.100	16W6027q 16W6119q	0.0853 0.1386	0.2320 0.3296	147 191	75-125 75-125	0.2320 0.3296	0.2163 0.3082	131 170	7.0 6.7	20 20	-	-	< 0.002
Selenium - Total mg/l	0.1000	102	80-120	0.500	16-W6027	0.0778	0.6528	115	75-125	0.6528	0.6284	110	3.8	20	-	-	< 0.002
Sodium - Dissolved mg/l	20.0	96	80-120	1000 100	16W6027q 16D5134q	1020 101	1900 194	88 93	75-125 75-125	1900 194	1900 194	88 93	0.0	20 20	-	-	< 1
Sodium - Total mg/l	20.0	97	80-120	500	16W6022q	240	730	98	75-125	730	735	99	0.7	20	- - -		< 1 < 1 < 1
Sulfate mg/l	100	102	80-120	10000	16-W6009	6450	15100	86	80-120	15100	15200	88	0.7	20	-	-	< 5
Thallium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.0005 < 0.0005	3	98 104	75-125 75-125	0.0979 0.1041	0.0877 0.1079	88 108	11.0 3.6	20 20	-	-	< 0.0005
Thallium - Total mg/l	0.1000 0.1000 0.1000	105 98 100	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005		94 95 96	75-125 75-125 75-125	0.4688 0.3812 0.3848	0.4860 0.4366 0.4290	97 109 107	3.6 13.5 10.9	20 20 20	-	1	< 0.0005
Total Alkalinity mg/l CaCO3	410 410	90 91	90-110 90-110	410	16-W6007	483	842	88	80-120	842	844	88	0.24	20	90	80-120	< 20 < 20
Total Dissolved Solids mg/l		-		-	-	-	-	- - -	-	4350 1490 1210	4240 1520 1220	-	2.6 2.0 0.8	20 20 20	-	-	< 5 < 5
Total Suspended Solids mg/l	-	-	_	-	_	-	_	-	_	8	9	-	11.8	*	-		< 1

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

Approved by: 22 Feb 17



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

Project Name: MDU Heskett CCR

Sample Description: Dup 1

Event and Year: December 2016

Page: 1 of 2

Report Date: 16 Jan 17 Lab Number: 16-W6008 Work Order #:82-4078 Account #: 002800

Date Sampled: 19 Dec 16

Date Received: 19 Dec 16 14:55 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 5.1C ROI

	As Receive Result	d	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	19 Dec 16	svs
pH	* 7.2	units	N/A	SM4500 H+ B	19 Dec 16 17:00	SVS
Total Suspended Solids	10	mg/l	2	13765-85	19 Dec 16 16:57	SVS
Total Alkalinity	485	mg/l CaCO3	20	SM2320-B	19 Dec 16 17:00	SVS
Fluoride	0.95	mg/1 cacos	0.10	SM4500-F-C	19 Dec 16 17:00	SVS
Sulfate	6010	mg/1	5.00	ASTM D516-07	5 Jan 17 13:50	EMS
Chloride	78.4	mg/1	1.0	SM4500-C1-E	4 Jan 17 9:56	EMS
Mercury - Total	< 0.0002	mg/1	0.0002	EPA 245.1	28 Dec 16 11:20	EV
	< 0.0002	mg/1	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Mercury - Dissolved Total Dissolved Solids	9260	mg/1	10	I1750-85	21 Dec 16 16:32	SVS
Calcium - Total	395	mg/1	1.0	6010	22 Dec 16 11:48	SZ
	605	mg/1	1.0	6010	22 Dec 16 11:48	SZ
Magnesium - Total	1800	mg/1	1.0	6010	22 Dec 16 11:48	SZ
Sodium - Total	22.7	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Potassium - Total	0.63	mg/1	0.10	6010	20 Dec 16 11:09	SZ
Lithium - Total	0.83	mg/1	0.10	6010	20 Dec 16 13:54	SZ
Boron - Total	388	mg/1	1.0	6010	22 Dec 16 16:42	SZ
Calcium - Dissolved			1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	600	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	1770	mg/l	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	22.4	mg/1	0.10	6010	20 Dec 16 12:11	SZ
Lithium - Dissolved	0.67	mg/1		6010	20 Dec 16 15:45	SZ
Boron - Dissolved	0.76	mg/1	0.10	6020	10 Jan 17 15:05	KMD
Antimony - Total	< 0.001	mg/l	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/l	0.0020		10 Jan 17 15:05	KMD
Barium - Total	0.0074	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	< 0.0005	mg/l	0.0005	6020		KMD
Chromium - Total	0.0029	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	
Molybdenum - Total	< 0.002	mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Selenium - Total	0.0396	mg/l	0.0020	6020	11 Jan 17 9:25	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	6020	10 Jan 17 15:05	KMD
Antimony - Dissolved	< 0.001	mg/l	0.0010	6020	9 Jan 17 12:20	KMD
Arsenic - Dissolved	< 0.002	mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Barium - Dissolved	0.0073	mg/l	0.0020	6020	9 Jan 17 12:20	KMD

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to complete the property of the proper

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

CERTIFICATION: ND # ND-00016



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Page:

2 of 2

Report Date: 16 Jan 17 Lab Number: 16-W6008 Work Order #:82-4078

Account #: 002800 Date Sampled: 19 Dec 16

Date Received: 19 Dec 16 14:55 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 5.1C ROI

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

Project Name: MDU Heskett CCR

Sample Description: Dup 1

Event and Year: December 2016

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Chromium - Dissolved	0.0025 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	9 Jan 17 12:20	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	13 Jan 17 11:42	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Selenium - Dissolved	0.0596 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD

^{*} Holding time exceeded

Approved by:

Claudette K. Canto 16 Jan 17

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 come to sample quantity # = Due to infinity
= Due to concentration of other analytes + = Due to internal standard response

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



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1 of 2

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

Report Date: 16 Jan 17 Lab Number: 16-W6009 Work Order #:82-4078 Account #: 002800

Date Sampled: 19 Dec 16 11:20 Date Received: 19 Dec 16 14:55 Sampled By: MVTL Field Services

Project Name: MDU Heskett CCR

PO #: 160249

Page:

Sample Description: MW13

Temp at Receipt: 5.1C ROI

Event and Year: December 2016

	As Receive Result	đ	Method RL	Method Reference	Date Analyzed	Analyst
Metal Digestion				EPA 200.2	19 Dec 16	SVS
рН	* 7.2	units	N/A	SM4500 H+ B	19 Dec 16 17:00	SVS
Total Suspended Solids	8	mg/l	2	I3765-85	19 Dec 16 16:57	SVS
pH - Field	6.78	units	NA	SM 4500 H+ B	19 Dec 16 11:20	JSM
Temperature - Field	3.28	Degrees C	NA	SM 2550B	19 Dec 16 11:20	JSM
Total Alkalinity	483	mg/l CaCO3	20	SM2320-B	19 Dec 16 17:00	SVS
Conductivity - Field	10703	umhos/cm	1	EPA 120.1	19 Dec 16 11:20	JSM
Fluoride	0.93	mg/l	0.10	SM4500-F-C	19 Dec 16 17:00	svs
Sulfate	6450	mg/l	5.00	ASTM D516-07	5 Jan 17 13:50	EMS
Chloride	78.6	mg/l	1.0	SM4500-C1-E	4 Jan 17 9:56	EMS
Mercury - Total	< 0.0002	mg/l	0.0002	EPA 245.1	28 Dec 16 11:20	EV
Mercury - Dissolved	< 0.0002	mg/1	0.0002	EPA 245.1	28 Dec 16 12:13	EV
Total Dissolved Solids	9290	mg/1	10	I1750-85	21 Dec 16 16:32	SVS
Calcium - Total	387	mg/1	1.0	6010	22 Dec 16 11:48	SZ
Magnesium - Total	600	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Sodium - Total	1760	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Potassium - Total	25.9	mg/l	1.0	6010	22 Dec 16 11:48	SZ
Lithium - Total	0.65	mg/l	0.10	6010	20 Dec 16 11:09	SZ
Boron - Total	0.82	mg/l	0.10	6010	20 Dec 16 13:54	SZ
Calcium - Dissolved	382	mg/1	1.0	6010	22 Dec 16 16:42	SZ
Magnesium - Dissolved	590	mg/1	1.0	6010	22 Dec 16 16:42	SZ
Sodium - Dissolved	1730	mg/1	1.0	6010	22 Dec 16 16:42	SZ
Potassium - Dissolved	21.8	mg/1	1.0	6010	22 Dec 16 16:42	SZ
Lithium - Dissolved	0.66	mg/1	0.10	6010	20 Dec 16 12:11	SZ
Boron - Dissolved	0.76	mg/1	0.10	6010	20 Dec 16 15:45	SZ
Antimony - Total	< 0.001	mg/1	0.0010	6020	10 Jan 17 15:05	KMD
Arsenic - Total	< 0.002	mg/1	0.0020	6020	10 Jan 17 15:05	KMD
Barium - Total	0.0068	mg/1	0.0020	6020	10 Jan 17 15:05	KMD
	< 0.0005	mg/1	0.0005	6020	10 Jan 17 15:05	KMD
Beryllium - Total	< 0.0005	mg/1	0.0005	6020	10 Jan 17 15:05	KMD
Cadmium - Total	0.0048	mg/1	0.0020	6020	13 Jan 17 11:42	KMD
Chromium - Total	< 0.002	mg/1	0.0020	6020	10 Jan 17 15:05	KMD
Cobalt - Total	< 0.002	mg/1	0.0025	6020	10 Jan 17 15:05	KMD
Lead - Total	< 0.001	mg/1	0.0020	6020	10 Jan 17 15:05	KMD
Molybdenum - Total	0.002		0.0020	6020	11 Jan 17 9:25	KMD
Selenium - Total		mg/l	0.0020	6020	10 Jan 17 15:05	KMD
Thallium - Total	< 0.001 ^	mg/l	0.0005	0020	10 0011 1. 15100	

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

@ = Due to sample matrix
! = Due to sample quantity



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Samantha Marshall Montana Dakota Utilities 400 N. 4th

Bismarck ND 58501

Project Name: MDU Heskett CCR

Sample Description: MW13

Event and Year: December 2016

2 of 2 Page:

Report Date: 16 Jan 17 Lab Number: 16-W6009 Work Order #:82-4078 Account #: 002800

Date Sampled: 19 Dec 16 11:20 Date Received: 19 Dec 16 14:55 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 5.1C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Antimony - Dissolved	< 0.001 mg/l	0.0010	6020	9 Jan 17 12:20	KMD
Arsenic - Dissolved	< 0.002 mg/1	0.0020	6020	9 Jan 17 12:20	KMD
Barium - Dissolved	0.0066 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Beryllium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Cadmium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Chromium - Dissolved	0.0022 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Cobalt - Dissolved	< 0.002 mg/1	0.0020	6020	9 Jan 17 12:20	KMD
Lead - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD
Molybdenum - Dissolved	< 0.002 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Selenium - Dissolved	0.0544 mg/l	0.0020	6020	9 Jan 17 12:20	KMD
Thallium - Dissolved	< 0.0005 mg/l	0.0005	6020	9 Jan 17 12:20	KMD

^{*} Holding time exceeded

Approved by:

Claudite K. Cantes

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 interpretation.

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

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



Phone: (701) 258-9720

Measurement Method: Electric Water Level Indicator

Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2016
Sample ID:	MWB
Sampling Personal:	Jerenny Meison
	· · · · · · · · · · · · · · · · · · ·

NDDH: 1L Raw, 500mL nitric, 500mL nitric (filtered), 250mL sulfinic

Weather Conditions:		Temp:	20	°F	Wind:	w@10-1	.3		Precip:	Suni	ny / Partly 0	loudy (Clo	vidy)
	Well Info	rmation						Sa	mplina li	nformatio			
Well Locked?	Yes	(NO)			1	Purging	Method:					ntrol Setting	10
Well Labeled?	₹ 1	No				Sampling	Method:	Blad	der		Purge:	X	sec.
Casing Straight?	Yes	No				Dedicated	Equip?:	Yes,	No			<u>55</u>	sec.
Grout Seal Intact?	Yes	No	Not	Visible		Duplicate S		Yes	No			30	300.
Repairs Necessary:					7	Duplicate Sa	mple ID:		***************************************		Pumping R		mL/min
Casing	Diameter:		2"		7			10 07			r amping re	atc. 700	11112/11111
Water Level Bef	ore Purge:	-	30,43	f	t	Pur	ge Date:	19 Del	6	Time Pura	ing Began:	1100	ā̃m)/pm
Total V	Vell Depth:			f	t	Well Purg	ged Dry?	Yes	(No)		urged Dry:	7.50	am/pm
We	ell Volume:	2-		liters	3	Sam	ole Date:	19 Dec 16			Sampling:	1120	(am/pm
Depth to Top	of Pump:			f	t							1100	(ampin
Water Level Afte	er Sample:	3	50.91	f	t	Bottle	CC	R: 1L Raw,	500mL Niti	rc. 500ml I	Vitric (filtere	d) 4-11 Nitr	ic
					7	1				. c, cconne	THE CHILCIC	47, 4-11-1111	10

List:

Field Measurements

	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	1105	5.11	10646	(S)	2,50	ARP	4.07	30.93	500	Clea
2	1110	4,16	10557	6.76	1.82	197.1	1,99	30,86	500	Cler
3	}[[S	4,29	10524	6.76	1,72	195,6	1.89	30,79	5 00	Clear
4	1120	3,28	10703	6.78	1.73	194.4	1.90	30,77	Sec	Cles
5	1125									
6										
7										William I was a second of the
8										
9										
10										
Stabilized: Comments		No	-			To	otal Volume	Removed:	2000	mL.



Laboratories, Inc. 2616 E. Broadway

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

Chain of Custody Record

Projec	t Name:				Name of Sampler(s):	ì · · · ·
MDU	Heskett	CCR Grou	ndwater	2016		Jerry May
Report To: Attn: Address:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501		<u>Carbon Copy:</u> <u>Attn:</u> <u>Address</u> :		Work Order Number:	82-4078
Phone:	701-222-7829					

	Samp	le Informat	ion			Bottle Type Field Parameters				Analysis		
Lab Number	Sample ID	Date	Тіте	Sample Type	Gradien _t		l HNO3 (filtered)		Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
*	Field Blank (FB)		NA	W		XX			NA.		NA	
800eW	Dup (19 Dec 16	NA	W		хх			NA		NA	
POODL	MWB	19 Dec 16	1120	GW		XX			3.28	10703		
								1				
												MDU CCR List with TSS and
												Dissolved CCR Metals. No RadChem.

Comments: # 1 - 19 Dail6

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	° C
1 _	1- the	Coesin	19 Dec 16	The Fler	-	19 Le 2014	511°C ROI
2		3					TMS83
3				-			



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CASE NARRATIVE

MVTL Lab Reference No/SDG:

201682-4079

IML Lab Reference No/SDG:

S1612307

Client:

Location:

Montana Dakota Utilities

Project Identification:

MDU Heskett Ash Site CCR December 2016

MVTL Laboratory Identifications:

16-W6010 through 16-W6011

IML Laboratory Identifications:

S1612307-001 through S1612307-002

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #	IML Laboratory #
Dup 1	16-W6010	\$1612307-001
MW13	16-W6011	S1612307-002

I.

- All samples were received at the laboratory on 19 December 2016 at 1455.
- 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 5.1°C.
- No other exceptions on sample receipt were encountered on this sample set unless noted here.
- All samples requiring radiochemistry analysis were sent via courier to Inter-Mountain Labs (IML) for analysis there. Samples were received at IML on 28 December 2016.
 - All samples were properly preserved unless noted on the individual analytical laboratory report or on the IML Case Narrative.

HOLDING TIMES II.

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

III. **METHODS**

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

IV. **ANALYSIS**

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



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CASE NARRATIVE

MVTL Lab Reference No/SDG:

IML Lab Reference No/SDG:

Client:

Location:

Project Identification:

MVTL Laboratory Identifications:

IML Laboratory Identifications:

Page 2 of 2

201682-4079

S1612307

Montana Dakota Utilities
MDU Heskett Ash Site

CCR December 2016

16-W6010 through 16-W6011

\$1612307-001 through \$1612307-002

V. REPORTING

• Per email from Barr Engineering dated 10 March 2016, IML was directed to report numerical values, including negative results for both the sample results and the method analyte precision.

 Per email from Samantha Marshall with MDU, MVTL was directed to report the radium 226 and radium 228 values individually and then MDU would calculate the summation result using their database tabulations.

All laboratory data has been approved by MVTL Laboratories.

SIGNED: Clauditte and

DATE:

Claudette Carroll - MVTL Bismarck Laboratory Manager



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

Project Name: MDU Heskett CCR Radiochem

Sample Description: Dup 1

Event and Year: December 2016

1 of 1 Page:

Report Date: 27 Jan 17 Lab Number: 16-W6010 Work Order #:82-4079 Account #: 002800

Date Sampled: 19 Dec 16

Date Received: 19 Dec 16 14:55 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 5.1C ROI

	As Received Result	Method RL	Method Reference	Date Analyzed	Analyst
Radium 226 Radium 228	See Attached Report See Attached Report			10 Jan 17 24 Jan 17	OL OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

The reporting limit was elevated for any analyte requiring a dilution as coded below: @= Due to sample matrix #= Due to code != Due to sample quantity += Due to in

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



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

Project Name: MDU Heskett CCR Radiochem

Sample Description: MW13

Event and Year: December 2016

Page: 1 of 1

Report Date: 27 Jan 17 Lab Number: 16-W6011 Work Order #:82-4079 Account #: 002800

Date Sampled: 19 Dec 16 11:20 Date Received: 19 Dec 16 14:55 Sampled By: MVTL Field Services

PO #: 160249

Temp at Receipt: 5.1C ROI

	As Recei Result	ved	Method RL	Method Reference	Date Analyzed	Analyst
pH - Field	6.78	units	NA	SM 4500 H+ B	19 Dec 16 11:20	JSM
Temperature - Field	3.28	Degrees C	NA	SM 2550B	19 Dec 16 11:20	JSM
Conductivity - Field	10703	umhos/cm	1	EPA 120.1	19 Dec 16 11:20	JSM
Radium 226		ched Report	_		10 Jan 17	OL
Radium 228		ched Report			24 Jan 16	OL

OL = Analysis performed by an Outside Laboratory.

Approved by:

Clauditte K. Canto

Claudette K. Carroll, Laboratory Manager, Bismarck, ND

RL = Method Reporting Limit

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

@ = Due to sample matrix # = Due to con
! = Due to sample quantity + = Due to int

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



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

Date: 1/27/2017

CLIENT:

MVTL Laboratories, Inc.

Project:

201682-4079

Lab Order:

S1612307

CASE NARRATIVE

Report ID: S1612307001

Samples 16-W6010 Dup 1, and 16-W6011 MW13 were received on December 28, 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: All

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 1



1673 Terra Avenue, Sheridan, Wyoming 82801

ph: (307) 672-8945

Sample Analysis Report

Company:

MVTL Laboratories, Inc.

2616 E Broadway Ave.

Bismarck, ND 58501

ProjectName:

201682-4079

Lab ID:

S1612307-001 ClientSample ID: 16-W6010 Dup 1

COC:

201682-4079

Date Reported 1/27/2017

Report ID

S1612307001

WorkOrder:

S1612307

CollectionDate: 12/19/2016

DateReceived:

12/28/2016 11:27:00 AM

FieldSampler:

Matrix:

Water

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/l	nit
Radionuclides - Total							
Radium 226	0.5	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1211	MB
Radium 226 Precision (±)	0.2	pCi/L			SM 7500 Ra-B	01/10/2017 1211	MB
Radium 228	-0.6	pCi/L		1	Ga-Tech	01/24/2017 042	WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/24/2017 042	WN

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 1 of 2



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

ProjectName:

201682-4079

Lab ID:

S1612307-002

ClientSample ID: 16-W6011 MW13 COC:

201682-4079

Date Reported 1/27/2017

Report ID

S1612307001

WorkOrder:

S1612307

CollectionDate: 12/19/2016 11:20:00 AM 12/28/2016 11:27:00 AM

DateReceived: FieldSampler:

Matrix:

Water

Comments

Comments							
Analyses	Result	Units	Qual	RL	Method	Date Analyzed/	nit
Radionuclides - Total							
Radium 226	0.3	pCi/L		0.3	SM 7500 Ra-B	01/10/2017 1211	MB
Radium 226 Precision (±)	0.1	pCi/L			SM 7500 Ra-B	01/10/2017 1211	MB
Radium 228	0.0	pCi/L		1	Ga-Tech	01/24/2017 345	WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/24/2017 345	WN
Radium 228 Precision (±)	1.6	pCi/L			Ga-Tech	01/24/2017 345	

These results apply only to the samples tested.

Qualifiers:

Analyte detected in the associated Method Blank

Value above quantitation range

Analyte detected below quantitation limits

Value exceeds Monthly Ave or MCL or is less than LCL

Outside the Range of Dilutions

Matrix Effect

RL - Reporting Limit

Calculated Value

Н Holding times for preparation or analysis exceeded

Analyzed by another laboratory L

ND Not Detected at the Reporting Limit

Spike Recovery outside accepted recovery limits

Reviewed by: A

Wade Nieuwsma, Assistant Laboratory Manager

Page 2 of 2



Inter-Mountain Labs

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

ANALYTICAL QC SUMMARY REPORT

CLIENT: MVTL Laboratories, Inc.

Date: 1/27/2017

Work Order:

S1612307

Report ID: S1612307001

Project: 201682-4079

Radium 228 by Ga/Tec	h	Sample Type MBLK		Units: pCi/L					
MB-412 (01/21/1	7 14:53)	RunNo: 14:	2633	Prep	Date: 01/0	3/17 0:00	Bat	chID 12769	
	Analyte	Resul	t	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228	ND		1					
Radium 228 by Ga/Tecl	h	Sample Type LCS			Units	: pCi/L			
LCS-412 (01/21/	17 17:54)	RunNo: 142	2633	Prep	Date: 01/0	3/17 0:00	Bat	chID 12769	
	Analyte	Result	t .	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228	38		1	40.3		93.5	64.4 - 99.5	
Radium 228 by Ga/Tecl	<u>n</u>	Sample Type MS			Units	: pCi/L			
MS-412 (01/22/1	7 00:01)	RunNo: 142	2633	PrepE	Date: 01/0	3/17 0:00	Bat	chID 12769	
	Analyte	Result	t	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Total Radium 228	37		1	40.3	ND	92.5	55 - 113	
Radium 228 by Ga/Tecl	1	Sample Type MSD			Units	: pCi/L		****	
MSD-412 (01/22/	(17 03:04)	RunNo: 142	2633	PrepD	Date: 01/0	3/17 0:00	Bate	chID 12769	
	Analyte	Result	t	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Total Radium 228	33		1	37	11.3	82.6	30	
Radium 226 in Water -		Sample Type MBLK			Units	: pCi/L			·····
MB-1707 (01/11/	17 13:52)	RunNo: 142	2395	PrepD	Oate: 01/0	3/17 0:00	Bate	chID 12733	
	Analyte	Result	t	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	ND		0.3					
Radium 226 in Water -		Sample Type LCS			Units	: pCi/L			
LCS-1707 (01/10	/17 10:09)	RunNo: 142	2395	PrepD	Date: 01/0	3/17 0:00	Bate	chID 12733	
	Analyte	Result	1	RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	5.9		0.3	5.89		99.8	65 - 131	
Radium 226 in Water -		Sample Type LCSD			Units	: pCi/L			
LCSD-1707 (01/1	0/17 12:11)	RunNo: 142	2395	PrepD	ate: 01/0	3/17 0:00	Bate	chID 12733	
	Analyte	Result	i.	RL	Conc	%RPD	%REC	% RPD Limits	Qual
	Radium 226	6.1		0.3	5.9	3.30	103	20	
Radium 226 in Water -		Sample Type MS			Units	: pCi/L			
S1612304-001AN	/IS (01/10/17 10:09)	RunNo: 142	2395	PrepD	ate: 01/0	3/17 0:00	Bato	chID 12733	
	Analyte	Result		RL	Spike	Ref Samp	%REC	% Rec Limits	Qual
	Radium 226	5.9		0.3	5.89	ND	96.2	65 - 131	

Qualifiers:

- Analyte detected in the associated Method Blank
- H Holding times for preparation or analysis exceeded
- L Analyzed by another laboratory
- O Outside the Range of Dilutions
- S Spike Recovery outside accepted recovery limits
- E Value above quantitation range
- J Analyte detected below quantitation limits
- ND Not Detected at the Reporting Limit
- R RPD outside accepted recovery limits
- X Matrix Effect



Transferred by:

T. Olson

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

Date:

20-Dec-16

Time:

1700

Chain of Custody Record

Received by:

Date:

12.28.16

Temp:

11:27

P	age	<u> </u>	of	: 1	

	Phone: (701) 2												
	300) 279-6885	Fax: (701) 258-9724									201682-4079		
Company Nam	ne and Address:			Account #							Phone #:		
	77.7	/TL									701-258-9720		
		Broadway		Contact:	0.				Fax #:				
	<u>Z010 E E</u> Bismarck		Name of C	Claud	ette	2	· · · · · · · · · · · · · · · · · · ·			For faxed report check box			
Billing Addres	s (indicate if different	Name of S	ampier:						E-mail: ccarroll@mvtl.com				
	•			Quote Nur	nher						For e-mail report check box Date Submitted:		
	<u>PO B</u>	ox 249									Date Submitted;		
	New Ulm,	MN 56073		Project Na	me/Numbe	r:					Purchase Order #:		
				_							BL5749		
		Sample Information					В	ottle	Ty	ре	Analysis		
SIGIZZ	307									Ī			
							23	-5					
						-	¥	s	_				
IML Lab			Sample	Date	Time	afe	E	Vial ese	Ja	١.			
Number	MVTL Lab Number	Client Sample ID	Type	Sampled	Sampled	Untreated	000	VOC Vials Umpreserved	Glass Jar	Other			
ر کی ر	16-W6010						=	> <u>></u>	9	10	Analysis Required		
		Dup 1	GW	19-Dec-16	***************************************	4	ļ				Ra226 & Ra228		
002	16-W6011	MW13 ,	GW	19-Dec-16	1120	4		ļ	<u> </u>	<u> </u>	Ra226 & Ra228		
			ļ										
						-							
Commente: All	regulte must be remain	orted as a numerical value											
	recarre muer ne teho	nteu as a numental value	÷.										

Sample Condition:



Field Datasheet

Groundwater Assessment

Company:	MDU Heskett
Event:	2016
Sample ID:	MW13
Sampling Personal:	Jevenny Meison

2616 E. Broadway Ave, Bis								Sampling P	ersonal:	Jeren	ng Menja	v	
Phone: (701) 258-9	720										ι τ		
Weather Conditions:		Temp:	20	°F	Wind:	w@10-	1.5		Precip	Suni	ny / Partly 0	Cloudy / Clo	udy>
	Well Info	rmation						Sa	mpling l	nformatio	on		ass-of-pales.
Well Locked?	Yes	NO)				Purging	Method:	Blad	der		Co	ntrol Setting	js
Well Labeled?	Yes	No				Sampling	Method:	Blad	der		Purge:	5	sec.
Casing Straight?	Yes	No				Dedicate	d Equip?:	Yes	No]	Recover:	52	sec.
Grout Seal Intact?	Yes	No	Not	Visible		Duplicate S	Sample?:	yes)	No		PSI:	30	
Repairs Necessary:						Duplicate S	ample ID:	3 D	1		Pumping R	ate: /00	mL/min
Casing	Diameter:		2"		•			,	,				
Water Level Befo	ore Purge:		30,43	ft		Pu	rge Date:	19 Del	6	Time Purg	ing Began:	1100	am/pm
Total W	/ell Depth:		*	ft		Well Pur	ged Dry?	Yes	No	Time P	urged Dry:		am/pm
We	II Volume:	1.		liters		Sam	ple Date:	19 Dec 16		Time of	Sampling:	1120	@m/pm
Depth to Top	of Pump:	-		ft									
Water Level Afte	r Sample:	3	50.91	ft		Bottle	CC	R: 1L Raw,	500mL Nit	irc, 500mL l	Nitric (filtere	d), 4-1L Nitr	ic
Measuremen	t Method:	Electric V	Vater Leve	Indicator		List:	NDDH	H: 1L Raw, 5	00mL nitri	c, 500mL ni	tiric (filtered	l), 250mL su	ılfiric
				Field I	Vleasure	ments						23.000	

	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	1105	Sill	10646	6.63	2,50	PG.L	4.07	30,43	500	Clear
2	1110	4.16	10557	6.76	1.82	197.1	1.99	30,86	500	Clex
3	1115	4,29	10524	6.76	1,72	195,6	1.69	30,79	5 500	Clear
4	1120	3,26	10703	6.78	1,73	194.4	1	30,77	500	Cles
5	475									
6										
7										
8										
9										
10 Stabilized:	Yes									

Stabilized: Yes/

Total Volume Removed: 2500 mL

Comments:



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

Chain of Custody Record

	Phone (701	1) 258-9720												
Projec	ct Name:				*			Nai	me d	of Sar	npler(s):	ĺ.	0	
MDU	Heskett	CCR Rad	liochem		2016							Jerry	Mus.	
Report To: Attn: Address: Phone:	MDU Samantha Marshall 400 N. 4th St Bismarck, ND 58501 701-222-7829		Carbon (Attn: Address					Wo	ork C	order	Number:	82 -	4070	7
	Samp	le Informat	ion				Во	ttle 1	Гуре)	Fi	eld Para	ameters	Analysis
Lab Number	Sample ID	Date	7ime	Sample Type	Gradient	1000 ml HMG					Field Temperature °C	Field Spec. Cond.	Field pH	Analysis Required
*	Field Blank (FB)		NA	W		4					NA	Daniel Co.	NA-	Analysis Required
WLOD	Dup l	19 Dec 16	NA	W		4					NA	NA NA	NA	
1100W	4w13	19De 16	1120	GW		4					3,28	10703	6.78	
													J. 75	
	4 .				*	7		-						MDU CCR Numerical RadChem

Comments: * d- 19 Dello

	Transferred by:	Sample Condition	Date/Time	Received by:	Sample Condition	Date/Time	°C	
1	- Lyth	Login	19 Dec 16	The All	_	19 Dec2014	5.100	ROT
2	(TIMSE
3	9							



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 28 FEB 2017

MVTL Lab Reference No/SDG:

201682-4102

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR December 2016

MVTL Laboratory Identifications:

16-W6025 through 16-W6027

Page 1 of 2

MDU Sample Identification	MVTL Laboratory #
Field Blank (FB)	16-W6025
103	16-W6026
44R	16-W6027

I. RECEIPT

- All samples were received at the laboratory on 20 Dec 2016 at 1420.
- 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 6.2°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.
 - o For some metals, the reported results were elevated due to instrument performance at the lower limit of quantitation (LLOQ).
 - o For some analytes, the reported results were elevated due to additional dilutions required to minimize the effects of sample matrix.



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CASE NARRATIVE - AMENDED 28 FEB 2017

MVTL Lab Reference No/SDG:

201682-4102

Client:

Montana Dakota Utilities

Location:

MDU Heskett

Project Identification:

CCR December 2016

MVTL Laboratory Identifications:

16-W6025 through 16-W6027

Page 2 of 2

- The recoveries for two selenium dissolved 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.
- Recovery for one molybdenum total matrix spike duplicate was outside of the acceptable limits. Recovery of the matrix spike was acceptable. RPD for the recoveries of the matrix spike/matrix spike duplicate was acceptable. No further action was taken.
- The recoveries for two beryllium total matrix spikes duplicates were outside the acceptable limits. Recoveries of the matrix spikes were acceptable. RPD for the recoveries was within limits. 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.
- Sample 16-W6025 was amended on 28 Feb 2017. TDS less than result was changed to reflect new method reporting limit for analyte.

All laboratory data	has been approved b	y MVTL Laboratori	es.						
	Claudate	(a. XO)		28 EB17					
SIGNED:	C minue	amiy	DATE:_	EGILDI'					
Claudette Carroll - MVTL Bismarck Laboratory Manager									

MVTL

1126 N. Front St. ~ New Ulm, MN 56073 ~ 800-782-3557 ~ Fax 507-359-2890 2616 E. Broadway Ave. ~ Bismarck, ND 58502 ~ 800-279-6885 ~ Fax 701-258-9724 1201 Lincoln Highway ~ Nevada, IA 50201 ~ 800-362-0855 ~ Fax 515-382-3885 www.mvtl.com

MEMBER ACIL

Page: 1 of 5

Quality Control Report – Amended 28 Feb 2017

Lab IDs: 16-W6025 to 16-V	W6027	Pr	oject: MI	DU Hesk	ett CCR	7	Work Or	der: 201	682-4102								
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	0.0160	104	80-120	0.100 0.100	16W6027q 16W6119q	< 0.001 < 0.001	0.1074 0.1120	107 112	75-125 75-125	0.1074 0.1120	0.1056 0.1136	106 114	1.7 1.4	20 20	-	-	< 0.001
Antimony - Total mg/l	0.1000 0.1000 0.1000	115 107 111	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.001 < 0.001 < 0.001	0.5586 0.4106 0.4598	112 103 115	75-125 75-125 75-125	0.5586 0.4106 0.4598	0.5452 0.4476 0.4642	109 112 116	2.4 8.6 1.0	20 20 20	-	-	< 0.001
Arsenic - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 < 0.002	0.1154 0.1182	115 118	75-125 75-125	0.1154 0.1182	0.1112 0.1193	111 119	3.7 0.9	20 20		-	< 0.002
Arsenic - Total mg/l	0.1000 0.1000 0.1000	112 108 112	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5784 0.4088 0.4748	116 102 119	75-125 75-125 75-125	0.5784 0.4088 0.4748	0.5630 0.4568 0.4778	113 114 119	2.7 11.1 0.6	20 20 20		- - -	< 0.002
Barium - Dissolved mg/l	0.0160	100	80-120	0.100 0.100	16W6027q 16W6119q	0.0065 0.0089	0.1104 0.1267	104 118	75-125 75-125	0.1104 0.1267	0.1002 0.1266	94 118	9.7 0.1	20 20	-	-	< 0.002
Barium - Total mg/l	0.1000 0.1000 0.1000	105 99 101	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	0.0070 < 0.002 0.0232	0.5200 0.3976 0.4460	103 99 106	75-125 75-125 75-125	0.5200 0.3976 0.4460	0.5306 0.4676 0.5030	105 117 120	2.0 16.2 12.0	20 20 20	-	-	< 0.002
Beryllium - Dissolved mg/l	0.0160	100	80-120	0.100	16W6027q	< 0.0005	0.1235	124	75-125	0.1235	0.1122	112	9.6	20	_	_	< 0.000
Beryllium - Total mg/l	0.1000 0.1000 0.1000	115 108 111	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.5952 0.4442 0.4942	119 111 124	75-125 75-125 75-125	0.5952 0.4442 0.4942	0.5908 0.5184 0.5346	118 130 134	0.7 15.4 7.9	20 20 20	-	- -	< 0.0005
Boron - Dissolved mg/l	0.40	115	80-120	0.300	16-W6107	0.28	0.55	90	75-125	0.55	0.56	93	1.8	20	-	- -	< 0.1 < 0.1 < 0.1
Boron - Total mg/l	0.40 0.40	110 115	80-120 80-120	0.400 0.400 0.400	16-W5963 17-D2 16-W6027	< 0.1 1.01 0.39	0.44 1.40 0.74	110 97 88	75-125 75-125 75-125	0.44 1.40 0.74	0.44 1.39 0.73	110 95 85	0.0 0.7 1.4	20 20 20	- - -	-	< 0.1 < 0.1 < 0.1
Cadmium - Dissolved mg/l	0.0160	103	80-120	0.100 0.100	16W6027q 16W6119q	< 0.0005 < 0.0005	0.1002 0.1060	100 106	75-125 75-125	0.1002 0.1060	0.1006 0.1079	101 108	0.4 1.8	20 20	-	-	< 0.0005

MVTL

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MEMBER ACIL

Page: 2 of 5

Quality Control Report

Lab IDs: 16-W6025 to 16-W	V6027	Pr	oject: MI	DU Hesk	ett CCR		Work Or	der: 201	682-410								
Analyte	LCS Spike Amt	LCS Rec %	LCS % Rec Limits	Matrix Spike Amt	Matrix Spike ID	Matrix □Ā□¤g 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 - Total mg/l	0.1000 0.1000 0.1000	119 110 116	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.5794 0.4290 0.4688	116 107 117	75-125 75-125 75-125	0.5794 0.4290 0.4688	0.5494 0.4758 0.4662	110 119 117	5.3 10.3 0.6	20 20 20	- - -	- - -	< 0.0005
Calcium - Dissolved mg/l	20.0	100	80-120	1000 100	16W6027q 16D5134q	431 61.5	1340 154	91 92	75-125 75-125	1340 154	1340 153	91 92	0.0 0.7	20 20	-	-	< 1
Calcium - Total mg/l	20.0	102	80-120	500	16W6027q	420	850	86	75-125	850	865	89	1.7	20	-	-	< 1 < 1 < 1
Chloride mg/l	30.0 30.0	88 89	80-120 80-120	30.0	16-W6019	7.8	37.6	99	80-120	37.6	35.8	93	4.9	20	-	-	< 1 < 1
Chromium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 0.0024	0.1086 0.1142	109 112	75-125 75-125	0.1086 0.1142	0.1057 0.1165	106 114	2.7 2.0	20 20	-	-	< 0.002
Chromium - Total mg/l	0.1000 0.1000 0.1000	107 101 103	80-120 80-120 80-120	I .	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5284 0.3858 0.4302	106 96 108	75-125 75-125 75-125	1	0.5096 0.4254 0.4292	102 106 107	3.6 9.8 0.2	20 20 20	-		< 0.002
Cobalt - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 < 0.002	0.1050 0.1060	105 106	75-125 75-125	0.1050 0.1060	0.1021 0.1088	102 109	2.8 2.6	20 20	-	-	< 0.002
Cobalt - Total mg/l	0.1000 0.1000 0.1000	108 101 105	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5316 0.3908 0.4316	106 98 108	75-125 75-125 75-125	0.5316 0.3908 0.4316	0.5120 0.4402 0.4326	102 110 108	3.8 11.9 0.2	20 20 20	-	-	< 0.002
Fluoride mg/l	0.50 0.50	98 100	90-110 90-110	0.500 0.500 0.500	16-M4090 16-W6025 16-W6027	0.71 < 0.1 0.67	1.19 0.50 1.11	96 100 88	80-120 80-120 80-120		1.20 0.52 1.12	98 104 90	0.8 3.9 0.9	20 20 20	-	-	< 0.1 < 0.1 < 0.1 < 0.1
Lead - Dissolved mg/l	0.0160	100	80-120	0.100 0.100	16W6027q 16W6119q	0.0007 < 0.0005	0.0958 0.1048	95 105	75-125 75-125	1	0.0872 0.1070	86 107	9.4 2.1	20 20	-	-	< 0.0005

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Quality Control Report
Lab Uns: 16-W6025 to 16-W6027

Lab IDs: 16-W6025 to 16-W6027 Project: MDU Heskett CCR Work Order: 201682-4102

Lab IDs: 16-W6025 to 16-W	6027	<u>Pr</u>	oject: MI	JU Hesk	ett CCR		Vork Or	T	682-4102	-					,		
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
Lead - Total mg/l	0.1000 0.1000 0.1000	104 97 101	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.4706 0.3828 0.3892	94 96 97	75-125 75-125 75-125	0.4706 0.3828 0.3892	0.4902 0.4424 0.4374	98 111 109	4.1 14.4 11.7	20 20 20	-	-	< 0.0005
Lithium - Dissolved mg/l	0.40	105	80-120	0.200	16-W6113	< 0.1	0.20	100	75-125	0.20	0.19	95	5.1	20	1 1		< 0.1 < 0.1
Lithium - Total mg/l	0.40 0.40	105 100	80-120 80-120	0.400 0.400	16-W6027 16-W6126	1.35 < 0.1	1.65 0.41	75 102	75-125 75-125	1.65 0.41	1.68 0.40	83 100	1.8 2.5	20 20	-	-	< 0.1 < 0.1 < 0.1
Magnesium - Dissolved mg/l	20.0	104	80-120	1000 100	16W6027q 16D5134q	1010 26.4	1890 123	88 97	75-125 75-125	1890 123	1880 123	87 97	0.5 0.0	20 20	-	-	< 1
Magnesium - Total mg/l	20.0	104	80-120	500	16W6027q	980	1380	80	75-125	1380	1400	84	1.4	20	-	-	< 1 < 1 < 1
Mercury - Dissolved mg/l	0.0020 0.0020	100 95	85-115 85-115	0.002 0.002 0.002	16-W5961 16-W6025 16-W6116	< 0.0002 < 0.0002 < 0.0002	0.0019 0.0019 0.0018	95 95 90	70-130 70-130 70-130	0.0019 0.0019 0.0018	0.0018 0.0019 0.0018	90 95 90	5.4 0.0 0.0	20 20 20	-	- - -	< 0.0002 < 0.0002
Mercury - Total mg/l	0.0020	95	85-115	0.002 0.002	AA66354 16-W6113	< 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	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.002 0.0033	0.1150 0.1274	115 124	75-125 75-125	0.1150 0.1274	0.1090 0.1254	109 122	5.4 1.6	20 20	_	-	< 0.002
Molybdenum - Total mg/l	0.1000 0.1000 0.1000	104 98 99	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.002 < 0.002 < 0.002	0.5704 0.4002 0.4614	114 100 115	75-125 75-125 75-125	0.5704 0.4002 0.4614	0.5564 0.4632 0.5072	111 116 127	2.5 14.6 9.5	20 20 20	-	-	< 0.002
pH units	- - -	-		-	-	-	- - -	-	- - - -	9.0 8.2 8.4 8.2	9.1 8.3 8.4 8.2	- - -	1.1 1.2 0.0 0.0	20 20 20 20 20			- - -

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Quality Control Report

Lab IDs: 16-W6025 to 16-W	76027	Pr	oject: MI	DU Hesk	ett CCR	<u> </u>	Work Or	der: 201	682-4102	2							
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 - Dissolved mg/l	10.0	88	80-120	200 20.0	16W6027q 16D5134q	25.7 5.1	217 24.2	96 96	75-125 75-125	217 24.2	220 24.3	97 96	1.4 0.4	20 20	-	-	< 1
Potassium - Total mg/l	10.0	87	80-120	100	16W6027q	31.2	128	97	75-125	128	130	99	1.6	20	-	- - -	< 1 < 1 < 1
Selenium - Dissolved mg/l	0.0160	103	80-120	0.100 0.100	16W6027q 16W6119q	0.0853 0.1386	0.2320 0.3296	147 191	75-125 75-125	0.2320 0.3296	0.2163 0.3082	131 170	7.0 6.7	20 20	-	-	< 0.002
Selenium - Total mg/l	0.1000	102	80-120	0.500	16-W6027	0.0778	0.6528	115	75-125	0.6528	0.6284	110	3.8	20		-	< 0.002
Sodium - Dissolved mg/l	20.0	96	80-120	1000 100	16W6027q 16D5134q	1020 101	1900 194	88 93	75-125 75-125	1900 194	1900 194	88 93	0.0	20 20	-	-	< 1
Sodium - Total mg/l	20.0	98	80-120	500	16W6027q	995	1380	77	75-125	1380	1420	85	2.9	20	- - -	-	< 1 < 1 < 1
Sulfate mg/l	100	98	80-120	100	16-W6024	< 5	93.1	93	80-120	93.1	95.4	95	2.4	20	-	-	< 5
Thallium - Dissolved mg/l	0.0160	101	80-120	0.100 0.100	16W6027q 16W6119q	< 0.0005 < 0.0005	0.0979 0.1041	98 104	75-125 75-125	0.0979 0.1041	0.0877 0.1079	88 108	11.0 3.6	20 20	-	-	< 0.0005
Thallium - Total mg/l	0.1000 0.1000 0.1000	105 98 100	80-120 80-120 80-120	0.500 0.400 0.400	16W6027q 16W6126q 16W6132q	< 0.0005 < 0.0005 < 0.0005	0.3812	94 95 96	75-125 75-125 75-125	0.4688 0.3812 0.3848	0.4860 0.4366 0.4290	97 109 107	3.6 13.5 10.9	20 20 20	-	-	< 0.0005
Total Alkalinity mg/l CaCO3	410 410	91 91	90-110 90-110	410 410 410	16-W6017 16-W6026 16-W6073	876 449 < 20	1230 827 382	86 92 93	80-120 80-120 80-120	1230 827 382	1236 825 378	88 92 92	0.5 0.2 1.1	20 20 20	91 91	80-120 80-120	< 20 < 20 < 20 < 20
Total Dissolved Solids mg/l	-	- - -		-	- - -	-	- - -	-	-	4350 1490 1210	4240 1520 1220	- - -	2.6 2.0 0.8	20 20 20	-	-	< 10 < 10
Total Suspended Solids mg/l	-	-	-	-		-	-	-	-	5720 5	7780 5	-	30.5 0.0	20	-	-	< 1 < 1

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Quality Control Report

Lab IDs: 16-W6025 to 16-W6027

Project: MDU Heskett CCR

Work Order: 201682-4102

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

Approved by: C. GWTD

28 FEB) 7